1. Call to Order – Dean Karen Plaut
2. Approval of Agenda
3. Distance Education – Joe Anderson
4. Announcement of College of Agriculture Faculty Awards – Dennis Buckmaster
5. Document I – Proposed Revision of the Agricultural Faculty Constitution (addition of virtual meeting) – Barbara Golden
6. Consent Agenda – Action Items
   Approval of Minutes of March 28, 2018 Agricultural Faculty Meeting
   Document II – Agricultural and Biological Engineering
   Document III – Agricultural Sciences Education and Communications
   Document IV – Agriculture - Online Master of Agriculture Program
   Document V – Agronomy
   Document VI – Biochemistry
   Document VII – Botany and Plant Pathology
   Document VIII – Entomology
   Document IX – Forestry and Natural Resources
   Document X – Horticulture and Landscape Architecture
   Document XI – Curriculum and Student Relations Committee
   Part I – Update to Core Curriculum Lists
   Part II – Deletions of courses
   Part III – Modifications of courses
   Part IV – Administrative change to Insect Biology: Forensic Entomology Concentration
   Part V – Transfer Credit Process
   Approval of 2018 December Degree Candidates
7. Memorial Resolutions
8. Report Items
   University Senate Report – Jo Ann Banks
   Dean’s Comments – Karen Plaut
9. Other Business
This is a proposal to the Agenda and Policy Committee to amend the Constitution of the College of Agriculture to allow virtual, electronic faculty meetings in addition to the regularly scheduled faculty meetings in spring and fall semesters. Rational for the addition of mid-semester virtual meetings includes, but is not limited to, the following:

- Accelerating the approval process for course and curricular changes.
- Allowing faculty participation from those that cannot attend a physical meeting.
- Allowing guest participation for guests that cannot attend a physical meeting.
- Facilitating emergency faculty meetings when access to campus may be limited.

This proposal will not remove the requirement for a regularly scheduled physical meetings each semester. Virtual meetings will require the same 15% quorum during virtual discussion as the regular faculty meetings. Virtual meetings will have the same voting requirements and options as regular faculty meetings. This proposal will not prevent the faculty from deciding to table discussion and vote of an item until the regularly scheduled physical meeting.

Signed,

Faculty member 1
Faculty member 2
Faculty member 3
Faculty member 4
Faculty member 5
Faculty member 6
Faculty member 7
Faculty member 8
Faculty member 9
Faculty member 10
Constitution of the Agriculture Faculty
Purdue University

Proposed Revisions – December 2018
Additions

ARTICLE I. COMPOSITION AND ADMINISTRATION

A. Composition of the Agriculture Faculty. All employees with the rank of at least Assistant Professor and those having the rank of Instructor for at least two years shall be eligible to vote on all Agriculture Faculty matters. Included are those individuals appointed as an Adjunct Faculty (as defined in Executive Memorandum C-12, 25 August 1987), or a Clinical Faculty member. Research Faculty members may vote on all items, excepting curricular matters. Associate and Affiliate administrative or professional appointees are specifically excluded.

B. Chief Administrative Officer. The chief administrative officer of the Agriculture Faculty is the Dean of Agriculture.

C. Instructional Department. An Instructional Department as used in this document refers to an academic department in the College.

ARTICLE II. POWERS OF THE AGRICULTURE FACULTY

A. The Agriculture Faculty shall have jurisdiction, consistent with University policy, of specific internal affairs, and shall discuss and make recommendations regarding all matters affecting its responsibilities in teaching, research, and extension. Specifically the Agriculture Faculty shall:

1. Establish course content, curricula, requirements, and certification for graduation.

2. Advise the Dean in matters of educational policy and long-term planning that affect the responsibilities of the Agriculture Faculty.

3. Advise the Dean and others on matters that concern Agriculture Faculty and student welfare.

ARTICLE III. MEETINGS OF THE AGRICULTURE FACULTY

A. The powers of the Agriculture Faculty shall be exercised at open meetings of the entire Agriculture Faculty, convened after proper written notification. The presiding officer shall be the Dean or his or her designee. The Dean shall appoint a Secretary of the Agriculture Faculty who shall keep the minutes of all meetings and a Parliamentarian who shall rule on all questions of procedure.

1. Regular meetings shall be called at least once during each of the fall and spring semesters of the University calendar, at times set by the Agenda and Policy Committee. At least one week prior to the announced date of the meeting, the Agenda and Policy Committee shall distribute an announcement and agenda for the meeting to each voting member.

1.2. In addition to the regular spring and fall semester meeting, virtual, synchronous meetings may be scheduled during the academic year.

2. Fifteen percent of the Agriculture Faculty shall constitute a quorum at an Agriculture Faculty meeting, including virtual faculty meeting. No meeting shall be held in the absence of a quorum.

3. Decisions of the Agriculture Faculty shall be reached by a simple majority of the Agriculture Faculty attending any called meeting.

a. Voting will be by secret ballot if requested by any Agriculture Faculty member present.
b. A mail or electronic vote by the Agriculture Faculty shall be conducted on any issue if requested by any voting Agriculture Faculty member and approved by one-fifth of the members present. Issues in all mail or electronic ballots shall be decided by a majority of the votes cast.

4.5. To encourage informed and efficient discussion of Agriculture Faculty business, only items appearing on the distributed agenda may be acted upon at a regular or virtual meeting, unless consent is voted by three-fourths of the members present. Written reports submitted for information only, even though not requiring immediate Agriculture Faculty action, shall whenever possible be distributed in advance of the meeting, and be noted on the agenda for question and discussion only. Any Agriculture Faculty member may introduce, for discussion only, any item not on the agenda at the appropriate time during regularly scheduled Agriculture Faculty meetings.

5.6. The minutes of each Agriculture Faculty meeting shall be distributed to each Agriculture Faculty member within 10 days after the meeting, and to the Offices of the President, Vice-Presidents, Deans, and Directors.

6.7. Special meetings, including virtual meetings may be called either by the Dean or by the Agenda and Policy Committee, or upon written request to the Agenda and Policy Committee by 10 or more Agriculture Faculty members. At these meetings, the same rules of agenda and procedure shall apply as at regular meetings.

7.8. Emergency meetings, including virtual meetings, of the Agriculture Faculty may be called by the Dean or his or her designee in consultation with a representative of the Agenda and Policy Committee by verbal notification of each Department Head and Administrative Office at least two hours before such an emergency meeting is to be convened. Regular rules of procedure shall apply except that such emergency meetings may consider and take appropriate action on emergency issues only.

ARTICLE IV. COMMITTEES OF THE FACULTY OF AGRICULTURE

A. The committees of this Agriculture Faculty include the following: Area Promotions Committee, Standing Committees of the Agriculture Faculty, Ad Hoc Committees of the Agriculture Faculty, and Administrative Committees. The Dean shall distribute annually to all Agriculture Faculty members a list giving the membership of all committees of these types.

1. Area Promotions Committee. This committee shall receive and act upon the recommendations of the Primary Committees in Agriculture in the regular promotions procedure of the University. Membership of this committee shall include the Dean of Agriculture who shall be Chairperson and call meetings, the Director of Academic Programs, the Director of Purdue Extension, the Director of Agriculture Research at Purdue, the Director of International Programs in Agriculture, Instructional Department Heads, and Agriculture Faculty Representatives (as described hereafter in Article IV) of the departments that normally generate promotions. A quorum of this committee shall consist of seven-eighths of its membership with at least one-third of those present being Agriculture Faculty representatives. Absentee ballots shall not be permitted. This committee will carry out its functions in agreement with the West Lafayette Campus Promotion and Tenure Policy.

a. Eligibility to serve as an Agriculture Faculty representative of this committee shall be limited to tenured Full Professors in Agriculture who do not have major administrative responsibilities.

b. The Agriculture Faculty of each department shall elect one eligible Agriculture Faculty representative to the committee according to the following procedures.

i. Candidates shall be nominated at an open meeting of the Agriculture Faculty of the department.

ii. Each nominee must express willingness to serve if elected.

iii. Elections shall be by written ballot in which all members of the Agriculture Faculty (as defined in Article I, A) in residence of a department have an opportunity to vote.

iv. To be elected, a candidate must receive a majority of ballots cast.
v.  Elections shall be concluded before July 1 of the year in which the term of service on the committee begins.

c.  The regular term of service for Agriculture Faculty representatives shall be three years, with approximately one-third of the apportionment elected each year according to a rotation schedule among the departments. The Agenda and Policy Committee shall be empowered to establish details of the rotation schedule and to make adjustments in this schedule if necessitated by a change in the number of departments. Each regular term of service shall begin July 1. There shall be no restrictions on consecutive terms of service.

d.  An Agriculture Faculty representative who is unable to complete the term of service or who is unable to participate in the affairs of the Area Promotions Committee shall be replaced by the department represented. Procedures for filling such unexpired terms or temporary vacancies on the Committee shall be the same as for the election to a full term, except for the time of election.

2.  **Standing Committees of the Agriculture Faculty.** Such committees shall deal with policy or action matters of continuing concern to the Agriculture Faculty. They shall be established or terminated only under the provisions of the constitution.

   a.  Terms of membership on all Standing Committees shall commence one month prior to the last official day of the spring semester unless otherwise specified. Before the last official day of the spring semester, the newly elected Chairperson shall provide the Secretary of the Agriculture Faculty with a list of the officers of his or her committee. Members of Standing Committees shall be elected prior to March 1 in an open meeting of each department, unless otherwise specifically stated. No Department Head shall be elected to serve.

   b.  Unless otherwise specifically stated, terms of membership shall be three years for elected members, with one-third of the members newly elected each year. Unless otherwise stated, no member shall be eligible for immediate re-election after completion of a full-term.

   c.  Excepting the Grade Appeals Committee, a Chairperson shall be elected annually in a meeting held no later than the last official day of the spring semester or May 1, whichever is earlier, by majority vote of the newly elected and continuing voting members. The organizational meeting shall be called and chaired by the retiring Chairperson.

   d.  Each committee has the responsibility for organizing itself, establishing a frequency for conducting business commensurate with achieving stated objectives in each area.

   e.  At least once each academic year, committee Chairpersons shall review with committee members those sections of the constitution and/or university policies on standing committees that apply to the activities of that committee.

   f.  Each committee may appoint such sub-committees as it deems necessary.

   g.  Each Standing Committee shall submit annually a written report to the Agriculture Faculty.

   i.  **Agenda and Policy Committee.** The functions of this committee shall be to maintain liaison between the administrative officials of Agriculture and the Agriculture Faculty, and to guide the Agriculture Faculty in the efficient exercise of its powers.

      A.  Schedule, announce, and prepare the agenda for Agriculture Faculty meetings in cooperation with the Dean.

      B.  Identify problems and counsel the Dean on policy matters of concern to the Agriculture Faculty.

      C.  Provide for periodic reports to the Agriculture Faculty from the Dean and the major administrative officers in the areas of teaching, research, and extension.
D. Act as a committee on committees: conduct the election of Senate representatives from Agriculture; and coordinate the activities of other standing committees of the Agriculture Faculty.

E. The membership of the Agenda and Policy Committee shall consist of a voting representative from each Instructional Department and the Chairperson of the Senate representatives from Agriculture. The Dean, or his or her designee, and the Secretary of the Agriculture Faculty shall serve as non-voting members of the committee.

ii. Curriculum and Student Relations Committee (CSRC). The functions of this committee shall be to coordinate and evaluate on a continuing basis the course work, curricula, and teaching offered by the Instructional Departments of the College of Agriculture; to examine and make recommendations to the assembled Agriculture Faculty on proposed changes in course work, curricula, and degree requirements; and to ensure prompt attention to educational problems of students. The CSRC may make final decisions on the following items and report to assembled Agriculture Faculty: 1) change in course title; 2) expiration of a course; 3) change in course number; 4) Registrar designation of a course (course type); 5) change in requisites; and 6) cross-listing courses; including changes to the 8 semester Plan of Study to reflect the above. Decisions from the Committee on these items must be unanimous, and any of the above may be sent to the assembled Agriculture Faculty at the discretion of the Committee.

Membership of this committee shall be one representative from each Instructional Department. The Agriculture Faculty representative to the university Undergraduate Curriculum Council shall serve as an ex officio, non-voting member. Pro-tempore members may be appointed by the Dean to give recognition to interdisciplinary and other programs. The Director of Academic Programs or his or her designee; the Associate Director of Academic Programs; and the Director of Agriculture Research at Purdue or his or her designee shall serve as ex officio members. One undergraduate student and one graduate student shall serve as non-voting members. Student members shall be randomly selected by the Secretary of the Agriculture Faculty from a pool of one undergraduate student and one graduate student nominated by the Department Head from each Instructional Department.

iii. Grade Appeals Committee. The function of this committee is to provide recourse to a student who believes that an inappropriate grade has been assigned as a result of prejudice, caprice, or other improper conditions such as mechanical error, or assignment of a grade inconsistent with those assigned other students. Additionally, a student may challenge the reduction of a grade assigned for his/her alleged dishonesty.

A. This committee shall consist of three members of the instructional Agriculture Faculty; two students, undergraduate or graduate, corresponding to the status of the appellant; and a non-voting Chairperson. The Chairperson will be an Assistant or Associate Dean appointed by the Dean.

1. Faculty membership of this committee shall be randomly selected by the Chairperson of the Agenda and Policy Committee from a pool consisting of one Agriculture Faculty member elected annually from each Instructional Department. Three members will be selected as regular members and all others in the pool shall serve as alternate members. No member shall serve more than two consecutive terms.

2. Student membership shall consist of two undergraduate students and two graduate students. In addition there will be nine alternates from each category selected to be used as necessary.

Undergraduate student members shall be randomly selected from a pool of one undergraduate student nominated by the Department Head from each Instructional Department. Before the last official day of the spring semester, the Secretary of the Agriculture Faculty in consultation with the Chairperson of the Agenda and Policy Committee shall randomly select two undergraduate
students from the pool and convey their names to the Chairperson of the Grade Appeals Committee. The remaining undergraduate students in the pool shall be considered alternate members of the committee to serve as necessary.

Graduate student regular members shall be selected in a random fashion from a pool of students from each Instructional Department. Annually graduate students from each Instructional Department shall elect one graduate student from their Instructional Department to serve in the pool for a one-year period. Before the last official day of the spring semester, the Secretary of the Agriculture Faculty in consultation with the Chairperson of the Agenda and Policy Committee shall randomly select two graduate students from the pool and convey their names to the Chairperson of the Grade Appeals Committee. The remaining graduate students in the pool shall be considered alternate members of the committee to serve as necessary.

3. **Ad Hoc Committees of the Agriculture Faculty.** Such committees shall deal with policy or action matters not delegated to an established standing committee and unlikely to require continuing attention. Such committees shall be established by the Dean or by vote of the Agriculture Faculty. Unless otherwise provided, such committees shall function by the following rules:

   a. Size, membership, and leadership of these committees shall be determined by the Dean, in consultation with the Agenda and Policy Committee.

   b. Such committees shall make a written report and final recommendations to the Agriculture Faculty.

   c. Membership shall extend for the duration of the committee, and the committee shall be disbanded upon acceptance of its report.

4. **Administrative Committees upon which Agriculture Faculty Members Serve.** Such committees shall deal with regular tasks of administering the established responsibilities of the subdivisions within Agriculture. Proposals for major changes in activities or policies stemming from these committees will be reported to the Agriculture Faculty. Except when otherwise provided, these committees shall be established by the Dean after consultation with appropriate members of the College leadership team, Agenda and Policy Committee, and/or members of the Agriculture Faculty to determine the need, membership, terms of service, leadership, and reporting requirements.

**ARTICLE V. REPRESENTATION TO THE UNIVERSITY SENATE**

A. **Responsibilities.** The Senators from Agriculture shall be responsible for regular participation in the activities of the University Senate, for communicating to the Faculty of Agriculture and its subdivisions the direction of Senate actions and deliberations, and for transmitting viewpoints and discussions of their Agriculture Faculty to the University Senate.

B. **Election Procedure.**

   1. The Agriculture Faculty shall elect the number of Senators apportioned to Agriculture. Terms of office shall be three years, with approximately one-third of the apportionment elected each year prior to February 1. Senators may serve only two successive terms.

   2. Each Instructional Department shall have at least one, but no more than two, Agriculture Faculty serving as Senators.

   3. Each Instructional Department shall elect one Agriculture Faculty member (as defined in Article I, A) to serve as its Senator according to the following procedures:

      a. Candidates must be nominated at an open meeting of the department.

      b. Nominees must state their willingness to serve after reviewing Senate rules of operation and attendance.
c. Elections shall be by secret ballot in which all members of the Agriculture Faculty in residence of a department have an opportunity to vote.

d. To be elected, a candidate must receive a majority of ballots cast.

4. In addition to the Senators elected as departmental representatives, Senators-at-large shall be elected and so designated by the Agriculture Faculty to fill the remaining number of Senate vacancies assigned to Agriculture.

a. Each department eligible to elect a Senator may submit only one nominee for Senator-at-large. Such nominees will be selected by the departments in a manner identical to regular Senators. Nominees will be forwarded to the Secretary of the Agriculture Faculty.

b. Election of Senators-at-large shall be by mail or electronic ballot of the entire Agriculture Faculty. Ballots shall contain names of all candidates in random order. Each Agriculture Faculty member may cast votes equal to but not to exceed the number of Senate vacancies to be filled. That number of candidates receiving the most votes shall be elected.

c. The number of votes cast for each candidate shall be filed with the Dean.

5. Immediately following each annual election, all Senators from Agriculture shall meet at the call of the Dean and elect a Chairperson. The Chairperson shall act as a spokesperson for the delegation and shall serve on the Agenda and Policy Committee.

6. Senators unable to complete their terms or unable to attend Senate meetings for periods of one regular semester or more shall be replaced. Replacement for shorter periods of absence shall be at the option of the Senator in question or the department represented. In either case, the replacement of a Senator shall be for the duration of the unexpired term. Senators who are aware of the forthcoming need for their replacement should notify the Chairperson of the Agenda and Policy Committee.

a. To replace Senators elected under B.3 above, the department represented shall elect a replacement (according to the procedures of B.3) upon request by the Chairperson of the Agenda and Policy Committee.

b. Senators-at-large shall be replaced by the Agenda and Policy Committee from the most recent list of candidates filed under Article V, B.4, above. Candidates not previously elected shall be considered alternates, in the order of votes received. Should a second replacement be required, or should the first alternate be unavailable, the second alternate would be selected, etc.

ARTICLE VI. AMENDMENTS TO THE CONSTITUTION

A. Initiation of Amendments. An amendment to this constitution may be initiated by two-thirds vote of the Agenda and Policy Committee, or by written petition signed by 10 members of the Faculty of Agriculture to the Agenda and Policy Committee.

B. Ratification. Any properly initiated amendment petition shall be placed on the agenda of the next regular or special meeting of the Agriculture Faculty for discussion. At such a meeting, any proposed amendment may be further amended by a two-thirds vote of those in attendance. Thereafter, it shall be submitted to a mail or electronic ballot of the entire Agriculture Faculty, in which a favorable vote by a majority of those voting shall be necessary for ratification.

ARTICLE VII. REVIEW OF THE CONSTITUTION

A. The Constitution shall be reviewed by the Agenda and Policy Committee every five years. Any changes resulting from such review shall follow the conditions of Article VI.
Agricultural Faculty
Document No. II, 2018-19
December 3, 2018

Department of Agricultural and Biological Engineering

Proposed Course and Curricular Changes
(College of Agriculture Undergraduate/Graduate)

A. COURSES TO BE ADDED

Prefix and Course Number: ABE 54000

Title: Principles of Systems and Synthetic Biology

Course Description for University Catalog (include requisites/restrictions): Synthetic biology harnesses the power and adaptability of biology to engineer living systems that address grand societal challenges. This course introduces students to fundamental concepts and techniques in this interdisciplinary discipline, and studies state-of-the-art techniques from the primary literature. The course follows the standard Design-Build-Test-Learn (DBTL) cycle of contemporary practice and includes topics such as biological circuit design, advanced DNA assembly techniques, genome editing technologies, next generation sequencing, and directed evolution.

B. CURRICULAR CHANGES

None
Semester(s) Offered: Fall

Schedule Type (e.g. Lecture/Lab) and Hours: Lecture

Credits: 3

A. Justification for the course:
- Supports training of students in the applied life sciences by providing tools for how to apply biology to solve engineering problems (example majors: Biological Engineering, Biological Sciences, Chemical Engineering, Biochemistry, Biomedical Engineering, Food Science (Fermentation minor))
- This course fills a training gap for students interested in developing systems for biotechnology. Current offerings are at the extremes of the process: fundamental biology concepts (e.g. BIOL 230) and scale up of these systems (ABE 558/580, ChE 525) with little covering the actual development of real-world systems that are then fed to large scale production systems
- This course may serve as a substitute for ABE 440 required for Biological Engineering students who may follow alternative plans of study due to internship, etc.

B. Learning Outcomes and Methods of Assessment

i. Applicable to University Core Curriculum
This course ☒ will ☐ will not be nominated for inclusion on University Foundational Core. If no, skip to section ii.

<table>
<thead>
<tr>
<th>Foundational Learning Outcomes</th>
<th>Check all that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Written Communication</td>
<td>☐</td>
</tr>
<tr>
<td>2. Information Literacy</td>
<td>☐</td>
</tr>
<tr>
<td>3. Oral Communication</td>
<td>☐</td>
</tr>
<tr>
<td>4. Science</td>
<td>☐</td>
</tr>
<tr>
<td>5. Science, Technology and Society</td>
<td>☐</td>
</tr>
<tr>
<td>6. Mathematics/Quantitative Reasoning</td>
<td>☐</td>
</tr>
<tr>
<td>7. Human Cultures: Humanities</td>
<td>☐</td>
</tr>
<tr>
<td>8. Human Cultures: Behavioral &amp; Social Sciences</td>
<td>☐</td>
</tr>
</tbody>
</table>

ii. Applicable to College of Agriculture Core
This course ☐ will ☒ will not be nominated for inclusion on College of Agriculture Core. If no, skip to section iii.

<table>
<thead>
<tr>
<th>College of Agricultural Core</th>
<th>Check all that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mathematics and Sciences</td>
<td>☐</td>
</tr>
<tr>
<td>2. Written and Oral Communication</td>
<td>☐</td>
</tr>
<tr>
<td>3. Humanities and Social Sciences</td>
<td>☐</td>
</tr>
<tr>
<td>4. Multicultural Awareness</td>
<td>☐</td>
</tr>
<tr>
<td>5. International Understanding</td>
<td>☐</td>
</tr>
<tr>
<td>6. Capstone</td>
<td>☐</td>
</tr>
</tbody>
</table>

iii. Graduate Learning Outcomes (for 50000 and 60000 level courses only)

<table>
<thead>
<tr>
<th>Graduate Learning Outcomes</th>
<th>Check all that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Advance Knowledge and Scholarship</td>
<td>☒</td>
</tr>
<tr>
<td>2. Demonstrate Critical Thinking and Problem Solving</td>
<td>☒</td>
</tr>
<tr>
<td>3. Exhibit Ethical Conduct</td>
<td>☒</td>
</tr>
<tr>
<td>4. Communicate Effectively</td>
<td>☒</td>
</tr>
<tr>
<td>5. Develop Professionalism</td>
<td>☒</td>
</tr>
</tbody>
</table>

iv. Describe course objectives and student learning outcomes that address the objectives (i.e., knowledge, communication, critical thinking, ethical research, etc.)

<table>
<thead>
<tr>
<th>Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify and select biological parts needed for a specific engineering objective</td>
</tr>
<tr>
<td>Use modern DNA assembly techniques to build biological circuits and designs</td>
</tr>
<tr>
<td>Quantitatively describe the performance of biological circuits and their components</td>
</tr>
<tr>
<td>Design biological circuits for specific applications</td>
</tr>
<tr>
<td>Evaluate design performance with modern analytical techniques</td>
</tr>
<tr>
<td>Discuss the ethical concerns of engineering biology</td>
</tr>
</tbody>
</table>

v. Methods of evaluation or assessment:

<table>
<thead>
<tr>
<th>Methods of assessment</th>
<th>Check all that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. exams and quizzes</td>
<td>☒</td>
</tr>
</tbody>
</table>
2. assessment and scoring of in class participation
3. assignments
4. class presentations
5. Other (specify): Click here to enter text.

C. Prerequisites
   BIOL 23000, or BCHM 56100, or equivalent

D. Course Instructor and Contact Information
   Kevin Solomon
   BND 216
   494-1134
   kvs@purdue.edu

E. Course Outline of Topics

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>• Engineering Biology Overview + Ethics</td>
</tr>
<tr>
<td>2</td>
<td>• Programming Biology</td>
</tr>
<tr>
<td>3</td>
<td>• Properties of Biological Systems</td>
</tr>
<tr>
<td>4</td>
<td>• Network Motifs</td>
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<tr>
<td>5</td>
<td>• Nonlinear Systems and Emergent Phenomena</td>
</tr>
<tr>
<td>6</td>
<td>• BioCAD</td>
</tr>
<tr>
<td>7</td>
<td>• Test 1</td>
</tr>
<tr>
<td>8</td>
<td>• DNA Assembly I</td>
</tr>
<tr>
<td>9</td>
<td>• DNA Assembly II</td>
</tr>
<tr>
<td>10</td>
<td>• Genome Engineering</td>
</tr>
<tr>
<td>11</td>
<td>• Genome Scale Assembly</td>
</tr>
<tr>
<td>12</td>
<td>• Applications: Metabolic Engineering</td>
</tr>
<tr>
<td>Week</td>
<td>Topic(s)</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>13</td>
<td>• Microbial Communities and Directed Evolution</td>
</tr>
<tr>
<td>14</td>
<td>• Test 2</td>
</tr>
<tr>
<td>15</td>
<td>• Learning from Nature + -omics</td>
</tr>
<tr>
<td>16</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

F. Reading List (include course text)

**Primary Reading List**

Students are assigned weekly readings from the primary literature as reference materials. Some examples include:


**Secondary Reading List**

G. Library Resources

<table>
<thead>
<tr>
<th>Name of journal, proceedings, book, video, or other acquisition</th>
<th>Already in Libraries?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biobuilder</strong>: Synthetic Biology in the Lab. Natalie Kuldell, Rachel Bernstein, Karen Ingram &amp; Kathryn M. Hart. ISBN: 978-1-4919-0429-9</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Synthetic Biology</strong>: Tools and Applications. Edited by Huimin Zhao. ISBN: 978-0-12-394430-6</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Synthetic Biology.</strong> Editors: Anton Glieder, Christian P. Kubicek, Diethard Mattanovich, Birgit Wilschi, Michael Sauer. ISBN: 978-3-319-22707-8</td>
<td>Yes</td>
</tr>
<tr>
<td>Nature</td>
<td>Yes</td>
</tr>
<tr>
<td>Science</td>
<td>Yes</td>
</tr>
<tr>
<td>ACS Synthetic Biology</td>
<td>Yes</td>
</tr>
<tr>
<td>Nature Biotechnology</td>
<td>Yes</td>
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<tr>
<td>Nature Review Genetics</td>
<td>Yes</td>
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<tr>
<td>Journal of Biological Engineering</td>
<td>Yes</td>
</tr>
<tr>
<td>FEMS Yeast Research</td>
<td>Yes</td>
</tr>
<tr>
<td>Cell</td>
<td>Yes</td>
</tr>
<tr>
<td>Essays in Biochemistry</td>
<td>Yes</td>
</tr>
</tbody>
</table>

H. Example of Course Syllabus

**ABE 591 Principles of Systems & Synthetic Biology**

**Instructor:** Dr. K. Solomon  
Office: BND 216  
Phone: 494-1134  
Email: kvs@purdue.edu  
Office Hours: by appt. at [http://doodle.com/ksolomon](http://doodle.com/ksolomon)  
[http://solomonlab.weebly.com](http://solomonlab.weebly.com)

**Course Information**  
Fall 2018  
TR 12:00 – 1:15 pm  
LILLY 3-120  
[https://mycourses.purdue.edu](https://mycourses.purdue.edu)

**Course Description**  
Synthetic biology harnesses the power and adaptability of biology to engineer living systems that address grand societal challenges. Driving our ability to engineer these systems are advances in molecular biology, quantitative understanding derived from systems biology, and engineering design principles. This course introduces students to fundamental concepts and techniques in this interdisciplinary discipline, and studies state-of-the-art techniques from the primary literature. The course follows the standard Design-Build-Test-Learn (DBTL) cycle of contemporary practice and
includes topics such as biological circuit design, advanced DNA assembly techniques, genome editing technologies, next generation sequencing, and directed evolution. This course fosters interdisciplinary thinking in the creation of biological solutions culminating in a group design project tackling real-world problems and its ethical implications.

**Prerequisites**
Anyone with high school biology will have the minimum prerequisites to get through the class, but I highly recommend taking college-level molecular and/or cell biology prior to this course. Some knowledge of differential equations and integral calculus is preferred. This course is appropriate for graduate students and advanced undergraduates within the colleges of Engineering, Science, and Agriculture.

**Course Goals**
To develop fundamental understanding of synthetic biology principles and provide a broad overview of the field and its future direction.

**Learning Objectives**
At the end of the course, students will be able to:
- Identify and select biological parts needed for a specific engineering objective
- Use modern DNA assembly techniques to build biological circuits and designs
- Quantitatively describe the performance of biological circuits and their components
- Design biological circuits for specific applications
- Evaluate design performance with modern analytical techniques
- Discuss the ethical concerns of engineering biology

**Course Requirements**
There is **no final exam**. Students need to complete:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 assignments</td>
<td>3% each – 15%</td>
</tr>
<tr>
<td>2 Tests</td>
<td>20% each – 40%</td>
</tr>
<tr>
<td>4 Journal Club Discussions + Peer Evaluation</td>
<td>2.5% each – 10%</td>
</tr>
<tr>
<td>Group Lit Review + Presentation – BioCAD tools</td>
<td>5%</td>
</tr>
<tr>
<td>Group Term Design Project (Report + Presentation)</td>
<td>100%</td>
</tr>
</tbody>
</table>

Class attendance and participation are critical for learning, especially for classes that discuss the current literature.

**Group Lit Review – BioCAD tools**
There has been rapid development of BioCAD (Computer Aided Design) tools for Synthetic Biology that aim to simplify the design process. To familiarize themselves with these tools and identify ones that may be beneficial for their own research, students will form groups of 4 to complete a literature review and in-class demonstration of the tool of their choice (e.g. Clotho, Cello). Students should discuss the power of these tools as well as any limitations in their current implementations by analyzing a model system in a brief technical report and 8 min presentation.

**Group Term Design Project**
Students will practice the course content in a single team design project due at the end of the semester similar to the iGEM competition (http://igem.org). The Design Project includes a
technical report and a 25 min presentation that will be weighted equally. Final scores will be distributed according to contributions recorded on private peer evaluations (i.e. if you contributed less than the others, you will receive a score less than the graded total). The report should include:

- A problem description
- Solution design including specific parts
- Quantitative models justifying part selection (should include analysis of performance)
- Construction plan and pros/cons of techniques selected
- Proposed analytical pipeline
- Discussion of how results may refine solution design
- Discussion of ethics (e.g. biocontainment risks, public perception, ethics of solution)

There will be opportunities for teams to receive feedback at various stages of their project through their homework assignments.

Schedule of Topics (Tentative – see Blackboard for details and updated schedule)

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Engineering Biology Overview + Ethics</td>
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<tr>
<td>2</td>
<td>Programming Biology</td>
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<tr>
<td>3</td>
<td>Properties of biological systems</td>
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<tr>
<td>4</td>
<td>Network Motifs</td>
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<tr>
<td>5</td>
<td>Nonlinear Systems and emergent phenomena</td>
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<tr>
<td>6</td>
<td>BioCAD</td>
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<tr>
<td>7</td>
<td>Test 1</td>
</tr>
<tr>
<td>8</td>
<td>DNA Assembly</td>
</tr>
<tr>
<td>9</td>
<td>DNA Assembly cont’d</td>
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<tr>
<td>10</td>
<td>Genome Engineering</td>
</tr>
<tr>
<td>11</td>
<td>Genome Scale Assembly</td>
</tr>
<tr>
<td>12</td>
<td>Applications – Metabolic Engineering</td>
</tr>
<tr>
<td>13</td>
<td>SynBio Frontiers – Microbial communities and directed evolution</td>
</tr>
<tr>
<td>14</td>
<td>Test 2/Thanksgiving</td>
</tr>
<tr>
<td>15</td>
<td>Learning from Nature + -omics</td>
</tr>
<tr>
<td>16</td>
<td>Design Projects</td>
</tr>
</tbody>
</table>

Required Texts
Readings are assigned from the primary literature as indicated on the course schedule and posted on Blackboard weekly. They should be read before class to maximize the value from the classroom discussion. Students are encouraged to consult the following optional texts electronically via Purdue Library proxy or through on-campus PAL access for background information and further details.


Policies

Grading

- Final scores will be calculated from the scores received on assigned homework, quizzes, term projects and literature reviews as indicated in the course requirements.
- Final scores may be curved at the discretion of the instructor.
- Any requests for reevaluation must be made in writing within 2 weeks of the return of the graded work indicating the grading discrepancy, justification for more points, and a proposed modified score. Requests made after this deadline will not be considered.

Academic Integrity

“As a boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together - we are Purdue”

– Purdue Honor Pledge

https://www.purdue.edu/provost/teachinglearning/honor-pledge.html

Purdue prohibits "dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty." [Part 5, Section III-B-2-a, University Regulations].

The university does not tolerate any form of academic dishonesty and will investigate all reported and observed instances. Academic dishonesty may result in a failing grade for the assignment or course and will be referred to the Office of Students Rights and Responsibility. Further university penalties, including expulsion from the university, may result from any confirmed case of Academic Dishonesty. For guidance on university policy and to learn more about Academic Integrity, please visit: https://www.purdue.edu/odos/academic-integrity/

Note, students are encouraged to collaborate and work together. Indeed, this is how science moves forward. However, all work turned in for grading must be that of the student and not a copy of the ‘group solution’.

Use of Copyrighted Materials

Students are not allowed to make course notes or materials available for others to purchase.

Attendance and Missed/Late Work

I will not accept course assignments missed due to unexcused absences and will assign them a failing grade. Excused absences for scheduled events such as interviews, doctor’s appointments, etc. will typically be granted provided you inform me at least 2 days in advance and supply appropriate documentation. It is the responsibility of the student to make arrangements for any
missed notes or assignments. In case of emergencies, please inform me as soon as possible upon return to class with appropriate documentation.

Students are expected to be present for every meeting of the classes in which they are enrolled. Only the instructor can excuse a student from a course requirement or responsibility. When conflicts or absences can be anticipated, such as for many University sponsored activities and religious observations, the student should inform the instructor of the situation as far in advance as possible...For unanticipated or emergency absences when advance notification to an instructor is not possible, the student should contact the instructor as soon as possible by email, or by contacting the main office that offers the course. When the student is unable to make direct contact with the instructor and is unable to leave word with the instructor’s department because of circumstances beyond the student’s control, and in cases of bereavement, the student or the student’s representative should contact the Office of the Dean of Students.

The link to the complete policy and implications can be found at http://www.purdue.edu/odos/services/classabsence.php

Grief Absence Policy for Students

Purdue University recognizes that a time of bereavement is very difficult for a student. The University therefore provides the following rights to students facing the loss of a family member through the Grief Absence Policy for Students (GAPS). GAPS Policy: Students will be excused for funeral leave and given the opportunity to earn equivalent credit and to demonstrate evidence of meeting the learning outcomes for missed assignments or assessments in the event of the death of a member of the student’s family.

Violent Behavior Policy

Purdue University is committed to providing a safe and secure campus environment for members of the university community. Purdue strives to create an educational environment for students and a work environment for employees that promote educational and career goals. Violent Behavior impedes such goals. Therefore, Violent Behavior is prohibited in or on any University Facility or while participating in any university activity.

For additional information, see:
http://www.purdue.edu/policies/pages/facilities_lands/i_2_3.shtml

Students with Disabilities

Purdue University strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let me know so that we can discuss options. You are also encouraged to contact the Disability Resource Center at: drc@purdue.edu or by phone: 765-494-1247.”
http://www.purdue.edu/drc/faculty/syllabus.html

Purdue University is required to respond to the needs of the students with disabilities as outlined in both the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 through the provision of auxiliary aids and services that allow a student with a disability to fully access and participate in the programs, services, and activities at Purdue University.
If you have a disability that requires special academic accommodation, please make an appointment to speak with me within the first three (3) weeks of the semester in order to discuss any adjustments. It is important that we talk about this at the beginning of the semester. It is the student's responsibility to notify the Disability Resource Center (http://www.purdue.edu/drc) of an impairment/condition that may require accommodations and/or classroom modifications.

Mental Health

CAPS Information: Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at (765)494-6995 and http://www.purdue.edu/caps/ during and after hours, on weekends and holidays, or through its counselors physically located in the Purdue University Student Health Center (PUSH) during business hours.

Emergencies

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor's control. Relevant changes to this course will be posted onto the course website or can be obtained by contacting the instructors or TAs via email or phone. You are expected to read your @purdue.edu email on a frequent basis.

Nondiscrimination

Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life.

Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, genetic information, marital status, parental status, sexual orientation, gender identity and expression, disability, or status as a veteran. The University will conduct its programs, services and activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in Executive Memorandum No. D-1, which provides specific contractual rights and remedies. Any student who believes they have been discriminated against may visit www.purdue.edu/report-hate to submit a complaint to the Office of Institutional Equity. Information may be reported anonymously.
EMERGENCY NOTIFICATION PROCEDURES are based on a simple concept – if you hear a fire alarm inside, proceed outside. If you hear a siren outside, proceed inside.

- **Indoor Fire Alarms** mean to stop class or research and immediately evacuate the building.
  - Proceed to your Emergency Assembly Area away from building doors. **Remain outside** until police, fire, or other emergency response personnel provide additional guidance or tell you it is safe to leave.
- **All Hazards Outdoor Emergency Warning Sirens** mean to immediately seek shelter (**Shelter in Place**) in a safe location within the closest building.
  - “Shelter in place” means seeking immediate shelter inside a building or University residence. This course of action may need to be taken during a tornado, a civil disturbance including a shooting or release of hazardous materials in the outside air. Once safely inside, find out more details about the emergency*. **Remain in place** until police, fire, or other emergency response personnel provide additional guidance or tell you it is safe to leave.

*In both cases, you should seek additional clarifying information by all means possible...Purdue Emergency Status page, text message, Twitter, Desktop Alert, Albertus Beacon, digital signs, email alert, TV, radio, etc....review the Purdue Emergency Warning Notification System multi-communication layers at [http://www.purdue.edu/ehps/emergency_preparedness/warning-system.html](http://www.purdue.edu/ehps/emergency_preparedness/warning-system.html)

EMERGENCY RESPONSE PROCEDURES:
- Review the **Emergency Procedures Guidelines** [https://www.purdue.edu/emergency_preparedness/flipchart/index.html](https://www.purdue.edu/emergency_preparedness/flipchart/index.html)
- Review the **Building Emergency Plan** (available on the Emergency Preparedness website or from the building deputy) for:
  - evacuation routes, exit points, and emergency assembly area
  - when and how to evacuate the building.
  - shelter in place procedures and locations
  - additional building specific procedures and requirements.

EMERGENCY PREPAREDNESS AWARENESS VIDEOS
- "The Coming Storm" The Coming Storm is a movie that dramatizes the aftermath of a campus shooting, weaving within the story the best practices and lessons learned from
active shooter incidents that have occurred throughout the United States. View FBI Short Movie [here].

• "Run. Hide. Fight.®" YouTube Video. Produced by the City of Houston Mayor's Office of Public Safety and Homeland Security through a grant provided by a Department of Homeland Security Grant Funded Project of the Regional Catastrophic Planning Initiative, provides critical options for consideration to survive an active shooter event.


• Department of Homeland Security Active Shooter web site…resources and tips on how to prepare for this type of horrific incident…learn more

• Ready: Whenever, Wherever—A public service campaign, from the Indiana Department of Homeland Security, which encourages Hoosiers to practice reasonable awareness and develop a plan for action in the event of an emergency

MORE INFORMATION
Reference the Emergency Preparedness web site for additional information:
https://www.purdue.edu/ehps/emergency_preparedness/
A. COURSES TO BE ADDED

ASEC 21200 Greenhouse and Landscape Fundamentals for Educators
Credit hours: 3.00. This course will prepare future educators in using a greenhouse and landscape as teaching tools. Laboratories will explore how to identify and produce both woody and herbaceous plants while safely maintaining and operating greenhouse technologies. Students will also explore how to implement landscape design technologies and identify tools, equipment, and landscape plants. Spring.

ASEC 28000 Digital Storytelling
Credit hours: 3.00. Students will plan, shoot, and edit videos; collaborate in teams; plan and generate social media; and write feature pieces for digital platforms. Students will gain meaningful digital storytelling experiences that will enhance their understanding of various platforms and build their professional portfolios. Prerequisites: YDAE 15200 and 30 credits or instructor consent. Fall and Spring.

ASEC 28500 Introduction to Publication Design
Credit hours: 3.00. Students will learn basic message design skills and industry-standard software for producing professional-quality print and digital publications. This course has been taught previously under a temporary 49100 number. The course will serve as a COM/AGCM selective in the major.

ASEC 54600 Communication and Issues Engagement for Agricultural Professional
Credit hours: 3.00. In this eight-week online course, students will be exposed to science communication and issues engagement principles. The course is designed primarily for those with little or no formal communication training. Topics include evidence-based best practices for communicating science; news media and social media influences on controversial science; how to monitor controversial issues; and major theoretical perspectives and strategies for engaging the public on food and agricultural science. Online, Fall and Spring.

ASEC 54800 Communicating Science to the Public
Credit hours: 1.00. This course will help graduate students in science disciplines learn to communicate science to non-expert audiences. Through readings, assignments and online-guided discussions, students will learn relevant communication theories and recommended strategies for engaging with the public on science and technology topics. Online, Summer.

ASEC 58500 Science Communication
Credit hours: 3.00. This course utilizes foundational research and commentary from scholars to track the evolution of media and our ability as scientists to understand and effectively communicate these issues to a non-science audience. This course covers the range of issues in the field of science communication including: the nature of science, how to translate evidence for a lay audience, media practices, reporting
and qualifying uncertainty, human psychology and belief systems, information processing, and the most current research for messaging science. Spring.

B. CURRICULAR CHANGES

REVISE Agricultural Communication (AGCM) Undergraduate Major
We are requesting the following changes to the AGCM curriculum. We are requesting deletion of COM 25000 (Mass Communication and Society, 3 cr) from the major’s communication core. Subject matter in this course (mass media systems and social impacts) is largely duplicated in our major’s ASEC (YDAE) 15200 course (Agricultural Communication Seminar, 3 cr). Our ASEC (YDAE) 15200 course also provides content on the agricultural communication industry, professional organizations and history, which is not addressed in COM 25000.

**Justification:** Personal observation, alumni, and potential employers have all told us that agricultural communication graduates need skills that will help them adapt to the emerging media landscape. These changes to the curriculum will better reflect that landscape.

Delete currently required COM 25000 (Mass Communication and Society) from AGCM curriculum  
Content on mass media systems and social impacts largely duplicates topics addressed in ASEC (YDAE) 15200 (Agricultural Communication Seminar).

Add new course ASEC 28000 (Digital Storytelling) to AGCM curriculum  
Course will provide AGCM majors with video shooting and editing skills early in their program of study. Course adds media convergence skills to major. Communication products developed in the course can be used across different media platforms.

**Justification:** We are requesting addition of a new course, ASEC 28000 (Digital Storytelling, 3 cr), to the major’s communication core. The course, which provides AGCM majors with video shooting and editing skills early in their program of study, updates the major through the addition of media convergence skills.

Add new course ASEC 28500 (Introduction to Publication Design)  
Students will learn basic message design skills and industry-standard software for producing professional-quality print and digital publications. This course has been taught previously under a temporary 49100 number. The course will serve as a COM/AGCM selective in the major.

Renumber and rename existing course YDAE 46000 (Agricultural Publishing) to YDAE 38000 (Feature Writing and Production)  
This course has served as an AGCM major requirement for several years. The current course number (46000) is similar to our capstone course number and students tend to delay taking course until their senior year. We want students to take the course earlier in their program of study. The proposed name more accurately reflects the course emphasis on feature writing.
### General Course Information

<table>
<thead>
<tr>
<th>Originating Campus*</th>
<th>West Lafayette</th>
<th>Northwest</th>
<th>Fort Wayne</th>
<th>IUPUI</th>
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<table>
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<th>College/School*</th>
<th>College of Agriculture - WL</th>
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</table>

<table>
<thead>
<tr>
<th>Department*</th>
<th>-Department of Agricultural Sciences Education and Communication - WL</th>
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</thead>
</table>

**Course Numbers:** All course numbers may only be used once for a course in order to allow our repeat course audit to work properly. Before submitting a form for a new course or renumber, please make sure the course number is available. Please remember Purdue now uses 5-digit course numbers to allow more options for the departments.

Legacy Course Catalog: [https://www.purdue.edu/registrar/legacy/catalog.cfm](https://www.purdue.edu/registrar/legacy/catalog.cfm)
Contact Maggie Gerald for available course numbers. [will1509@purdue.edu](mailto:will1509@purdue.edu)

<table>
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<th>Proposed Effective Term*</th>
<th>Spring 2019</th>
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<th>Proposed Subject Code*</th>
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<th>Long Title*</th>
<th>Greenhouse and Landscape Fundamentals for Educators</th>
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<th>Short Title (max 30 characters)*</th>
<th>GH and LA for Educators</th>
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<table>
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<tr>
<th>Terms offered (Select all that apply)</th>
<th>Spring</th>
<th>Fall</th>
<th>Summer</th>
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</thead>
</table>

**Credit Hour Guidelines:** Purdue’s credit hour guidelines are provided below. [http://www.purdue.edu/registrar/documents/forms/Credit_Hr_Guidelines.pdf](http://www.purdue.edu/registrar/documents/forms/Credit_Hr_Guidelines.pdf)

Please use the following two options to specify if the course credit is fixed or variable:
### Option #1: Fixed Credit Hours

| Proposed Credit Hours | 3 |

### Option #2: Variable Credit Range

| Minimum |
| Variable Credit | To | OR |
| Maximum |
| Course Repeat Status | Course may be repeated |
| If Repeatable | Unlimited Amount of times |
| Maximum Credit Amount |
| Grade modes (Standard default is regular grade, pass/no pass, and audit) | Regular Grade |
| Crosslisted/Equivalent Courses - provide explanation | Crosslist as HORT 21200 |

**Course Fees:** The following fees are provided on the form: Coop, Lab, and Rate Request. In order to ensure the accurate fee is assessed on a course, the Bursar's Office would like to have an explanation included with the form along with the business manager's contact information if additional information is needed.

| Additional Fees | Yes |
| No |

**Explanation of fees**

| Registration Approvals | Department |
| Instructor |

**Attributes: (Select all that apply)**

| Variable Title |
| Honors |
| Full-Time Privileges |
Schedule Types/Credit Hours: The following links will provide explanations of the schedule types and credit hours to assist in assigning accurate types to a course.
Schedule Type Classifications
Credit Hour Guidelines

Use the following instructions to add each schedule type for the course in the text box. Examples are listed below.

- **Schedule Types:** Lecture (LEC), Recitation (REC), Presentation (PRS), Laboratory (LAB), Lab Prep (LBP), Studio (SD), Distance Learning (DIS), Clinic (CLN), Experiential (EX), Research (RES), Individual Study (IND), Practice Study Observation (PSO)
- Minutes per Meeting
- Number of Meetings per week
- Weeks per term

**Examples:** (3 credit course) LEC/50min per mtg/3mtgs per wk/16 wks per term OR (3 credit course with Lecture and Lab) LEC/50/2/16 and LAB/100/1/16

| Proposed Schedule Type: | 3 credit course = LBP/50 min per mtg/1 mtg per week/16 wks per term and LAB/100 min/2 mtgs per week/16 wks per term |

Restrictions:
If restrictions are being requested, please provide the proper Banner codes (major, program etc.) to ensure all are accurately reflected on the course. All codes may be found on our website under Advisors/Active PWL Major Programs, and Active PWL Minors links:

- Restriction Types: major, program or school codes; never use more than one
- Use the words "and" or "or" when filling out form instead of commas

Restrictions List:
Department, Field of Study, Class, Level, Degree, Program, Campus, College

| Proposed Restrictions: |

Requisites:
Requisite information can only be selected from active offerings.

- Co-requisite courses are always required to be taken at the same time
- Concurrent prerequisite courses may be taken during the same semester or in a previous term
- 600-level prerequisites are not enforced, they are added to description as informational text

If there is an equivalent course the department would like listed with the prerequisites, that specific course will need to be specified on the form in order to have it enforced through the
### Course Information:

#### Pre-Requisites:
D-equals the lowest passing grade, unless otherwise noted

#### Co-Requisites

#### Course Description

This course will prepare future educators in using a greenhouse and landscape as teaching tools. The key focus will be preparing students to apply greenhouse and landscape management fundamentals in order to teach these concepts in the classroom. Laboratories will explore how to identify and produce both woody and herbaceous plants while safely maintaining and operating greenhouse technologies. Students will also explore how to implement landscape design technologies and identify tools, equipment, and landscape plants.

#### Learning Outcomes

- Students will identify and apply basic propagation techniques.
- Students will identify and describe plant species specific to greenhouse and landscape plantings.
- Students will interpret funding for greenhouses, greenhouse technologies, and landscape design equipment.
- Students will apply IPM, irrigation, and propagation techniques while safely maintaining and operating a greenhouse.
- Students will analyze and utilize landscape design software and tools to design a landscape.

#### Justification for the course:

Agriculture Education teacher licensure programs are faced with a growing list of coursework needed to meet requirements and standards, with a shrinking number of credit hours available to meet those needs. Students often leave university programs with limited knowledge of specific Agricultural content that they are then expected to teach at secondary schools where they are employed following graduation. To address one such problem in the area of Horticulture, this new course – ‘Greenhouse and Landscape Fundamentals for Educators’ was developed. Data utilized in creating the course, around the topics of landscape horticulture, greenhouse management, plant propagation and basic plant science, included: 1) an evaluation of current Agriculture Education coursework students commonly enrolled in; 2) a review of state and national Agriculture
Syllabus - Attach using the directions below:

Navigate to the Proposal Toolbox at the top of the right side.
Select the "Add Files" button
Upload file to be attached.

Validate and Launch Proposal once you have completed all fields:

Click “Save All Changes”
Click on the arrow at the top of the page to launch the proposal.

(Only launch the proposal after completing all necessary fields.)
The proposal will now be sent on for approvals.

Administrative Use Only:

<table>
<thead>
<tr>
<th>Catalog Ownership</th>
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<tbody>
<tr>
<td>Course Type</td>
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</table>
Crosslistings for ASEC - 21200 - Spring 2019

ASEC - 21200 - Spring 2019 (parent proposal)
This proposal does not have any active crosslisted proposals.
ASEC - 28000 - Fall 2019
2019 Course Undergraduate - New

**General Course Information**

- **Originating Campus**
  - West Lafayette
  - Northwest
  - Fort Wayne
  - IUPUI

- **College/School**
  - College of Agriculture - WL

- **Department**
  - Department of Agricultural Sciences Education and Communication - WL

**Course Numbers:** All course numbers may only be used once for a course in order to allow our repeat course audit to work properly. Before submitting a form for a new course or renumber, please make sure the course number is available. Please remember Purdue now uses 5-digit course numbers to allow more options for the departments.

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Contact Maggie Gerald for available course numbers. will1509@purdue.edu

- **Proposed Effective Term**
  - Fall 2019

- **Proposed Subject Code**
  - ASEC

- **Proposed 5 digit course #**
  - 28000

- **Long Title**
  - Digital Storytelling

- **Short Title (max 30 characters)**
  - Digital Storytelling

- **Terms offered**
  - **Fall**
  - **Spring**
  - Summer

**Credit Hour Guidelines:** Purdue’s credit hour guidelines are provided below. [http://www.purdue.edu/registrar/documents/forms/Credit_Hr_Guidelines.pdf](http://www.purdue.edu/registrar/documents/forms/Credit_Hr_Guidelines.pdf)

Please use the following two options to specify if the course credit is fixed or variable:
**Option #1: Fixed Credit Hours**

| Proposed Credit Hours | 3.0 |

**Option #2: Variable Credit Range**

<table>
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<td>Course Repeat Status</td>
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<td>□ Course may be repeated</td>
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<tr>
<td>□ Course may not be repeated</td>
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<table>
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<th>If repeatable:</th>
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<tbody>
<tr>
<td>□ Unlimited Amount of times</td>
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<tr>
<td>□ Maximum Repeatable Credit Amount</td>
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**Maximum Credit Amount**

<table>
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<tr>
<th>Grade modes (Standard default is regular grade, pass/no pass, and audit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Regular Grade</td>
</tr>
<tr>
<td>□ Pass/No Pass Option</td>
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<tr>
<td>□ Audit</td>
</tr>
<tr>
<td>□ Satisfactory/Unsatisfactory</td>
</tr>
</tbody>
</table>

**Crosslisted/Equivalent Courses - provide explanation**

**Course Fees:** The following fees are provided on the form: Coop, Lab, and Rate Request. In order to ensure the accurate fee is assessed on a course, the Bursar’s Office would like to have an explanation included with the form along with the business manager’s contact information if additional information is needed.

<table>
<thead>
<tr>
<th>Additional Fees:</th>
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<tr>
<td>□ Yes</td>
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<tr>
<td>□ No</td>
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</table>

**Explanation of fees**

<table>
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<tr>
<th>Registration Approvals</th>
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</thead>
<tbody>
<tr>
<td>□ Department</td>
</tr>
<tr>
<td>□ Instructor</td>
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</tbody>
</table>

**Attributes: (Select all that Apply)**

| □ Variable Title |
| □ Honors |
| □ Full-Time Privileges |
Schedule Types/Credit Hours: The following links will provide explanations of the schedule types and credit hours to assist in assigning accurate types to a course.

Schedule Type Classifications
Credit Hour Guidelines

Use the following instructions to add each schedule type for the course in the text box. Examples are listed below.

**Schedule Types:** Lecture (LEC), Recitation (REC), Presentation (PRS), Laboratory (LAB), Lab Prep (LBP), Studio (SD), Distance Learning (DIS), Clinic (CLN), Experiential (EX), Research (RES), Individual Study (IND), Practice Study Observation (PSO)

**Minutes per Meeting**

**Number of Meetings per week**

**Weeks per term**

**Examples:** (3 credit course) LEC/50min per mtg/3mtgs per wk/16 wks per term OR (3 credit course with Lecture and Lab) LEC/50/2/16 and LAB/100/1/16

**Proposed Schedule Type:** Studio (SD) will meet for 2 hours twice a week (e.g., MW 2:30-4:20 p.m.), 16 weeks

**Restrictions:**
If restrictions are being requested, please provide the proper Banner codes (major, program etc.) to ensure all are accurately reflected on the course. All codes may be found on our website under Advisors/Active PWL Major Programs, and Active PWL Minors links:

Restriction Types: major, program or school codes; never use more than one

Use the words “and” or “or” when filling out form instead of commas

**Restrictions List:**
Department, Field of Study, Class, Level, Degree, Program, Campus, College

**Proposed Restrictions:**

**Requisites:**
Requisite information can only be selected from active offerings.

Co-requisite courses are always required to be taken at the same time
Concurrent prerequisite courses may be taken during the same semester or in a previous term
600-level prerequisites are not enforced, they are added to description as informational text

If there is an equivalent course the department would like listed with the prerequisites, that specific course will need to be specified on the form in order to have it enforced through the
Pre-Requisites: D- equals the lowest passing grade, unless otherwise noted

Prerequisites: YDAE 15200 and 30 credits or instructor consent.

Co-Requisites

Course Information:

Course Description*
Students will plan, shoot, and edit videos; collaborate in teams; plan and generate social media; and write feature pieces for digital platforms. Students will gain meaningful digital storytelling experiences that will enhance their understanding of various platforms and build their professional portfolios. Prerequisites: YDAE 15200 and 30 credits or instructor consent. Typically offered Fall and Spring.

Learning Outcomes*
Develop compelling, audience-appropriate written and video feature stories for online platforms. This requires critical thinking (for planning, audience analysis, etc.), knowledge (effective storytelling techniques), and communication (must collaborate with classmates to coordinate topics and schedules).
Plan and integrate social media strategies into your work. This requires critical thinking (must plan ahead to include these pieces from the beginning of the project, must analyze audience), communication (must create and schedule effective, audience-relevant posts), and communication (must collaborate with classmates to coordinate posts and schedules).
Develop projects that meet a client’s expectations and communication goals. This requires communication (with the client and source), knowledge (of effective interviewing and shooting principles), and critical thinking (to determine what audiences want to know and assess what they may already know).
Effectively communicate science topics to lay audiences. This requires communication (to translate sometimes difficult subjects in ways that even elementary age audiences will understand), critical thinking (to determine what should and should not be covered), and knowledge (of effective video storytelling techniques).
Collaborate effectively with others. This requires communication (with colleagues all topics and schedules) and ethics (to be reliable team members who are just as responsible to each other as to themselves).
Reflect the diversity of the community you report on. This requires ethics (students must ensure that their work is diverse and inclusive) and critical thinking (students must be aware of when
their work does not reflect the diversity of the population they serve).

Additional information can be provided here.

**Syllabus** - Attach using the directions below:

- Navigate to the Proposal Toolbox at the top of the right side.
- Select the "Add Files" button
- Upload file to be attached.

**Validate and Launch Proposal once you have completed all fields:**

- Click “Save All Changes”
- Click on the arrow at the top of the page to launch the proposal.

*(Only launch the proposal after completing all necessary fields.)*
The proposal will now be sent on for approvals.

**Administrative Use Only:**

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<th>Course Type</th>
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ASEC - 28500 - Fall 2019

2019 Course Undergraduate - New

<table>
<thead>
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<th>General Course Information</th>
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<td>✓ West Lafayette</td>
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<tr>
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<td>❑ Fort Wayne</td>
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<td>❑ IUPUI</td>
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<td><strong>College/School</strong></td>
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<td>College of Agriculture - WL</td>
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<tr>
<td><strong>Department</strong></td>
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<tr>
<td>Department of Agricultural Sciences Education and Communication - WL</td>
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</table>

**Course Numbers:** All course numbers may only be used once for a course in order to allow our repeat course audit to work properly. Before submitting a form for a new course or renumber, please make sure the course number is available. Please remember Purdue now uses 5-digit course numbers to allow more options for the departments.

Legacy Course Catalog: [https://www.purdue.edu/registrar/legacy/catalog.cfm](https://www.purdue.edu/registrar/legacy/catalog.cfm)
Contact Maggie Gerald for available course numbers. will1509@purdue.edu

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</tr>
</thead>
<tbody>
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<td>ASEC</td>
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<tr>
<td><strong>Proposed 5 digit course #</strong></td>
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<td>28500</td>
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</tbody>
</table>

**Long Title**
Introduction to Agricultural Publication Design

**Short Title (max 30 characters)***
Intro to Agr Publcn Design

**Terms offered (Select all that apply)**
- Fall
- Spring
- Summer

**Credit Hour Guidelines:** Purdue’s credit hour guidelines are provided below. [http://www.purdue.edu/registrar/documents/forms/Credit_Hr_Guidelines.pdf](http://www.purdue.edu/registrar/documents/forms/Credit_Hr_Guidelines.pdf)

Please use the following two options to specify if the course credit is fixed or variable:

28
Option #1: Fixed Credit Hours

Proposed Credit Hours 3.0

Option #2: Variable Credit Range

Minimum

Variable Credit To OR

Maximum

Course Repeat Status

- Course may be repeated
- Course may not be repeated

If repeatable:

- Unlimited Amount of times
- Maximum Repeatable Credit Amount

Maximum Credit Amount

Grade modes (Standard default is regular grade, pass/no pass, and audit)

- Regular Grade
- Pass/No Pass Option
- Audit
- Satisfactory/Unsatisfactory

Crosslisted/Equivalent Courses - provide explanation

Course Fees: The following fees are provided on the form: Coop, Lab, and Rate Request. In order to ensure the accurate fee is assessed on a course, the Bursar's Office would like to have an explanation included with the form along with the business manager's contact information if additional information is needed.

Additional Fees: Yes

Explanation of fees

Registration Approvals

- Department
- Instructor

Attributes: (Select all that Apply)

- Variable Title
- Honors
- Full-Time Privileges
Schedule Types/Credit Hours: The following links will provide explanations of the schedule types and credit hours to assist in assigning accurate types to a course.

Schedule Type Classifications
Credit Hour Guidelines

Use the following instructions to add each schedule type for the course in the text box. Examples are listed below.

Schedule Types: Lecture (LEC), Recitation (REC), Presentation (PRS), Laboratory (LAB), Lab Prep (LBP), Studio (SD), Distance Learning (DIS), Clinic (CLN), Experiential (EX), Research (RES), Individual Study (IND), Practice Study Observation (PSO)

Minutes per Meeting
Number of Meetings per week
Weeks per term

Examples: (3 credit course) LEC/50min per mtg/3mtgs per wk/16 wks per term OR (3 credit course with Lecture and Lab) LEC/50/2/16 and LAB/100/1/16

Proposed Schedule Type: Lecture will meet for 75 minutes twice a week (e.g., T R 3:30 - 4:45 p.m.)/16

Restrictions:
If restrictions are being requested, please provide the proper Banner codes (major, program etc.) to ensure all are accurately reflected on the course. All codes may be found on our website under Advisors/Active PWL Major Programs, and Active PWL Minors links:

Restriction Types: major, program or school codes; never use more than one
Use the words "and" or "or" when filling out form instead of commas

Restrictions List:
Department, Field of Study, Class, Level, Degree, Program, Campus, College

Proposed Restrictions:

Requisites:
Requisite information can only be selected from active offerings.

Co-requisite courses are always required to be taken at the same time
Concurrent prerequisite courses may be taken during the same semester or in a previous term
600-level prerequisites are not enforced, they are added to description as informational text

If there is an equivalent course the department would like listed with the prerequisites, that specific course will need to be specified on the form in order to have it enforced through the system.
Pre-Requisites: D-
equals the lowest
passing grade,
unless otherwise
noted

Co-Requisites

Course Information:

Course Description*
Credit Hours: 3.00. Introduction to pre-press production of professional-quality
publications. Emphasis on computer applications for publication layout, design
and production. Topics include composition, readability, typography, graphic
resolution, and color management systems. Typically offered Spring.

Learning Outcomes*
Demonstrate knowledge of graphic composition and layout
principles when designing publications.
Use industry-standard computer software accomplish basic and
advanced pre- press publication design and production tasks.
Solve common design and production problems encountered in
the communication workplace, including those related to
readability, resolution, color and composition.
Use appropriate professional terminology when communicating
with editors, designers, printers and other vendors on particular
projects.
Seek bids that result in reliable cost estimates from printers and
other vendors.
Consider ethical implications and professional communication
responsibilities when making editorial and design decisions.

Additional
information can be provided here.
There is no text for the course. Weekly resources will be provided on
Blackboard.

Recommended resources:  http://www.pantone.com/pages/pantone.aspx?
pg=19306   (Pantone®)
http://www.purdue.edu/marketing/index.html  (Purdue University Office of
Marketing & Media)

Adobe Press.

Syllabus - Attach using the directions below:

Navigate to the Proposal Toolbox at the top of the right side.
Select the "Add Files" button
Upload file to be attached.
Validate and Launch Proposal once you have completed all fields:

Click “Save All Changes” 📝

Click on the arrow ➡ at the top of the page to launch the proposal.

(Only launch the proposal after completing all necessary fields.)

The proposal will now be sent on for approvals.

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Administrative Use Only:

<table>
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<table>
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<tr>
<th>Course Type</th>
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</table>
# ASEC - 54600 - Communication and Issues Engagement for Agricultural Professionals

## 2019-2020 Graduate Course - New

### General Catalog Information

<table>
<thead>
<tr>
<th>Campus*</th>
<th>West Lafayette</th>
<th>Northwest</th>
<th>Fort Wayne</th>
<th>IUPUI</th>
</tr>
</thead>
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<td>College of Agriculture - WL</td>
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<td>Department of Agricultural Sciences Education and Communication - WL</td>
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**Course Numbers:** All course numbers may only be used once for a course in order to allow our repeat course audit to work properly. Before submitting a form for a new course or renumber, please make sure the course number is available. Please remember Purdue now uses 5-digit course numbers to allow more options for the departments. This may be verified through the following:

Legacy Course Catalog: [https://www.purdue.edu/registrar/legacy/catalog.cfm](https://www.purdue.edu/registrar/legacy/catalog.cfm)

Contact Maggie Gerald for available course numbers. will1509@purdue.edu

### Proposed Effective Term:*

| Fall 2019 |

### Proposed Subject Code*

| ASEC |

### Proposed 5 digit course #*

| 54600 |

### Long Title*

Communication and Issues Engagement for Agricultural Professionals

### Short Title (max 30 characters)*

Comm & Issues Engmt - Ag Prof

### Terms offered (Select all that apply)

- Fall
- Spring
- Summer

### Course Description:

Course Description:* 40
Credit hours: 3.00. In this eight-week online course, students will be exposed to science communication and issues engagement principles. The course is designed primarily for those with little or no formal communication training. Topics include evidence-based best practices for communicating science; news media and social media influences on controversial science; how to monitor controversial issues; and major theoretical perspectives and strategies for engaging the public on food and agricultural science. Online, Fall and Spring.

**Credit Hour Guidelines:** Purdue's credit hour guidelines are provided below. [http://www.purdue.edu/registrar/documents/forms/Credit_Hr_Guidelines.pdf](http://www.purdue.edu/registrar/documents/forms/Credit_Hr_Guidelines.pdf)

Please use the following two options to specify if the course credit is fixed or variable:

**Option #1: Fixed Credit Hours**

| Proposed Credit Hours | 3.0 |

**Option #2: Variable Credit Range**

| Minimum |
| Variable Credit | To | OR |

| Maximum |
| Course Repeat Status: | ☐ Course may be repeated |
| | ☐ Course may not be repeated |

If repeatable: ☐ Unlimited amount of times

☐ Maximum repeatable credit

| Maximum Credit Amount |
| Crosslisted Course/Equivalent Course |

**Grade modes (Select all that apply)**

☒ Regular Grade

☐ Pass/No Pass Option

☐ Audit

☐ Satisfactory/Unsatisfactory

**Course Fees:** The following fees are provided on the form: Coop, Lab, and Rate Request. In order to ensure the accurate fee is assessed on a course, the Bursar's Office would like to have an explanation included with the form along with the business manager's contact information if additional information is needed.

**Additional Fees:**

https://curriculog.com/proposal:7106/print
Yes
Yes

Explanation of fees:

Registration Approvals

Department
Instructor

Attributes (Select all that Apply):

Variable Title
Honors
Full-Time Privileges
Half-Time Privileges
Internship
Coop
Parallel Coop
Credit by Exam

Schedule Types/Credit Hours: The following links will provide explanations of the schedule types and credit hours to assist in assigning accurate types to a course.

Credit Type Classifications
Credit Hour Guideline

Use the text box below to add the following

Schedule Types: Lecture (LEC), Recitation (REC), Presentation (PRS), Laboratory (LAB), Lab Prep (LBP), Studio (SD), Distance Learning (DIS), Clinic (CLN), Experiential (EX), Research (RES), Individual Study (IND), Practice Study Observation (PSO)
Number of Minutes per Meeting
Number of Meetings per Week
Number of Weeks per Term

Examples: (3 credit course) LEC/50min per mtg/3mtgs per wk/16 wks per term OR (3 credit course with Lecture and Lab) LEC/50/2/16 and LAB/100/1/16

Proposed Schedule Type:* Online – 8 weeks - DIS

Restrictions:
If restrictions are being requested, please provide the proper Banner codes (major, program etc.) to ensure all are accurately reflected on the course. All codes may be found on our website:
http://www.purdue.edu/registrar/faculty/advisors/index.html

Typically the most limiting restriction is added to course
Restriction Types: major, program or school codes; never use more than one
Use the words "and" or "or" when filling out form instead of commas

Restrictions List: Department, Field of Study, Class, Level, Degree, Program, Campus, College
Proposed Restrictions:

Requisites:
Requisite information can only be selected from active offerings.

Co-requisite courses are always required to be taken at the same time
Concurrent prerequisite courses may be taken during the same semester or in a
previous term
600-level prerequisites are not enforced, they are added to description as
informational text

If there is an equivalent course the department would like listed with the prerequisites, that
specific course will need to be specified on the form in order to have it enforced through the
system.

Pre-Requisites: D-
equals the lowest
passing grade,
unless otherwise
noted

Co-Requisites

NOTE: In the following sections, A-E, it is not permissible to simply forward reference to an
attached syllabus. Review committees need to quickly find proposal information in the sections
as provided in this template.

A. Justification for the Course

Justification of the need for the course

Provide a complete and detailed explanation of the need for the course (e.g., in the preparation
of students, in providing new knowledge/training in one or more topics, in meeting degree
requirements, etc.), how the course contributes to existing majors and/or concentrations, and
how the course relates to other graduate courses offered by the department, other departments,
or interdisciplinary programs.

Justification that course will be taught at a graduate level

Graduate Council policy requires that courses at the 50000 level in the Purdue system should be
taught at the graduate level and meet four criteria: a) the use of primary literature in conjunction
with advanced secondary sources (i.e., advanced textbooks); b) assessments that demonstrate
synthesis of concepts and ideas by students; c) demonstrations that topics are current, and; d)
components that emphasize research approaches/methods or discovery efforts in the course
content area (reading the research, critiquing articles, proposing research, performing research).
Such courses should be taught so that undergraduate students are expected to rise to the level
of graduate work and be assessed in the same manner as the graduate students.
Anticipated Enrollment

Graduate*  Undergrad (if any)

Justification for Online/Distance Delivery

The Graduate School wants to know if the course needs to be delivered online, immediately or in the near future, and that any special considerations have been appropriately anticipated for online delivery.

B. Learning Outcomes and Methods of Assessment

List learning outcomes. It is expected that graduate courses aspire to higher order learning outcomes (i.e., communication, critical thinking, analysis and synthesis, research, etc.), meaning they go well beyond simple understanding of the subject knowledge base.

For more information on writing learning outcomes, visit: http://teachingtomtom.com/2012/11/15/writing-critical-thinking-learning-outcomes/

For each learning outcome, describe one or more methods of evaluation or assessment of student learning outcomes. (Include evidence for both direct and indirect methods.)

Learning Outcomes*

Students will master course concepts through readings, assignments, directed online discussions, and instructor and peer feedback. After completing the course, students will be able to:

a. Integrate best communication practices from the literature for engaging audiences about agriculture and science.

b. Critically analyze audiences and design appropriate messaging based on audience characteristics and needs.

c. Develop and adapt communication strategies for science-based controversial issues.

d. Formulate evidence-based strategies to anticipate controversial issues in agriculture and science.

Assessment Methods*

Provide additional information about the assessment methods(s) that address the learning outcomes listed above. A few sentences will suffice to describe the assignment, project, discussions, or major homework assignments and how they address learning outcomes.

Description of Assessment Methods*
Final Grading Criteria

Describing the criteria that will be used to assess students and how the final grade will be determined.

Using assessment methods that were provided above, list **Weight Toward Final Grade** (type points or %)

<table>
<thead>
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<th>Exams and Quizzes</th>
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<tr>
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<td>Homework</td>
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<td>Laboratory Exercises</td>
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</tr>
<tr>
<td>Class Preparation</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>25%</td>
</tr>
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</table>

C. Course Instructor(s)

*Provide the name, rank, and department/program affiliation of the instructor(s). Is the instructor currently a member of the Graduate Faculty? (If the answer is no, indicate when it is expected that a request will be submitted.)*

**Course Instructor(s)**

Mark, A. Tucker, Professor, Agricultural Sciences Education and Communication. Current Graduate Faculty.

Beth Forbes, Science Communication Director, College of Agriculture

**Non-Purdue Faculty, provide a one paragraph instructor bio (maximum 300 words) that specifically speaks to the instructor’s background to teach the course.**

**Non-Purdue Faculty:** Beth Forbes Bio...

D. Library Resources

Describe any library resources that are currently available or the resources needed to support this proposed course. Examples include named journals or proceedings that the library should acquire or keep current, or non-required textbooks that the library should acquire or reserve for students. If no library resources are needed, explain how students will complete their research for the course. **If resources not currently available in the library are needed to support**
this course, it is the proposer's responsibility to notify the library about obtaining the resources.

Recommended Resources

The value of communication during a crisis: Insights from strategic communication research

Situational crisis communication and interactivity: Usage and effectiveness of Facebook for crisis management by Fortune 500 companies

Understanding online firestorms: Negative word-of-mouth dynamics in social media

Steve Jobs’ response to an insulting question
https://www.inc.com/justin-bariso/20-years-ago-steve-jobs-demonstrated-the-perfect-w.html

E. Course Syllabus (to be attached)

COURSE SYLLABUS:

A sample syllabus should be attached to all course proposals. To attach a document use the "Files" icon on the top right side of the page.

The syllabus is helpful to review committees who wish to better understand some of the course characteristics and nuances that are described in other sections of this proposal. Suggestions for developing a syllabus are provided by the Center for Instructional Excellence at http://www.purdue.edu/cie/toolsservices/syllabus.html

It is recognized that many course syllabi are based on earlier offerings of an experimental version of the course, and that changes may have been introduced to improve the proposal. This can create an unintended perception that the proposal is contradicted by the sample syllabus. Accordingly, please briefly describe any changes or clarifications in the field below.

Please confirm* ✓ A syllabus has been attached.

Additional Course Information

Additional Course Information: 4
**CONTACT INFO:**
Please provide contact information for the faculty member or staff who can answer questions regarding this proposal. Provide Name, Phone, and E-mail.*

Dr. Mark A. Tucker, 494-8429, scicom@purdue.edu
Beth Forbes, 494-8406, scicom@purdue.edu

Once you have completed all fields:

Click “Save All Changes” 
Then scroll to the top of the proposal
Click on the arrow to launch (Only launch once the proposal is complete. It will move on to the next person in the approval process.)
After launching, the originator will need to Approve the proposal to send it on.

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**WL Catalog (Registrar) Use Only**

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**WL Graduate School Use Only**

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ASEC - 54800 - Communicating Science to the Public
2019-2020 Graduate Course - New

General Catalog Information

Campus*  
☑ West Lafayette
☐ Northwest
☐ Fort Wayne
☐ IUPUI

College/School*  
College of Agriculture - WL

Department*  
-Department of Agricultural Sciences Education and Communication - WL

Course Numbers: All course numbers may only be used once for a course in order to allow our repeat course audit to work properly. Before submitting a form for a new course or renumber, please make sure the course number is available. Please remember Purdue now uses 5-digit course numbers to allow more options for the departments. This may be verified through the following:
Legacy Course Catalog: https://www.purdue.edu/registrar/legacy/catalog.cfm
Contact Maggie Gerald for available course numbers. will1509@purdue.edu

Proposed Effective Term:*  
Summer 2019

Proposed Subject Code*  
ASEC

Proposed 5 digit course #*  
54800

Long Title*  
Communicating Science to the Public

Short Title (max 30 characters)*  
Communic Science to the Public

Terms offered (Select all that apply)  
☐ Fall
☐ Spring
☑ Summer

Course Description:

Course Description:*  
Credit hours: 1.00. This course will help graduate students in science disciplines learn to communicate science to non-expert audiences. Through readings,
assignments and online-guided discussions, students will learn relevant communication theories and recommended strategies for engaging with the public on science and technology topics. Online, Summer.

Credit Hour Guidelines: Purdue’s credit hour guidelines are provided below. [http://www.purdue.edu/registrar/documents/forms/Credit_Hr_Guidelines.pdf](http://www.purdue.edu/registrar/documents/forms/Credit_Hr_Guidelines.pdf)

Please use the following two options to specify if the course credit is fixed or variable:

Option #1: Fixed Credit Hours

| Proposed Credit Hours | 1.0 |

Option #2: Variable Credit Range

| Minimum |

| Variable Credit | To | OR |

| Maximum |

| Course Repeat Status:* | Course may be repeated | Course may not be repeated |

| If repeatable: | Unlimited amount of times | Maximum repeatable credit |

| Maximum Credit Amount |

| Crosslisted Course/Equivalent Course |

| Grade modes (Select all that apply)* | Regular Grade |

| Pass/No Pass Option |

| Audit |

| Satisfactory/Unsatisfactory |

Course Fees: The following fees are provided on the form: Coop, Lab, and Rate Request. In order to ensure the accurate fee is assessed on a course, the Bursar’s Office would like to have an explanation included with the form along with the business manager’s contact information if additional information is needed.

Additional Fees:* | Yes | No
Explanation of fees:

Registration Approvals
- Department
- Instructor

Attributes (Select all that Apply):
- Variable Title
- Honors
- Full-Time Privileges
- Half-Time Privileges
- Internship
- Coop
- Parallel Coop
- Credit by Exam

Schedule Types/Credit Hours: The following links will provide explanations of the schedule types and credit hours to assist in assigning accurate types to a course.

Credit Type Classifications
Credit Hour Guideline

Use the text box below to add the following

Schedule Types: Lecture (LEC), Recitation (REC), Presentation (PRS), Laboratory (LAB), Lab Prep (LBP), Studio (SD), Distance Learning (DIS), Clinic (CLN), Experiential (EX), Research (RES), Individual Study (IND), Practice Study Observation (PSO)
Number of Minutes per Meeting
Number of Meetings per Week
Number of Weeks per Term

Examples: (3 credit course) LEC/50min per mtg/3mtgs per wk/16 wks per term OR (3 credit course with Lecture and Lab) LEC/50/2/16 and LAB/100/1/16

Proposed Schedule Type: Online – 8 weeks (Second eight-week session, June 10 – July 30)

Restrictions:
If restrictions are being requested, please provide the proper Banner codes (major, program etc.) to ensure all are accurately reflected on the course. All codes may be found on our website: http://www.purdue.edu/registrar/faculty/advisors/index.html

Typically the most limiting restriction is added to course
Restriction Types: major, program or school codes; never use more than one
Use the words "and" or "or" when filling out form instead of commas

Restrictions List: Department, Field of Study, Class, Level, Degree, Program, Campus, College

Proposed Restrictions: 0
Requisites:
Requisite information can only be selected from active offerings.

Co-requisite courses are always required to be taken at the same time
Concurrent prerequisite courses may be taken during the same semester or in a
previous term
600-level prerequisites are not enforced, they are added to description as
informational text

If there is an equivalent course the department would like listed with the prerequisites, that
specific course will need to be specified on the form in order to have it enforced through the
system.

Pre-Requisites: D-
equals the lowest
passing grade,
unless otherwise
noted

Co-Requisites

NOTE: In the following sections, A-E, it is not permissible to simply forward reference to an
attached syllabus. Review committees need to quickly find proposal information in the sections
as provided in this template.

A. Justification for the Course

Justification of the need for the course

Provide a complete and detailed explanation of the need for the course (e. g., in the preparation
of students, in providing new knowledge/training in one or more topics, in meeting degree
requirements, etc.), how the course contributes to existing majors and/or concentrations, and
how the course relates to other graduate courses offered by the department, other departments,
or interdisciplinary programs.

Justification of the Need for the Course*

Justification that course will be taught at a graduate level

Graduate Council policy requires that courses at the 50000 level in the Purdue system should be
taught at the graduate level and meet four criteria: a) the use of primary literature in conjunction
with advanced secondary sources (i.e., advanced textbooks); b) assessments that demonstrate
synthesis of concepts and ideas by students; c) demonstrations that topics are current, and; d)
components that emphasize research approaches/methods or discovery efforts in the course
content area (reading the research, critiquing articles, proposing research, performing research).
Such courses should be taught so that undergraduate students are expected to rise to the level
of graduate work and be assessed in the same manner as the graduate students.

Justification of the Level for the Course*

Anticipated Enrollment

Supplemental Information -
ASEC Fall 2018
Justification for Online/Distance Delivery

The Graduate School wants to know if the course needs to be delivered online, immediately or in the near future, and that any special considerations have been appropriately anticipated for online delivery.

B. Learning Outcomes and Methods of Assessment

List learning outcomes. It is expected that graduate courses aspire to higher order learning outcomes (i.e., communication, critical thinking, analysis and synthesis, research, etc.), meaning they go well beyond simple understanding of the subject knowledge base.

For more information on writing learning outcomes, visit: http://teachingtomtom.com/2012/11/15/writing-critical-thinking-learning-outcomes/

For each learning outcome, describe one or more methods of evaluation or assessment of student learning outcomes. (Include evidence for both direct and indirect methods.)

Learning Outcomes *

The subject matter is valuable to students planning careers in government, research, teaching or industry in which there is a need to communicate science-based information to the public. After completing the course, students will be able to:

a. Apply findings from the literature to anticipate how values and culture influence public perceptions of science.

b. Integrate key communication concepts and theories in the development of effective communication strategies for science and technology.

c. Analyze audiences and design messaging for specific audience segments.

Assessment Methods*

Provide additional information about the assessment methods(s) that address the learning outcomes listed above. A few sentences will suffice to describe the assignment, project, discussions, or major homework assignments and how they address learning outcomes.

Final Grading Criteria
Describing the criteria that will be used to assess students and how the final grade will be determined.

Using assessment methods that were provided above, list **Weight Toward Final Grade** (type points or %)

<table>
<thead>
<tr>
<th>Weight Toward Final Grade</th>
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<tr>
<td><strong>Exams and Quizzes</strong></td>
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<tr>
<td><strong>Papers and Projects</strong></td>
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<td><strong>Homework</strong></td>
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<td><strong>Laboratory Exercises</strong></td>
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<td><strong>Class Preparation</strong></td>
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<td><strong>Other</strong></td>
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C. Course Instructor(s)

*Provide the name, rank, and department/program affiliation of the instructor(s). Is the instructor currently a member of the Graduate Faculty? (If the answer is no, indicate when it is expected that a request will be submitted.)*

**Course Instructor(s)**

Mark A. Tucker, Professor, Agricultural Sciences Education and Communication. Graduate Faculty

Beth Forbes, Science Communication Director, College of Agriculture

Non-Purdue Faculty, provide a one paragraph instructor bio (maximum 300 words) that specifically speaks to the instructor’s background to teach the course.

**Non-Purdue Faculty:** Beth's bio...

D. Library Resources

Describe any library resources that are currently available or the resources needed to support this proposed course. Examples include named journals or proceedings that the library should acquire or keep current, or non-required textbooks that the library should acquire or reserve for students. If no library resources are needed, explain how students will complete their research for the course. If resources not currently available in the library are needed to support this course, it is the proposer’s responsibility to notify the library about obtaining the resources.
E. Course Syllabus (to be attached)

**COURSE SYLLABUS:**

A sample syllabus should be attached to all course proposals. To attach a document use the "Files" icon on the top right side of the page.

The syllabus is helpful to review committees who wish to better understand some of the course characteristics and nuances that are described in other sections of this proposal. Suggestions for developing a syllabus are provided by the Center for Instructional Excellence at [http://www.purdue.edu/cie/toolsservices/syllabus.html](http://www.purdue.edu/cie/toolsservices/syllabus.html)

It is recognized that many course syllabi are based on earlier offerings of an experimental version of the course, and that changes may have been introduced to improve the proposal. This can create an unintended perception that the proposal is contradicted by the sample syllabus. Accordingly, please briefly describe any changes or clarifications in the field below.

Please confirm*  ✔️ A syllabus has been attached.

**Additional Course Information**

**CONTACT INFO:**
Please provide contact information for the faculty member or staff who can answer questions regarding this proposal. Provide Name, Phone, and E-mail.*

Once you have completed all fields:

Click “Save All Changes”  
Then scroll to the top of the proposal
Click on the arrow to launch (Only launch once the proposal is complete. It will move on to the next person in the approval process.)
After launching, the originator will need to Approve the proposal to send it on.
### WL Catalog (Registrar) Use Only

<table>
<thead>
<tr>
<th>Catalog Ownership</th>
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<tr>
<td>Course Type</td>
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### WL Graduate School Use Only

<table>
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<th>Graduate Council Document Number</th>
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Supplemental Information - ASEC Fall 2018
ASEC - 58500 - Science Communication

2019-2020 Graduate Course - New

General Catalog Information

Campus*
- West Lafayette
- Northwest
- Fort Wayne
- IUPUI

College/School* College of Agriculture - WL

Department* Department of Agricultural Sciences Education and Communication - WL

Proposed Effective Term:* Fall 2019

Proposed Subject Code* ASEC

Proposed 5 digit course #* 58500

Long Title* Science Communication

Short Title (max 30 characters)* Science Communication

Terms offered (Select all that apply)
- Fall
- Spring
- Summer

Course Description:* This course utilizes foundational research and commentary from scholars to track the evolution of media and our ability as scientists to understand and effectively communicate these issues to a non-science audience. Science and technology are evolving faster than societies ability to understand, assimilate, and make policies to address these increasingly complex issues. As a result, controversies arise over issues such as climate change, forest management, genetically modified foods, energy choices, genetic engineering, nanotechnology, water management, and agricultural practices, etc. This course covers the range of issues in the field of science communication including: the nature of science, how to translate evidence for a lay audience, media practices, reporting and qualifying uncertainty, human psychology and belief systems, information processing, and the most current research for messaging science.
We will work together to examine the foundational scholarly literature in this area and how it is/ or is not reflected in construction of popular media. You will use this knowledge to construct both compelling oral science narratives, and a science story for popular consumption.

**Proposed Credit Hours**

- **Minimum**
- **Variable Credit**
  - To OR
- **Maximum**

**Course Repeat Status:**
- Course may be repeated
- Course may not be repeated

If repeatable:
- Unlimited amount of times
- Maximum repeatable credit

**Maximum Credit Amount**

**Crosslisted Course/ Equivalent Course**

**Grade modes (Select all that apply):**
- Regular Grade
- Pass/No Pass Option
- Audit
- Satisfactory/Unsatisfactory

**Additional Fees:**
- Yes
- No

**Explanation of fees:**

**Registration Approvals**
- Department
- Instructor

**Attributes (Select all that Apply):**
- Variable Title
- Honors
- Full-Time Privileges
- Half-Time Privileges
- Internship
- Coop
Proposed Schedule Type:* LEC 150/1/16

Proposed Restrictions: Graduate students or approval of instructor for undergraduates

Pre-Requisites: D- equals the lowest passing grade, unless otherwise noted

No prerequisites

Co-Requisites

A. Justification for the Course

Justification of the Need for the Course* The communication of science is an essential skill as all scientists have an essential role in contributing to society. Yet, science students struggle to translate their science for non-science audiences (such as the public or policymakers), a skill that is increasingly urgent as complex issues such as climate change, nanotechnology, water scarcity confront our communities. This course provides foundational knowledge to enable students to communicate complex issues to a range of audiences. It is the only graduate science communication course offered on campus, and is a foundational course in graduate study in the Department of Agricultural Sciences Education and Communication. All graduate students who have a role in communicating their research to non-science audiences are encouraged to attend.

Justification of the Level for the Course* Justification:

a) This course utilizes foundational primary research studies from the field of Science Communication, neuroscience, psychology, sociology, and ethics. Scholars are national and international and material is sources from peer-reviewed literature.

b) Synthesis of concepts: Students are required to read, analyze, present, and lead discussion on peer-reviewed research, as well as evaluate this process as utilized by other students in the course. For the final project, the students must apply the theoretical constructs learned in the semester to the construction of a final popular press story - AND explain how they have implemented the theories learned.

c) Current topics: The course begins with an overview of the 2018 NAS trends in Science Communication. It then utilizes a historical review of seminal constructs, which progresses to current problems/discoveries in the field of science communication
d) Key Components that demonstrate mastery: Students must read, analyze, understand and report on research findings, and then lead discussion of the weekly readings. In addition, students are expected to utilize communication theory in their assigned oral presentations as well as in their final projects and in peer review of the same.

**Graduate** 5-15

**Justification for online delivery**

The course has been taught in person for the past two years. It is anticipated that it will continue to be offered at the West Lafayette campus in this form on an ongoing basis. However, this course is also proposed to be a foundational course in a certificate program currently being proposed by Agricultural Sciences Education and Communication. For distance students this course will be offered in an online version beginning the summer of 2019. Currently the department has hired a post-doc in learning systems who is helping me develop this course into its online version.

**B. Learning Outcomes and Methods of Assessment**

**Learning Outcomes**

- Gain a foundational understanding of science communication theory.
- Develop a working understanding of the psychology of the communication audience
- Utilize theory to analyze and deconstruct popular press stories
- Design strategies for diffusing controversial issues.
- Evaluate the efficacy of communication strategies in current use, and in peer communication products.
- Apply science communication theory in the design of both oral and written popular press stories.

**Assessment Methods**

**Assignment/Activity Course Grade**

1. Class participation/ discussion 20%
2. Oral presentation role (10% presentation, 10% discussion) 20%
3. Annotated bibliographies 5%
2. Written science story/ or research project 35%
3. Final Presentation on story package or/ research project 20%

Total 100%

78
Class discussion is designed for students to gain a working understanding of the foundational literature underpinning science communication theory. It is also designed for them to analyze and integrate the material provided.

The annotated bibliography assignment is designed so they learn to synthesize the main ideas from research articles into a coherent summary. In the oral presentations, students must utilize science theory in the design of their oral presentation, and late in their final projects. I see the final project as utilizing all of Bloom's taxonomy because in order to complete this assignment they must: have knowledge of the material, be able to analyze it, and integrate it into a synthetic whole, while also evaluating the limitation so the research and designing a project that demonstrates mastery of all of the above.

**Participation:** This will be a seminar course. That means that everyone does the reading and everyone comes to class prepared to discuss the readings. A discussion means you've read the texts, you've thought about them, and you're ready to see where the arguments lead. It also means you've identified inconsistencies or problems with the logic and are ready to analyze the authors arguments. You often will find the material intellectually challenging which will require multiple readings of the article. The authors may also challenge beliefs that you hold, or other scholarship you have read. Be prepared to support your arguments with other references of material you are basing your arguments on.

**Oral Presentation Role:** For each class session, one of you (or a team of you) will provide an engaging oral presentation of the key points in the reading. Engaging means you have assimilated the research into a compelling story arc. This is designed to practice applying the theories that you are learning to oral storytelling. You will also lead the discussion on the week's topic. This discussion will summarize the key points of each article, how they overlap or challenge each other, what the main findings and methodological flaws are. It will take no more than 15-20 minutes total (for all articles combined). This will require preparation on your part when you are the presenter(s). You will be asked to email your summary and key discussion questions to class on the Thursday before you present:

1) A specific set of key questions (4-6) raised by the readings (those questions may emerge from the content of your reading, or they may question the approach taken by the author.

2) An annotated bibliography summarizing key ideas in the article (no longer than 2 pages, should include the pertinent information from the Suggested Article Analysis Template at the end of syllabus).

3) A brief popular media story that illustrates how the theory of the week may be applied in our current media culture.

You will be sharing your analysis of the articles through a didactic power-point presentation no longer than 15 minutes, which will summarize the main theory and provide a foundation for the discussion – which you will be leading.
Options: Science Story Package OR a formal Research Project (choose one):

In addition each student will choose one of two final writing projects:

1) **Science Story Package**: The student will be responsible for composing one feature article (1000-1200 words) for their popular press story. This story should be well edited before turning it in. This story will include: 1) interviewing two sources (those who are affected, and experts) and including a photo and or graphic that enhances your story line. A final graduate paper (5-6 pages) will accompany the story, explaining the choices you have made in composition—including audience variables, choice of sources, media channel, and outlet you want to publish in (together this should be no more than one explanatory paragraph), with a focus on the theoretical explanation of structure and content based on the research theories we studied in class. Include at least five theories, define them, and then outline how you incorporated them into your popular press story. This paper should demonstrate that you understand the theories, and know how to apply them to story production. Formatting for the academic theory paper will be standard APA (seventh edition), double-spaced, size 12 font, 1 inch margins.

2) **Formal Research Project**: A formal research paper that focuses on a key science communication theory. This paper will be an in-depth graduate level treatment of the topic that highlights the theory, critiques of the theory (if applicable), the limitations of the theory, and how it can be most effectively improved for use in an applied setting. (20 pages, double-spaced, 12 font, 1 inch margins APA style formatting).

**Final Presentation**: Finally, each student will be responsible for a 12-15 minute timed presentation on either:

A professional presentation of their Story Package to the class. This presentation will be an engaging treatment of your story topic and will include the theoretical foundations explaining why you constructed your story the way you did. It should be a well-constructed and compelling story designed to engage a non-science audience.

If you completed the research project instead of the story package, you will give a professional presentation targeted to a specialized (graduate student) audience, much like you would for a conference presentation.
Papers and Projects
Final project 35% // Final presentation 20%

Homework

Laboratory Exercises

Class Preparation 20%

Other Oral presentation 20% / annotated bibliographies 5%

C. Course Instructor(s)

Course Instructor(s)*
Dr. Linda J Pfeiffer, Assistant Professor, Agricultural Sciences Education and Communication (ASEC)

Non-Purdue Faculty:
Dr. Linda J. Pfeiffer
Assistant Professor of Science Communication
Department of Agricultural & Science Education and Communication, Purdue University
Area of Expertise: Messaging of Science Risk to Engage Analytic Information Processing
Dr. Pfeiffer earned her Joint PhD. in Mass Communications and Environmental Resources at the University of Wisconsin-Madison.

Dr. Pfeiffer’s research program is focused on the development of models for the communication of controversial science and science risk. Specifically, research at the Pfeiffer lab focuses at the interface of message design and human information processing with the goal of designing risk messages that engage non-science audiences in the reflective processing of complex science.

Most recently she is engaged with a multi-disciplinary collaborative team working on “Revolutionizing control of Mosquito-Bourne Infectious Disease”, and the development of messaging models for decision-makers and journalists to utilize during emergent crisis that involve risk-risk tradeoff decisions (i.e. decisions where the solution involves an alternative risk).
## D. Library Resources

| Name of journal, proceedings, book, video, or other acquisition | National Science Board 2016. Science and Engineering Indicators 2018  
| Nature |  
| Public Understanding of Science |  
| Science Communication |  
| The Journal of Science Communication |  
| Environment |  
| Journal of the American Society for Information Science and Technology, Public Health |  
| Proceedings of the National Academy of Sciences |  
| Journal of Risk Research |  
| Journal of Personality and Social Psychology, Developmental Review |  
| Journal of Environmental Psychology |  
| American Journal of Botany |  
| Geoforum |  
| Climatic Change |  
| Nieman Reports |  

## E. Course Syllabus (to be attached)

- Please confirm* ✓ A syllabus has been attached.

### Additional Course Information:
This course is open to graduate students across campus, as well as to advanced undergraduate students with permission of instructor.

### CONTACT INFO:
Linda J. Pfeiffer  
1-765-496-1980
<table>
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<th><strong>WL Graduate School Use Only</strong></th>
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<tr>
<td><strong>Graduate Council</strong></td>
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<td><strong>Document</strong></td>
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<td><strong>Number</strong></td>
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* member or staff who can answer questions regarding this proposal. Provide Name, Phone, and E-mail.*

lpfeiff@purdue.edu
ASEC - 38000 - Feature Writing and Production
2019 Course Undergraduate - Revise

General Course Information

Follow these directions for your proposal to work properly!

How to Import the Course for Revision:

- Click on the Import Icon
- Click "Purdue: curriculog_course"
- Click “Filter by Field” and choose “Prefix” from the drop down.
- Type the course prefix (i.e. STAT)
- In the "Sort Results By:" field, remove the Long Title & Course Number by clicking the x. This will allow the courses to be sorted numerically.
- Select "Search Available Curriculum"
- Click "Import This Item". (Leave all boxes checked)

<table>
<thead>
<tr>
<th>Proposed Effective Term*</th>
<th>Fall 2019</th>
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<tbody>
<tr>
<td>Originating Campus*</td>
<td>West Lafayette</td>
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<td>Northwest</td>
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<td>Fort Wayne</td>
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<td>IUPUI</td>
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<tr>
<td>Campus</td>
<td>Purdue West Lafayette</td>
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<tr>
<td>Select ADDITIONAL campuses offering this course (The Originating Campus should NOT be selected here.)*</td>
<td>No other campus (Choose if Pre-req or Restriction change)</td>
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<td>West Lafayette</td>
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<td>Fort Wayne &amp; IUPUI</td>
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</table>
Multiple Campuses: There is only one version of a course in the catalog!
Forms requesting title, credit, schedule type, description, renumber or attribute modifications for courses offered at multiple campuses, **must** be agreed upon by all involved, otherwise the request will be denied and no change will be made. If agreed, the modification will be made and will affect all campuses, not just the campus requesting the change. Standard turnaround time for all approvals/denials is 30 days.

**College/ School**
- College of Agriculture - WL

**Department**
- Department of Agricultural Sciences Education and Communication - WL

**LAUNCH PROPOSAL NOW**
Do **NOT** make any changes below.

Go to the top of the proposal to click **LAUNCH PROPOSAL NOW**.

The proposal will come back to you to make edits. This will allow changes to be tracked and easily viewed. *If you do not launch prior to making changes, your proposal will be rejected for you to start over.*

**Make changes in the fields below after launching:**

Indicate all revisions to the course by checking the appropriate box(s) below. Since the proposal has been launched, all changes can now be tracked and viewed in the proposal.
Make changes to the information in the same fields that have the existing or blank information.
You may add additional information for clarity in the "Additional Information" area.

**Changes requested**
- Course Description
- Course Number
- Course Title
- Schedule Type

**Activity Log**

- Melissa J Geiger
  - Course Description
  - Course Number
  - Course Title
  - Schedule Type

- Course Attributes
- Course Description
- Course Fees
This course has been (and will continue to be) a required course for all agricultural communication majors. The first change we propose is in the course number: from 46000 to 36000/38000. We want our students to take this course in their sophomore or junior years because it is a foundation for future coursework and professional development in the major. Because this has been a 400-level class, students often waited until their final year (or even semester) to take it. As a result, they received much-needed skills too late in their academic careers to help them at Purdue — we base this on our own observations and feedback from alumni and potential employers. This change is also based on current practice — we have been advising students to take this course (whenever possible) during their second or third year, but many do not because of the course level. The second change we propose is for the course title. We feel that this new title better reflects current practices both in our program and in the communication discipline. Our third requested change is to change the schedule type classification: from Lab and Lecture to Studio (SD). This is an applied and hands-on course. Students engage in the use and practice of interviewing, designing, writing, producing, and other applied core communication skills. Students will use class time to learn from the instructor and from each other and to use equipment and software under supervised conditions. This level of one-on-one mentorship between the instructor and students is vital to the course. Each student project goes through several stages of critique and refinement, which is key to student success in this field (and which requires a lot of input from the instructor). The payoff for students is that their projects are not just class assignments — they form a significant part of their professional development. Because these projects are for a real client and delivered to a real audience, the students have completed projects they can add to their professional portfolios and share them with potential employers.

Course Numbers:
All course numbers may only be used once for a course in order to allow our repeat course audit to work properly. Before submitting a form for a new course or renumber, please make sure the course number is available. Please remember Purdue now uses 5-digit course numbers to allow more options for the departments.

Legacy Course Catalog: https://www.purdue.edu/registrar/legacy/catalog.cfm
Contact Maggie Gerald for available course numbers. will1509@purdue.edu

Subject Code*  
Melissa J Geiger  
+ ASEC  
- YDAE  
ASEC

Course Number* 46000 38000

Long Title* Agricultural Publishing Feature Writing and Production

Short Title (max 30 characters) Agricultural Publishing Feature Writing and Production

Course Description
Credit Hours: 3.00. Learning experiences Students gain hands-on studio experience experiences in all phases of agricultural-publishing features writing, including audience analysis storytelling, and production. Students will analyze audiences, generating story ideas, researching research, interviewing interview, writing write, editing edit, editing shooting photos, photography, planning social media, designing design pages, desktop publishing publishing, printing specifications and estimates, and distribution can shoot short-form video. Prerequisite: COM 25200 or instructor consent. Typically offered Fall and Spring Summer. 3.000 credit hours.

Credit Hours
Credit Hours 3.00

Course Repeat Status
- Course may be repeated
- Course may not be repeated

If repeatable, is this: Unlimited Maximum Repeatable Credit

Maximum Credit Amount

Grade Mode (Select all that apply)
- Regular Grade
- Pass/No Pass Option
- Audit
- Satisfactory/Unsatisfactory

Course Fees:
The following fees are provided on the form: Coop, Lab, and Rate Request. In order to ensure the accurate fee is assessed on a course, the Bursar's Office would like to have an explanation included with the form along with the business manager's contact information if additional information is needed.

Additional Fees
Explanation of Additional Fees

Course Attributes (Select all that apply)

- Variable Title
- Honors
- Full-Time Privileges
- Half-Time Privileges
- Internship
- Coop
- Parallel Coop
- Credit By Exam

Schedule Type/Credit Hour:
The following links will provide explanations of the schedule types and credit hours to assist in assigning accurate types to a course.

Schedule Type Classifications  Credit Hour Guidelines

Use the following instructions to add schedule type or show changes for the course in the text box. Examples are listed below.

Schedule Type
Minutes per Meeting
Number of Meeting per week
Weeks per term

Examples: (3 credit Lecture course) LEC/50min per mtg/3 mtgs per wk/16 wks per term LEC/50/3/16 OR (3 credit course with Lecture and Lab) LEC/50/2/16 and LAB/100/1/16

Proposed Schedule Type Changes

Studio (SD) will meet for 2 hours twice a week (e. g., TR 1: 30-3: 20 p. m.)

Pre-requisite or Co-requisite:
Requisite information can only be selected from active offerings. Find Current Requisites - Search "Course Catalog"

Co-requisite courses are always required to be taken at the same time
Concurrent pre-requisite courses may be taken during the same semester or in a previous term
600-level prerequisites are not enforced, they are added to description as informational text

If there is an equivalent course the department would like listed with the prerequisites, that specific course will need to be specified on the form in order to have it enforced through the system.

Pre-requisite: D- equals the lowest passing grade, unless otherwise noted
Restrictions:
If restrictions are being requested, please provide the proper Banner codes (major, program etc.) to ensure all are accurately reflected on the course. All codes may be found on our website under Advisors/Active PWL Major Programs, and Active PWL Minors links:

Restriction Types: major, program or school codes; never use more than one
Use the words "and" or "or" when filling out form instead of commas

Find Current Restrictions - Search "Course Catalog"

Restrictions List:
Department, Field of Study, Class, Level, Degree, Program, Campus, College

After completing this course, students are expected to:

- Develop audience-appropriate story ideas consistent with Destination Purdue’s mission. This requires critical thinking (will a topic actually interest readers and our client) and communication skills (students must articulate to the instructor and others why their stories will work).
- Distinguish the differences between feature and news stories. This requires knowledge (what are the technical differences between these two seminal communication styles).
- Write compelling, newsworthy feature stories. This requires critical thinking (what parts of conversations with sources will appeal to our readers).
- Produce and prepare publication-quality photos. This requires knowledge (how to shoot and prepare an effective photo).
- Demonstrate basic skills in desktop publishing software, design, and layout. This requires knowledge (of basic design principles and publishing software).
- Develop and demonstrate reporting skills that accurately reflect the diversity of the Purdue Agriculture community. This requires ethics (students must ensure that their work is diverse and inclusive) and critical thinking (students must be aware of when their work does not reflect the diversity of the population they serve).
- Demonstrate professionalism and professional “improvisation.” This requires ethics (students must learn how to operate as professionals) and critical thinking.
(students must be able to solve unexpected problems that arise during the process).

**Syllabus** - Attach using the directions below:

Navigate to the Proposal Toolbox at the top of the right side.

Select the "Add Files" button

Upload file to be attached.

**Impact Report**

**Impact Report** - An Impact Report may be run to determine what academic programs the course being expired are housed within. This will help determine the impact of your requested expiration. Based on the results, we encourage you to contact any affected departments.

Navigate to the top of the proposal to run the Impact Report

Click the most recent Acalog catalog entry.

Scroll to the bottom of the window and click "Generate Report".

Use the results to answer questions below.

**Is this course required on a Plan of Study?**

- Yes
- No

If this course is included on a Plan of Study, the proposed effective session is subject to change.

**Is this course a prerequisite?**

- Yes
- No

If Yes to any of the above, please contact affected departments.

**Once you have completed all revisions, please approve:**

1. Go to the top right side of the proposal page
2. Click the (circle with the checkmark)
3. The proposal will then move to the next step in the approval process.
# Agricultural Communication, BS

## 2019 Plan of Study (POS) Undergraduate

### Plan of Study

<table>
<thead>
<tr>
<th>Program Type*</th>
<th>Program</th>
<th>Shared Core</th>
</tr>
</thead>
</table>

| Department* | Department of Agricultural Sciences Education and Communication - WL |

| Program* | Agricultural Communication, BS |

### Degree Requirements

120 Credits Required

### Departmental/Program Major Courses (110-111 credits)

### Required Major Courses (24 credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM 20400</td>
<td>Critical Perspectives On Communication</td>
<td>3.00</td>
</tr>
<tr>
<td>COM 31100</td>
<td>Copy Editing</td>
<td>COM 31800 Principles Of Persuasion</td>
</tr>
<tr>
<td>ASEC 15200</td>
<td>Agricultural Communication Seminar</td>
<td>3.0300</td>
</tr>
<tr>
<td>ASEC 48000</td>
<td>Agricultural Communication Capstone Seminar</td>
<td>3.00</td>
</tr>
</tbody>
</table>

### Other

| Departmental /Program Course Requirements | (86-87 credits) |
AGEC 21700 Economics 3.00
AGR 10100 Introduction To The College Of Agriculture And Purdue University 0.50
AGR 12100 Introduction To Youth Development And Agricultural Education Academic Programs 0.50
AGR 20100 Communicating Across Culture (satisfies Science #1) 3.00
CHM 11100 General Chemistry (for core) 3.00
CHM 11200 General Chemistry (satisfies Science #2 for core) 3.00
MA 15800 Precalculus - Functions And Trigonometry (satisfies Quantitative Reasoning for core) 3.00
STAT 30100 Elementary Statistical Methods 3.00
ENGL 10600 First-Year Composition (satisfies Written Communication for core) 4.00

(satisfies Information Literacy for core)

or

ENGL 10800 Accelerated First-Year Composition 3.00
HONR 19903 Interdisciplinary Approaches In Writing 3.00
COM 11400 Fundamentals Of Speech Communication (satisfies Oral Communication for core) 3.00

(or

COM 21700 Science Writing And Presentation 3.00
EDPS 31500 Collaborative Leadership: Interpersonal Skills 3.00
Biological Science Selective - Credit Hours: 4.00
Biological Science Selective - Credit Hours: 4.00
Math/Science Selective - Credit Hours: 3.00
Communication or AGCM Selective - Credit Hours: 8.00
Communication or AGCM 30000+ Selective - Credit Hours: 3.00
AGCM or Science Communication Selective - Credit Hours: 3.00
Agricultural Selective - Credit Hours: 15.00
Agricultural 30000+ Selective - Credit Hours: 6.00
UCC Humanities Selective (satisfies Human Cultures Humanities for core) - Credit Hours: 3.00
UCC STS Selective (satisfies Science, Technology & Society Selective for core) - Credit Hours: 3.00
Humanities or Social Science Selective - Credit Hours: 3.00
Humanities or Social Science Selective - Credit Hours: 3.00
Humanities or Social Science Selective (30000+ level) - Credit Hours: 3.00

Electives (9 - 10 credits)

University Core Requirements

Human Cultures Humanities
Human Cultures Behavioral/Social Science
Information Literacy
Science #1
Science #2
Science, Technology, and Society
Written Communication
Oral Communication
Quantitative Reasoning

For a complete listing of course selectives, visit the Provost's Website.

Prerequisite Information:

For current pre-requisites for courses, click here.

College of Agriculture & University Level Requirements

2.0 GPA required for Bachelor of Science degree
32 Upper division credits taken from Purdue
9 credits International Understanding
3 credits Multicultural Awareness
9 credits of Hum and/or Social Sciences outside the College of Agriculture

Additional Degree Requirements

Click here for Agricultural Communication Supplemental Information

Program Requirements

Fall 1st Year
AGR 10100 Introduction To The College Of Agriculture And Purdue University 0.50
AGR 12100 Introduction To Youth Development And Agricultural Education Academic Programs or 0.50
ENGL 10600 First-Year Composition 4.00
ENGL 10800 Accelerated First-Year Composition 3.00
HONR 19903 Interdisciplinary Approaches In Writing 3.00
ASEC 15200 Agricultural Communication Seminar 3.00
Humanities or Social Science Selective - Credit Hours: 3.00

Biological Science Selective - Credit Hours: 4.00

14-15 Credits

Spring 1st Year

AGEC 21700 Economics 3.00
COM 11400 Fundamentals Of Speech Communication or 3.00
COM 21700 Science Writing And Presentation or 3.00
EDPS 31500 Collaborative Leadership: Interpersonal Skills 3.00
Agricultural Selective - Credit Hours: 3.00
Biological Science Selective - Credit Hours: 4.00
MA 15800 Precalculus- Functions And Trigonometry 3.00

16 Credits

Fall 2nd Year

AGR 20100 Communicating Across Culture 3.00
CHM 11100 General Chemistry UCC 3.00
COM 20400 Critical Perspectives On Communication Science, Technology, & Society Selective - Credit Hours: 3.00

Agricultural Selective - Credit hours 3.00
15 Credits

Spring 2nd Year

CHM 11200 General Chemistry  
COM 31800 Principles Of Persuasion

Communications or AGCM  Selective - Credit Hours: 3.00

2.00

Mathematics or Science Selective - Credit Hours: 3.00

Elective - Credit Hours: 1.00

ASEC 28000 Digital Storytelling

15 Credits

Fall 3rd Year

♦ Add new course ASEC 38000 - Credit hours 3.00

STAT 30100 Elementary Statistical Methods

Agricultural Selective - Credit Hours: 6.00

Communication or AGCM Selective - Credit Hours: 3.00

15 Credits

Spring 3rd Year

Agricultural Selective (30000+ Level) - Credit Hours: 3.00

Communication or AGCM Selective - Credit Hours: 3.00
UCC Humanities Selective - Credit Hours: 3.00
Elective - Credit Hours: 3.00

ASEC 38000 Feature Writing and Production

15 Credits

Fall 4th Year

COM 31100 Copy Editing 3.00
ASEC 48000 Agricultural Communication Capstone Seminar 3.00
Agricultural Selective - Credit Hours: 3.00
Communication or AGCM Selective (30000+ level) - Credit Hours: 3.00
Humanities or Social Science Selective (30000+ level) - Credit Hours: 3.00

15 Credits

Spring 4th Year

AGCM or Science Communication Selective - Credit Hours: 3.00
Agricultural Selective (30000+ level) - Credit Hours: 3.00
Humanities or Social Science Selective - Credit Hours: 3.00
Electives - Credit Hours: 5.00 - 6.00

14-15 Credits

Notes
2.0 GPA required for Bachelor of Science degree.

Consultation with an advisor may result in an altered plan customized for an individual student.

Foreign Language Courses

Foreign Language proficiency requirements vary by program.

For acceptable languages and proficiency levels, see your advisor: American Sign Language, Arabic, Chinese, French, German, (ancient) Greek, Hebrew, Italian, Japanese, Latin, Portuguese, Russian, Spanish

Critical Course

The ♦ course is considered critical. A Critical Course is one that a student must be able to pass to persist and succeed in a particular major.

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.
About the Program

Prepare for a profession that serves business and society by promoting awareness of food, agriculture, and science issues among rural and urban audiences. Purdue agricultural communication majors gain skills and experience in public relations, marketing, journalism, and new media through diverse coursework and competitive internships. Through the program's design, students have the advantage of excelling in communication, science, and agricultural courses—a combination future employers value. Though situated within a large university, the agricultural communication program offers a close-knit community in which students receive personal attention from faculty and staff in the College of Agriculture.

Agricultural Communication Website
### Required Major Courses (24 credits)

- (3) YDAE 15200 Agricultural Communication Seminar
- (3) YDAE 28000 Digital Storytelling
- (3) YDAE 46000 Agricultural Publishing
- (3) YDAE 38000 Feature Writing and Production
- (3) YDAE 48000 AGCM Capstone Seminar (Capstone)
- (3) COM 20400 Critical Perspectives on Communication
- (2) COM 25000 Mass Communication and Society
- (3) COM 25200C Writing for Mass Media
- (3) COM 31100 Copy Editing
- (3) COM 31800 Principles of Persuasion

### Other Department/Program Course Requirements (86-87 credits) (See Advising Resources)

- (0.5) AGR 10100 Introduction to the College of Agriculture and Purdue University
- (0.5) AGR 12100 Introduction to YDAE Programs
- (4) Biological Science Selective
- (4) Communication or AGCM Selective
- (3) CHM 11100 General Chemistry \(\text{(satisfies Science } \#1 \text{ for core)}\)
- (3) CHM 11200 General Chemistry \(\text{(satisfies Science } \#2 \text{ for core)}\)
- (3) MA 15800 Precalculus - Functions and Trigonometry \(\text{(satisfies Quantitative Reasoning for core)}\)
- (3) STAT 30100 Elementary Statistical Methods
- (3) Math/Science Selective
- (3) AGR 20100 Communicating Across Cultures
- (8) Communication or AGCM Selective
- (3) Communication or AGCM 300+ Selective
- (3) AGCM or Science Communication Selective
- (15) Agricultural Selectives
- (6) Agricultural 30000+ Selective
- (3) AGEC 21700 Economics
- (3) UCC Humanities Selective \(\text{(Human Cultures Humanities for core)}\)
- (3) UCC STS Selective \(\text{(satisfies Science, Technology & Society Selective for core)}\)
- (3) Humanities or Social Science Selective
- (3) Humanities or Social Science Selective
- (3) Humanities or Social Science Selective (30000+ level)
- (3-4) ENGL 10600 First Year Composition or ENGL 10800 Accelerated First-Year Composition or HONR 19903 Interdisciplinary Approaches in Writing \(\text{(satisfies Written Communication for core)}\)
- (3) COM 11400 Fundamentals of Speech Communication or COM 21700 Science Writing and Presentation or EDPS 31500 Collaborative Leadership: Interpersonal Skills \(\text{(satisfies Oral Communication for core)}\)

### Electives (9-10 credits)

- (9-10) Elective

### University Core Requirements ([link](http://www.purdue.edu/provost/initiatives/curriculum/course.html))

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<thead>
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<th>Science, Technology &amp; Society Selective</th>
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### College of Agriculture & University Level Requirements ([link](https://ag.purdue.edu/oap/Pages/core_requirements.aspx))

| 3 credits Multicultural Awareness | □ |
| 9 credits International Understanding | □ |
| 9 credits of Hum. And/or Social Sciences outside the College of Agriculture | □ |
| 3 credits of Hum. And/or Social Science at 30000 or higher | □ |

11/2/2018 (effective Fall 2018-2019)
### Suggested Arrangement of Courses:

<table>
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<th>Credits</th>
<th>Fall 1st Year</th>
<th>Prerequisite</th>
<th>Credits</th>
<th>Spring 1st Year</th>
<th>Prerequisite</th>
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<td>0.5</td>
<td>AGR 10100 Introduction to the College of Agriculture and Purdue University</td>
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<td>AGEC 21700 Economics</td>
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<td>0.5</td>
<td>AGR 12100 Introduction to YDAE Programs</td>
<td>3</td>
<td>COM 11400 Fundamentals of Speech or COM 21700 Science Writing and Presentation or EDPS 31500 Collaborative Leadership: Interpersonal Skills</td>
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<td>3-4</td>
<td>ENGL 10600 First Year Composition or ENGL 10800 Accelerated First-Year Composition or HONR 19903 Interdisciplinary Approaches in Writing</td>
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<td>COM 25000 Mass Communication and Society MA 15800 Precalculus - Functions and Trigonometry</td>
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<th>Spring 2nd Year</th>
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<td>AGR 20100 Communicating Across Cultures</td>
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<td>CHM 11200 General Chemistry</td>
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<td>CHM 11100 General Chemistry</td>
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<td>COM 31800 Principles of Persuasion</td>
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<td>COM 20400 Critical Perspectives on Communication</td>
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<td>MA 15800 Precalculus - Functions and Trigonometry</td>
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<td>UCC Science, Technology, &amp; Society Selective</td>
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<th>Prerequisite</th>
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<th>Spring 3rd Year</th>
<th>Prerequisite</th>
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<tr>
<td>3</td>
<td>COM 25200 Writing for Mass Media cc</td>
<td>3</td>
<td>YDAE 46000 Agricultural Publishing</td>
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<td>STAT 30100 Elementary Statistical Methods</td>
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<td>UCC Humanities Selective</td>
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<th>Fall 4th Year</th>
<th>Prerequisite</th>
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<th>Spring 4th Year</th>
<th>Prerequisite</th>
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<tbody>
<tr>
<td>3</td>
<td>YDAE 48000 AGCM Capstone Seminar</td>
<td>COM 25200</td>
<td>3</td>
<td>AGCM or Science Communication Selective</td>
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<td>3</td>
<td>COM 31100 Copy Editing</td>
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<td>Agricultural Selective (30000+ level)</td>
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</table>

1) 120 credits listed above are required for the AGBS Bachelor of Science degree.
2) 2.0 Graduation GPA required for Bachelor of Science degree.
3) 32 credits of upper division courses (30000 level or higher) must be taken at Purdue University, West Lafayette.
4) ANY COURSE TAKEN AT PURDUE CAN BE ATTEMPTED NO MORE THAN THREE TIMES (INCLUSIVE OF W, WF, I AND IF).
5) CC = is considered a critical course.

See next page for all supplemental information.

****************************************************************************************************************************

The student is ultimately responsible for knowing and completing all degree requirements.

myPurdue Plan is knowledge source for specific requirements and completion.

11/2/2018 (effective Fall 2018-2019)
Greenhouse and Landscape Fundamentals for Educators
ASEC and HORT 21200

Dr. Orvis
Office: Rm 3-231 LILY
Phone: 494-8433
Email: orvis@purdue.edu

Course Information
Spring 2019
Mon – Wed 9:30-11:20; Mon 11:30-12:20
HRGH 1104/LILY 3-120

Course Description
This course will prepare future educators in using a greenhouse and landscape as teaching tools. The key focus will be preparing students to apply greenhouse and landscape management fundamentals in order to teach these concepts in the classroom. Laboratories will explore how to identify and produce both woody and herbaceous plants while safely maintaining and operating greenhouse technologies. Students will also explore how to implement landscape design technologies and identify tools, equipment, and landscape plants.

Learning Outcomes
1. Students will identify and apply basic propagation techniques.
2. Students will identify and describe plant species specific to greenhouse and landscape plantings.
3. Students will interpret funding for greenhouses, greenhouse technologies, and landscape design equipment.
4. Students will apply IPM, irrigation, and propagation techniques while safely maintaining and operating a greenhouse.
5. Students will analyze and utilize landscape design software and tools to design a landscape.

Required Texts
None. Various online materials will be provided.

Course Requirements
1) Blackboard Course site
2) Resources (will be available on BB):
   a. Online information and readings
   b. Links for:
      i. Content teaching resources
      ii. Grant applications
      iii. Lesson plan libraries - MyCaert, AgEdNet, CASE
      iv. Greenhouse/landscape plant information and ID
      v. Landscape design software and tools
## Class Schedule and Topics

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Activity/Theme</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 8</td>
<td>Welcome and Course Overview</td>
<td>GH Tour, Course Details</td>
<td></td>
</tr>
<tr>
<td>10, 17</td>
<td>Greenhouse Use and Management and Design</td>
<td>Safety; Creating Plant ID Learning Materials; Plant Propagation: Seeds</td>
<td>Plant Prop Lab</td>
</tr>
<tr>
<td>22*, 24</td>
<td></td>
<td>Greenhouse How-to: Plan, Design and Construction, Quiz</td>
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</tr>
<tr>
<td>29, 31</td>
<td>Vegetative Propagation</td>
<td>Ordering Plants and Supplies; Greenhouse management topics—IPM, nutrition, weeds, and light; Vegetative Propagation: Specialty Structures</td>
<td>Lesson Plan</td>
</tr>
<tr>
<td>Feb. 5, 7</td>
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<td>Deppe Guest Lecture; Vegetative Propagation: Cuttings</td>
<td>Plant Prop Lab</td>
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<tr>
<td>12*, 14</td>
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<td>Grants, Hallett Guest Lecture; Teaching content lessons-methods (Guest lecture) Quiz</td>
<td></td>
</tr>
<tr>
<td>19, 21</td>
<td></td>
<td>Business Components, Farmers Markets; Torres Guest Lecture</td>
<td>Lesson Plan</td>
</tr>
<tr>
<td>26</td>
<td>Landscape Design</td>
<td>Landscape Design Software Guest Lecture</td>
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<tr>
<td>28</td>
<td></td>
<td>Nemali Guest lecture (Controlled Environment Ag); Plant Selection and ID; Landscape Design and Planning; Guest Lecture; Quiz</td>
<td>Greenhouse Plan</td>
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<tr>
<td></td>
<td>Landscape Maintenance</td>
<td>Installation of Landscape Design</td>
<td>Lesson Plan</td>
</tr>
<tr>
<td>26, 28,  April 2*, 4</td>
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<td>Maintaining Landscape - irrigation, nutrition, care, etc.; Guest Lecture; Quiz</td>
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<tr>
<td>11</td>
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<td>Maintaining landscape examples in school district; Guest Lecture</td>
<td>Lesson Plan</td>
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<tr>
<td>16, 18</td>
<td>Businesses in Greenhouse and Landscape</td>
<td>How to: Plant Sale Landscape businesses; Field trip</td>
<td>Landscape De-</td>
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<tr>
<td>23*, 25</td>
<td>Presentations of designs and plans</td>
<td>Course wrap up</td>
<td>Reflection</td>
</tr>
</tbody>
</table>

*Quiz

Note: some topics may be added or dropped, as needed, to manage various learning opportunities.
Course Assignments

Teaching (250 pts)
- Teaching resource development for Greenhouse Plants or Landscape Plants, for example, create PowerPoint file or Quizlet or some other appropriate and functional resource (50 pts)
- Develop lesson for teaching propagation lab (50 pts)
- Develop lesson plan to teach an aspect of Landscape Design (50 pts)
- Lesson plan or teaching resource, or equivalent, of topic related to course materials and standards - instructor approval of topic required (50 pts)
- Practice teaching lesson with activity (25 pts)
- Reflection of classroom teaching lesson (25 pts)

Doing (150 pts)
- Greenhouse Development Plan (50 pts)
  - Description of greenhouse to build including: Size; Heating/cooling system; Irrigation system; Materials for structure; Benches, flooring type, walls, roof, doors, etc.; greenhouse supply resources
- Plant Propagation Lab Activities (25 pts)
- Landscape Design Plan – using appropriate software (50 pts)
- Business Plan: for Plant Sale, Greenhouse fundraising (25 pts)

Assessment (100 pts)
- Quizzes – 25 pts each (100 pts total)
  - Week 3, 6, 9, 12

How to Succeed in This Course
Show up to class, do your best work and turn it in, ON TIME. Be respectful and kind, & use your experience in this course to help your future teaching endeavors.

Grading Scale
Final grades will be calculated on the estimated point total (500 pts). The official final point total will be posted on Blackboard, and will include all of the above, plus any extra credit. The instructor reserves the right to adjust the point total!

The grading scale depicted in the table will be utilized to assigned letter grades to your percentage of total points at the end of the semester.

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<thead>
<tr>
<th>Grade</th>
<th>% of total points</th>
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<td>B</td>
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<td>B-</td>
<td>80 – 82</td>
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<tr>
<td>C+</td>
<td>77 – 79</td>
</tr>
<tr>
<td>C</td>
<td>73 – 76</td>
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<tr>
<td>C-</td>
<td>70 – 72</td>
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<tr>
<td>D+</td>
<td>67 – 69</td>
</tr>
<tr>
<td>D</td>
<td>63 – 66</td>
</tr>
<tr>
<td>D-</td>
<td>60 – 62</td>
</tr>
<tr>
<td>F</td>
<td>&lt; 60.0</td>
</tr>
</tbody>
</table>
Missed or Late Work
All reports, plans and other assignments must follow given guidelines and format, and should be uploaded into Blackboard. Handwritten work will not be accepted. Work MUST be done independently. Any student that is a party to work that is copied (whether you are the originator or copier) will be given a score of zero for that assignment! The instructor reserves the right to contact the Dean of Students in any event of academic dishonesty.

Grade Appeals
All grade change inquiries, including incorrectly scored quizzes or assignments, must be submitted in writing to Dr. Orvis. One or two sentences should do.

Policies

Student Conduct
You are expected to conduct yourselves as adults, with respect for yourself and others. Please turn off cell phones, pagers, and etc. while in class or lab. Your full attention while in class and lab will make the learning experience a quality one for you, your classmates and your instructors. If you don’t intend to pay attention and be engaged, then don’t come, however… please see attendance policy below.

Attendance Policy
Students are expected to attend the class sessions, and complete the course assignments. Students are responsible for material covered in class, as well as material that is assigned via Blackboard or other computer mediated delivery systems. All matters relative to attendance, including the make-up of missed work, are to be arranged between you and Dr. Orvis. In the case of an illness, accident, or an emergency, you should make direct contact with your professor as soon as possible, preferably before the class. If Dr. Orvis cannot be reached directly, a message should be left with her secretary in YDAE (494- 8433) or the HLA main office (494-1306).

The University recognizes that the learning mission can be enhanced significantly by extracurricular experiences. Students participating in University-sponsored activities may be permitted to make up classwork missed as a result of this participation.
Ultimately, students are responsible for all required coursework and bear full responsibility for any academic consequences that may result due to absence. Please let Dr. Orvis know as soon as possible if you have planned excused absences so that we may arrange to make up missed course work.

GAPS Policy: Students will be excused for funeral leave and given the opportunity to earn equivalent credit and to demonstrate evidence of meeting the learning outcomes for missed assignments or assessments in the event of the death of a member of the student’s family.

Academic Dishonesty
Purdue’s Honor Pledge-purdue.edu/provost/teachinglearning/honor-pledge.html

“As a boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together - we are Purdue.”

Purdue prohibits “dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty.” [Part 5, Section III-B-2-a, Student Regulations] Furthermore, the University Senate has stipulated that “the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest.” [University Senate Document 72-18, December 15, 1972] Please see https://www.purdue.edu/odos/academic-integrity/ for more information.
Accessibility and Accommodations
Purdue University strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, you are encouraged to let Dr. Orvis know so that we can discuss options. If accommodations are needed, please schedule a meeting with Dr. Orvis as soon as possible. You are also encouraged to contact the Disability Resource Center at: drc@purdue.edu or by phone: 765-494-1247.

Use of Copyrighted Materials
Please refer to: http://www.purdue.edu/policies/academic-research-affairs/ia3.html

Violent Behavior Policy
Purdue University is committed to providing a safe and secure campus environment for members of the university community. Purdue strives to create an educational environment for students and a work environment for employees that promote educational and career goals. Violent Behavior impedes such goals. Therefore, Violent Behavior is prohibited in or on any University Facility or while participating in any university activity. See the University’s website for additional information: http://www.purdue.edu/policies/facilities-safety/iva3.html

Nondiscrimination
Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life.

Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, genetic information, marital status, parental status, sexual orientation, gender identity and expression, disability, or status as a veteran. The University will conduct its programs, services and activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in Executive Memorandum No. D-1, which provides specific contractual rights and remedies. Any student who believes they have been discriminated against may visit www.purdue.edu/report-hate to submit a complaint to the Office of Institutional Equity. Information may be reported anonymously.

Student Health Resources
Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at (765)494-6995 and http://www.purdue.edu/caps/ during and after hours, on weekends and holidays, or through its counselors physically located in the Purdue University Student Health Center (PUSH) during business hours. https://www.purdue.edu/push/

Wellness Services are also available at the REC center: http://www.purdue.edu/recwell/programs/wellness-Programs/index.php

In situations of an emergency, where you are hospitalized or may need to go home for medical care, please work with the Dean of Students to assist in accommodations.
Emergencies
In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. Relevant changes to this course will be posted onto the course website or can be obtained by contacting the instructors or TAs via email or phone. You are expected to read your @purdue.edu email on a frequent basis.

Additional emergency preparedness information can be found at:
http://www.purdue.edu/ehps/emergency_preparedness/index.html

Disclaimer
This syllabus is subject to change.

YDAE 28000 (Digital Storytelling) — Spring 2019
MW 12:30-2:20 p.m.
LILY 3-215

Instructor
Kevin Leigh Smith
Office: Lilly 3-236 Email: kevlsmith@purdue.edu
Phone: 494-0166 Office hours: By appointment

Course Description
In this project-based studio communication course, you will shoot and edit videos that promote Purdue Agriculture science topics, write short news feature stories, and develop social media strategies to promote the works you create. You will learn how to tell stories in digital media that meet the needs of a real client: Purdue Agriculture. Your final project will be part of the Visionaries project, a collaboration with Envision magazine. Visionaries promotes Purdue Agriculture science and research to key audiences, including stakeholders, donors, alumni, and potential students. Upon successfully completing the course, you will have significant, published works to add to your professional portfolio.

Required Texts and Materials
- A 64 Gb (or greater capacity) reliable flash drive for working on videos during studio hours

Equipment Checkout and Responsibility
You must sign out an equipment “backpack” that you will use for the entire semester. You may also check out shared equipment (lighting, handheld microphones). If you lose or damage any equipment (beyond routine wear-and-tear), you are responsible for replacing the lost or damaged items. If you lose or damage equipment, Purdue reserves the right to encumber your grades and records until you pay to replace the items.

You will complete a check-out form with the instructor. You will use the same form to check-in the equipment at the end of the term. If you notice a problem with any equipment, it is your responsibility to notify the instructor as soon as possible. Do not wait until the end of the semester to report faulty equipment or you will be considered responsible for the damage.

Course Objectives
After completing this course, you will be able to:
Write and Communicate Across Media
1. Develop compelling, audience-appropriate written and video feature stories for online platforms (critical thinking, knowledge, and communication)
2. Plan and integrate social media strategies into your work (critical thinking, communication)
3. Develop projects that meet a client’s expectations and communication goals (communication, knowledge, critical thinking)

Think Critically and Understand Science
4. Effectively communicate science topics to lay audiences (communication, critical thinking, knowledge)

Demonstrate Ethics and Professionalism
5. Collaborate effectively with others (communication, ethics)
6. Reflect the diversity of the community you report on (ethics, critical thinking)

Assignments
You will complete seven formal assignments:

1. **Reading Diaries**
   Each week, you will submit reflections on class reading assignments.

2. **Personal Videos (3 parts)**
   These “warmup” assignments will acquaint you with video shooting and editing basics.

3. **Visionaries Planning Documents (on Visionaries topic)**
   This assignment includes a brief story about your Visionaries topic that will be a “rehearsal” for the video you shoot. The assignment also includes story boards and shot lists for your video. This is a personal (not group) assignment.

4. **Visionaries Video Feature**
   This 2-minute video will focus on a Purdue Agriculture researcher. This is a personal assignment in collaboration with teammates.

5. **Visionaries Blog Post**
   This is a personal blog that will accompany and compliment your video feature. This is a personal assignment in collaboration with team members.

6. **Visionaries Social Media Strategy**
   This team project will detail a social media campaign to promote your team’s videos and blogs.

7. **Team Collaboration**
   For this team assignment you will assess your own performance within the collaborative team, and you will assess the contributions of other team members.

Assignment Weights
I will base your grade on the assignments below. I will provide assignment details separately.

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percentage of Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading Diaries</td>
<td>10</td>
</tr>
<tr>
<td>Personal Videos</td>
<td>10</td>
</tr>
<tr>
<td>Visionaries Planning Documents</td>
<td>10</td>
</tr>
<tr>
<td>Visionaries Video Feature</td>
<td>35</td>
</tr>
<tr>
<td>Visionaries Blog Post</td>
<td>15</td>
</tr>
<tr>
<td>Visionaries Social Media Strategy</td>
<td>10</td>
</tr>
<tr>
<td>Team Collaboration</td>
<td>10</td>
</tr>
</tbody>
</table>

Grading Scale
Grading follows a traditional scale: 90-100=A; 80-89=B; 70-79=C; 60-69=D; below 60=F.

Note: In case of a major campus emergency, course requirements, deadlines, and grading percentages are subject to changes that may be required by a revised semester calendar or other circumstances.

Collaboration and Peer Feedback
You will offer and receive feedback on all aspects of our projects (videos, stories, sequences, photographs, etc.) in formal and informal settings. This peer-to-peer feedback will draw on what you’ve learned and suggest improvements. You should give and take this feedback professionally.
When you assess another’s project (and as others assess yours), try to evaluate the work, not the person.

Collaboration will be a big part of the work we do. As part of your final grade, members of your team will help the instructor assess your performance in the team. Likewise, you will be asked to help assess your team members.

**Personal Conduct**

You are expected to act respectfully and professionally. This includes being courteous and attentive to all in class (the instructor, fellow students, and guests), as well as anyone with whom you conduct business (your sources and contacts).

**Attendance**

Attendance is mandatory. Your various assignments are all part of a coordinated team project, and everyone’s input is required. Still, there are times when absences are unavoidable. You have two freebies — that is, excused absences. However, freebies are unacceptable on days that work is due or in-class assignments are scheduled. If you miss a deadline or in-class assignment, you may receive a zero for that assignment. Continued absences may lower your grade.

If you’re unable to attend a session, let the instructor know in advance via email (when possible). The instructor believes your lives are your own, so excuses for single absences are not required. If you miss classes for an extended period, notify the instructor and Dean of Students as soon as possible.

Remember, it is your responsibility to get any missed notes and assignments.

For more information, see the Dean of Students Class Attendance and Absence Reporting Policy at [www.purdue.edu/advocacy/students/absences.html](http://www.purdue.edu/advocacy/students/absences.html).

**Plagiarism and Copyright Infringement**

All work must be your own and (to the best of your knowledge) accurate. Plagiarism, fabricating material, using the works of others without permission, and not checking facts are unethical and unacceptable.

Such conduct may result in failing the assignment, failing the course, and reporting your actions to the Dean of Students. In the case of copyright infringement, there are even legal liabilities.

**Late Assignments**

No late assignments will be accepted without the instructor’s prior consent.

**Disabilities Statement**

Students with disabilities must be registered with the Disability Resource Center in the Office of the Dean of Students before classroom accommodations can be provided. If you are eligible for academic accommodations because you have a documented disability that will impact your work in this class, please schedule an appointment with the instructor as soon as possible to discuss your needs.

**Course Evaluations**

You will have an opportunity to evaluate this course and the instructor using the university’s online course evaluation system. You will receive an official email from evaluation administrators with a link to the evaluation site on the Monday of the 15th week of classes (April 16). You have two weeks to complete the evaluation. Your participation in this evaluation is an integral part of this course. Your feedback is vital to improving the course and to education at Purdue University. I strongly urge you to participate in the evaluation system.

**Campus Emergency and Emergency Preparedness**
In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. Such changes, if necessary, will be announced in class and/or by email.

Purdue University is generally a very safe campus and there is a low probability that a serious incident will occur here. However, it’s important to be prepared for emergencies. Please review the Emergency Preparedness notice posted on the class Blackboard site. You may also contact your instructors for information and instructions at any time.

**Nondiscrimination Statement**

Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, marital status, parental status, sexual orientation, disability, or status as a veteran. The University will conduct its programs, services and activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in [www.purdue.edu/purdue/ea_eou_statement.html](http://www.purdue.edu/purdue/ea_eou_statement.html), which provides specific contractual rights and remedies.

**Tentative Schedule**

**WEEK 1**

Jan. 7 (M) — Orientation and equipment check-out

Jan. 9 (W) — *Topic*: What is storytelling?
   *Activity*: Practice setting up equipment

**WEEK 2**

Jan. 14 (M) — *Topic*: How to think visually
   *Activity*: Practice shooting
   *Read*: Stockman, pages 1-36 — Understand audience and medium

Jan. 16 (W) — *Topic*: Basic technical elements in video (lighting, etc.)
   *Activity*: Practice shooting

**ASSIGNMENT DUE**: Reading Diary, week 1 (by noon Friday)

**WEEK 3**

Jan. 21 (M) — **MLK Holiday** — **NO CLASSES**

Jan. 23 (W) — *Topics*: How to work with sources for video, discuss *Visionaries* project, select teams
   *Activity*: Quick video with sources
   *Read*: Stockman, pages 37-95 — Prepare like the pros do

**ASSIGNMENT DUE**: Reading Diary, week 2 (by noon Friday)
WEEK 4
Jan. 28 (M) — Topic: Editing basics 1, discuss personal video series project
Activity: Edit some of the video we’ve already shot
Read: Stockman, pages 96-140 — Think before you shoot
Jan. 30 (W) — Topic: Editing basics 2
Activity: Further refine and edit shot material
Read: Stockman, pages 141-157 — Think while you shoot
ASSIGNMENT DUE: Reading Diary, week 3 (by noon Friday)

WEEK 5
Feb. 4 (M) — Topic: Practical strategies for planning videos (storyboards, shot lists, etc.)
Activity: Teams collaborate on strategies for Visionaries project
Read: Stockman, pages 196-229 — Edit to communicate effectively
Feb. 6 (W) — Topic: How to plan and integrate social media, what to cover in your blogs
Activity: Collaborate on Visionaries planning
Read: Stockman, pages 230-241 — Reflect on and improve your work
ASSIGNMENTS DUE: Reading Diary, week 4 (by noon Friday) and Personal Videos planning documents

WEEK 6
Feb. 11 (M) — Topic and activity: Open day to catch up on all projects (Q&A)
Feb. 13 (W) — Activity: Discuss initial interviews with sources
ASSIGNMENT DUE: Initial interviews with Visionaries subjects must be complete

WEEK 7
Feb. 18 (M) — Activity: Edit personal videos
Feb. 20 (W) — Activity: Review personal videos
ASSIGNMENT DUE: Personal Video, part 1

WEEK 8
Feb. 25 (M) — Activity: Edit personal videos
Feb. 27 (W) — Activity: Review personal videos
ASSIGNMENT DUE: Personal Video, part 2

WEEK 9
March 4 (M) — Activity: Edit personal videos
March 6 (W) — Activity: Review personal videos
ASSIGNMENTS DUE: Personal Video, part 3 and Visionaries Planning Documents
<table>
<thead>
<tr>
<th>WEEK 10</th>
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<tbody>
<tr>
<td>March 11 (M) — <strong>SPRING BREAK — NO CLASSES</strong></td>
<td></td>
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<tr>
<td>March 13 (W) — <strong>SPRING BREAK — NO CLASSES</strong></td>
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</table>

<table>
<thead>
<tr>
<th>WEEK 11</th>
<th></th>
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</table>
| March 18 (M) — **Topic:** Discuss planning documents  
**Activity:** Adjust planning documents |  |
| March 20 (W) — **Activity:** Teams collaborate  
**ASSIGNMENT DUE:** Source check for storyboards |  |

<table>
<thead>
<tr>
<th>WEEK 12</th>
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<tbody>
<tr>
<td>March 25 (M) — <strong>Activity:</strong> Collaborate and edit videos</td>
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<tr>
<td>March 27 (W) — <strong>Activity:</strong> Collaborate and edit videos</td>
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</table>

<table>
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<tr>
<th>WEEK 13</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>April 1 (M) — <strong>Activity:</strong> Collaborate and edit videos</td>
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</tbody>
</table>
| April 3 (W) — **Activity:** Collaborate and edit videos  
**ASSIGNMENT DUE:** First draft of *Visionaries* Blog Post |  |

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<thead>
<tr>
<th>WEEK 14</th>
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</thead>
<tbody>
<tr>
<td>April 8 (M) — <strong>Activity:</strong> Collaborate and edit videos</td>
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</tbody>
</table>
| April 10 (W) — **Activity:** Collaborate and edit videos  
**ASSIGNMENT DUE:** Second draft of *Visionaries* Blog Post |  |

<table>
<thead>
<tr>
<th>WEEK 15</th>
<th></th>
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</table>
| April 15 (M) — **Activity:** Review and discuss *Visionaries* videos  
**ASSIGNMENT DUE:** *Visionaries* Video Feature |  |
| April 17 (W) — **Activity:** Social media strategy critique and repair  
**ASSIGNMENT DUE:** *Visionaries* Social Media Strategy |  |

<table>
<thead>
<tr>
<th>WEEK 16</th>
<th></th>
</tr>
</thead>
</table>
| April 22 (M) — **Activity:** Adjust videos, blogs, and social media strategy  
**ASSIGNMENT DUE:** Team Collaboration |  |
| April 24 (W) — **Activity:** Adjust videos, blogs, and social media strategy  
**ASSIGNMENT DUE:** Source checks for *Visionaries* Video Features and  
*Visionaries* Blog Posts  
Final versions of all videos and blogs |  |

**FINALS WEEK (April 29-May 4)**  
**FINAL EXAM PERIOD:** No final exam is scheduled
Notes: This is a tentative schedule and subject to change. Attend class regularly to learn about any changes in this schedule. In the event of a major campus emergency, course requirements, deadlines, and grading percentages are subject to changes that may be required by a revised semester calendar or other circumstances. All assignments are due at the beginning of class on the day that they are due.

YDAE 28500
Introduction to Agricultural Publication Design
Spring 2019 – Undergraduate, 3 Credit Hours
Department of Agricultural Sciences Education and Communication
Purdue University

Instructor
Dr. Mark Tucker
AGAD 225
Phone: (765) 494-8429
E-mail: matucker@purdue.edu
Office Hours: By appointment

Class time
T R, 3:00 to 4:15 p.m.

Location
MTHW (Matthews Hall) 301

Course Description and Objectives
This course provides an overview of principles involved in design and production of professional-quality publications for agricultural and general audiences. The theoretical and applied concepts emphasized in the course will be of value in the communication workplace.

After completing this course, students should be able to perform the following tasks:

1. Apply established layout and design principles when producing a publication.
2. Use professional-quality computer software and hardware to complete basic and advanced pre-press publication design and production tasks.
3. Solve common design and production problems encountered in the communication workplace, including those related to readability, resolution, color and composition.
4. Employ appropriate professional terminology when communicating with editors, designers, printers and other vendors on particular projects.
5. Seek bids that result in reliable cost estimates from printers and other vendors.
6. Identify ethical implications and consider professional responsibilities when making editorial and design decisions.

Materials
Students should purchase a flash drive specifically for use in the course. This drive should be brought to each class and have at least 8 GB memory. A standard ruler or pica ruler also will be needed throughout the semester as well as a notebook or folder to store class materials.

Recommended Online Resources
http://www.purdue.edu/marketing/index.html (Purdue University Office of Marketing & Media)
Purdue Honors Pledge

As a Boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do.
Accountable together – we are Purdue.”

(See https://www.purdue.edu/provost/teachinglearning/honor-pledge.html)

Diversity Welcome

In this course, each voice in the classroom has something of value to contribute. Please take care
to respect the different experiences, beliefs, and values expressed by students and staff involved
in this course. We support Purdue's commitment to diversity, and welcome individuals of all
ages, backgrounds, citizenships, disabilities, sex, education, ethnicities, family statuses, genders,
gender identities, geographical locations, languages, military experience, political views, races,
religions, sexual orientations, socioeconomic statuses, and work experiences.

Notice for Students with Special Needs

Students with disabilities must be registered with the Disability Resource Center in the Office of
the Dean of Students before classroom accommodations can be provided. If you are eligible for
academic accommodations because you have a documented disability that will impact your work
in this class, please schedule an appointment with the instructor as soon as possible to discuss
your needs.

Grading Scale and Policies

This course provides an introduction to publication design principles and practices. Students
should expect to spend a considerable amount of time outside of class to master concepts and
techniques discussed in the course. The instructor will consider the following criteria when
grading assignments:

- Professional editing to ensure accuracy in fact, grammar and spelling;
- Use of correct communication and design terminology when discussing assignments;
- Demonstrated mastery of software when formatting text, designing pages, composing
documents, and preparing electronic files for vendors; and
- Effective design that incorporates concepts and techniques discussed in class.

All materials submitted for a grade will be evaluated according to the following 300-point scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>282 – 300</td>
<td>(94 – 100%)</td>
</tr>
<tr>
<td>A-</td>
<td>270 – 281</td>
<td>(90 – 93.9%)</td>
</tr>
<tr>
<td>B+</td>
<td>261 – 269</td>
<td>(87 – 89.9%)</td>
</tr>
<tr>
<td>B</td>
<td>249 – 260</td>
<td>(83 – 86.9%)</td>
</tr>
<tr>
<td>B-</td>
<td>240 – 248</td>
<td>(80 – 82.9%)</td>
</tr>
<tr>
<td>C+</td>
<td>231 – 239</td>
<td>(77 – 79.9%)</td>
</tr>
<tr>
<td>C</td>
<td>219 – 230</td>
<td>(73 – 76.9%)</td>
</tr>
<tr>
<td>C-</td>
<td>210 – 218</td>
<td>(70 – 72.9%)</td>
</tr>
<tr>
<td>D+</td>
<td>201 – 209</td>
<td>(67 – 69.9%)</td>
</tr>
<tr>
<td>D</td>
<td>189 – 200</td>
<td>(63 – 66.9%)</td>
</tr>
<tr>
<td>D-</td>
<td>180 – 188</td>
<td>(60 – 62.9%)</td>
</tr>
<tr>
<td>F</td>
<td>&lt; 180</td>
<td>(less than 60%)</td>
</tr>
</tbody>
</table>
Announced deadlines are firm for all graded work unless the student receives advance permission from the instructor. Exemptions are granted only for legitimate university functions or other unavoidable situations that warrant an excused absence as judged by the instructor. If you must miss class and are unable to speak with the instructor in person, leave a voice message or send an e-mail in advance of the missed class or as soon thereafter as possible.

Unless otherwise stated, materials are due during class on the announced deadline date. Computer, disk or printer problems are not justification for missed deadlines. Late materials will not be accepted unless the student has received prior permission from the instructor.

Professionalism
Punctuality and attention to deadlines are among the basic requirements expected of professionals. Regular attendance is expected. To receive full credit for class attendance and quality of participation, students are expected to be attentive, prepared for class and considerate of others. Please make sure all cell phones are turned off before class starts.

Course Activities
Course grades will be calculated from student performance on quizzes and exercises, two course exams, a major project and overall professionalism. These items are described in this syllabus and on the class Blackboard site. See the instructor immediately if you have questions about deadlines or expectations.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Points Possible</th>
<th>Percentage of Course Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In-class exercises and quizzes</td>
<td>45*</td>
<td>15%</td>
</tr>
<tr>
<td>2. Ad replication assignment</td>
<td>60</td>
<td>20%</td>
</tr>
<tr>
<td>3. Midterm</td>
<td>60</td>
<td>20%</td>
</tr>
<tr>
<td>4. Major project</td>
<td>75</td>
<td>25%</td>
</tr>
<tr>
<td>5. Final exam</td>
<td>45</td>
<td>15%</td>
</tr>
<tr>
<td>6. Professionalism and quality of participation</td>
<td>15</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>100%</td>
</tr>
</tbody>
</table>

* If the total points in this category do not equal 45, the sum will be adjusted to equal 15% of the course grade.

Tentative Course Schedule

**Week 1: Jan. 9-11**
Course introduction.
Basic computer operating commands and text-formatting options.

**Week 2: Jan. 16-18**
Indents, tabs and paragraph spacing.
In-class word-processing assignment.
Week 3: Jan. 23-25
Adobe InDesign® tools and menu options.
Introduction to composition.
Page layout and design principles – examples and applications.

Week 4: Jan. 30 – Feb. 1
Screens, tints and strokes.
Discussion of major projects.
Assignment: Ad replication assignment.

Week 5: Feb. 6-8
Complex formats in layout and design. Reverses, overprints and gradients.
Introduction to typography – type as a design element.

Week 6: Feb. 13-15
Advertising replication labs.

Week 7: Feb. 20-22
Digital and film photography principles. Original and stock photographs and artwork.
Grayscale, mezzotints, duotones and four-color imaging. Resolution issues.

Week 8: Feb. 27 – March 1
Deadline: Ad replication assignment.
Midterm.

Week 9: March 6-8
Spot and process color. Pantone® and CMYK color systems.

Week 10: March 13-15
Spring Vacation – no classes.

Week 11: March 20-22
Special printing items (die cuts, scoring, foil stamping, embossing).
Layout and design lab.

Week 12: March 27-29
Introduction to Adobe Photoshop®. Selected tools and art, photographic and typographic enhancements (transparency, layer masks, color adjustment, Pantone color conversion, filter gallery, text warp).

Week 13: April 3-5
Avoiding printing problems: moirés, pixilation, lost links, missing fonts.
Adobe InDesign® package feature.

Week 14: April 10-12
Copyright, taste and ethics.
Week 15: April 17-19
Working with printers and other production vendors; requesting reliable printing cost estimates.
Major project lab.

Week 16: April 24-26
Major project lab.
Prepare for final examination.
Deadline: Major project.

Final Examination:
Date to be announced.

Description of Course Activities

Exercises and quizzes. Several exercises and quizzes, some unannounced, will be administered throughout the semester to gauge students’ knowledge of course concepts. In-class exercises and quizzes are due in class on the day assigned; make-ups are granted only for excused absences.

Ad replication assignment. Students will use Adobe InDesign software to replicate one to two print advertisements supplied by the instructor. This assignment requires close attention to advanced formatting commands, color, and proper measurement and alignment techniques. The instructor will discuss this assignment early in the semester.

Major project. Students will complete a major project worth 25 percent of the course grade. Projects must include text and photographs or artwork and should incorporate design principles discussed in the course. This is a significant assignment that will require a substantial time commitment. Students should start work on the project as soon as possible after receiving instructor approval. Graded projects will be available for students to pick up during finals week.

Midterm and final exams. This course includes a midterm and a comprehensive final exam that total to 35 percent of the course grade. The exams may include conventional test items (multiple choice, matching, short answer) as well as a computer design component.

General Information

Campus Emergency
In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. Should such changes be necessary, contact your instructor for information and instructions. Instructor contact information is provided on the first page of this syllabus. When possible, your instructor will send class cancellation information to you through e-mail.

Academic Integrity
Students are responsible for knowing and observing the policies and regulations of this university. This information is available from the instructor or from the Office of the Dean of
Students. Plagiarism and other forms of academic dishonesty are justification for failure on any assignment or the course. Materials turned in for a grade are assumed to be the student’s original work prepared specifically for this course during this semester. Students wishing to submit material that has been used for other classes must get permission from the instructor beforehand.

Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breeches of this value by either emailing integrity@purdue.edu or by calling 765-494-8778.

**Student Well-Being**

Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. Contact Counseling and Psychological Services (CAPS) at 765-494-6995 and http://www.purdue.edu/caps/ during and after hours, on weekends and holidays, or through its counselors physically located in the Purdue University Student Health Center (PUSH) during business hours.

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**Selected Concepts and Terminology**

**YDAE 28500 – Introduction to Agricultural Publication Design**

<table>
<thead>
<tr>
<th>Art and Photos</th>
<th>Basic Design and Color Management</th>
<th>Basic Operating System/Software</th>
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<td>Cropping</td>
<td>Adobe® palettes</td>
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<td>Overprint</td>
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<td>Paper/stock (finish, weight)</td>
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<td>Portrait; landscape</td>
<td>Printing (offset, digital)</td>
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<td>Proofs</td>
<td>Resolution (DPI)</td>
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<tr>
<td>Screen</td>
<td>Size (flat; finished)</td>
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<tr>
<td>Stroke (line; rule)</td>
<td>Thumbnail sketch</td>
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<td>Unity</td>
<td>White space</td>
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Communication and Issues Engagement for Agricultural Professionals
ASEC 54600 – Fall 2019
Graduate, 3 Credits
Department of Agricultural Sciences Education and Communication
Purdue University

Instructors
Mark Tucker, Professor
LILY 3-227
Email: scicom@purdue.edu
Phone: (765) 494-8429
Office Hours: By appointment
Beth Forbes, Science Communication Director
LILY 4-401
Email: scicom@purdue.edu
Phone: (765) 494-8406
Office Hours: By appointment

Teaching Assistant: TBD

Class Time: Online – 8 weeks

Course Description and Objectives
The ability to communicate effectively is necessary for agricultural professionals, organizations and the agricultural industry. Communication is also key to engaging audiences on scientific issues that become controversial. In this eight-week online course, students will be exposed to science communication and issues engagement principles. The course is designed primarily for those with little or no formal communication training. Topics include evidence-based best practices for communicating science; news media and social media influences on controversial science; how to monitor controversial issues; and major theoretical perspectives and strategies for engaging the public on food and agricultural science.

Students will master course concepts through readings, assignments, directed online discussions, and instructor and peer feedback. After completing the course, students will be able to:

☐ Integrate best communication practices from the literature for engaging audiences about agriculture and science.
Critically analyze audiences and design appropriate messaging based on audience characteristics and needs.

Develop and adapt communication strategies for science-based controversial issues.

Formulate evidence-based strategies to anticipate controversial issues in agriculture and science.

**Readings and Videos**
This course requires weekly readings from communication publications, websites and organizations as well as from peer-reviewed journals. In addition, your instructors have developed short videos relating to major course concepts and theoretical perspectives. All resources can be accessed through the course Blackboard site.

**Course Content Requirements**
- Everything you need to meet course objectives appears on the course Blackboard site.
- Readings are linked and located in the weekly schedule as well as the Reading List Tab in the Blackboard left-hand-side menu.
- Assignments and discussion posts are required as part of your final grade.
Grading Scale and Policies
All materials submitted for a grade will be evaluated according to the following 200-point scale:

\[
\begin{align*}
A &= 188 - 200 \\
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Materials submitted for a grade are assumed to be the student’s original work prepared specifically for this course during this semester. Students wishing to submit material that has been used for other classes or purposes must get permission from the instructors beforehand.

Announced deadlines are firm for all graded work unless the student receives advance permission from the instructors. If you have a conflict, leave a voice message or send an email in advance or as soon thereafter as possible. Notifying the instructors does not guarantee permission for an extended deadline.

While you have freedom to work at your own pace in this online class, please start as soon as possible and allocate sufficient time each week to complete required readings, discussion questions and assignments.

Course Assignments and Activities
Course grades will be calculated from student performance on the following assignments and activities:

<table>
<thead>
<tr>
<th>Assignment/Activity</th>
<th>Points Possi</th>
<th>Percent of Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Introductory video</td>
<td>10</td>
<td>5%</td>
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<tr>
<td>2. Engagement reflection memorandum</td>
<td>20</td>
<td>10%</td>
</tr>
<tr>
<td>3. News release</td>
<td>30</td>
<td>15%</td>
</tr>
<tr>
<td>4. Commentary/blog (peer reviewed)</td>
<td>40</td>
<td>20%</td>
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<tr>
<td>5. Issue analysis paper</td>
<td>50</td>
<td>25%</td>
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<tr>
<td>6. Discussion and participation</td>
<td>50</td>
<td>25%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>200</strong></td>
<td><strong>100%</strong></td>
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Tentative Course Schedule
The class will be taught online over an eight-week period. Weekly materials will be accessible on Blackboard no later than 8 a.m. Monday of each week. Students should contribute to course discussions and upload assignments according to deadlines listed below and on Blackboard.
Students may read and work ahead, but cannot submit assignments until the week they are due.
The following topics will be covered each week:

Week 1
Effective communication across cultures
Introduction to professional communication and contexts across cultures.
Communication in the agricultural and food industries.
Storytelling: Why narratives are compelling and effective.
Deadlines: Introductory video (<date>, 11:59 p.m.)
Respond to online discussion prompt based on readings (<Date>, 11:59 p.m.)

Week 2
Science communication
Engaging with audiences and stakeholders. Engagement with science vs. the deficit theory of science communication.
Opinion writing.
Deadlines: Initial draft of commentary/blog for peer review (<Date>, 11:59 p.m.)
Respond to online discussion prompt based on readings (<Date>, 11:59 p.m.)

Week 3
Message design
Message design: Audience analysis and framing.
How transparency, trust and values influence effective communication.
Deadlines: Engagement reflection memorandum (<Date>, 11:59 p.m.)
Respond to online discussion prompt based on readings (<Date>, 11:59 p.m.)

Week 4
Mass media coverage of science and agriculture
News writing and the inverted pyramid. News releases.
General news coverage in contrast to trade publication news.
Media training – preparing for a media interview.
Deadlines: News release (<Date>, 11:59 p.m.)
Respond to online discussion prompt based on readings (<Date>, 11:59 p.m.)

Week 5
Social media influence and engagement
Why engagement through social media is so difficult; influencers and echo-chambers.
Why do people trust advice from non-experts?
Deadlines: Revised draft of commentary/blog (<Date>, 11:59 p.m.)
Respond to online discussion prompt based on readings (<Date>, 11:59 p.m.)

Week 6
Issues monitoring and analysis
How to determine what issues may be important to your organization.
Activism vs. engagement.
Deadline: Respond to online discussion prompt based on readings (<Date>, 11:59 p.m.)
Week 7
Communicating on controversial issues
How to use engagement and science communication principles with regard to messaging on controversial issues in agriculture.

Deadlines: Issue analysis paper (<Date>, 11:59 p.m.)
Respond to online discussion prompt based on readings (<Date>, 11:59 p.m.)

Week 8
Course reflection and feedback.
Course evaluation.

Assignments/Activities

Introductory video – Using a digital device of your choice, develop a 30- to 60-second informal video introducing yourself to the class. Include your name, employment experiences, future goals and any other information you wish to share. Videos will be uploaded to Blackboard and made viewable to other students in the class. (10 points)

Engagement reflection memo – Identify someone whose views on a science-based topic differ from yours. Use active-listening and trust-building techniques to engage this person, learn about their views and share your own. Develop a professional memorandum to your instructors in which you reflect upon the conversation. Summarize major discussion points, what you learned from the encounter and personal reflections about engaging with others on controversial issues. (20 points)

News release – Stories published in mass media are often based on news releases. In this assignment, you will develop a news release from information provided by your instructors. The release should be well-edited, concise (no more than 300 words), and structured in the inverted pyramid format commonly used in mass media. (30 points)

Commentary/blog – Commentaries, editorials and blogs are common mechanisms for discussing controversial issues through mass media or social media. Develop a 500-word commentary on a chosen topic. Select a timely, science-based food or agricultural issue of interest to a general (non-technical) audience. Assignments will undergo a peer review for suitability of topic, message, language and appropriateness of supporting evidence. (40 points)

Issue analysis paper – Develop an eight- to 10-page paper analyzing a contentious food, agricultural, environmental or science issue impacting your industry or profession. Provide background on the issue, including varying perspectives. Cite academic literature regarding audience-appropriate messaging, engagement strategies, trust and values, and potential for different sides to find common ground. How could your industry better communicate with and/or engage audiences regarding this issue? (50 points)

Discussion and participation – Using resources in Blackboard, actively participate in course discussions and respond to weekly questions posed by the instructors via text, audio or video, as directed. As a part of your response, please cite and discuss points made by your classmates or instructors. Support your major points using concepts from course readings. (50 points)
Diversity Welcome
In this course, each voice has something of value to contribute. Please take care to respect the different experiences, beliefs, and values expressed by students and staff involved in this course. We support Purdue's commitment to diversity, and welcome individuals of all ages, backgrounds, citizenships, disabilities, sex, education, ethnicities, family statuses, genders, gender identities, geographical locations, languages, military experience, political views, races, religions, sexual orientations, socioeconomic statuses, and work experiences.

Accessibility and Accommodations
Purdue University strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let the course instructors know so they can discuss options with you. You may also contact the Disability Resource Center at drc@purdue.edu or by phone: 765-494-1247.

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Course Readings
Weekly required readings shown below include literature from communication publications, websites and organizations as well as from peer-reviewed journals.

Week 1
Effective communication across cultures

- Osborn Barr study points to four key factors shaping America’s ag industry
  https://www.agrimarketing.com/s/113722
- Using narratives and storytelling to communicate science with nonexpert audiences
  http://www.pnas.org/content/111/Supplement_4/13614.full.pdf
- Communicating across cultures
  https://search.proquest.com/docview/224614782?pq-origsite=gscholar
- Storytelling and evidence-based policy: Lessons from the grey literature
  https://www.nature.com/articles/palcomms201793

Week 2
Science communication
The role of trust and values in communication

- How to rebuild the public’s trust in modern agriculture
  https://www.agrimarketing.com/s/113112
- Science communication as political communication
  http://www.pnas.org/content/111/Supplement_4/13585.full.pdf
- Americans believe in science, just not its findings
- Pew Research Center: Mixed messages about public trust in science
- Organizational transparency: A new perspective on managing trust in organization-stakeholder relationships
  http://journals.sagepub.com/doi/abs/10.1177/0149206314525202

Week 3
Message design

- Message framing in the context of the national menu-labeling policy: a comparison of public health and private industry interests
- Genetically modified food labeling: The impacts of message and messenger on consumer perceptions of labels and products
• Using frames to make scientific communication more effective

• Climate change beliefs, risk perceptions and adaptation behavior among Midwestern U.S. crop farmers

• In America’s Heartland, discussing climate change without saying ‘climate change’

Week 4
Mass media coverage of science and agriculture

• How changing media structures are affecting science news coverage

• Coverage of organic agriculture in North American newspapers. Media: linking food safety, the environment, human health and organic agriculture

• Do mass media affect global agricultural and food policies?

• Media coverage, public perceptions and consumer behavior: Insights from new food technologies

• Communications about biotechnologies and GMOs across Europe

• Pew Research Center: State of the news media
  http://www.pewresearch.org/topics/state-of-the-news-media/

Week 5
Social media influence and engagement

• Social media? Get serious! Understanding the functional building blocks of social media

• The “nasty effect:” Online incivility and risk perceptions of emerging technologies
  https://www.tandfonline.com/doi/abs/10.1080/13527266.2013.797778networks

• Pew Research Center: Crossing the line: What counts as online harassment

• Three ways to extinguish – and survive – a social media firestorm
  https://www.ragan.com/Main/Articles/53665.aspx
Week 6
Issues monitoring and analysis


- Redefinition, differentiation, and the farm animal welfare debate https://www.tandfonline.com/doi/pdf/10.1080/00909882.2015.1019541

- When is genetic modification socially acceptable? When used to advance human health through avenues other than food http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0178227


Week 7
Communicating on controversial issues

- The three essential elements of an effective communication strategy https://communicationmgmt.usc.edu/msp-resources/articles-blogs/the-3-essential-elements-of-an-effective-communication-strategy/


Recommended Resources

- The value of communication during a crisis: Insights from strategic communication research

- Situational crisis communication and interactivity: Usage and effectiveness of Facebook for crisis management by Fortune 500 companies

- Understanding online firestorms: Negative word-of-mouth dynamics in social media

- Steve Jobs’ response to an insulting question
  https://www.inc.com/justin-bariso/20-years-ago-steve-jobs-demonstrated-the-perfect-.html

Netiquette Guidelines

GENERAL GUIDELINES

- Do not share your Blackboard password with others.
- Be cautious when using humor or sarcasm in a discussion post or an email. Consider how your tone might be perceived when corresponding electronically.
- Avoid slang terms.
- Do not share confidential information.
- Treat your instructor and classmates with respect and courtesy.

DISCUSSION BOARDS

- Participate. Rather than merely reading the posts of others, be an active contributor.
- Review and edit your posts before submitting them. Correct spelling, grammar, and sentence structure before making posts.
- Use standard fonts such as Calibri or Times New Roman and use font size 12 or 14.
- Stay on topic. Avoid posting comments and links that are not relevant to or connected to the topic.
- Cite your sources. Always give proper credit when referencing another source. When responding to a classmate, write the following: “Dan said…” followed by your response/comment.
- Be sure to read all replies within a thread before replying. Do not repeat someone else’s post without adding something of your own to it.
- Avoid replies that lack substance (e.g. “I agree.”).
- Always be respectful of other’s opinions, expressing your differing opinion in a non-insulting way. Ask for clarity with follow-up questions if you need someone to develop an opinion further so that you can better understand it. It is OK to disagree, but be careful not to make offensive, insensitive, or cutting remarks.
- Be open-minded, professional, and polite in your interactions.
EMAIL

- Use a descriptive subject line that allows the sender to know what the email is about and where to categorize it.
- Be brief and to the point while providing the receiver with all of the necessary information to be able to understand and/or address your email.
- Before you send an email to multiple people, think about whether it is necessary for all of them to see it. Be sure your reply is appropriate for all audiences.
- Include your full name and contact information in your email signature.
- Only forward messages that the original sender intended to be passed along to others.

AESC 54800 – Communicating Science to the Public
Summer 2019 – Graduate, 1 Credit Hour
Department of Agricultural Sciences Education and Communication
Purdue University

Instructors
Mark Tucker, Professor
LILY 3-227
Email: scicom@purdue.edu
Phone: (765) 494-8429
Office Hours: By appointment

Beth Forbes, Science Communication Director
LILY 4-401
Email: scicom@purdue.edu
Phone: (765) 494-8406
Office Hours: By appointment

Class Time
Online – 8 weeks (Second eight-week session, June 10 – July 30)

Course Description and Objectives
This course will help graduate students in science disciplines learn to communicate science to non-expert audiences. Through readings, assignments and online-guided discussions, students will learn relevant communication theories and recommended strategies for engaging with the public on science and technology topics.

The subject matter is valuable to students planning careers in government, research, teaching or industry in which there is a need to communicate science-based information to the public. After completing the course, students will be able to:

☐ Apply findings from the literature to anticipate how values and culture influence public perceptions of science.
☐ Integrate key communication concepts and theories in the development of effective communication strategies for science and technology.
☐ Analyze audiences and design messaging for specific audience segments.

Readings and Resources
Access required and recommended weekly readings through the course Blackboard site. Readings are linked and located in the weekly schedule as well as the Reading List Tab in the Blackboard left-hand-side menu.

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Grading Scale and Policies
All materials submitted for a grade will be evaluated according to the following 200-point scale:

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\text{C} &= 146 - 163 \quad (73\% - 76.9\%) \\
\text{C-} &= 140 - 145 \quad (70\% - 72.9\%) \\
\text{D+} &= 134 - 139 \quad (67\% - 69.9\%) \\
\text{D} &= 126 - 133 \quad (63\% - 66.9\%) \\
\text{D-} &= 120 - 125 \quad (60\% - 62.9\%) \\
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Materials turned in for a grade are assumed to be the student’s original work prepared specifically for this course during this semester. Students wishing to submit material that has been used for other classes must get permission from the instructors beforehand.

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<tbody>
<tr>
<td>1. Research pitch script (peer reviewed) and video</td>
<td>30</td>
<td>15%</td>
</tr>
<tr>
<td>2. Science press releases</td>
<td>30</td>
<td>15%</td>
</tr>
<tr>
<td>3. Communication case-study analysis</td>
<td>40</td>
<td>20%</td>
</tr>
<tr>
<td>4. Science communication project</td>
<td>60</td>
<td>30%</td>
</tr>
<tr>
<td>(Communication plan, final product, summary)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Online discussion and participation (incl. introductory video)</td>
<td>40</td>
<td>20%</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100%</td>
</tr>
</tbody>
</table>

Tentative Course Schedule
This online class will be taught over an eight-week period according to the schedule below. Weekly materials will be accessible on Blackboard no later than 8 a.m. Monday of each week. Students should actively contribute to online course discussions and upload assignments according to deadlines listed below and on Blackboard. Students may read and work ahead, but cannot submit assignments until the week they are due.
Week 1: June 10-14
Introduction to science communication; science communication outlets and genres. Challenges and benefits of communicating science to the public. Free-choice learning about science.
Deadlines: Introductory video (June 14, 11:59 p.m.)
  Respond to online discussion prompt (June 23, 11:59 p.m.)

Week 2: June 17-21
Deadlines: Research pitch script (June 18, 11:59 p.m.)
  Peer-review of research pitch script (June 21, 11:59 p.m.)
  Respond to online discussion prompt (June 23, 11:59 p.m.)

Week 3: June 24-28
Deadlines: Final research pitch script and video (June 25, 11:59 p.m.)
  Practice press release (June 27, 11:59 p.m.)
  Respond to online discussion prompt (June 30, 11:59 p.m.)

Week 4: July 1-5
Deadlines: Science press release (July 6, 11:59 p.m.)
  Respond to online discussion prompt (July 7, 11:59 p.m.)

Week 5: July 8-12
Science communication case studies; what makes science controversial. Optional campus/WebEx meeting to discuss science communication project ideas (July 8, time to be determined).
Deadlines: Communication plan for science communication project (July 12, 11:59 p.m.)
  Respond to online discussion prompt (July 14, 11:59 p.m.)

Week 6: July 15-19
Blogs and social media. Science communication project consultations.
Deadlines: Communication case-study analysis (July 19, 11:59 p.m.)
  Respond to online discussion prompt (July 19, 11:59 p.m.)
  Note: All online discussions must be completed by July 19, 11:59 p.m.

Week 7: July 22-26
Future prospects for science communication – changing audiences and communication platforms. Recognizing excellence in science communication. Science communication project consultations.

Week 8: July 29-30
Course evaluation.
Deadline: Science communication project (July 30, 11:59 p.m.)
Description of Course Assignments/Activities

**Introductory video** – Develop a 30- to 60-second informal video introducing yourself to the class. Include your name, major and any other information you wish to share (4 points).

**Research pitch (script and video)** – Develop a crisp (90-second) pitch to introduce non-scientists to your research. If you are not currently conducting research, select a topic you would like to research. Your research pitch should use simple, jargon-free text as well as non-verbal language that encourages public interest in your topic. You will be evaluated on your initial script (5 points), your peer-review of an assigned classmate’s script (5 points), and your final revised script and video pitch (20 points).

**Science press releases** – Science stories published in mass media are often based on press releases developed from peer-reviewed journal articles. In this assignment, you will develop a press release from materials provided by your instructors. The press release, worth 25 points, should be no more than 300 words and structured in the inverted pyramid format. To help you learn this writing style, the instructors will provide a practice writing exercise (5 points) prior to the graded assignment.

**Communication case-study analysis** – To gain a deeper understanding of the science communication literature, students will develop a four- to five-page paper on a science communication topic of interest. Papers, worth 40 points, should cite current science communication literature in addressing such aspects as purpose of communication; appropriateness to target audience(s); key messages; and overall effectiveness of communication. The instructors will help identify possible topics.

**Science communication project** – Through a final project worth approximately one-third of the course grade, students will develop a creative communication product appropriate for a lay audience. Projects must include a communication plan that outlines the target audience, key messages, social media component, and science communication strategy. Possible platforms include video, podcast, or Extension publication. Note that all projects should include a social media component. Project topics and proposed platforms require instructor approval. Students are encouraged to begin work on the project early in the semester. You will be evaluated on your communication plan (10 points), your final communication product (40 points), and a concise one-page summary of the project (10 points).

**Class discussion and participation** – Using resources in Blackboard, respond to discussions and weekly questions posed by the instructors via text, audio or video, as directed. Contributions will be evaluated on quality of writing and your ability to support your major points using concepts from course readings. Please follow instructions provided on Blackboard, including guidelines for discussion board etiquette. **All online discussions must be completed by 11:59 p.m. on July 19.**

**CAPS**
If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, contact Counseling and Psychological Services (CAPS) at (765) 494-6995 and [http://www.purdue.edu/caps/](http://www.purdue.edu/caps/) during and after hours, on weekends and holidays, or through its counselors located in the Purdue University Student Health Center (PUSH) during business hours.

**Academic Misconduct**
Students are responsible for knowing and observing university policies and regulations. This information is available from the instructors or from the Office of the Dean of Students. Plagiarism and other forms of academic dishonesty ([http://www.purdue.edu/odos/osrr/academic-integrity/index.html](http://www.purdue.edu/odos/osrr/academic-integrity/index.html)) are justification for failure on any assignment or the course. All incidents of academic misconduct will be forwarded to the Office of Student Rights and Responsibilities (OSRR). Students may also report issues of academic integrity that they observe to the Office of the Dean of Students (purdue.edu/odos), by phone (765-494-8778) or email [integrity@purdue.edu](mailto:integrity@purdue.edu).
Course Readings and Videos

Course readings come from communication publications, websites and organizations as well as from peer-reviewed journals. These readings frame major course topics and assignments and form the basis of online discussions. Weekly videos emphasize key course concepts and theoretical perspectives.

Week 1


http://www.nature.com/nature/journal/v494/n7435/full/nj7435-137a.html


https://www.aps.org/publications/apsnews/201210/backpage.cfm

▶ Blackboard video: Discussion on "Analogies, metaphors, and wondering about the future: Lay sense-making around synthetic meat"

Week 2

http://www.pnas.org/content/111/Supplement_4/13585.full

http://journals.sagepub.com/doi/abs/10.1177/0963662516629749

▶ Blackboard video: Discussion on "Science communication as political communication"

▶ Blackboard video: Discussion on "The lure of rationality: Why does the deficit model persist in science communication?"

Week 3

http://journals.sagepub.com/doi/full/10.1177/1075547013478203

- **Blackboard video**: Discussion on "Constituting public engagement: Meanings and genealogies of PEST in two U.K. studies"

- **Blackboard video**: Discussion on "Heightening uncertainty around certain science: Media coverage, false balance, and the autism-vaccine controversy"

**Week 4**


- **Blackboard video**: "Effects of alternative framing on the public's perceived importance of environmental conservation"

**Week 6**


**Week 7**

What Will Science Communication Look Like a Decade from Now? [http://axial.acs.org/2016/12/05/future-science-communication/](http://axial.acs.org/2016/12/05/future-science-communication/)


- **Blackboard video**: "Week 7 message from the instructors"
Recommended Resources

The following resources will assist you in completing assignments and communicating science.

Week 1

The Elevator Pitch: Presenting Your Research in Conversation (Notre Dame University)

Week 3

Writing Press Releases - OWL (Online Writing Lab, Purdue University)
https://owl.english.purdue.edu/owl/resource/735/06/

Guidelines for scientists on communicating with the media, Social Issues Research Centre
http://www.sirc.org/messenger/

How to check to see if your press release is jargon free (De-jargonizer)
http://scienceandpublic.com/

Week 4

Resources – Extension Publication

Video: Kevin Smith, "How to Develop an Extension Publication"

Extension Publication Template
https://mycourses.purdue.edu/bbcswbdav/pid-11312692-dt-content-rid-84887667_1/xid-84887667_1

Extension Publication Student Example: No Room at the Inn
https://mycourses.purdue.edu/bbcswbdav/pid-11312692-dt-content-rid-84951454_1/xid-84951454_1

Resources – Videos

The Scientist Videographer: Make your own videos and share your knowledge with the world.
http://thescientistvideographer.com/wordpress/

YouTube your Science: Video is an engaging way to make your research more accessible
https://www.nature.com/articles/d41586-018-04606-2

Video Student Example
https://youtu.be/xMHcUUxFI4
Resources – Podcasts

Start That Podcast!
https://www.edutopia.org/blog/start-that-podcast-ainissa-ramirez

"How to Create a Podcast"
https://mycourses.purdue.edu/bbcswebdav/pid-11312692-dt-content-rid-84887668_1/xid-84887668_1

Science Podcast Examples

Science Friday
http://www.sciencefriday.com/

Science Underground
http://scienceunderground.org/about/

Week 6

Resources – Blogging

"Blogging: It's Academic" (Beth Forbes)
https://www.purdue.edu/research/dimensions/blogging-its-academic/

How to write a blogpost for your journal article in eleven easy steps
http://blogs.lse.ac.uk/impactofsocialsciences/2016/01/25/how-to-write-a-blogpost-from-your-journal-article/

Additional Resources

Tips for scientists to improve their presentation skills (Penny Hawken)
www.sciencepresentationsmadeeasy.com
Netiquette Guidelines

**GENERAL GUIDELINES**

- Do not share your Blackboard password with others.
- Be cautious when using humor or sarcasm in a discussion post or an email. Consider how your tone might be perceived when corresponding electronically.
- Avoid slang terms.
- Do not share confidential information.
- Treat your instructor and classmates with respect and courtesy.

**DISCUSSION BOARDS**

- Participate. Rather than merely reading the posts of others, be an active contributor.
- Review and edit your posts before submitting them. Correct spelling, grammar, and sentence structure before making posts.
- Use standard fonts such as Calibri or Times New Roman and use font size 12 or 14.
- Stay on topic. Avoid posting comments and links that are not relevant to or connected to the topic.
- Cite your sources. Always give proper credit when referencing another source. When responding to a classmate, write the following: “Dan said...” followed by your response/comment.
- Be sure to read all replies within a thread before replying. Do not repeat someone else’s post without adding something of your own to it.
- Avoid replies that lack substance (e.g. “I agree.”).
- Always be respectful of other’s opinions, expressing your differing opinion in a non-insulting way. Ask for clarity with follow-up questions if you need someone to develop an opinion further so that you can better understand it. It is OK to disagree, but be careful not to make offensive, insensitive, or cutting remarks.
- Be open-minded, professional, and polite in your interactions.

**EMAIL**

- Use a descriptive subject line that allows the sender to know what the email is about and where to categorize it.
- Be brief and to the point while providing the receiver with all of the necessary information to be able to understand and/or address your email.
- Before you send an email to multiple people, think about whether it is necessary for all of them to see it. Be sure your reply is appropriate for all audiences.
- Include your full name and contact information in your email signature.
- Only forward messages that the original sender intended to be passed along to others.

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Science Communication
Purdue University
Spring 2019 – 3 Credit Hours

**Instructor**
Dr. Linda J Pfeiffer
Phone: (765) 494-1890

Lilly 3-228
E-mail: lpfeiff@purdue.edu
Office Hours: By appointment

<table>
<thead>
<tr>
<th>Class Time</th>
<th>Location</th>
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<tbody>
<tr>
<td>TBD</td>
<td>TBD</td>
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</table>

**What is Science Communication?** Science communication is simply taking the complexity of science and translating it in a way that is compelling enough to engage an audience in the issue. Surprisingly, there is a science behind how to do this!

**Who is this course for?** Graduate students who will be working with science, agriculture, the environment or health and recognize the need to better design communication projects for audiences who are not scientists. No prerequisites.

**Course Description:** This course utilizes foundational research and commentary from scholars to track the evolution of media and our ability as scientists to understand and effectively communicate these issues to a non-science audience. Science and technology are evolving faster than societies ability to understand, assimilate, and make policies to address these increasingly complex issues. As a result, controversies arise over issues such as climate change, forest management, genetically modified foods, energy choices, genetic engineering, nanotechnology, water management, and agricultural practices, etc. This course covers the range of issues in the field of science communication including: the nature of science, how to translate evidence for a lay audience, media practices, reporting and qualifying uncertainty, human psychology and belief systems, information processing, and the most current research for messaging science. We will work together to examine the foundational scholarly literature in this area and how it is/ or is not reflected in construction of popular media. You will use this knowledge to construct both compelling oral science narratives, and a science story for popular consumption.

**Objectives Students will:**

1. Gain a foundational understanding of science communication theory.
2. Develop a working understanding of the psychology of the communication audience
3. Utilize theory to analyze and deconstruct popular press stories
5. Evaluate the efficacy of communication strategies in current use, and in peer communication products.
6. Apply science communication theory in the design of both oral and written popular press stories.
Course Grading and Assignments

The course grading scale is provided below. All written assignments submitted for a grade should be well edited and in the proper format. Late papers will be downgraded 10% per day. Substantial penalties will be assessed for errors in fact, grammar and spelling.

Grading scale

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>94 – 100</td>
<td>(94 – 100%)</td>
</tr>
<tr>
<td>A-</td>
<td>90 – 93</td>
<td>(90 – 93.9%)</td>
</tr>
<tr>
<td>B+</td>
<td>87 – 89</td>
<td>(87 – 89.9%)</td>
</tr>
<tr>
<td>B</td>
<td>83 – 86</td>
<td>(83 – 86.9%)</td>
</tr>
<tr>
<td>B-</td>
<td>80 – 82</td>
<td>(80 – 82.9%)</td>
</tr>
<tr>
<td>C+</td>
<td>77 – 79</td>
<td>(77 – 79.9%)</td>
</tr>
<tr>
<td>C</td>
<td>73 – 76</td>
<td>(73 – 76.9%)</td>
</tr>
<tr>
<td>C-</td>
<td>70 – 72</td>
<td>(70 – 72.9%)</td>
</tr>
<tr>
<td>D+</td>
<td>67 – 69</td>
<td>(67 – 69.9%)</td>
</tr>
<tr>
<td>D</td>
<td>63 – 66</td>
<td>(63 – 66.9%)</td>
</tr>
<tr>
<td>D-</td>
<td>60 – 62</td>
<td>(60 – 62.9%)</td>
</tr>
</tbody>
</table>

F < 120 (less than 60%)

Course grades will be calculated from the following assignments and activities. Each is discussed below in more detail.

<table>
<thead>
<tr>
<th>Assignment/Activity</th>
<th>Course Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Class participation/ discussion</td>
<td>20%</td>
</tr>
<tr>
<td>2. Oral presentation role (10% presentation, 10% discussion)</td>
<td>20%</td>
</tr>
<tr>
<td>3. Annotated bibliographies</td>
<td>5%</td>
</tr>
<tr>
<td>2. Written science story/ or research project</td>
<td>35%</td>
</tr>
<tr>
<td>3. Final Presentation on story package or/ research project</td>
<td>20%</td>
</tr>
</tbody>
</table>

Total 100%

General Overview of Requirements for this Course

Participation: This will be a seminar course. That means that everyone does the reading and everyone comes to class prepared to discuss the readings. A discussion means you've read the texts, you've thought about them, and you're ready to see where the arguments lead. It also means you've identified inconsistencies or problems with the logic and are ready to analyze the authors arguments. You often will find the material intellectually challenging which will require multiple readings of the article. The authors may also challenge beliefs that you hold, or other scholarship you have read. Be prepared to support your arguments with other references of material you are basing your arguments on.

Oral Presentation Role: For each class session, one of you (or a team of you) will provide an engaging oral presentation of the key points in the reading. Engaging means you have assimilated the research into a compelling story arc. This is designed to practice applying the theories that you are learning to oral storytelling. You will also lead the discussion on the week’s topic. This discussion will summarize the key points of each article, how they overlap or
challenge each other, what the main findings and methodological flaws are. It will take no more than 15-20 minutes total (for all articles combined). This will require preparation on your part when you are the presenter(s). You will be asked to email your summary and key discussion questions to class on the Thursday before you present:

1) A specific set of key questions (4-6) raised by the readings (those questions may emerge from the content of your reading, or they may question the approach taken by the author.
2) An annotated bibliography summarizing key ideas in the article (no longer than 2 pages, should include the pertinent information from the Suggested Article Analysis Template at the end of syllabus).
3) A brief popular media story that illustrates how the theory of the week may be applied in our current media culture.

You will be sharing your analysis of the articles through a didactic power-point presentation no longer than 15 minutes, which will summarize the main theory and provide a foundation for the discussion – which you will be leading.

**Options: Science Story Package OR a formal Research Project** (choose one):
In addition each student will choose one of two final writing projects:

1) **Science Story Package**: The student will be responsible for composing one feature article (1000-1200 words) for their popular press story. This story should be well edited before turning it in. This story will include: 1) interviewing two sources (those who are affected, and experts) and including a photo and or graphic that enhances your story line. A final graduate paper (5-6 pages) will accompany the story, explaining the choices you have made in composition-including audience variables, choice of sources, media channel, and outlet you want to publish in (together this should be no more than one explanatory paragraph), with a focus on the theoretical explanation of structure and content based on the research theories we studied in class. Include at least five theories, define them, and then outline how you incorporated them into your popular press story. This paper should demonstrate that you understand the theories, and know how to apply them to story production. Formatting for the academic theory paper will be standard APA (seventh edition), double-spaced, size 12 font, 1 inch margins.

2) **Formal Research Project**: A formal research paper that focuses on a key science communication theory. This paper will be an in-depth graduate level treatment of the topic that highlights the theory, critiques of the theory (if applicable), the limitations of the theory, and how it can be most effectively improved for use in an applied setting. (20 pages, double-spaced, 12 font, 1 inch margins APA style formatting).

**Final Presentation**: Finally, each student will be responsible for a 12-15 minute timed presentation on either:

1) A professional presentation of their Story Package to the class. This presentation will be an engaging treatment of your story topic and will include the theoretical foundations explaining why you constructed your story the way you did. It should be a well-constructed and compelling story designed to engage a non-science audience.
2) If you completed the research project instead of the story package, you will give a professional presentation targeted to a specialized (graduate student) audience, much like you would for a conference presentation.
Week 1: Introduction to Science Communication

(January 8th)

Course Overview: Discussion of Assignments/ Course format

Readings:

- Nature special section on Science Journalism: [http://www.nature.com/articles/090318/full/458274a.html](http://www.nature.com/articles/090318/full/458274a.html)

HOLIDAY_MARTIN LUTHER KING DAY (January 15 – NO CLASS)

Week 2: Exemplars of Science Writing

(Jan 22)

Readings: Format of explanatory feature story and examples:
This week we will read and analyze a Pulitzer Prize winning story to identify the elements that make a science story compelling.

- Stocking: S.H. (2011) *The New York Times Reader: Science and Technology*, Chapter 3-Explanatory Feature Stories. Read the earthquake story (others are examples of short form science writing and may be helpful to refer to if you choose to write a science story).

Science News Stories: [http://www.pulitzer.org/winners/kathryn-schulz](http://www.pulitzer.org/winners/kathryn-schulz)

Week 3: History of Science Communication: Science Literacy to Public Engagement

(Jan 29)

Readings:


Discussion leaders:

**Week 4: Ideas that changed the communication landscape**

(Feb 5)

Readings:


Discussion Leaders:

**Week 5: Scientist-Media Interface- What could go wrong?**

(Feb 12)

Readings:


*Popular Press Reading:* Nine ways scientists demonstrate they don't understand journalism


Discussion Leaders:

**Week 6: Audience Variables: How does the public feel about science?**

(Beliefs AND Information-processing)

(Feb 19)

Readings:


Douglas, M.


Discussion Leader(s) Beliefs:
Discussion Leader Information Processing:

Week 7: Science is never certain – Communicating uncertainty and risk to a range of publics. (Feb 26)
Readings:


Discussion Leaders:

Week 8: The Current State of Science Communication _What do politics have to do with science? (Mar 5)
Readings:


March 12-16 SPRING BREAK  No Class!

Week 9: Science controversy – how NOT to write about science

(March 19)

Readings:


Week 10: Science Controversy and Social Systems – Why is communication getting harder?

(Mar 26)

Readings:


Popular Press Reading: Why Do Many Reasonable People Doubt Science?  

Week 11: The Wave of the Present

(April 2)

Readings:


*Popular Press Example* (Weight of Evidence) Atlantic Climate Pacemaker for Millenia Past, Decades Hence? [http://science.sciencemag.org/content/309/5731/41](http://science.sciencemag.org/content/309/5731/41)

Discussion Leader:

**Week 12: Addressing What We Know**

(April 9)

**Readings:**


Discussion Leader: David

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**Popular Press Stories Due: March 5-19, 2018**

(at the latest by Midnight on the 19th)

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**Week 13: Ethical Issues in Science Communication**

(April 16)

**Readings:** Scientists and the Public


Discussion Leaders:

**Assignments due: Mon, Apr 16 (before midnight):**
Story Option: Final version of story with accompanying academic theory paper due on Blackboard
Research Option: Final Research Paper due on Blackboard

**Week 14:** Paper Presentations and Evaluations: (April 23)

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**End of Semester!**

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**Background Information/ Resources for Science Communication**


**Journals for Science/ Environmental/ Agricultural Communication**

Science Communication Specific
- *Science Communication*
- *Public Understanding of Science*
- *Communication and the Public*

Science Policy Issues
- *Social Studies of Science and Science, Technology & Human Values.*

More Journalism Focused
- *Journalism and Mass Communication Quarterly*
- *Critical Studies in Mass Communication*
- *Health Communication*
- *Journal of Communication*
Suggested Article Analysis Template
(annotated bibliography – no more than 2 pages double spaced)

Citation: Author, date, Title of Study, title of journal, pages (APA style)

Why was this study done? What are the research questions or hypotheses? Is there a theoretical approach evident?

What research approach/method is used? (e.g., content analysis, experiment, survey)
   How did the researchers go about answering their questions or testing their hypotheses? What instruments did they use? What relationships did they test? What variables did they control for? What are the main findings?

What conclusions can be drawn from these findings?
   - are there limitations?

So what? Why does it matter? What is the “take away” message (bit of intriguing evidence, lesson for future research) for you?

What is your opinion of the research? Support your opinion with evidence. (A few questions to ask yourself are as follows: Does the literature review outline the problem effectively or is it weak? If so where? What about the methodology-does it support the arguments or is there another approach that may be more effective? Does the conclusion fit with the argumentation made? Does the data support the conclusion?)

Important Academic Information

Nondiscrimination Policy Statement
Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life.

Purdue University views, evaluates, and treats all persons in any University related activity or circumstance in which they may be involved, solely as individuals on the basis of their own personal abilities, qualifications, and other relevant characteristics. Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, genetic information, marital status, parental status, sexual orientation, gender identity and
expression, disability, or status as a veteran. The University will conduct its programs, services and activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in Purdue’s Equal Opportunity, Equal Access and Affirmative Action policy which provides specific contractual rights and remedies. Additionally, the University promotes the full realization of equal employment opportunity for women, minorities, persons with disabilities and veterans through its affirmative action program.

Any question of interpretation regarding this Nondiscrimination Policy Statement shall be referred to the Vice President for Ethics and Compliance for final determination.

Campus Emergency
In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. Such changes, if necessary, will be announced in class and by e-mail. You may also contact your instructor for information and instructions at any time.

Academic Misconduct
Students are responsible for knowing and observing the policies and regulations of this university. This information is available from the instructors or from the Office of the Dean of Students. Plagiarism, cheating and other forms of academic dishonesty are justification for failure on any assignment or the course. All incidents of academic misconduct will be forwarded to the Office of Student Rights and Responsibilities (OSRR), where university penalties, including removal from the university, may be considered.

Materials turned in for a grade are assumed to be the student’s original work prepared specifically for this course during this semester. Students wishing to submit material that has been used for other classes must get permission from the instructor beforehand.

Purdue Honors Pledge. (written by Purdue Students)
“As a boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together - we are Purdue.”
https://www.purdue.edu/provost/teachinglearning/honor-pledge.html

Special Needs
Any student with a documented disability needing academic adjustments or accommodations should speak with the professor as soon as possible. All discussions will remain confidential.

Course Evaluation
During the last two weeks of the semester, you will be provided an opportunity to evaluate this course and your instructor through an online course evaluation. On Monday of the fifteenth week of classes, you will receive an official email from evaluation administrators with a link to the online evaluation site. You will have two weeks to complete this evaluation. Your participation in this evaluation is an integral part of this course. Please participate in the evaluation system as your feedback is vital to improving education at Purdue University.

Attendance Policy
You are expected to attend all classes. In the event you need to miss a class, you must notify the instructor in advance except in the case of an emergency. As this is a seminar course that
meets once a week, any absences may influence your final grade if prior permission is not received.

**Counseling Information:** Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at (765)494-6995 and [http://www.purdue.edu/caps/](http://www.purdue.edu/caps/) during and after hours, on weekends and holidays, or by going to the CAPS office of the second floor of the Purdue University Student Health Center (PUSH) during business hours.

**Students with Disabilities**
- The Disability Resource Center (DRC) is a resource for students and instructors. Students may present a “Letter of Accommodation” to you at any point in the semester. Should you have questions about accommodations, please contact the DRC at: 494-1247 or drc@purdue.edu. In many cases the DRC can partner with you to develop inclusive teaching strategies that benefit all students in your class.

**YDAE 380 (Feature Writing and Production) — Spring 20xx**
TR 1:30-3:20 p.m.
Lilly 3-215

**Instructor**
Kevin Leigh Smith
Email: kevlsmith@purdue.edu
Office: Lilly 3-236
Phone: 765-494-0166
Office hours: By appointment

**Course Description**
This is a hands-on publishing course that produces *Destination Purdue* magazine, which helps Purdue Agriculture undergraduate recruitment by offering glimpses of its people and programs. YDAE 380 students are responsible for all elements of the magazine’s production — from finding and writing stories, to shooting photos, to laying out the pages.

**Required Texts and Materials**
- *Destination Purdue* packet provided by instructor.
- A flash drive (2 GB or more) you can hand in for a few days at a time (for photos, etc.).

**Course Objectives**
After completing this course you will be able to:

**Write and Communicate Across Media**
1. Develop audience-appropriate story ideas consistent with *Destination Purdue*’s mission
2. Distinguish the differences between feature and news stories
3. Write compelling, newsworthy feature stories
4. Produce and prepare publication-quality photos
5. Demonstrate basic skills in desktop publishing software, design, and layout

**Demonstrate Ethics and Professionalism**
6. Develop and demonstrate reporting skills that accurately reflect the diversity of the Purdue Agriculture community
7. Demonstrate professionalism and professional “improvisation”

Assignments
You will complete eight formal assignments:
1. Weekly reading diaries
2. Story and Students on the Street pitches
3. Photo critique
4. Story 1 (including images and sidebars)
5. Story 2 (including images and sidebars)
6. Students on the Street (photos and responses)
7. Final layout
8. Social media posts
Visual elements are an integral part of the newsgathering process. The Story 1 and Story 2 assignments must include at least three photographs or graphics each. Digital images are required. Print photos can be accepted if you scan them first and they are of sufficient quality. You may use your own camera or check one out from the instructor.

**Assignment Weights**
Your final grade is based on the criteria below. Assignment details are provided separately.

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percentage of Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly reading diaries</td>
<td>5</td>
</tr>
<tr>
<td>Story and Students on the Street pitches</td>
<td>10</td>
</tr>
<tr>
<td>Photo critique assignment</td>
<td>5</td>
</tr>
<tr>
<td>Story 1 assignment (including images and sidebars)</td>
<td>25</td>
</tr>
<tr>
<td>Story 2 assignment (including images and sidebars)</td>
<td>25</td>
</tr>
<tr>
<td>Students on the Street feature (including images)</td>
<td>15</td>
</tr>
<tr>
<td>Final layout assignment</td>
<td>10</td>
</tr>
<tr>
<td>Social media posts</td>
<td>5</td>
</tr>
</tbody>
</table>

**Grading Scale**
Grading follows a traditional scale: 90-100=A; 80-89=B; 70-79=C; 60-69=D; below 60=F.

**Note:** In case of a major campus emergency, course requirements, deadlines, and grading percentages are subject to changes that may be required by a revised semester calendar or other circumstances.

**Peer Feedback**
You will offer and receive feedback on all aspects of the publication (stories, headlines, layout, photographs, etc.) in formal and informal settings. This peer-to-peer feedback will draw on what you’ve learned and suggest improvements. You should give and take this feedback professionally. In other words: we evaluate the work, not the person.

**Personal Conduct**
You are expected to act respectfully and professionally. This includes being courteous and attentive to all in class (the instructor, students, and guests), as well as anyone with whom you conduct Destination Purdue business (your sources and contacts).

**Attendance**
Attendance is mandatory. Destination Purdue is a team project, and everyone’s input is required. Still, there are times when absences are unavoidable. You have two freebies — that is, excused absences. However, **freebies are unacceptable on days that work is due or in-class assignments are scheduled.** If you miss a deadline or in-class assignment, you may receive a zero for that assignment. Continued absences may lower your grade.

If you’re unable to attend class, let the instructor know in advance via email (when possible). The instructor believes your lives are your own, so excuses for single absences are not required. If you miss classes for an extended period, notify the instructor and Dean of Students as soon as possible. Remember, it is your responsibility to get any missed notes and assignments.

For more information, see the Dean of Students Class Attendance and Absence Reporting Policy at [www.purdue.edu/advocacy/students/absences.html](http://www.purdue.edu/advocacy/students/absences.html).

As for late arrivals, the instructor uses the Five-Minute Warning: if you show up to class more than
five minutes late, the instructor reserves the right to ask you to leave.

**Plagiarism**
All work must be your own and (to the best of your knowledge) accurate. Plagiarism, fabricating material, and not checking facts are unethical and unacceptable. Such conduct may result in failing the assignment, failing the course, and reporting your actions to the Dean of Students.

**Late Assignments**
No late assignments will be accepted without the instructor’s prior consent.

**Assignment Format**
All work must be submitted in electronic format. Written assignments must be emailed to the instructor. All other files (photos, InDesign pages, etc.) must be submitted on flash drives or CDs (or sent through a file sharing service like Dropbox). Be prepared to submit copies of all stories and supporting materials (such as earlier drafts, notes, etc.). Missing materials may result in lower grades. All stories, photo cutlines, and pages must adhere to Associated Press, Purdue, and Destination Purdue style guidelines. See the Destination Purdue Guide to Style and Usage.

Because this course produces a publication-ready magazine, an assignment will not be considered complete unless it is submitted in the proper format. In other words, assignments that fail to meet technical criteria will not be accepted. Students who submit improperly formatted assignments may receive zeroes.

**Written Assignments**
You must submit all written assignments as unformatted Word files. This means that stories should have no indents or tabs, should use only single spaces between sentences, should be uniform in font and size, be single-spaced, etc. See the Destination Purdue Guide to Style and Usage for details.

**Graphic Assignments**
Except for the photo critique assignment, you must submit all photos and graphics in TIF format with a resolution of 300 dpi. You may submit photos in RGB mode, but eventually all photos must be converted to CMYK for layout. All images must be of sufficient publication size. Most horizontal or square photos must be at least 10.5 inches wide (three columns). Vertical or secondary photos must be at least 7.5 inches wide (two columns). Photos too small to print will not be accepted.

**Disabilities Statement**
Purdue University strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let me know so that we can discuss options. You are also encouraged to contact the Disability Resource Center at: drc@purdue.edu or 765-494-1247.

**Course Evaluations**
You will have an opportunity to evaluate this course and the instructor using the university’s online course evaluation system. You will receive an official email from evaluation administrators with a link to the evaluation site on the Monday of the 15th week of classes (April 16). You have two weeks to complete the evaluation. Your participation in this evaluation is an integral part of this course. Your feedback is vital to improving the course and to education at Purdue University. I strongly urge you to participate in the evaluation system.

**Nondiscrimination Statement**
Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, marital status, parental status, sexual orientation, disability, or status as a veteran. The University will conduct its programs, services and
activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in www.purdue.edu/purdue/ea_eou_statement.html, which provides specific contractual rights and remedies.

Tentative schedule

WEEK 1
(T) — Orientation
(R) — Activity: Select beats
  Topics: Pitching Stories. Working with sources.
  Read: Summer & Miller: Chapters 1, 2, and 5

WEEK 2
(T) — Activity: Group interview with guest speaker
  Read: Summer & Miller: Chapters 3 and 4
  ASSIGNMENT DUE: Have questions ready for interview

(R) — Topic: Understanding the differences between feature writing and news writing
  (or, unlearning everything you know about writing)
  Read: Summer & Miller: Chapters 8 and 9

WEEK 3
(T) — Topic: Understanding feature writing (do’s and don’t’s for features, writing is a joke, feature types)
  Read: Summer & Miller: Chapter 10
  ASSIGNMENT DUE: Short feature about Kami Knies

(R) — Topic: Understanding feature writing (example-rama)
  Read: Summer & Miller: Chapters 12 and 14

WEEK 4
(T) — Topic: Understanding feature writing (writing effective leads and nut grafs).
  Activity: Lead writing exercise

(R) — Topic: Recognizing the parts of a good photo
  ASSIGNMENTS DUE: Story 1, Story 2 and “Students on the Street” pitches

WEEK 5
(T) — Activity: Pitch and select stories

(R) — Activity: Wrap up any pitches, planning ahead, think of social media now
WEEK 6
(T) — **Guest:** Russ Merzdorf on Photoshop

ASSIGNMENT DUE:  Photo critique

(R) — **Activity:** Photo critique

WEEK 7
(T) — **Activity:** Discuss stories in class

ASSIGNMENT DUE:  First draft of Story 1

(R) — **Activity:** Discuss stories in class

ASSIGNMENT DUE:  First draft of Story 2

WEEK 8
(T) — **Topic:** Stories, sidebars, and optional video sidebars

(R) — **Activity:** Peer consultations for Story 1

ASSIGNMENTS DUE:  Second draft of Story 1

Photos/graphics and cutlines for Story 1

WEEK 9
(T) — **Activity:** Peer consultations for Story 2

ASSIGNMENTS DUE:  Second draft of Story 2

Photos/graphics and cutlines for Story 2

(R) — **Topic:** Understanding basic design principles, part 1

ASSIGNMENT DUE:  “Students on the Street” responses and photos

WEEK 10
(T) — **SPRING BREAK — NO CLASSES**

(R) — **SPRING BREAK — NO CLASSES**

WEEK 11
(T) — **Topic:** Understanding basic design principles, part 2

ASSIGNMENTS DUE:  Final draft of Story 1

Final Story 1 photos and cutlines

(R) — **Activity:** Go over the *Destination Purdue* template.

ASSIGNMENTS DUE:  Final draft of Story 2

Final Story 2 photos and cutlines
WEEK 12
(T) — Activity: Select stories, assign layout teams, define duties, set style guidelines, choose “Student on the Street” responses and photos
ASSIGNMENT DUE: Applications for managing editor, optional video sidebars due
(R) — Activity: Layout

WEEK 13
(T) — Activity: Layout
ASSIGNMENT DUE: Written source checks for Story 1 and Story 2
(R) — Activity: Layout
ASSIGNMENT DUE: Social media posts for stories

WEEK 14
(T) — Activity: Layout
ASSIGNMENT DUE: Managing editor’s Word from the Editor
(R) — Activity: Layout

WEEK 15
(T) — Activity: Layout
ASSIGNMENT DUE: Video sidebar (optional)
(R) — ASSIGNMENT DUE: Final pages

WEEK 16
(T) — Activity: Proof and repair pages — attendance mandatory
(R) — Activity: Proof and repair pages — attendance mandatory

Notes: This is a tentative schedule and subject to change. Attend class regularly to learn about any changes in this schedule. In the event of a major campus emergency, course requirements, deadlines, and grading percentages are subject to changes that may be required by a revised semester calendar or other circumstances. All assignments are due at the beginning of class on the day that they are due.
Agriculture

Proposed Course and Curricular Changes
(College of Agriculture Undergraduate/Graduate)

PURDUE UNIVERSITY
MASTER OF AGRICULTURE PROGRAM
SEPTEMBER 2018

MISSION
The Master of Agriculture (MAgr) Program is a professional interdisciplinary graduate degree program that offers educational opportunities to qualified graduate students through an integrated curriculum that is shared across academic units. The degree is intended to be a terminal degree and is targeted to practitioners of agriculture and life sciences and is delivered in accordance with the rules of the Purdue Graduate School.

ADMINISTRATION AND FINANCIAL SUPPORT
Administration of MAgr program is the responsibility of the Office of Agriculture Research and Graduate Education including supervision of the budget and administrative and clerical staff.

MAJORS AND CONCENTRATIONS (OR EMPHASIS TRACKS)
The degree (MAgr) is administered as a single major and is available to students in the College of Agriculture. Concentrations (also referred to as emphasis tracks) can be established for the degree program providing there is a cluster of 12 or more credits in a focused area of work that has an identifiable theme.

METHODS OF DELIVERY
The preferred method of deliver of the MAgr is an online format but on campus and blended delivery programs are also acceptable. All programs must provide a professional experience as part of the professional core curriculum and the focused emphasis track.

GOVERNANCE
Program Director
The Dean of the College of Agriculture will appoint a Director of Programming and Operations for the Professional Master of Agriculture program. The director will coordinate the efforts of the committees within the program and will serve as the liaison to the Purdue Graduate School, the College of Agriculture Graduate Council, and the Graduate Programs within the Office of Ag Research at Purdue.

Committees
Committees for the management of MAgr are designed to optimize communication among the faculty, departmental units, and college administration and to provide an organizational structure for the management of the program.

Executive Committee: Membership to the executive committee consists of the Director (chair), the Assistant Dean for Graduate Education for the CoA, plus one faculty representative from each of the academic departments participating in delivery of the MAgr program. Representatives are designated by the heads of academic departments participating in delivery of the MAgr program.

Responsibilities: The roles of the Executive Committee (EC) are to: provide oversight of the operations for the MAgr program; to provide a communication link to the participating departments; to review program direction and goals, to evaluate and establish, on an ongoing basis, new emphasis tracks and revisions to existing tracks and curricula; and for decisions pertaining to the overall operation of MAgr and program priorities. The EC will meet at least twice per semester in the fall and spring.

Admissions Committee: The Admissions Committee will provide oversight to the application and admission process for the MAgr program.

Responsibilities: The Admissions Committee is responsible for the graduate student admissions to the program. This committee will also develop contacts with other relevant graduate admissions committees with the goal of identifying potential candidates who would be more appropriate for the MAgr program than MS degrees. The admissions committee will endeavor to identify applicants with the greatest likelihood of success in the program. Applicants to be reviewed will be identified through the application process. The committee is responsible for reviewing and identifying students to admit to the program. In addition, the admissions committee tracks the success of the admissions process each year. Annually, the committee reviews admission requirements for the program and makes recommendations for changes in the standards for admission to the executive committee.

CONCENTRATIONS (EMPHASIS TRACKS)

1. Digital agriculture and remote sensing: Students in this emphasis track will receive advanced training in the theory and practice of geographic information systems (GIS), the global positioning system (GPS), and remote sensing (RS) technologies for collection and analysis of field data for precision agriculture, site-specific crop management, and/or management of natural resources.
2. Other concentrations as determined by the faculty and reviewed and approved by the Executive Committee
3. New tracks are proposed by the faculty groups within the CoA and approved by the EC, the CoA Graduate Council, the CSRC, and brought to the full faculty of the CoA for final approval.

CERTIFICATES

Graduate certificates: Holders of baccalaureate or advanced degrees who desire to complete pre-specified courses to attain a graduate-level, academic credit certificate in a specific area may be
admitted through the graduate certificate program enrollment objective. Students in this category are subject to the same restrictions as are nondegree students if they are subsequently admitted for degree study. A certificate program that requires 75% or more of its credits to be taken at the 50000 level or higher shall be designated as a graduate certificate program. The certificate shall require a minimum of 9 credit hours, taken for a letter grade. (No maximum number of hours is specified; and no restriction is placed on how courses that exceed the 9 hour minimum shall be graded.). Potential certificate programs for the MAgr degree are listed below

1. Graduate Certificate in Digital Agriculture and Remote Sensing
2. Graduate Certificate in Agricultural Professional Skills and Ag Science Communication
PROPOSAL FOR
ADDING AN ONLINE OPTION TO AN
EXISTING DEGREE

ONLINE MASTER OF MASTERS OF AGRICULTURE

SUBMITTED BY:

COLLEGE OF AGRICULTURE
PURDUE UNIVERSITY
WEST LAFAYETTE
Online Master of Agriculture degree

Campus: Purdue University - West Lafayette
Degree Program: Online Master of Agriculture degree
Launch Date: January 1, 2019

PREAMBLE:

Professional Master’s degrees represent one of fastest growing graduate degree areas for US universities. The Education Advisory Board indicates that by 2019 master’s degrees will account for nearly a third of all postsecondary degrees (EAB 2015 report ‘Understanding the Changing Market for Professional Master's Programs’). Professional science master’s degree programs combine graduate level technical coursework in a scientific discipline with coursework in management, communication, business, policy, or law. Programs prepare graduates to engage with researchers and business managers, marketing groups, finance and legal departments to fill a management need for technology-based companies, governmental agencies, and non-profit organizations.

The College of Agriculture engaged Wiley-Deltak in market research for the proposed online degree. The potential market and existing programs were identified. Using search terms that included ‘Bio/Data’ and ‘Applied Geographic Information Science’ there were 422 graduates that were reported in 2015, up from 58 in 2010 and this 628% 5-year growth rate is expected to continue. In 2015 there were 37 similar programs at 31 institutions but only 22% were online. Given this information, the global growth in digital agriculture, and the reputation of Purdue Agriculture globally we anticipate a high demand for a Purdue professional degree in digital agriculture.

At this time the Purdue College of Agriculture Office of Research and Graduate Education is proposing an online pathway to meet a critical need in the nation. The Online Professional Master of Agriculture degree will provide a graduate degree program for professionals in agriculture, natural resources and related life sciences. The degree will complement current offerings and provide ongoing career development for mid-career individuals who would find it difficult - if not impossible - to give up their present position and income to undertake an on-campus program.

Item
1. On-Campus Enrollment/Degree History (from SIS):

The College-based Master of Agriculture Graduate Program was approved in 1947. The degree program was managed within the Department of Horticulture and Landscape Architecture. The MS (nonthesis) degree is available for departmental units within the College of Agriculture and was adapted by the Department of Horticulture and Landscape Architecture therefore making the Master of Agriculture degree redundant. In 2018 the Master of Agriculture degree was released by the department to the College of Agriculture.
There are no students currently enrolled in the Master of Agriculture program.

2. **Mix of Technologies:**

   The program will use a commercial Learning Management System (LMS), Engage, or a similar platform, as the main course development platform. Engage is provided by Wiley Publishing. Engage may be integrated with Purdue technologies including Blackboard Learn, Kaltura (Video distribution), and GotoMeeting (Video conferencing).

3. **Access to the Instruction:**

   a. The LMS technology used for the online option of the Master of Agriculture program will allow students to access the course material online in a variety of settings including home, office, and other non-educational settings. The technology will allow both computer and mobile access for most elements of the program. Asynchronous delivery will provide students with maximum flexibility in completing their studies.

   - Will the institution enroll students in the program from anywhere in the state?
     - ☑ Yes
     - ☐ No (If no, please explain)

4. **Coursework Delivery:**

   a. Provide an example Plan of Study (including terms, class schedule type, expected duration/time to completion, etc…)

   The College of Agriculture would like to keep the flexibility of the approved residential degree, and add one 3-credit hours required course.

   - Time to completion is 2 years
   - Courses are either 8 or 16 weeks
   - See Table 1 for an example plan of study. Courses in the top section are core courses for the professional skills segment of the degree (total 12 credit hours). Deep knowledge courses are listed in the bottom of the table (total 12 credits) and include 3 credits in data management. Students must also complete a 3 credit hour practicum. Graduation is based on satisfactory completion of 30 credit hours.

   b. New courses are being developed for distance learning. The courses to be used in
the online program are currently in the on-campus program and are being modified for online delivery.

- **YDAE 5XX00 – Communication and Issues Engagement for Agricultural Professionals** is a new course. Approval for this course will be pursued in parallel with approval for the degree program.

c. If the curriculum for the online degree includes courses offered by academic units other than the academic unit offering the degree, provide a statement of commitment from each unit, approved by the department/school head, which identifies the courses, by name and course number, it will teach using the distance/online format in support of the online degree.

- All courses will be offered by the College of Agriculture except for COM 61011 – Strategic Communication and Ethics (3) and COM 60811 - Leadership and Global Strategic Communication (3). These courses are already online and part of the curriculum for the Master of Science in Communication degree offered by the Robert Lamb School of Communication. The College of Agriculture has a working commitment from these departments and statements of agreements are being developed.

5. **Off-Campus Curriculum and Instruction:**

a. Will the off-campus curriculum be identical to the on-campus curriculum?

- Yes
- No (If no, please explain)

b. If applicable, describe how students will complete laboratory, studio, or clinical work.

Some courses will engage students in learning using ArcGIS and data visualization software (e.g. GMT, ArcMap)

Students must complete a 3 credit hour practicum. The policies and procedures used for the on-campus program will also be used for the distance learning track. The practicum will be flexible as to where it may be conducted and students already commonly identify opportunities off-campus.

c. Please explain how the program will provide for timely and appropriate interaction among students and faculty members.

Each of the online courses will be designed around an asynchronous course management system discussion board (e.g., Blackboard, Engage). All assignments and discussions are presented on the discussion board and students and faculty will interact regularly in that environment. In addition, faculty use various other techniques to maintain a high level of contact including email, telephone, and web
conferencing tools such as Adobe Connect.

d. Please explain how the program will provide for timely and appropriate interaction among students.

Similar to student/faculty interaction, student to student interaction will be focused on similar methodologies. In particular, online discussion allows for students to comment and give feedback directly to the comments made by faculty and other students, and to receive feedback given by other students about their contributions. Discussion boards also allow for small groups of students to be formed and for projects and small group interactions to be completed. Students in this program will have many of the same classes together - following similar schedules. This will allow student-to-student relationships to form over a series of semesters and this should enhance other forms of interaction including email, telephone and face-to-face contact.

e. Will the program require students to come to campus for any period of time?

☐ Yes
☒ No

If “Yes,” indicate for how long, with what frequency, and for what purpose.

6. Assessment of Student Learning:

Similar to the on-campus program, assessment will be based on meeting the same competencies. These are listed below:

Core Competencies

1. Demonstrate abilities to communicate effectively to
   a. bridge the gap between academics and the nonacademic public
   b. interpret knowledge and communicate to nontechnical audiences
   c. extension audiences and adult learners
   d. provide service and customer support at a systems level

2. Demonstrate capacity to lead and manage people and projects
   a. Organizational structures and management plans
   b. Human resource operations
   c. Cultural competency - workplace culture, diversity, and inclusion
   d. Manage and motivate people

3. Demonstrate abilities of entrepreneurship, engagement and ethics

4. Demonstrate critical and creative thinking skills
5. Demonstrate an understanding of how data and digital data tools are used to support decision making.

Class requirements can be accessed via course examinations. Such on-line examinations may require the use of selected proctors at the test takers location to maintain the integrity of the test. In addition, student learning will be assessed via course assignments, papers, and projects. For the distance program all of these requirements can be submitted via electronic means and will not require student on-campus attendance. Feedback for all assessments will be delivered via the secured course management system feedback/grade book mechanism or other secured means of communications.

7. Availability of Academic Support and Student Services:

Admissions - Following the normal on campus course of action for admissions, all applications for the program will be reviewed by the Admissions Committee of the Master of Agriculture (MAgr) Program for the College of Agriculture. Based on their admission requirements, they will make recommendations to the graduate school for acceptance and/or rejection of the applications.

Financial Aid – As a professional program, students are not eligible for assistantships or fellowships from the University. There are no scholarships, monetary awards, etc. that have been designated specifically for the online program.

Academic Advising - Upon admittance into the MS degree program, each student will be assigned to the Online Degree Coordinator who will serve as the program’s academic advisor.

Course Materials (including delivery mechanism) - All course materials will be included within the price of the course and will be shipped to the student by the Distance Learning Coordinator prior to the start of classes each semester. Additional course materials may be made available via postings on the secured course management system.

Library Materials (including delivery mechanism) - Required library material will be accessible via online versions or through inter-library loan for all students. Students will be able to access needed online journals through the Purdue library system.

Placement and Counseling - The Center for Career Opportunities is available to all Purdue students, including those in this online program. Distance learners may require access the counseling via email and/or telephone to a greater extent when on campus visits are not an option.

Technical support (e.g. on-line help desk) – Wiley publishing (or similar platform provider selected to deliver the program) will provide technical support for students 24-hours per day 7 days per week. ITaP (Instructional Technologies at Purdue) will provide direct voice and email technical support as well as help students with other forms of communication that will be used in the courses such as Adobe Connect and other similar technologies.
8. **Student Fees:**

Fees\(^1\) Charged per Semester Hour for Part-Time Students

<table>
<thead>
<tr>
<th></th>
<th>Proposed Rate (without fees)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident</td>
<td>$450.00/credit hour</td>
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<tr>
<td>Non-Resident</td>
<td>$750.00/credit hour</td>
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<tr>
<td>Resident Corporate Discount</td>
<td>$405.00/credit hour</td>
</tr>
<tr>
<td>Non-Resident Corporate Discount</td>
<td>$675.00/credit hour</td>
</tr>
</tbody>
</table>

\(^1\) All tuition and mandatory fees

\(^2\) ICHE Policy on Approving Distance Education Programs as passed by ICHE on May 11, 2012

9. **Academic Degree Program:**

**Table 1**

The competencies will be identical for both the on-campus and online learning programs. The table below represents the plan of courses to be offered via distance learning for a Master of Agriculture degree with a concentration in Digital Agriculture. Many courses are already delivered but will be developed and appropriately structured for online delivery.
Example of a Plan of Study Outline

Professional Skills Core (12 credits)
Human capital, project management, professionalism, and ethics
- COM 61011 – Strategic Communication and Ethics (3)
- AGEC 68700 - Problem Solving and Project Management for Decision Makers (3) (required course)

Communications and leadership
- COM 60811 - Leadership And Global Strategic Communication (3)
- YDAE 5XX00 – Communication and Issues Engagement for Agricultural Professionals (3) (New Course)

General data methods (3 credits)
- ABE 65100 - Environmental Informatics (3)

Deep knowledge core (12 credits from the following)
- ASM 54000 - GIS applications (3)
- FNR 35900/59800 - Spatial Ecology and GIS (3)
- AGRY 54500 - Remote Sensing of Land Resources (3)
- ABE 53100- Instrumentation and Data Acquisition (3)

Project based activity (3 credits)
- AGR 59500 - Current Topics In Ag, Natural Resources, And Related Sciences (3)

Summary of degree program

<table>
<thead>
<tr>
<th></th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional core</td>
<td>12</td>
</tr>
<tr>
<td>General Data methods</td>
<td>3</td>
</tr>
<tr>
<td>Deep knowledge</td>
<td>12</td>
</tr>
<tr>
<td>Project based activity</td>
<td>3</td>
</tr>
<tr>
<td>Total credits</td>
<td>30</td>
</tr>
</tbody>
</table>

Admissions Requirements

- Each degree-seeking applicant is expected to complete a Statement of Purpose. The statement of purpose should be 300-500 words concerning their purpose for undertaking or continuing graduate study, their reasons for wanting to study at Purdue, and their professional plans, and career goals.
- Domestic students with a GPA of 3.5 or greater may be considered for admission without GRE scores at the discretion of the Chair of the Graduate Program.
- Three (3) letters of recommendation are required for degree-seeking applicants.
For applicants who are seeking admission to this degree, the following are the minimum TOEFL requirements:

The minimum paper-based test score required for admission is 550.

The minimum Internet-based test (iBT) scores required for admission are the following:

- Writing 18
- Speaking 18
- Listening 14
- Reading 19
- Total 77

**Financial Model**

Please see Appendix A for a detailed financial model.
## Appendix A
### Financial Model

#### Enrollment

<table>
<thead>
<tr>
<th></th>
<th>Credit Hour</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
<th>Year 7</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Cost to Student</strong></td>
<td></td>
<td>$518.00</td>
<td>$343</td>
<td>$468</td>
<td>$53</td>
<td>$57</td>
<td>$73</td>
<td>$97</td>
<td>$488</td>
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<td>Non-Residential</td>
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<td>$518.20</td>
<td>$343.20</td>
<td>$468.20</td>
<td>$53.20</td>
<td>$57.20</td>
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</table>

#### Revenue

|                         |             | $165,096.40 | $315,021.60 | $307,002.00 | $405,590.40 | $405,590.40 | $405,590.40 | $405,590.40 | $2,439,552.40 |

#### Income Distribution

<table>
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<tr>
<th></th>
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<th>$7.55</th>
<th>$1,721.40</th>
<th>$3,363.60</th>
<th>$4,099.05</th>
<th>$4,412.90</th>
<th>$4,212.90</th>
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<tr>
<td>Tech Fee</td>
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<td>Admission Fee</td>
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<tr>
<td>Office Fee</td>
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<tr>
<td>Student Service Fee</td>
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<tr>
<td>Tuition Revenue</td>
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<td>$184,800.00</td>
<td>$385,900.00</td>
<td>$350,500.00</td>
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<td>$367,200.00</td>
<td>$367,200.00</td>
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<td>$405,590.40</td>
<td>$2,439,552.40</td>
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<tr>
<td>Net Revenue from Tuition</td>
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<td>$14,800.00</td>
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<tr>
<td>Less F&amp;A (10% on net revenue)</td>
<td></td>
<td>$10,494.00</td>
<td>$315,110.00</td>
<td>$207,355.00</td>
<td>$205,040.00</td>
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<td>$159,040.00</td>
<td>$159,040.00</td>
<td>$900,135.00</td>
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<tr>
<td>Total (after F&amp;A)</td>
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<td>Final Revenue</td>
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#### Expenses

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<tr>
<td>General Admin</td>
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<td>-</td>
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<td>-</td>
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<tr>
<td>Total Expenses</td>
<td></td>
<td>$119,000.00</td>
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<td>$104,000.00</td>
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<tr>
<td>Net Income/Loss</td>
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<td>$[104,076.40]</td>
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</table>

|                         |             | $109,076.00 | $117,739.00 | $76,892.50 | $25,795.00 | $19,779.50 | $9,113.50 | $118,451.50 | $118,451.50 |
| Life to Care Balance    |             |           |           |           |           |           |           |           |           |
Department of Agronomy

Proposed Course and Curricular Changes
(College of Agriculture Undergraduate/Graduate)

A. COURSES TO BE ADDED

Prefix and Course Number: AGRY 48500

Title: Precision Crop Management

Course Description for University Catalog (include requisites/restrictions): An experiential lecture, discussion and field laboratory course for graduating seniors majoring in Agronomy. Analysis of multi-layer digital geo-referenced crop data is used to inform the development and evaluation of zone-specific agronomic input prescriptions. Variables include factors affecting soil productivity, soil fertility and N management (including emerging sensor and crop modeling technologies). Prescriptions for variable crop genetics and seeding rates are also discussed. Sound agronomic use of emerging technologies such as real time soil moisture, organic matter, temperature and moisture sensing to affect variable seeding depth, rate and precision are included.

Prerequisites: Semester 6, 7 or 8 in Agronomy and AGRY 25500 and AGRY 37500 or consent of instructor.

B. CURRICULAR CHANGES

None
Supporting Document

Semester(s) Offered: Fall

Schedule Type (e.g. Lecture/Lab) and Hours: Lecture 2, Lab/Discussion 2

Credits: 3.00

A. Justification for the course:

Increasingly, farm managers and operators depend upon an analysis of integrated digital data plus advice from consulting agronomists (a.k.a. graduates of Colleges of Agriculture) to write and implement effective zone-specific prescriptions for variable rate applications of fertilizers, crop hybrids and varieties, seeding rates, and other input levels. Site-specific economic tracking of input mix use efficiency at variable rates is also possible using “as-applied” maps in conjunction with yield maps to map cost/bushel in grain crops. Remotely-sensed data contributes further to the pool of satellite-based, spatially mapped (Global Position Systems and Geographic Information Systems) data available to crop managers. These powerful tools are used by top crop managers who seek to improve profitability and sustainability but College of Agriculture graduates are seldom provided with the opportunity to gain experience in the use of these tools to prescribe data-based zone-management agronomic strategies until they are on the job as professionals.

“Precision Crop Management” AGRY 48500 has been developed and taught under a temporary number each fall since 2014 as a capstone course to close this gap of knowledge and experience for graduating seniors in Agronomy. Sound agronomic principles are incorporated with the use of new and emerging precision agriculture tools and capabilities so students can learn to write and implement effective field zone-specific crop management prescriptions. Students work with state of the art integrated data software and field data under the tutelage of practicing professional agronomists and Purdue faculty to gain experience with precision-management decision making. Field trips enable students to learn from farmers and industry professionals and to see new generation field technologies (e.g. guidance systems for auto steer, active downpressure control and fast planter systems, subsurface tile drainage system design and installation using GPS technology). Students also learn about innovative cover crop management strategies to improve soil productivity and a host of additional strategic topics. Each student works as part of a team of peers to research, prepare and present a professional-grade extension or industry presentation covering a precision crop management topic. Formative peer and faculty review are used during two “dry runs” to refine students’ work culminating in a final presentation by each team to their peers, industry representatives and faculty.

B. Learning Outcomes and Methods of Assessment

i. Applicable to University Core Curriculum
This course ☐ will ☒ will not be nominated for inclusion on University Foundational Core. If no, skip to section ii.

<table>
<thead>
<tr>
<th>Foundational Learning Outcomes</th>
<th>Check all that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Written Communication</td>
<td>☐</td>
</tr>
<tr>
<td>2. Information Literacy</td>
<td>☐</td>
</tr>
<tr>
<td>3. Oral Communication</td>
<td>☐</td>
</tr>
<tr>
<td>4. Science</td>
<td>☐</td>
</tr>
<tr>
<td>5. Science, Technology and Society</td>
<td>☐</td>
</tr>
<tr>
<td>6. Mathematics/Quantitative Reasoning</td>
<td>☐</td>
</tr>
<tr>
<td>7. Human Cultures: Humanities</td>
<td>☐</td>
</tr>
<tr>
<td>8. Human Cultures: Behavioral &amp; Social Sciences</td>
<td>☐</td>
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</table>

ii. **Applicable to College of Agriculture Core**

This course ☒ will ☐ will not be nominated for inclusion on College of Agriculture Core. If no, skip to section iii.

<table>
<thead>
<tr>
<th>College of Agricultural Core</th>
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<tbody>
<tr>
<td>1. Mathematics and Sciences</td>
<td>☐</td>
</tr>
<tr>
<td>2. Written and Oral Communication</td>
<td>☐</td>
</tr>
<tr>
<td>3. Humanities and Social Sciences</td>
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<tr>
<td>4. Multicultural Awareness</td>
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<tr>
<td>5. International Understanding</td>
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</tr>
<tr>
<td>6. Capstone (In combination with AGRY 49800)</td>
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</table>

iii. **Graduate Learning Outcomes (for 50000 and 60000 level courses only)**

<table>
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<th>Check all that apply</th>
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</thead>
<tbody>
<tr>
<td>1. Advance Knowledge and Scholarship</td>
<td>☐</td>
</tr>
<tr>
<td>2. Demonstrate Critical Thinking and Problem Solving</td>
<td>☐</td>
</tr>
<tr>
<td>3. Exhibit Ethical Conduct</td>
<td>☐</td>
</tr>
<tr>
<td>4. Communicate Effectively</td>
<td>☐</td>
</tr>
<tr>
<td>5. Develop Professionalism</td>
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</tr>
</tbody>
</table>
iv. Describe course objectives and student learning outcomes that address the objectives (i.e., knowledge, communication, critical thinking, ethical research, etc.)

Student Learning Outcomes:

At the end of this course students will be able to:

1. Understand the capabilities and use of integrated crop management digital data software packages (e.g. ENCIRCA from Dupont Pioneer or FieldView from Climate Corporation) to organize, analyze and interpret multiple layers and sources of geo-referenced data to correctly prescribe agronomic crop inputs and input levels.

2. Identify primary limitations within field zones and uniquely manage corn and soybean crops by zone-specific prescriptions.

3. Utilize data-based soil sampling strategies to manage soil fertility (primarily P, K, pH) on a site-specific basis.

4. Make cost-effective, environmentally-sound N fertility management recommendations for corn utilizing soil, genetic, agronomic and economic data, software crop models, temperature and precipitation data and sensors as tools for N management.

5. Write site-specific prescriptions for genetic (i.e. corn hybrid and soybean cultivar) placement and seeding rates.

6. Utilize geo-referenced field scouting data and crop models to prescribe effective pest management strategies.

7. Acquire, analyze and utilize, geo-referenced crop data from multiple sources including spectral reflectance, grain harvest yield maps (calibrated and cleaned), real-time sensor readings of soil organic matter, moisture and temperature at planting (e.g. SmartFirmer), soil conductivity, SSURGO and other geo-referenced soils map resources.

8. Explain the capabilities and utility of auto-steer, section control, and variable rate control crop production technologies.
9. Use yield maps plus as-applied site-specific crop input (e.g. N, P, K, ag lime, herbicide, hybrid, variety, seeding rate, fungicide and yield map layers as analytical tools to assess possible yield and profit-limiting factors.

10. Evaluate potential crop response to varying input level main effects and input interactions with other yield-influencing factors (e.g. soil type X corn hybrid or soil type X corn hybrid X N rate interactions).

11. Describe and explain the impact of productivity-influencing soils factors (e.g. soil drainage system design and installation, cover crops and crop residue management).

12. Describe the use of precision technologies in the management of irrigation (e.g. capacitance probe soil moisture sensing and crop modeling software) strategies.

13. Prepare and deliver a professional extension or industry education agronomic presentation covering an aspect of Precision Crop Management.

**This course helps satisfy the following embedded outcomes:**

1. Critical Thinking
2. Quantitative Reasoning
3. Verbal Communication

### v. Methods of evaluation or assessment:

<table>
<thead>
<tr>
<th>Methods of assessment</th>
<th>Check all that apply</th>
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</thead>
<tbody>
<tr>
<td>1. exams and quizzes</td>
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</tr>
<tr>
<td>2. assessment and scoring of in class participation</td>
<td>☒</td>
</tr>
<tr>
<td>3. assignments</td>
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<tr>
<td>4. class presentations</td>
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<tr>
<td>5. Other (specify): Click here to enter text.</td>
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</table>

### C. Prerequisites

Semester 6, 7 or 8 in Agronomy and AGRY 25500 and AGRY 37500 or consent of instructor.

### D. Course Instructor and Contact Information

Lee E. Schweitzer

Professor of Agronomy
E. Course Outline of Topics

1. Agronomic data management, analysis and agronomic decision-making using multi-layer data capable crop management software (e.g. ENCIRCA from DuPont Pioneer, FieldView from Climate Corporation, Advantage Acre from AgReliant Genetics).

2. Crop management zone definition.


5. Site-specific genetic (e.g. corn hybrid and soybean cultivar) placement and seeding rate prescriptions.

6. Geo-referenced field scouting and pest management strategies.

7. Data acquisition, communication, storage and integration from multiple sources such as spectral reflectance (e.g. satellite, aerial fixed wing or drone) grain yield mapping (weight and moisture) at harvest, real-time measurement of soil organic matter, moisture and temperature at planting (e.g. SmartFirmer) and use of this data to inform planting decisions, soil conductivity, SSURGO and other soils map resources.

8. Auto-steer, section control, and variable rate control technologies.

9. Planter technologies including electric drive row units, monitors, seed singulation and spacing, multimeter systems, active downpressure control, row residue management, sensors, fast planting systems, starter placement.

10. Use of site-specific crop input (e.g. N, P, K, ag lime, herbicide, hybrid, variety, seeding rate, fungicide) as-applied and yield map layers as analytical tools to assess possible yield and profit-limiting factors and to measure and evaluate response to varying input levels in interaction with other yield-influencing factors (e.g. soil type X corn hybrid or soil type X corn hybrid X N rate interactions).

11. Precision management strategies affecting soil productivity (prescription soil drainage system design and installation, cover crop and crop residue management).

12. Precision irrigation management (e.g. capacitance probe soil moisture sensing and crop modeling software).
13. Preparation and delivery of professional extension or industry education agronomic presentations.

**Schedule For Agronomy 59800 (Temporary Course Number) – Precision Crop Management – Fall 2018 - Tuesdays 1:30 to 5:20 p.m.**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Presenters</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 21</td>
<td>2-425 Lilly Hall - AGRY 59800</td>
<td>Course Overview</td>
<td>Dr. Lee Schweitzer – Purdue University Agronomy.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>GPS/GIS/VR Technologies – Hardware/Software and Technology Update / Variable Rate Planters, Yield Monitoring And Calibration And Mapping, Section Control, JD Link, AFS</td>
</tr>
<tr>
<td></td>
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<td>Brian Duffy – Precision Specialist and CCA Agronomist - Castognia John Deere Tractor – DeMotte, Indiana.</td>
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<td>Calvin Knotts – Precision Specialist – Redline Equipment Case New Holland – Rossville, Indiana</td>
</tr>
<tr>
<td>August 28</td>
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<td>Meet Bus At The Bus Stop West Of Lilly Hall (On Russell Street)</td>
<td>Soil Drainage System Design and Installation – Joey Schlatter – Schlatters’s Inc. – Francesville, Indiana</td>
</tr>
<tr>
<td></td>
<td>Introduction to literature search strategies. Danielle Walker – Purdue Agricultural Sciences Information Specialist - WALC 3053T - <a href="mailto:walke524@purdue.edu">walke524@purdue.edu</a> - 765-496-7680</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sept. 25</td>
<td>Beering Hall B286 – Computing Lab - Precision Crop Management Data Analytics – Use Of FieldView As A Tool In Support Of Crop Input Decision-Making. Jeff Hinen – Climate Corporation</td>
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<td>Oct. 2</td>
<td>College of Agriculture Career Day – No Class Meeting</td>
<td></td>
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<tr>
<td>Oct. 9</td>
<td>October Break – No Class Meeting</td>
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<tr>
<td>Oct. 16</td>
<td>Meet At The Bus Stop West Of Lilly Hall (On Russell Street) For Travel To The Purdue Corn and Soybean Innovation Center</td>
<td></td>
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</tr>
<tr>
<td>Oct. 25</td>
<td>Student Teams’ Presentation Outlines Due (Turn In Written A Copy Of Outline) - Formative Review And Suggestions. Teams Present Outlines On Whiteboards and Refine Topic Coverage In Negotiation</td>
<td></td>
<td></td>
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</tbody>
</table>
With Other Teams In Open Forum At Corn and Soybean Innovation Center (To Focus Topic Coverage, Share Resources and Minimize Overlap).

**Phenotyping, Field Research Management and Remote Sensing Facilities – Corn and Soybean Innovation Center** – Jason Adams, Manager

<table>
<thead>
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<th>Oct. 23</th>
<th>Meet Bus At The Bus Stop West Of Lilly Hall (On Russell Street) – For Travel To The Purdue Corn and Soybean Innovation Center</th>
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</thead>
<tbody>
<tr>
<td><strong>Smart Firmer Seed Slot Sensor System</strong> – Calvin Knotts, Redline Equipment Rossville, IN</td>
<td></td>
</tr>
<tr>
<td><strong>Precision Soil Fertility Sampling and Prescriptions</strong> - Dr. Jim Camberato, Purdue Agronomy Extension Soil Fertility Specialist; Jamie Bultemeier, Great Lakes Laboratories.</td>
<td></td>
</tr>
<tr>
<td><strong>Precision Crop Management and Remote Sensing</strong> – Dr. Jason Ackerson and Dr. Robert Nielsen, Department of Agronomy - Purdue University.</td>
<td></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Oct. 30</th>
<th>Meet Bus At The Bus Stop West Of Lilly Hall (On Russell Street) – For A Cover Crop Field Trip</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cover Crop Field Trip</strong> - Dr. Eileen Kladivko – Purdue University. Hosted by Dan and R.A. DeSutter At Their Farm In Attica, Indiana. Please watch the weather forecast and dress appropriately to be outdoors on-site. Please view/read and highlight/take notes on the following resources as preparation for the October 30 Cover Crop field trip.</td>
<td></td>
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</table>

**Required Video** "Cover Crops Benefits And Risks" available on line at

https://www.youtube.com/watch?v=2NlvQeZ8jxQ

**Required Articles** (Please Read Prior To Class - Available on the AGRY 59800 Precision Crop Management Course Web Site) https://ag.purdue.edu/agry/courses/Pages/agry598.aspx


<table>
<thead>
<tr>
<th>Nov. 6</th>
<th>2-425 Lilly Hall – <strong>Formal Dry Run For The Nov. 27 and December 4 Presentations – All Slides Must Be In PowerPoint</strong></th>
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<tbody>
<tr>
<td>Nov. 14</td>
<td>2-425 Lilly Hall – <strong>Formal Dry Run For The Nov. 27 and December 4 Presentations – All Slides Must Be In PowerPoint</strong></td>
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<tr>
<td>Nov. 20</td>
<td>Thanksgiving Week – No Class Meeting</td>
</tr>
<tr>
<td>November 27</td>
<td>2-425 Lilly Hall – <strong>Team Presentations</strong> – Teams 1, 2, 3, 4.</td>
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</table>
F. Reading List (include course text)
   Click here to enter text.

G. Library Resources
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H. Example of Course Syllabus

   **Example Syllabus - AGRY 59800 - Precision Crop Management – Fall 2018**

   **Syllabus - AGRY 59800 - Precision Crop Management – Fall 2018**

   AGRY 59800 Precision Crop Management. Sem. 1 Cr. 3. CRNs 10212 and 10211.
   An experiential lecture, discussion and field laboratory course for graduating seniors (December 2018 or May 2019). May be used in combination with AGRY 49800 to meet the Agronomy undergraduate capstone requirement; will also meet the GIS/GPS requirement in Agronomy plans of study. Prerequisites: Semester 6, 7 or 8 in Agronomy and AGRY 25500, AGRY 37500 or consent of instructor.
   Topics planned include but are not limited to GPS, GIS, RTK, auto steer basics, GIS data collection, crop management software and the use of integrated spatial data in zone management decision-making. Includes harvest operations and accurate yield mapping, soil sampling, precision zone P, K and pH management, N management, remotely-sensed data interpretation, variable rate and variable genetic planting, planting systems, spray systems, tile drainage design and installation, field operation logistics, crop residue management, cover crops, soil compaction, irrigation management and crop diagnostics. Consent of instructor required. Taught by Dr. Lee Schweitzer with support from industry professionals and additional Purdue Agronomy faculty including Drs. Eileen Kladivko, Jim Camberato, Bob Nielsen and Jason Ackerson.

1. Course Resource Website

   [https://ag.purdue.edu/agry/courses/Pages/agry598.aspx](https://ag.purdue.edu/agry/courses/Pages/agry598.aspx)

2. Class Meetings
   Attendance is required. The class meets each Tuesday 1:30 to 5:20 p.m. (includes travel time for off-campus field demonstrations when scheduled). Please see the class schedule for meeting locations. The first class meeting is in 3-102 Lilly Hall. However, subsequent classes are scheduled for Field Trip Bus Loading on Russell Street west of Lilly Hall, B-286 Beering Computing Lab as or 2-425 Lilly Hall as listed on the schedule. **Please follow the published schedule carefully** to note the location of each class.

3. Field Trips
   On days scheduled for field trips (see the class schedule) please board the bus at the curb of Russell Street west of Lilly Hall. The bus will leave promptly at 1:30 p.m. so please plan to arrive on time. If an emergency arises and you are delayed or cannot attend class please notify Dr. Schweitzer prior to class if possible (cell phone 765 413 5994; email [lswheit@purdue.edu](mailto:lswheit@purdue.edu)).
4. Grading Policy and Performance Evaluation

This class is structured to provide students with opportunities to gain practical insight and experience with a wide array of emerging crop management technologies and strategies. It is our goal to work with each student to maintain a high level of learning and performance. However, unsatisfactory participation or incompletion of the requirements listed below will result in grade reductions as indicated.

Each student will receive a score for each of three components (Attendance, Participation and the Team Presentation) as listed below. The course grade will then be assigned on the basis of a total composite score of 120 points possible per the Course Grading Scale as follows.

**Course Grading Scale (Sum Of All Components)**

<table>
<thead>
<tr>
<th>Course Grade</th>
<th>Percentage</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90 - 100%</td>
<td>108 - 120</td>
</tr>
<tr>
<td>B</td>
<td>80 - 89%</td>
<td>96 - 107</td>
</tr>
<tr>
<td>C</td>
<td>70 - 79%</td>
<td>84 - 95</td>
</tr>
<tr>
<td>D</td>
<td>60 - 69%</td>
<td>72 - 83</td>
</tr>
<tr>
<td>F</td>
<td>&lt; 59%</td>
<td>≤ 71 points</td>
</tr>
</tbody>
</table>

**a) Attendance (40 Points):** Attendance is required. Points will be deducted for unexcused absence beginning with the second class meeting. One or fewer unexcused absences will result in an attendance grade of “A“ (40 points). Two unexcused absences will result in an attendance grade of “B“ (32 points). Three unexcused absences will result in an attendance grade of “C “ (28 points). Four unexcused absences will result in an attendance grade of “D “ (24 points). Five or more unexcused absences will result in an attendance grade of “F “ (20 points). Please see Dr. Schweitzer (in advance if possible) to request an excused absence. Please also see Dr. Schweitzer for makeup assignments for work missed during an excused absence.

**b) Participation (40 Points):** As a capstone course active participation by all students is expected in each class meeting. Ask questions which exercise critical and analytical thinking and communicate as a professional in interactions with industry representatives, farmers, fellow students and the faculty. Each student is expected to highlight (e.g. star) in their daily class notes the key actionable concepts emphasized during each day’s presentation.

Students’ notes for the class on August 21 will be collected at the end of the class period and returned at the next class meeting on August 28. Notes from August 28 through November 27 will be collected on November 27 and returned on December 4. Notes are to be dated and include the author’s name along with the name(s) of the speakers.

Your notes will document attendance, provide input for your participation grade, and serve as a valuable reference for your use as you prepare your team presentation and as a future professional resource. Students who are fully attentive in class, take excellent notes and actively participate in discussions will earn an “A” for this portion of the class (40 points) for their participation. Lesser engagement in class, submission of notes that do not reflect thought and analysis will result in a participation grade of “B” (32 points) for good but not excellent participation. A participation grade of “C” (28 points) will be earned for minimally satisfactory engagement and notes. A participation grade of “D” (24 points) will be earned for low levels interaction in class and poor quality notes. A participation grade of “F” (20 points) will be earned for attendance with no notes submitted and no participation in class discussions.
c) Team Presentation (40 Points):
Each student will be a part of a team of 3 to 5 students to compose, practice and present a Precision Crop Management topic selected from a list provided and targeted for an industry or extension farmer audience.

**PowerPoint presentations (required format** so no internet issues will arise from on-line applications – no exceptions) are to be 25 to 30 minutes in length, professional grade, supported by valid data, photos, graphics and video clips as appropriate. Each presentation is to be informative, well organized, practiced and structured in such a way that an industry or extension farmer audience member will be able to take home key points and translate them to action. Team presentations may be added to each students’ academic portfolio and will boost students’ professional prospects as evidence of professional presentation capability and experience. Students who contribute at a level of excellence in all phases of the development and delivery of their team’s presentation will earn a presentation grade of “A “ (40 points). Good but not excellent contributions will earn a presentation grade of “B” (32 points). Minimally satisfactory contributions will earn a presentation grade of “C “ (28 points). Low levels of contribution will earn a presentation grade of “D “ (24 points). Poor levels of contribution will earn a presentation grade of “F “ (20 points).

Each team will include a captain responsible for communications among and preparation by team members.

**Each presentation should include (but is not limited to) answers to you intended audience’s questions such as the following.**
1. What is the technology/agronomy crop management concept, how does it work and why is it relevant and of potential value to the farmer?
2. Is the technology practical and adaptable to the farm they own or manage or for farms for which they provide technical support?
3. Will the utilization of this technology/implementation of these agronomic management concepts return positively on investment, produce a significant improvement in crop management efficiency (lower cost per bushel) and or reduce crop production risks?

Please begin preparation of your presentation early in the semester and take full advantage of university faculty, industry representative, farmer, library database (specifically Agricola) and university and industry web-based resources. Sources for your presentation must be properly cited. There are no restrictions on the range of resources you can utilize so please think broadly and be imaginative.

1) The key to a successful presentation is to start early with your preparation.
2) Planning should begin very early in the semester as your team outlines an approach to the topic you choose.
3) Conduct a thorough literature review using the Purdue Library databases (such as Agricola) and on-line extension and industry resources. Each team is required to schedule an appointment with and meet with the Purdue Agriculture Sciences Information Specialist Danielle N. Walker walke524@purdue.edu in WALK between September 12 and 28 so she can help you with your search of the literature relating to your presentation topic. Danielle will join us in class on September 11 to introduce herself and to provide a brief introduction of search strategies. Purdue Library Resources (Books & Media, Articles, Website, Databases, Online Journals) https://www.lib.purdue.edu
4) Network with university and industry professionals to gain valuable direction and insight and adhere to a time line that allows sufficient time for preparation and multiple cycles to practice and upgrade. Gaps in coverage and support show up best through formal practice. Please take full advantage of university faculty, industry representative, farmer, library database and university and industry web-based resources. All sources must be properly cited. There are no restrictions on the range of resources you can utilize so please think broadly and be imaginative. A well-developed outline of each team’s presentation content is due in class on October 16 and will be presented to the entire class team by team as a detailed outline on whiteboards in a workshop in class on that day. Each team will make a formal dry-run presentation (slides finalized as nearly as possible and presentation practiced more than once) in class in 2-425 Lilly Hall on either November 6 or November 13 depending on your team assignment. Dry runs are to provide opportunity for constructive peer and faculty review and critique.

Final presentations are scheduled for November 27 and December 4 in 2-425 Lilly Hall depending on the schedule for each team.

Presentation Topics (Student Topic Preferences Indicated By Sign Up On August 21. Team Assignments Will Be Announced In Class On August 28)

Topic Areas Are A General Guideline – Student teams may narrow (but not broaden) the scope of their presentation – class discussion and draft outlines (in particular at the workshop on October 30) will assist teams in narrowing their focus on their topic and avoiding topic overlap. You are welcome to pull out specific pieces of a topic as your preferred point of emphasis and clearly indicate that in your notes with your ranking. You are also welcome to suggest another topic not listed and that topic will be taken into consideration as well.
1. Zone Management – Agronomics Of Variable Seeding Rate and Genetics (Corn Hybrids and/or Soybean Varieties), Data Supporting Or Refuting Variable Population and Genetics.
2. Corn Planting Technology – Active / Passive Downpressure Control and Margin Management, Seed Singulation & Spacing (Include Precision Planting Yield Response), Fast Planters, Row Residue Management – Clean Sweep & Other.
4. Zone Management - Nitrogen Prescriptions - Include Leaf Reflectance and Soil Sensor Input, Integrated Software e.g. ENCIRCA Nitrogen Service and Climate Corp FieldView Nitrogen Management, Land Grant University N Rate Calculator For Eastern Corn Belt States, Other Approaches. Also Include N contribution from cover crops.
5. Auto Steer, Swath Control, Boom Control, Section Control, Direct Injection Spray System And Other RTK Efficiencies / Machine Synchronization (Multiple Planters/Combines/Sprayers/Combines & Grain Carts), Labor and Equipment Utilization, Pesticide and Fuel Savings, Environmental Stewardship, and Pesticide Application, Family Time, Farm Business Operations. (Please leave out the mechanics of variable seeding rate and hybrid/variety as well as variable rate fertilizer and ag lime, as these topics are to be presented by other group presentations.)
6. Combine Set Up, Yield Monitor Calibration, Yield Mapping
7. Demonstrating The Value Of Integrative Precision Crop Management Software – Compare Commercial Integrated Software Available and Discuss Their Value For Zone Management Agronomic Decision Making – Producer Goals and Needs, What Level Of Software Fits Best With Producer Goals? Include To Apply Maps, As Applied Maps Economic Summaries (Profit Or Loss $/Acre, $/Bushel).

Data Integrated May Include Yield, Soil Fertility P, K, pH, SURGO, CTI, Topography, Tile, Field Boundaries, Soil Productivity Indices And Other Similar Resources


9. Cover Crop and Soil Drainage Management Improvements To Soil Productive Potential. Agronomics, Interactions and Yield Response Data. (Do not include N contribution from cover crops as a point of emphasis as this will be included in the presentation by the N Management Team 5).

Lee E. Schweitzer
Office: 2-414B Life Science Building
Office Phone: 49-44789
Cell Phone 765 413 5994
e-mail: lschweit@purdue.edu

Please ask questions and let Dr. Schweitzer or other participating faculty know if we may be of assistance.

HAVE A GREAT SEMESTER!

Purdue University Academic Honesty Statement. Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breaches of this value by either emailing integrity@purdue.edu or by calling 765-494-8778. While information may be submitted anonymously, the more information that is submitted provides the greatest opportunity for the university to investigate the concern.”

Purdue Honor Pledge
“As a Boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together - we are Purdue.”

Diversity
All students are valued in the Purdue University community.

EMERGENCY PREPARENESS PROCEDURES:
Preparedness will be critical IF an unexpected event occurs! Emergency preparedness is your personal responsibility. Purdue University is actively preparing for natural disasters or human-caused incidents with the ultimate goal of maintaining a safe and secure campus. Let’s review the following procedures:

- To report an emergency, call 911.
- To obtain updates regarding an ongoing emergency, and to sign up for Purdue Alert text messages, view www.purdue.edu/ea
- If we hear a fire alarm, we will immediately suspend class, evacuate the building, and proceed outdoors, and away from the building. Do not use the elevator.
- If we are notified of a Shelter in Place requirement for a tornado warning, we will suspend class and shelter in the lowest level of this building away from windows and doors.
If we are notified of a Shelter in Place requirement for a hazardous materials release, or a civil disturbance, including a shooting or other use of weapons, we will suspend class and shelter in our classroom, shutting any open doors or windows, locking or securing the door, and turning off the lights.

EMERGENCY PREPAREDNESS WEBSITE:
http://www.purdue.edu/ehps/emergency_preparedness/index.html
Agricultural Faculty
Document No. VI, 2018-19
December 3, 2018

Department of Biochemistry

Proposed Course and Curricular Changes
(College of Agriculture Undergraduate/Graduate)

A. COURSES TO BE ADDED

Prefix and Course Number: BCHM 61200

Title: Bioinformatic Analysis of Genome Scale Data

Course Description for University Catalog (include requisites/restrictions): This course provides a hands-on experience for life science researchers in the bioinformatic analysis of genome-scale data. The various disciplines in the life sciences are generating a wealth of experimental and annotation data. Today’s graduate students need experience with modern tools that can help them to access, explore, analyze, interpret and manage the data that they generate in the lab.

Students will use the R programming language and packages from Bioconductor, the R bioinformatics project, as their principal tools for this course. Students will develop workflows in R that bridge established algorithms for bioinformatics such as limma, edgeR or DESeq2, incorporating methods to import, QC, transform and visualize genome-scale datasets derived from next generation sequencing experiments. A critical aspect of bioinformatics that is often inadequate is workflow documentation. This course will use Rmarkdown to integrate computer code, data and results to manage complex bioinformatics projects.

The class has lecture, lab and distance components. Lectures will focus on the theoretical and biological aspects of bioinformatics analysis using recent examples from the literature. In lab, students will work on programming exercises or projects using published datasets. Advanced students will also have the opportunity to work with their own data. Distance instruction will include R tutorials and videos that students can work through at their own pace (subject to completion deadlines). Particular emphasis will be placed on the theoretical and practical limitations of next generation sequencing data.

No prior computer programming experience is required, but it is assumed that students have a firm grasp of the fundamental principles of molecular biology and how they relate to complex processes such as gene expression and genome organization.

B. CURRICULAR CHANGES
None
Supporting Document

Semester(s) Offered: Summer

Schedule Type (e.g. Lecture/Lab) and Hours: LEC/50/2/8 LAB/100/2/8 DIS/50/2/8

Credits: 3

A. Justification for the course:
   There are three major justifications for this course.
   1. This bioinformatics course is intended for graduate students in the life sciences that will likely generate large genome-scale data sets in their research but lack the theoretical knowledge and practical skills to interpret their data. The course is intended for students with a strong background in biology and undergraduate-level statistics.
   2. This is a summer course that can be easier for graduate students to schedule. There are multiple options for bioinformatics or computational biology courses at Purdue University including courses in the departments of Biological Sciences and Computer Science. Other departments also offer courses with a bioinformatics component, e.g. Applied Plant Genomics from Horticulture and Animal Biotechnology from Animal Sciences. A common feature of these courses is that they are taught during the Fall and/or Spring semesters. Therefore, they can be difficult for graduate students to schedule, unless they already have a strong interest in bioinformatics and are pursuing additional training in this area, e.g. the PULSe Computational and Systems Biology training group or the Computational Life Science certificate.
   3. This course uses R and Bioconductor. It is possible to do bioinformatics with any computer language including Perl, Python, C, and Java. Each of these languages has their advantages and have been used to develop bioinformatics tools, but primarily by computer scientists or computational biologists. In contrast, R is the language of choice for many statisticians, including bioinformaticians. Bioconductor, the open source bioinformatics project for R, started in 2001 with the advent of microarray technology. Since then, Bioconductor has involved with the field and includes many key methods to analyze the current wave of “omics” data. Bioconductor also provides a host of data packages, e.g. sequences, gene annotation and biological pathways, that facilitate data integration and analysis.

B. Learning Outcomes and Methods of Assessment
   i. Applicable to University Core Curriculum
      This course □ will ☒ will not be nominated for inclusion on University Foundational Core. If no, skip to section ii.
### Foundational Learning Outcomes

<table>
<thead>
<tr>
<th>Foundational Learning Outcomes</th>
<th>Check all that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Written Communication</td>
<td>☐</td>
</tr>
<tr>
<td>2. Information Literacy</td>
<td>☐</td>
</tr>
<tr>
<td>3. Oral Communication</td>
<td>☐</td>
</tr>
<tr>
<td>4. Science</td>
<td>☐</td>
</tr>
<tr>
<td>5. Science, Technology and Society</td>
<td>☐</td>
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<tr>
<td>6. Mathematics/Quantitative Reasoning</td>
<td>☐</td>
</tr>
<tr>
<td>7. Human Cultures: Humanities</td>
<td>☐</td>
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<tr>
<td>8. Human Cultures: Behavioral &amp; Social Sciences</td>
<td>☐</td>
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</tbody>
</table>

#### ii. Applicable to College of Agriculture Core

This course ☐ will ☒ will not be nominated for inclusion on College of Agriculture Core. If no, skip to section iii.

<table>
<thead>
<tr>
<th>College of Agricultural Core</th>
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</thead>
<tbody>
<tr>
<td>1. Mathematics and Sciences</td>
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<tr>
<td>2. Written and Oral Communication</td>
<td>☐</td>
</tr>
<tr>
<td>3. Humanities and Social Sciences</td>
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<tr>
<td>4. Multicultural Awareness</td>
<td>☐</td>
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<tr>
<td>5. International Understanding</td>
<td>☐</td>
</tr>
<tr>
<td>6. Capstone</td>
<td>☐</td>
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</table>

#### iii. Graduate Learning Outcomes (for 50000 and 60000 level courses only)

<table>
<thead>
<tr>
<th>Graduate Learning Outcomes</th>
<th>Check all that apply</th>
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</thead>
<tbody>
<tr>
<td>1. Advance Knowledge and Scholarship</td>
<td>☐</td>
</tr>
<tr>
<td>2. Demonstrate Critical Thinking and Problem Solving</td>
<td>☒</td>
</tr>
<tr>
<td>3. Exhibit Ethical Conduct</td>
<td>☒</td>
</tr>
<tr>
<td>4. Communicate Effectively</td>
<td>☒</td>
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<tr>
<td>5. Develop Professionalism</td>
<td>☐</td>
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</table>

#### iv. Describe course objectives and student learning outcomes that address the objectives (i.e., knowledge, communication, critical thinking, ethical research, etc.)

- Students will write R scripts that utilize Bioconductor packages for bioinformatic analyses.
• Students will access genome-scale data sets from public repositories and import this data into R for further analysis.
• Students will visualize genome-scale data sets for both quality control and presentation purposes.
• Students will implement strategies to deal with genome-scale datasets including parallel computing.
• Students will be able to critically evaluate the bioinformatics methods and data from publications.
• Students will implement “literate programming” with Rmarkdown to document and share their bioinformatics projects.

v. Methods of evaluation or assessment:

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>1. exams and quizzes</td>
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</tr>
<tr>
<td>2. assessment and scoring of in class participation</td>
<td>☒</td>
</tr>
<tr>
<td>3. assignments</td>
<td>☒</td>
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<tr>
<td>4. class presentations</td>
<td></td>
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<tr>
<td>5. Other (specify): Click here to enter text.</td>
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</table>

C. Prerequisites
BCHM 60100, 60200 and 60501 or approval of instructor

D. Course Instructor and Contact Information
Pete E. Pascuzzi, ppascuzz@purdue.edu

E. Course Outline of Topics
Week 01
Lecture 01 Overview of Bioinformatics
Lab 01 Logistics
• Register with PURR and create personal repository
• Check Scholar and Data Depot access
• Overview of RStudio
• Overview of learnR tutorials
• Rmarkdown for reporting
• Getting started on the Bioinformatics Notebook assignment
Lecture 02 Data Management for Bioinformatics
Lab 02 Managing Projects
• Using Git for version control
• Navigating directories and file paths
• Conversion of data types
• Exercise 01: Data Inventory
Distance
- LearnR tutorial on syntax and help system
- LearnR tutorial on directories and files
- LearnR tutorial on reading and writing data
- LearnR tutorial on data types and vectors
- LearnR tutorial on data frames and tibbles
- LearnR tutorial on lists
- LearnR tutorial on data matrices

Week 2
Lecture 03 Genome Assembly and Annotation
Lab 03 Data Manipulation
- File formats for bioinformatics
- Data summaries and transformations
- Data visualization with ggplot2
- Exercise 02: Summarize RNAseq results

Lecture 04 Databases for Genome-Scale Data
Lab 04 Linking Data
- Data linking and merging
- Data visualization with ggplot 2
- Exercise 03: Data visualization of RNA-seq results

Distance
- LearnR tutorial on data extraction
- LearnR tutorial on data transformation
- LearnR tutorial on tidyr
- LearnR tutorial on character string manipulation
- LearnR tutorial on ggplot2
- LearnR tutorial on control flow
- LearnR tutorial on conditional expressions

Week 3
Lecture 05 Overview of Bioconductor and Data Structures for Genomics Data
- Initial proposals for bioinformatic project due.
- F1000 Research Bioconductor Workflows

Lab 05 Biological Annotation Data
- Genome annotation packages and APIs.

Lecture 06 Biological Sequence Data
Lab 06 Manipulating Biostrings
- Sequence analysis
- Pattern searching
- Pairwise alignments
• Exercise 04: Sequence extraction and pattern searching
Week 4
Lecture 07 Gene Regulation and Positional Information
• Final topic for bioinformatic project approved.
Lab 07 In Silico Representation of Genes and Genomes
• Manipulation and annotation of genomic features
• Exercise 05: Identification of Genomic Features
Lecture 08 Epigenetics and Chromatin
Lab 08 Analysis of Genomic Intervals
• Reanalysis of epigenetic data from Julienne, et al.
Distance
• learnR tutorials on manipulating genomic intervals
• learnR tutorial on genomic liftovers
• learnR tutorial on PCA
Week 5
Lecture 09 Next Generation Sequencing Projects
Lab 09 Parallel Computing
• Orientation to Purdue Research Computing
• Parallel computing
• Preparing jobs
• Exercise 06: Parallel Computing
Lecture 10 Sequence Alignment Problem
• QC of reads
• Mapping reads
• QC of alignments
• Browser tracks from alignments
Distance
• Video on using a server
• Video on parallel computing
• Tutorial on Unix commands
• learnR tutorial on biocParallel
• learnR tutorial on Rsamtools
• learnR tutorial on GenomicAlignments
Week 6
Lecture 11 Critical Evaluation of Bioinformatics Results
• RNA-seq analysis with edgeR and DESeq2
• Exercise 07: Reanalysis of GEO RNA-seq dataset
Lecture 12 Gene List and Pathway Enrichment Analysis
Lab 12 Gene List and Pathway Enrichment Analysis
• Gene Ontology Enrichment Analysis
• Pathway Enrichment Analysis
• RNA-seq analysis R Notebook.
• Gene list enrichment R Notebook.
• video on Reactome
• video on DAVID

Week 7
Lecture 13 DNA-seq Experiments
11
• ENCODE Project
Lab 13 ChIP-seq Analysis
• Identifying regions of enrichment from sequencing data
• Exercise 08: Reanalysis of GEO DNA-seq dataset
Lecture 14 Other Uses of NGS
• Genome assembly
• Protein-RNA interactions
• Chromatin access
• Metagenomics
Lab 14 Bioinformatics Project
• Work on bioinformatics project
Distance
• ChIP-seq analysis R Notebook

Week 8
Lecture 15 Open Discussion
Lab 15 Open Lab
• Finish bioinformatic project
Lecture 16 Final
Lab 16 Final

F. Reading List (include course text)
No required textbook. However, there are many eBooks on R programming available through the library. Here are a few that are recommended:

- R for Data Science, Garret Grolemund and Hadley Wickham
- R in a Nutshell, Joseph Adler
- Introductory Statistics with R, Peter Daalgard
- Bioinformatics with R Cookbook, Paurush Praveen Sinha

Primary Literature:


G. Library Resources
All resources available in Library.

H. Example of Course Syllabus
See attached
Bioinformatic Analyses of Genome-Scale Data

BCHM 612

Syllabus

Summer 2019

Instructor: Dr. Pete E. Pascuzzi
Office: WALC 3053A
Phone: 765-494-3620
email: ppascuzz@purdue.edu
Hours: TBD

Teaching Assistant: TBD
Office: TBD
Phone: TBD
email: TBD
Hours: TBD

COURSE DESCRIPTION

This course provides a hands-on experience for life science researchers in the bioinformatic analysis of genome-scale data. The various disciplines in the life sciences are generating a wealth of experimental and annotation data. Today’s graduate students need experience with modern tools that can help them to access, explore, analyze, interpret and manage the data that they generate in the lab.

Students will use the R programming language and packages from Bioconductor, the R bioinformatics project, as their principal tools for this course. Students will develop workflows in R that bridge established algorithms for bioinformatics such as limma, edgeR or DESeq2, incorporating methods to import, QC, transform and visualize genome-scale datasets derived from next generation sequencing experiments. A critical aspect of bioinformatics that is often inadequate is workflow documentation. This course will use Rmarkdown to integrate computer code, data and results to manage complex bioinformatics projects.

The class has lecture, lab and distance components. Lectures will focus on the theoretical and biological aspects of bioinformatics analysis using recent examples from the literature. In lab, students will work on programming exercises or projects using published datasets. Advanced students will also have the opportunity to work with their own data. Distance instruction will include R tutorials and videos that students can work through at their own pace (subject to completion deadlines). Particular emphasis will be placed on the theoretical and practical limitations of next generation sequencing data.

No prior computer programming experience is required, but it is assumed that students have a firm grasp of the fundamental principles of molecular biology and how they relate to complex processes such as gene expression and chromatin structure.
LEARNING OUTCOMES

- Students will write R scripts that utilize Bioconductor packages for bioinformatic analyses.
- Students will access genome-scale data sets from public repositories and import this data into R for further analysis.
- Students will visualize genome-scale data sets for both quality control and presentation purposes.
- Students will implement strategies to deal with genome-scale datasets including parallel computing.
- Students will be able to critically evaluate the bioinformatic methods and data from publications.
- Students will implement “literate programming” with Rmarkdown to document and share their bioinformatics projects.

TEXTBOOK

No required textbook. However, there are many eBooks on R programming available through the library. Here are a few that are recommended:

- *R for Data Science*, Garret Grolemund and Hadley Wickham
- *R in a Nutshell*, Joseph Adler
- *Introductory Statistics with R*, Peter Daalgard
- *Bioinformatics with R Cookbook*, Paurush Praveen Sinha

LECTURE TIME AND PLACE

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<th>Session</th>
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<tbody>
<tr>
<td>Lecture</td>
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<tr>
<td>Lab</td>
<td>TR</td>
<td>9:50 - 11:40</td>
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<tr>
<td>Distance</td>
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<td>110 minutes per week</td>
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ASSESSMENT

This course is offered for a letter grade. Grades will be determined through successful completion of exercises, projects, a data management notebook, and a final. Final grades will be based on the following:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Grading</th>
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<tbody>
<tr>
<td>Eight lab exercises</td>
<td>25%</td>
</tr>
<tr>
<td>Bioinformatic project</td>
<td>25%</td>
</tr>
<tr>
<td>Bioinformatics Notebook</td>
<td>25%</td>
</tr>
<tr>
<td>Final exam</td>
<td>25%</td>
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</table>
Class participation and attendance 0, 2% or 4% bonus points

Exercises and projects will be graded on a scale 0 - 10 with point values clearly indicated. Every effort will be made to give partial credit. Lab exercises and programming projects are not graded on style or efficiency, only on successful completion of the assigned task(s). If your code is well-organized and easy to read, with clear documentation, it is much easier to give you partial credit.

The Bioinformatics Notebook is an open-ended assignment that enables students to synthesize concepts from lecture and lab. The Notebook will be written in Rmarkdown allowing the students to include text narrative, links to web resources, and executable computer code. The Notebook should include sections ranging from file transfer with Globus, SMB and SCP to quality control metrics for next generation sequencing with clear documentation of how these topics apply to the student’s research. The intent is that students will leave the class with a tangible product that will help them with their research.

The final is a traditional exam comprised of short answer questions as well as code chunks that must be completed, edited or corrected.

Perfect attendance is required for 10 bonus points, but one absence is allowed for 5 bonus points. Pre-arranged, excused absences may be allowed at the discretion of the instructor. In either case, active participation in class discussions is expected.

**GRADING SCALE**

<table>
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<th>Grade</th>
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<td>78.00 to 79.99</td>
<td>C+</td>
</tr>
<tr>
<td>92.00 to 97.99</td>
<td>A</td>
<td>72.00 to 77.99</td>
<td>C</td>
</tr>
<tr>
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<td>88.00 to 89.99</td>
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<td>68.00 to 69.99</td>
<td>D+</td>
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<td>82.00 to 87.99</td>
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<td>62.00 to 67.99</td>
<td>D</td>
</tr>
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<td>80.00 to 81.99</td>
<td>B-</td>
<td>60.00 to 61.99</td>
<td>D-</td>
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<tr>
<td>59.99 and Below</td>
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</table>

**EXTRA CREDIT**

Class attendance is the only way to achieve some extra credit. No exceptions will be made.

**COURSE MANAGEMENT SYSTEM**

We will not use Blackboard for this course. Instead, we will use the Purdue University Research Repository (PURR). Each student must register for an account with PURR using their Purdue Career credentials, and create a private PURR project with Professor Pascuzzi and the teaching assistant as collaborators. This project site will be used to turn in all completed assignments and to track your progress in the class. There will be a common PURR project for the course where students will retrieve the lectures, data files and other material as required.
OBTAINING EXTRA HELP

Professor Pascuzzi will be available to answer your questions immediately after class, during office hours, or by appointment (arranged in class or by e-mail). Alternatively, you can submit questions by e-mail that can be answered in class or by return e-mail. The teaching assistants will be available during office hours, by email or by appointment. If you are struggling, get help!

ACADEMIC MISCONDUCT

Academic misconduct of any kind will not be tolerated in any course offered by the Department of Biochemistry. For specifics, please refer to Purdue’s Regulations Governing Student Conduct

Any incidence of academic misconduct will be reported to the Office of the Dean of Students. Academic misconduct may result in disciplinary sanctions including expulsion, suspension, probated suspension, disciplinary probation, and/or educational sanctions. In addition, such misconduct will result in punitive grading such as:

- receiving a lower or failing grade on the assignment, or
- assessing a lower or failing grade for the course

Punitive grading decisions will be made after consultation with the Office of the Dean of Students. Please note reported incidences of academic misconduct go on record for reference by other instructors. Further, a record of academic misconduct is likely to influence how current/future situations are handled.

To provide you with an unambiguous definition of academic misconduct, the following text has been excerpted from “Academic Integrity: A Guide for Students”, written by Stephen Akers, Ph.D., Executive Associate Dean of Students (1995, Revised 1999, 2003), and published by the Office of the Dean of Students in cooperation with Purdue Student Government, Schleman Hall of Student Services, Room 207, 475 Stadium Mall Drive West Lafayette, IN 47907-2050.

Purdue prohibits “dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty.” [Part 5, Section III-B-2-a, Student Regulations] Furthermore, the University Senate has stipulated that “the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest.” [University Senate Document 72-18, December 15, 1972]

More specifically, the following are a few examples of academic dishonesty which have been discovered at Purdue University.

- substituting on an exam for another student
- substituting in a course for another student
- paying someone else to write a paper and submitting it as one’s own work
• giving or receiving answers by use of signals during an exam
• copying with or without the other person’s knowledge during an exam
• doing class assignments for someone else
• plagiarizing published material, class assignments, or lab reports
• turning in a paper that has been purchased from a commercial research firm or obtained from the internet
• padding items of a bibliography
• obtaining an unauthorized copy of a test in advance of its scheduled administration
• using unauthorized notes during an exam
• collaborating with other students on assignments when it is not allowed
• obtaining a test from the exam site, completing and submitting it later
• altering answers on a scored test and submitting it for a regrade
• accessing and altering grade records
• stealing class assignments from other students and submitting them as one’s own
• fabricating data
• destroying or stealing the work of other students

Plagiarism is a special kind of academic dishonesty in which one person steals another person’s ideas or words and falsely presents them as the plagiarist’s own product. This is most likely to occur in the following ways:
• using the exact language of someone else without the use of quotation marks and without giving proper credit to the author
• presenting the sequence of ideas or arranging the material of someone else even though such is expressed in one’s own words, without giving appropriate acknowledgment
• submitting a document written by someone else but representing it as one’s own
CLASS ATTENDANCE

In accordance with University policy, you are expected to attend every scheduled class. If you have a valid reason for missing class such as a University-sponsored activity, religious observances, illness, or family emergency, the instructor or TA will assist you in obtaining information and materials you may have missed. Students who skip class without a valid excuse should not expect the instructor or TA to supply class notes or provide special help. For more information see the Purdue Regulations Governing Classes and the Class Absence page from the Office of the Dean of Students.

EMERGENCY PREPAREDNESS

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. To get information about changes in this course consult the class PURR site or e-mail or phone the instructor.

ON-LINE COURSE EVALUATIONS

During the last two weeks of the semester, you will be provided an opportunity to evaluate this course and your instructor(s). To this end, Purdue has transitioned to online course evaluations. On Monday of the fifteenth week of classes, you will receive an official email from evaluation administrators with a link to the online evaluation site. You will have two weeks to complete this evaluation. Your participation in this evaluation is an integral part of this course. Your feedback is vital to improving education at Purdue University. I strongly urge you to participate in the evaluation system.

NON-DISCRIMINATION POLICY STATEMENT

Purdue University’s non-discrimination policy will be upheld in this classroom. Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life.

Purdue University views, evaluates, and treats all persons in any University related activity or circumstance in which they may be involved, solely as individuals on the basis of their own personal abilities, qualifications, and other relevant characteristics.

For more information, refer to the Purdue Nondiscrimination Policy Statement.
CLASS SCHEDULE

Week 01

Lecture 01 Overview of Bioinformatics

Lab 01 Logistics
• Register with PURR and create personal repository
• Check Scholar and Data Depot access
• Overview of RStudio
• Overview of learnR tutorials
• Rmarkdown for reporting
• Getting started on the Bioinformatics Notebook assignment

Lecture 02 Data Management for Bioinformatics

Lab 02 Managing Projects
• Using Git for version control
• Navigating directories and file paths
• Conversion of data types

• Exercise 01: Data Inventory

Distance
• LearnR tutorial on syntax and help system
• LearnR tutorial on directories and files
• LearnR tutorial on reading and writing data
• LearnR tutorial on data types and vectors
• LearnR tutorial on data frames and tibbles
• LearnR tutorial on lists
• LearnR tutorial on data matrices

Week 2

Lecture 03 Genome Assembly and Annotation


Lab 03 Data Manipulation
• File formats for bioinformatics
• Data summaries and transformations
• Data visualization with ggplot2

• Exercise 02: Summarize RNAseq results

Lecture 04 Databases for Genome-Scale Data
• Nucleic Acids Research Database Issue


Lab 04 Linking Data
• Data linking and merging
• Data visualization with ggplot 2

• Exercise 03: Data visualization of RNA-seq results

Distance
• LearnR tutorial on data extraction
• LearnR tutorial on data transformation
• LearnR tutorial on tidyr
• LearnR tutorial on character string manipulation
• LearnR tutorial on ggplot2
• LearnR tutorial on control flow
• LearnR tutorial on conditional expressions

Week 3
Lecture 05 Overview of Bioconductor and Data Structures for Genomics Data
• Initial proposals for bioinformatic project due.

• F1000 Research Bioconductor Workflows
Lab 05 Biological Annotation Data
• Genome annotation packages and APIs.

Lecture 06 Biological Sequence Data

Lab 06 Manipulating Biostrings
• Sequence analysis
• Pattern searching
• Pairwise alignments

• Exercise 04: Sequence extraction and pattern searching

Distance
• LearnR tutorial on biomaRt
• LearnR tutorial on IRanges
• LearnR tutorial of rtracklayer
• LearnR tutorial on GRanges
• LearnR tutorial on Biostrings
Week 4

Lecture 07 Gene Regulation and Positional Information

• Final topic for bioinformatic project approved.


Lab 07 In Silico Representation of Genes and Genomes

• Manipulation and annotation of genomic features

• **Exercise 05: Identification of Genomic Features**

Lecture 08 Epigenetics and Chromatin


Lab 08 Analysis of Genomic Intervals

• Reanalysis of epigenetic data from Julienne, et al.

Distance

• learnR tutorials on manipulating genomic intervals

• learnR tutorial on genomic liftovers

• learnR tutorial on PCA

Week 5

Lecture 09 Next Generation Sequencing Projects

Lab 09 Parallel Computing
• Orientation to Purdue Research Computing
• Parallel computing
• Preparing jobs

Lecture 10 Sequence Alignment Problem


Lab 10 Quality Control of NGS Data
• QC of reads
• Mapping reads
• QC of alignments
• Browser tracks from alignments
**Distance**
- Video on using a server
- Video on parallel computing
- Tutorial on Unix commands
- learnR tutorial on biocParallel
- learnR tutorial on Rsamtools
- learnR tutorial on GenomicAlignments

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**Week 6**

**Lecture 11 Critical Evaluation of Bioinformatics Results**


**Lab 11 Differential Gene Expression Analysis with RNA-seq**
- RNA-seq analysis with edgeR and DESeq2
- Exercise 07: Reanalysis of GEO RNA-seq dataset

**Lecture 12 Gene List and Pathway Enrichment Analysis**

**Lab 12 Gene List and Pathway Enrichment Analysis**
- Gene Ontology Enrichment Analysis
- Pathway Enrichment Analysis

**Distance**
- RNA-seq analysis R Notebook.
Week 7

Lecture 13 DNA-seq Experiments

• ENCODE Project

Lab 13 ChIP-seq Analysis
• Identifying regions of enrichment from sequencing data

• Exercise 08: Reanalysis of GEO DNA-seq dataset

Lecture 14 Other Uses of NGS
• Genome assembly

• Protein-RNA interactions

• Chromatin access

• Metagenomics

Lab 14 Bioinformatics Project
• Work on bioinformatics project

Week 8

Lecture 15 Open Discussion

Lab 15 Open Lab
• Finish bioinformatic project
Department of Botany and Plant Pathology

Proposed Course and Curricular changes
(College of Agriculture Undergraduate/Graduate)

A. COURSES TO BE ADDED

None

B. CURRICULAR CHANGES

Change to the Plant Science Plan of Study

• Add BTNY 42000, Plant Cellular and Developmental Biology, to the required courses for our plant science majors. This 3-credit course is taught every spring by Dr. Anjali Iyer-Pascuzzi and has previously been offered as a focus elective.
• Remove 3-credits from focus selective
### Required Major Courses (25 credits)

- (4) BTNY 11000 Introduction to Plant Science
- (4) BTNY 11100 Principles of Plant Biology
- (3) BTNY 20700 The Microbial World
- (3) BTNY 30200 Plant Ecology
- (3) BTNY 30500 Fundamentals of Plant Classification
- (4) BTNY 31600 Plant Anatomy
- (3) BTNY 42000 Plant Cellular and Developmental Biology
- (1) BTNY 49700 Research seminar (Capstone)
- (3) BTNY 49800 Research in Plant Science (Capstone)

### Other Department/Program Course Requirements (77.5-78.5 credits) (See Advising Resources)

- (0.5) AGR 10100 Introduction to the College of Agriculture and Purdue University
- (1) AGR 12500 Introduction to Botany and Plant Pathology
- (3) AGRY 32000 Genetics
- (1) AGRY 32100 Genetics Laboratory
- (3) CHM 11100 General Chemistry (satisfies Science #1 for core)
- (3) CHM 11200 General Chemistry (satisfies Science #2 for core)
- (4) CHM 25700 Organic Chemistry
- (1) CHM 25701 Organic Chemistry Laboratory
- (4) HORT 30100 Plant Physiology
- (3) MA 16010 Applied Calculus I (satisfies Quantitative Reasoning for core)
- (3) PHYS 21400 The Nature of Physics
- (3) STAT 30100 Elementary Statistical Methods (satisfies Information Literacy for core)
- (3) Economics Selective (satisfies Human Culture Behavioral/Social Science for core)³
- (3) UCC Humanities Selective (satisfies Human Cultures Humanities for core)²
- (3) UCC STS Selective (satisfies Science, Technology & Society Selective for core)³
- (3) Humanities or Social Science Selective²
- (3) Humanities or Social Science Selective³
- (3) Humanities or Social Science Selective (30000+ level)²
- (3-4) First Year Composition Selective (satisfies Written Communication for core)
- (3) Oral Communication Selective (satisfies Oral Communication for core)
- (3) Written or Oral Communications Selective⁴

### Electives (16.5-17.5 credits)

- (16.5-17.5) Elective

### University Core Requirements ([http://www.purdue.edu/provost/initiatives/curriculum/course.html](http://www.purdue.edu/provost/initiatives/curriculum/course.html))

<table>
<thead>
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<td>Information Literacy</td>
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### College of Agriculture & University Level Requirements ([https://ag.purdue.edu/oap/Pages/core_requirements.aspx](https://ag.purdue.edu/oap/Pages/core_requirements.aspx))

- 3 credits Multicultural Awareness
- 9 credits International Understanding
- 9 credits of Hum. And/or Social Sciences outside the College of Agriculture
- 3 credits of Hum. And/or Social Science at 30000 or higher

11/26/2018 (effective Fall 2019)
# Plant Science

## Suggested Arrangement of Courses:

### Fall 1st Year

<table>
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<tr>
<th>Credits</th>
<th>Course</th>
<th>Prerequisite</th>
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<th>Course</th>
<th>Prerequisite</th>
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<td>AGR 10100 Introduction to the College of Agriculture and Purdue University</td>
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<td>AGR 12500 Introduction to Plant Science</td>
<td>BTNY 11000</td>
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<td>BTNY 20700 The Microbial World</td>
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<td>BTNY 11000 Introduction to Plant Science</td>
<td>CHM 11200 General Chemistry</td>
<td>3</td>
<td>CHM 11200 General Chemistry</td>
<td>CHM 11000</td>
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<tr>
<td>3</td>
<td>CHM 11100 General Chemistry</td>
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<td>3</td>
<td>COM 11400 Fundamentals of Speech or COM 21700 Scientific Communication or EDPS 31500 Collaborative Leadership: Interpersonal Skills</td>
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<tr>
<td>3-4</td>
<td>ENGL 10600 First Year Composition or ENGL 10800 Accelerated First-Year Composition or HONR 19903 Interdisciplinary Approaches in Writing</td>
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<td>MA 16010 Applied Calculus I ALEKS 75+</td>
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<tr>
<td>3</td>
<td>BTNY 30500cc Fundamentals of Plant Classification</td>
<td>BTNY 11000</td>
<td>3</td>
<td>AGRY 32000 Genetics</td>
<td>BTNY 11000, HORT 30100</td>
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<td>CHM 25700 Organic Chemistry</td>
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<td>AGRY 32100 Genetics Lab</td>
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<td>BTNY 30200 Plant Ecology</td>
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<td>PHYS 21400 The Nature of Physics</td>
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### Fall 3rd Year

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<td>STAT 30100 Elementary Statistical Methods</td>
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<td>Focus Selective BTNY 42000 Plant Cellular and Developmental Biology</td>
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<td>Humanities or Social Science Selective</td>
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### Fall 4th Year

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<tr>
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<td>BTNY 49800 Research in Plant Science</td>
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<td>BTNY 49700 Research Seminar</td>
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<td>11.5-12.5</td>
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</table>

1) 120 credits listed above are required for Bachelor of Science degree.
2) 2.0 Graduation GPA required for Bachelor of Science degree.
3) 32 credits of upper division courses (30000 level or higher) must be taken at Purdue University, West Lafayette.
4) ANY COURSE TAKEN AT PURDUE CAN BE ATTEMPTED NO MORE THAN THREE TIMES (INCLUSIVE OF W, WF, I AND IF).
5) CC = is considered a critical course

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See next page for all supplemental Information

The student is ultimately responsible for knowing and completing all degree requirements.
myPurdue Plan is knowledge source for specific requirements and completion

11/26/2018 (effective Fall 2019)
Department of Entomology

Proposed Course and Curricular Changes
College of Agriculture Undergraduate/Graduate)

A. COURSES TO BE ADDED

Prefix and Course Number:  ENTM 24200

Title: Data Science

Course Description for University Catalog (include requisites/restrictions): Develop a data science skill set that complements coursework in mathematics, statistics, and experimental design. Data Science facilitates research by developing skills in data sourcing, formatting and using different types of data, and hypothesis generation. Mathematical communication skills are developed through data graphics, animation, and delivery of results through multiple platforms including interactive simulations on webpages.

Concurrent Prerequisite: STAT 30100 or STAT 35000 or STAT 50100 or STAT 50300 or STAT 51100.

Prefix and Course Number: ENTM 43100/FNR 43100 [crosslist]

Title: Human Wildlife Conflicts

Course Description for University Catalog (include requisites/restrictions): Exploration of conflicts between human interests and wildlife and the regulations policies and legislation used to minimize conflicts. Negative interactions may be real or perceived, economic or aesthetic, social or political, and may pose risks to human health and safety. Emphasis on the causes of conflict and resolutions that seek to balance protection or conservation of wildlife with protection of other public resources and individual property owners. Prior knowledge of college level general biology and ecology is expected. Prerequisites: none.

B. CURRICULAR CHANGES:

None
Supporting Documents

Prefix and Course Number: ENTM 24200

Title: Data Science

Semester(s) Offered: Distance, Fall, Spring Summer

Schedule Type (e.g. Lecture/Lab) and Hours: Lecture/ Distance

Credits: 3

A. Justification for the course:

Development of this course is being undertaken by a partnership between the instructor, Jeff Nagle of AgOnline and Mark Ward of Statistics. It is funded by the office of the Dean of Agriculture. The instructor, Jeffrey Holland, serves as the lead on the Undergraduate Education group within the College of Agriculture’s segment of the campus-wide data science ecosystem, and serves as the Agriculture lead for the Data Mine Learning Community. He is therefore well-positioned and informed to judge the potential success of this course. He plans to build a minor in Digital Agriculture around this course or work to integrate it into such a minor.

This course will be delivered entirely online through AgOnline. The instructor is working with Jeff Nagle of AgOnline to deliver the material using Blackboard as a conduit to schedules and assessment tools as well as a conduit to the living textbook website. The development team is aware that Blackboard will be replaced and are already planning to ensure the course materials are in a format to facilitate rapidly moving to the new learning platform. The online format will allow them to do some very innovative things with this course. For example, most of the lecture material will take place within a ‘living textbook’ on a website. Students will change settings in simulations to dynamically alter the figures within the text. Leading questions will guide these activities. Students will see the code driving these online activities and learn to recreate them. The online format will allow many students to take this course with minimal time commitment after course development which will take place mainly during a sabbatical in spring 2019. I predict that enrollment will reach over 1,000 students annually by the third year. Everything within the course will be automated as much as possible so that the course could easily scale up to a few thousand students per year. A cohort of up to 50 students in the Data Mine learning community will serve as a rapid feedback test group in fall 2019.

B. Learning Outcomes and Methods of Assessment

i. Applicable to University Core Curriculum

This course ☒ will ☐ will not be nominated for inclusion on University Foundational Core. If no, skip to section ii.

<table>
<thead>
<tr>
<th>Foundational Learning Outcomes</th>
<th>Check all that apply</th>
</tr>
</thead>
</table>
1. Written Communication ☐
2. Information Literacy ☐
3. Oral Communication ☐
4. Science ☐
5. Science, Technology and Society ☐
6. Mathematics/Quantitative Reasoning ☐
7. Human Cultures: Humanities ☐
8. Human Cultures: Behavioral & Social Sciences ☐

ii. Applicable to College of Agriculture Core
This course ☐ will ☒ will not be nominated for inclusion on College of Agriculture Core. If no, skip to section iii.

<table>
<thead>
<tr>
<th>College of Agricultural Core</th>
<th>Check all that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mathematics and Sciences</td>
<td>☐</td>
</tr>
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<td>2. Written and Oral Communication</td>
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</table>

iii. Graduate Learning Outcomes (for 50000 and 60000 level courses only)

<table>
<thead>
<tr>
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</thead>
<tbody>
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<tr>
<td>2. Demonstrate Critical Thinking and Problem Solving</td>
<td>☐</td>
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</tr>
</tbody>
</table>

iv. Describe course objectives and student learning outcomes that address the objectives (i.e., knowledge, communication, critical thinking, ethical research, etc.)

**Student Learning Outcomes:**
1) Source different types of data and know what analyses are appropriate for each type.
2) Transform and format data for analyses.
3) Detect trends in data as part of hypothesis generation.
4) Communicate findings to different audiences through appropriate graphics and animations, including through web pages.
5) Write R scripts to accomplish all of the above.

v. Methods of evaluation or assessment:

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>1. exams and quizzes</td>
<td>☒</td>
</tr>
<tr>
<td>2. assessment and scoring of in class participation</td>
<td>☐</td>
</tr>
<tr>
<td>3. assignments</td>
<td>☒</td>
</tr>
<tr>
<td>4. class presentations</td>
<td>☐</td>
</tr>
<tr>
<td>5. Other (specify): Online Community participation</td>
<td></td>
</tr>
</tbody>
</table>

C. Prerequisite/Corequisite  STAT 30100 or STAT 35000 or STAT 50100 or STAT 50300 or STAT 51100

D. Course Instructor and Contact Info:
Instructor: Jeffrey D. Holland
Email: jdhollan@purdue.edu
Phone: 494-7739
Office Hours: TBD

E. Outline of Topics:
Introduction to data science
Introduction to R
Data visualization
Data trend visualization
Hypothesis building vs. testing
Data transformation
Scales & types of data
Probability
Preliminary analysis
Data frames & data wrangling
Importing data
Tidy data
Relational data
String data
Class variables
Time & date data
Pipes
Functions
Vectors
Iterative processes
Model basics
Model building
Coding for presentation
Graphics in R
Graphics with ray-tracing
Animations
Presentation media
Spatial data

EXAMPLE SYLLABUS

Data Science
ENTM 24200
An AgOnline Course
Course Syllabus

Fall & Spring semesters (3 credits, 16 wk)
Summer semesters (3 credits, 8 wk)

Instructor
Prof. Jeffrey D. Holland
jdhollan@purdue.edu
Office: SMTH B17
Phone: 765/494–7739

Office hours: During the first week of each semester I will post an hour of time that I will be
online in the course chat room and monitoring the discussion forum.

Concurrent Prerequisite  STAT 30100 or STAT 35000 or STAT 50100 or STAT 50300 or
STAT 51100

Course Description
This course develops a data science skill set that complements coursework in mathematics,
statistics, and experimental design. Data Science facilitates research by developing skills in data
sourcing, formatting, using different types of data, and hypothesis generation. Mathematical
communication skills are developed through data graphics and animation, and delivery of results
through different platforms including interactive simulations on webpages.
Course Outcomes
Upon successfully completing this course students will be able to:
1) Source different types of data and know what analyses are appropriate for each type.
2) Transform and format data for analyses.
3) Detect trends in data as part of hypothesis generation.
4) Communicate findings to different audiences through appropriate graphics and animations, including through web pages.
5) Write R scripts to accomplish all of the above.

Course Format
This course uses an online format. This allows students to complete the lectures, activities, and quizzes at their own pace and around existing schedules. Most ‘lectures’ will contain a short introductory video and reading and activities on the course ‘living textbook’ website. The webpage contains interactive simulations that students will use to change settings and parameters to answer guiding questions.

Text
Supplemental: I strongly recommend The R Book by M. J. Crawley for those expecting to use R for analysis in their careers. This book is optional for this course, however.

Grading
1) Quizzes: 7 bi-weekly quizzes will cover both the reading and online lecture material.
2) Online Community: students will be expected to participate in the course community through the course discussion board. Participation will be graded according to the use of the boards to pose questions, answer questions from others, and add alternative solutions. The contribution to the online community will be evaluated at the end of weeks 5, 10, and 15.
3) Assignments: there will be two term assignments, due at 8 and 15 weeks. Students will grade the work of their peers in the week following each due date.
4) Exam: a final comprehensive exam will cover material from the lectures and reading material.

7 quizzes × 20 points = 140
3 online comm. × 10 = 30
2 assignments × 40 points = 80
1 exam x 150 points = 150
400 points

<table>
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<th>Grade</th>
<th>Points</th>
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<td>F</td>
<td>&lt;240</td>
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Course Schedule (for fall and spring semesters)
Dates subject to change as needed to cover topics, however quizzes will never cover more recent material than the first lecture and reading of the quiz week.

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture Topics</th>
<th>Reading</th>
<th>Quiz Topics</th>
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<tr>
<td>Week 1</td>
<td>Introduction to data science</td>
<td>ix – xiv, 1–2</td>
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<tr>
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<td>Introduction to R</td>
<td>xv – xiv</td>
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<td></td>
<td>Introduction to R</td>
<td>ch. 2</td>
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<td>Week 2</td>
<td>Data visualization</td>
<td>ch. 1 to p. 15</td>
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<td>Data trend visualization</td>
<td>16 – 21</td>
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<td>Data trend visualization</td>
<td>22 -- 35</td>
<td>Data Science – Data Visualization</td>
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<td>Week 3</td>
<td>Hypothesis building vs. testing</td>
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<td>Week 4</td>
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<td></td>
<td>Preliminary analysis</td>
<td>81 -- 93</td>
<td>Data trend vis. – Scales of data</td>
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<tr>
<td>Week 5</td>
<td>Preliminary analysis</td>
<td>93 – 109</td>
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<td>Data frames &amp; data wrangling</td>
<td>111 – 124</td>
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<td>Importing data</td>
<td>125 – 145</td>
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<td>Week 6</td>
<td>Tidy data</td>
<td>147 – 169</td>
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<td>Relational data</td>
<td>171 – 193</td>
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<td>String data</td>
<td>195 – 222</td>
<td>Probability – Tidy data</td>
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<td>Week 7</td>
<td>Class variables</td>
<td>223 – 235</td>
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<td>Time &amp; date data</td>
<td>237 – 256</td>
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<td>Pipes</td>
<td>257 – 268</td>
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<tr>
<td>Week 8</td>
<td>Functions</td>
<td>269 – 289</td>
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<td>Vectors</td>
<td>291 – 312</td>
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<td>Iterative processes</td>
<td>313 – 324</td>
<td>Relational data – Class variables</td>
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<td>Week 9</td>
<td>Iterative processes</td>
<td>325 – 339</td>
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<td>Week</td>
<td>Topic</td>
<td>Pages</td>
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<tr>
<td></td>
<td>Model basics</td>
<td>341 – 373</td>
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<td></td>
<td>Model building</td>
<td>375 – 396</td>
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<td>Week 10</td>
<td>Model building</td>
<td>397 – 419</td>
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<td>Coding for presentation</td>
<td>421 – 428</td>
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<tr>
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<td>Coding for presentation</td>
<td>429 – 439</td>
<td>Time &amp; date – Model basics</td>
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<tr>
<td>Week 11</td>
<td>Graphics in R</td>
<td>441 – 454</td>
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<td>Graphics in R</td>
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<td>Graphics with ray-tracing</td>
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<td>Model building – Graphics in R</td>
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<td>Week 13</td>
<td>Animations</td>
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<td>Animations</td>
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<td>Presentation media</td>
<td>469 – 481</td>
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<td>Week 14</td>
<td>R web interfaces</td>
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<td>Ray-tracing – Present’n coding</td>
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<td>Week 16</td>
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<td>Comprehensive exam</td>
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</table>

**Academic Honesty**

"To foster a climate of trust and high standards of academic achievement, Purdue University is committed to cultivating academic integrity and expects students to exhibit the highest standards of honor in their scholastic endeavors. Academic integrity is essential to the success of Purdue University's mission. As members of the academic community, our foremost interest is toward achieving noble educational goals and our foremost responsibility is to ensure that academic honesty prevails." (Purdue University Regulations, Part 5, Section II). To this end, any instance of plagiarism, cheating, dishonesty, or the aiding of such will result in a grade of 0 for the assignment. If a second instance occurs the student will be reported to the Office of the Dean of Students. Students may discuss class material and are encouraged to do so. Online quizzes, however, must be completed individually.
Students with Disabilities
"Students with disabilities are expected to meet the same academic standards as all students in their respective programs. In some cases, however, it is necessary that they receive academic adjustments to make the educational opportunity more accessible. Academic adjustments may include, but are not limited to, alternative testing methods, copies of instructor notes, enlarged handouts, distraction-limited testing, extra time for exams, no in-class spelling penalty, note-taker in class, readers, in-class sign language interpreter, permission to tape record lectures, etc. To receive academic adjustments, a student must register with and provide documentation of his or her disabling condition to the Adaptive Programs staff of the Office of the Dean of Students." (Purdue University Policies and Procedures, on-line handbook).

Nondiscrimination
Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life.

Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, marital status, parental status, sexual orientation, disability, or status as a veteran. The University will conduct its programs, services and activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in (http://www.purdue.edu/purdue/ea_eou_statement.html) which provides specific contractual rights and remedies.

Anti-Harassment Policy
Purdue University is committed to maintaining an environment that recognizes the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding and mutual respect; and encourages its members to strive to reach their potential. The most effective way to work toward preventing Harassment is through education that emphasizes respect for every individual.

Harassment in the workplace or the educational environment is unacceptable conduct and will not be tolerated. Purdue University is committed to maintaining an educational and work climate for faculty, staff and students that is positive and free from all forms of Harassment. This policy addresses Harassment in all forms, including Harassment toward individuals with legally protected status for reasons of race, gender, religion, color, age, national origin or ancestry, genetic information or disability and Harassment toward individuals for other reasons such as sexual orientation, gender identity, gender expression, marital status or parental status. The University will not tolerate Harassment of its faculty, staff or students by persons conducting business with or visiting the University, even though such persons are not directly affiliated with the University.


Emergency Notification Procedures
· Dial 911 from any public or campus telephone.
· Over 250 Emergency Telephone System (ETS) boxes
  o For assistance push the ETS button to contact the Purdue Police Department
· Immediate warning notifications focuses on two basic concepts:
  o **Fire Alarms** mean to immediately **evacuate** the building and proceed to your Emergency Assembly Area (Parking lot behind Smith Hall).
  o **All Hazards Outdoor Emergency Warning Sirens** means to immediately seek shelter (**Shelter In Place**) in a safe location within closest facility/building.
· “Shelter in place” means seeking immediate shelter inside a building or University residence. This course of action may need to be taken during a tornado (Basement), earthquake, release of hazardous materials in the outside air, or a civil disturbance. When you hear the sirens immediately go inside a building to a safe location and use all communication means available to find out more details about the emergency. Remain in place until police, fire, or other emergency response personnel provide additional guidance or tell you it is safe to leave. *(In both cases, you should seek additional clarifying information by all means possible...Purdue Home page, email alert, TV, radio, etc....review the Purdue Emergency Warning Notification System multi-communication layers at [http://www.purdue.edu/emergency_preparedness/warning_system.htm](http://www.purdue.edu/emergency_preparedness/warning_system.htm)*)

Prefix and Course Number  Cross Listed as ENTM 43100 and FNR 43100

Title:  Human Wildlife Conflicts

Semester Offered:  Spring

Schedule Type:  Lecture 2, Recitation 1

Credit Hours:  3.00

A. Justification for the course:

Increases in human and/or wildlife populations and altered landscapes have led to increases in human-wildlife conflicts. ‘Human-wildlife conflict management’ is a term commonly used to describe any negative interactions between human interests and wildlife. These interactions may be real or perceived, economic or aesthetic, social or political, and may pose risks to human health and safety. As a result various legislation, regulations, and policies have been developed to protect or conserve wildlife, other public resources, and individual property owners.

This course provides practical knowledge for students desiring a career that includes working with wildlife in both rural and urban settings. Professionals who work with wildlife must understand:
1) Why human-wildlife conflicts are on the rise
2) How varying human interests influence resolution alternatives
3) How humans can prevent conflicts, and
4) Tools and strategies commonly utilized to resolve/mitigate conflict.

Professionals who work with wildlife are frequently asked to:
1) Identify common causes of human-wildlife conflicts,
2) Evaluate the impacts of the conflict damage/threat,
3) Prescribe options for resolving the conflict, and
4) Measure effectiveness of applied mitigation strategies.

B. Learning Outcomes and Methods of Assessment

i.  Applicable to University Core Curriculum

This course ☒ will ☐ will not be nominated for inclusion on University Foundational Core. If no, skip to section ii.

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<td>3. Oral Communication</td>
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<td>4. Science</td>
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ii. **Applicable to College of Agriculture Core**
   This course □ will ☒ will not be nominated for inclusion on College of Agriculture Core. If no, skip to section iii.

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<tr>
<td>3. Humanities and Social Sciences</td>
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<tr>
<td>4. Multicultural Awareness</td>
<td>□</td>
</tr>
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iii. **Graduate Learning Outcomes (for 50000 and 60000 level courses only)**

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<tr>
<td>2. Demonstrate Critical Thinking and Problem Solving</td>
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</tr>
<tr>
<td>3. Exhibit Ethical Conduct</td>
<td>□</td>
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<td>4. Communicate Effectively</td>
<td>□</td>
</tr>
<tr>
<td>5. Develop Professionalism</td>
<td>□</td>
</tr>
</tbody>
</table>

iv. **Describe course objectives and student learning outcomes that address the objectives (i.e., knowledge, communication, critical thinking, ethical research, etc.)**

**Student Learning Outcomes:**

Upon completion of the course students will be able to:
1) Identify common causes of human-wildlife conflicts,
2) Evaluate the impacts of the conflict damage/threat,
3) Prescribe options for resolving the conflict, and
4) Measure effectiveness of applied mitigation strategies.
v. Methods of evaluation or assessment:

<table>
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<td>2. assessment and scoring of in class participation</td>
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<td>3. assignments</td>
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<td>4. class presentations</td>
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<td>5. Other (specify): Click here to enter text.</td>
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B. Prerequisites: None

C. Course Instructor and Contact Info:
Lee Humberg
Office: SMITH B32 (East Basement)
Phone: 765.494.6229
Email: Lee.A.Humberg@usda.gov
Mail: ENTM/SMITH

D. Outline of Topics:

The many names of wildlife management
The business of wildlife damage management
History of human-wildlife conflicts
The role of agencies and biologists
Societal and political impacts
Expanding science and technology
Biological and economic impacts
Lethal vs. nonlethal control
Wildlife concerns in urban environments
Fertility control
Wildlife concerns in rural environments
Habitat modification
Conflicts with aviation
Integrated management
The role of media in conveying wildlife events
Identifying stakeholders
Wildlife disease conflicts
Effective communication strategies
Rabies management
Opposition to wildlife management
Predator management
NEPA and other four letter words
Ungulate management
The N.A. Model of Wildlife Conservation
Canada goose management
Threatened and endangered species management
Feral swine management
Exotic and invasive species management
Syllabus
ENTM 43100/FNR 43100  Human-Wildlife Conflicts

Instructor: Lee Humberg
Office: SMITH B32 (East Basement)
Phone: 49-46229
Email: Lee.A.Humberg@usda.gov
Office Hours: Mondays 9:30-10:30

Course Information
Spring Semester
Lecture: M, F 8:30-9:20
Recitation: F 9:30-10:20
Room: SMTH XXX

Course Description
Credit Hours: 3.00. Increases in human and/or wildlife populations and altered landscapes have led to increases in human-wildlife conflicts. 'Human-wildlife conflict management' is a term commonly used to describe any negative interactions between human interests and wildlife. These interactions may be real or perceived, economic or aesthetic, social or political, and may pose risks to human health and safety. As a result various legislation, regulations, and policies have been developed to protect or conserve wildlife, other public resources, and individual property owners. This course will focus on understanding the causes of and resolutions to human-wildlife conflicts.

Prerequisites
No prerequisites.

Course Goals
Upon completion of the course students will have a greater understanding of; 1) why human-wildlife conflicts are on the rise, 2) how varying human interests influence resolution alternatives, 3) how humans can prevent conflicts, and 4) the various tools and strategies commonly utilized to resolve/mitigate the conflict.

Learning Objectives
Upon completion of the course students will be able to; 1) the various tools and strategies commonly utilized to resolve/mitigate the conflict, 2) evaluate the impacts of the conflict damage/threat, 3) prescribe options for resolving the conflict, and 4) measure effectiveness of applied mitigation strategies.

Course Requirements
Students will be responsible for attending lectures and recitations and reading assigned articles prior to recitation. A total of 8 quizzes and 2 exams, one mid-term and one final, will be administered during lecture or recitation. Participation in class discussion of required readings
and lecture topics during recitation sessions will also count toward your final grade. A total of 11 recitations will be held and the lowest recitation grade will be dropped.

**Assessment of Learning Outcomes**

- 90 Points from Quizzes (6 quizzes, 15 pts each)
- 200 Points from Exams (2 exams, 100 pts each)
- 50 Points from Recitation Participation (Top 10 recitations, 5 pts each)
- 340 Total Points Possible

**Required Texts**

There are no required textbooks for this course. Required readings for discussion will be disseminated via email or Blackboard.

**Policies**

**General Course Policies**

Students are strongly encouraged to attend each class as lecture material (i.e., Multimedia presentations) will not be posted on the internet, Blackboard, or made publicly available. Students may arrange with the instructor to review certain portions of a lecture or to clarify points of discussion; however, entire class presentations will not be available for students to copy/take notes from if a lecture is missed without prior notification or documented reason for absence. For further discussion on this topic see the “Attendance” section below.

The use of cell phones or other devices which may distract other students and the instructor will not be permitted during class unless approved by the instructor prior to class.

Questions on course subject matter may be emailed to the instructor; however, visitation during scheduled office hours is preferred to ensure the questions is interpreted correctly and response is understood.

**Grading**

Grades will be based on a percentage of total points earned from the total 380 points possible using the following scale.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>98% and above</td>
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<tr>
<td>A</td>
<td>93 – 97.9%</td>
</tr>
<tr>
<td>A-</td>
<td>90 – 92.9%</td>
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<tr>
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<td>87-89.9%</td>
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<tr>
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<td>83-86.9%</td>
</tr>
<tr>
<td>B-</td>
<td>80-82.9%</td>
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<tr>
<td>C+</td>
<td>77-79.9%</td>
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<tr>
<td>C</td>
<td>73-76.9%</td>
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<tr>
<td>Grade</td>
<td>Percentage</td>
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<tr>
<td>C-</td>
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<tr>
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<tr>
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<td>60-62.9%</td>
</tr>
<tr>
<td>F</td>
<td>59.9% and below</td>
</tr>
</tbody>
</table>

**Academic Dishonesty**

Simply put, academic dishonesty will not be tolerated. Anyone found cheating on individual quizzes or exams will receive a “0” for that event. For more information on Purdue’s student guide for academic integrity please visit: [http://www.purdue.edu/odos/aboutodos/academicintegrity.php](http://www.purdue.edu/odos/aboutodos/academicintegrity.php)

**Use of Copyrighted Materials**

Lecture materials (i.e., Multimedia presentations) presented in class are the intellectual property of the instructor and are therefore protected by copyright laws. Sale or bartering of notes taken during this course to a commercial note taking service is prohibited.

**Attendance**

While attendance will not be taken during class, students are expected to attend each class lecture and recitation. Repeated absences will have a direct effect on class participation points. University policy on attendance:

*Only the instructor can excuse a student from a course requirement or responsibility. When conflicts or absences can be anticipated, such as for many University sponsored activities and religious observations, the student should inform the instructor of the situation as far in advance as possible…For unanticipated or emergency absences when advance notification to an instructor is not possible, the student should contact the instructor as soon as possible by email, or by contacting the main office that offers the course. When the student is unable to make direct contact with the instructor and is unable to leave word with the instructor’s department because of circumstances beyond the student’s control, and in cases of bereavement, the student or the student’s representative should contact the Office of the Dean of Students.*

To view the complete policy on attendance please visit [http://www.purdue.edu/odos/services/classabsence.php](http://www.purdue.edu/odos/services/classabsence.php)

**Grief Absence Policy for Students**

University policy on Grief Absence for Students:

*Purdue University recognizes that a time of bereavement is very difficult for a student. The University therefore provides the following rights to students facing the loss of a family member through the Grief Absence Policy for Students (GAPS). GAPS Policy: Students will be excused for funeral leave and given the opportunity to earn equivalent credit and to demonstrate*
evidence of meeting the learning outcomes for misses assignments or assessments in the event of the death of a member of the student’s family.

Missed or Late Work
Make-up quizzes or exams will only be given if advanced notice of absence is given to instructor, or in the event of an emergency or unplanned absence in which written documentation of why the absence occurred must be presented and will be dealt with on a case by case situation. Make-up quizzes or exams must be completed within 7 days, unless extenuating circumstances prevent (e.g., university holiday). Participation points missed due to absences from recitation will not be allowed to be made up since the lowest recitation grade is dropped. Absences and resulting recitation points lost due to University sponsored activities will be allowed to be made up as long as advanced written notice and documentation was provided to the instructor. Make up points will be awarded by submitting a report of 100 written words on a topic/paper assigned by the instructor or other similar activity covered during missed recitation.

Violent Behavior Policy
Purdue policy prohibiting violent behavior:

Purdue University is committed to providing a safe and secure campus environment for members of the university community. Purdue strives to create an educational environment for students and a work environment for employees that promote educational and career goals. Violent Behavior impedes such goals. Therefore, Violent Behavior is prohibited in or on any University Facility or while participating in any university activity.

Students with Disabilities
Purdue policy:

Purdue University is required to respond to the needs of the students with disabilities as outlined in both the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 through the provision of auxiliary aids and services that allow a student with a disability to fully access and participate in the programs, services, and activities at Purdue University.

If you have a disability that requires special academic accommodation, please make an appointment to speak with me within the first three (3) weeks of the semester in order to discuss any adjustments. It is important that we talk about this at the beginning of the semester. It is the student's responsibility to notify the Disability Resource Center (http://www.purdue.edu/drc) of an impairment/condition that may require accommodations and/or classroom modifications.

Emergencies
In the event of an emergency the instructor will attempt to email each student as to any class cancellation or modification. If time permits, a note will also be posted on the door of the classroom where the scheduled class is held. In addition, Purdue policy on emergencies:
In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor’s control. Relevant changes to this course will be posted onto the course website or can be obtained by contacting the instructors or TAs via email or phone. You are expected to read your @purdue.edu email on a frequent basis.

Non-discrimination
Purdue policy on nondiscrimination:

Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life.

Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, genetic information, marital status, parental status, sexual orientation, gender identity and expression, disability, or status as a veteran. The University will conduct its programs, services and activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in Executive Memorandum No. D-1, which provides specific contractual rights and remedies. Any student who believes they have been discriminated against may visit www.purdue.edu/report-hate to submit a complaint to the Office of Institutional Equity. Information may be reported anonymously.

Class Schedule
Below is a list of topics that will be covered during the course. In addition, current topics in the news or special topics presented by guest lecturers may be added.

<table>
<thead>
<tr>
<th>The many names of wildlife management</th>
<th>The business of wildlife damage management</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of human-wildlife conflicts</td>
<td>The role of agencies and biologists</td>
</tr>
<tr>
<td>Societal and political impacts</td>
<td>Expanding science and technology</td>
</tr>
<tr>
<td>Biological and economic impacts</td>
<td>Lethal vs. nonlethal control</td>
</tr>
<tr>
<td>Wildlife concerns in urban environments</td>
<td>Fertility control</td>
</tr>
<tr>
<td>Wildlife concerns in rural environments</td>
<td>Habitat modification</td>
</tr>
<tr>
<td>Conflicts with aviation</td>
<td>Integrated management</td>
</tr>
<tr>
<td>The role of mass media in conveying wildlife events</td>
<td>Identifying stakeholders</td>
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<tr>
<td>Wildlife disease conflicts</td>
<td>Effective communication strategies</td>
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<tr>
<td>Rabies management</td>
<td>Opposition of wildlife management</td>
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<tr>
<td>Predator management</td>
<td>NEPA and other four letter words</td>
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<tr>
<td>Feral swine management</td>
<td>Exotic and invasive species management</td>
</tr>
</tbody>
</table>

This schedule is subject to change.
FORESTRY AND NATURAL RESOURCES
Proposed Course and Curricular Changes
(College of Agriculture Undergraduate/Graduate)

A. Courses to be Added

Prefix and Course Number: FNR 43100

Title: Human-Wildlife Conflicts

**Course Description (with prerequisites):** (3 credits) Exploration of conflicts between human interests and wildlife and the regulations, policies and legislation used to minimize conflicts. Negative interactions may be real or perceived, economic or aesthetic, social or political, and may pose risks to human health and safety. Emphasis on the causes of conflict and resolutions that seek to balance protection or conservation of wildlife with protection of other public resources and individual property owners. Prior knowledge of college level general biology and ecology is expected. Prerequisites: None

Prefix and Course Number: FNR 43300

Title: Grand Challenges in Forest Management

**Description (with prerequisites):** This course will guide students through readings, discussions, and presentations of the grand challenges that face the field of forest management. These topics will vary with each iteration of the class, but may include topics such as climate change, invasive species, pressure on forest lands from a growing population, altered disturbance regimes, development of new silvicultural techniques, economic pressure at multiple scales, and shifting public perceptions on the management of forests. Students will examine and discuss these challenges from the vantage points of multiple stakeholders to gain insight into their complexity and importance. Students will read and discuss on average 2-4 research or review articles, book chapters, or other sources per week. Prerequisites: FNR 33100, FNR 35500 (may be taken concurrently), FNR 37500 (may be taken concurrently)

Prefix and Course Number: FNR 58600

Title: Urban Ecology

**Description (with prerequisites):** Urbanization is on the rise, transforming natural ecosystems into coupled human-natural ecosystems that encompass complex, novel functional and structural characteristics shaped by people and the inherent environment. Through local field trips and readings of the primary scientific literature, we examine the unique characteristics of coupled human-natural ecosystems. The course is designed to be broadly accessible to students from a variety of backgrounds, interests, and majors who are interested in environmental science and engineering and emphasizes the importance of incorporating an ecological perspective in environmental engineering and natural resource management. This course covers fundamental principles of ecology as applied in urban and other coupled human-natural systems with emphasis on the impact of modern industrial society on ecosystem structure and function. Organizing themes addressed in this class include macroscale processes, systems thinking, and topics related to urban systems. Prerequisite: none
B. Curricular Changes

Revised majors. The Department of Forestry and Natural Resources (FNR) has approved revisions to the current Forestry and Aquatic Sciences majors. First, FNR has approved changing the Forestry major to include four concentrations: 1) Forest Science, 2) Forest Management, 3) Sustainable Biomaterials, and 4) Urban Forestry. The plans of study for these four concentrations will have nearly identical requirements for the first two years. In the third and fourth years, students will take different required courses and selectives to meet the requirements of each concentration. In addition, the Forest Science major will include a senior thesis requirement. All College of Agriculture and University Core requirements are met with the curricula for this major.

Justification: We have a wide range of stakeholders who have a broad array of employment needs. In October 2017, we convened a day-long, on-campus workshop, to which a diverse set of stakeholders was invited. This included representatives from state and federal agencies, non-profit groups, and various companies. The latter included vertically integrated, privately owned lumber companies; a subsidiary of a multi-national company; and a tree-care company. All participates had a chance to review our existing curriculum in advance and were asked to come prepared to discuss their current employment needs, how well our extant curriculum meets them, and the training they anticipate future hires will need.

There was unanimous agreement among our stakeholders that our students needed more training with respect to soft skills, particularly oral and written communication. It also was obvious that no one curriculum could meet all of their employment needs. In an attempt to better equip our students with the skills they will need to be competitive in the job market, we decided to create four concentrations that encompass the expectations of our diverse set of stakeholders. Within each concentration, students can choose from a variety of selectives that will allow them to tailor their plans of study to meet their interests and prepare them to compete for the types of jobs they would like to perform after they graduate.

In addition, as students progress through the curriculum, they often realize that they want to pursue a different path, educationally. Having very similar curricular requirements for all Forestry concentrations in the first two years allows students to change course with little or no penalty.

In addition, FNR has approved a small change in the Aquatic Sciences major, to replace a course that is no longer being taught.

The changes are as outlined below.

1) Forestry major (updated 8-semester plans are attached).

Overall description

a. Forest Science concentration

Justification: A subset of Forestry students go on to pursue advanced degrees after they complete their undergraduate degrees. We want these students to have research experience and to take courses that will help prepare them for graduate school, and to have credits that will be transferrable to graduate-degree programs. In addition, some of our stakeholders want to hire people with more technical training than has been afforded by a traditional forestry degree.
The way in which forestry is being practiced is undergoing dramatic change. New technologies that are being developed (e.g., digital agriculture) are being adopted by some of our stakeholders. Selective credits within the Forest Science concentration will allow students to meet these specific needs and make them more competitive for these more technically demanding jobs.

b. Forest Management concentration

**Justification:** Approximately 20% of Indiana is forested, equating to 4.9 million acres of forestland. Of this forestland, 73% is privately owned by individuals, 16% is owned by state and federal agencies, and 10% is owned by corporations and non-governmental organizations. This diverse forestland is critical to the economy of the state, but also provides invaluable wildlife habitat, recreational opportunities, and ecological services. The importance of forests extends well beyond Indiana, and conservation and stewardship of forest resources is critical at both national and global scales. With growing populations and demand for resources, the pressure on forestlands will only increase.

Students trained in ecologically based management are critical to the successful stewardship of forests in Indiana and beyond. To meet this need, Purdue has long trained students in the science and practice of forest management. The Forest Management concentration will continue to meet this need by training students through a modern curriculum that provides students with the technical, critical thinking, and communication skills they need to become leaders in both the public and private sectors.

c. Sustainable Biomaterials concentration

**Justification:** The forest products industry plays an important role in the state of Indiana. According to a recent Census of Manufacturers (2014), the hardwood industry is Indiana's number 1 agricultural sector as measured by value added, wages paid and number of employees. The hardwood industry contributes $16.6 billion to the Indiana economy (Indiana Department of Agriculture). Wood products manufacturing (NAICS 321) is the third largest manufacturing sector in Indiana after transportation and metal fabrication.

FNR has traditionally offered a major (currently Sustainable Biomaterials, SUBO) for students interested in careers in the forest products industry. This major has had low enrollment and with the retirement of several faculty in this area, it is difficult to maintain the current SUBO major. Graduates with this degree, however, readily find good-paying jobs and the industry is pressing our program to produce more students with this kind of expertise. We, therefore, propose a concentration within the revised Forestry major to give students training suitable for jobs in the wood products industry. Substantial numbers of concentration selective credits (12) will allow students to fine-tune the concentration to their specific needs. The Sustainable Biomaterials concentration within the Forestry major would specifically familiarize students with forest products procurement and the primary and secondary forest products manufacturing industries.

d. Urban Forestry concentration

**Justification:** Urban trees in Indiana provide over $100 million in ecosystem services. While only 3.5% of our land is urban, it still supports nearly 80% of our population. It is projected that by 2050, Hoosiers will experience a loss of over 250,000 acres of trees due to urbanization. Trees are important to our health and quality of life and it is critical to have educated, trained professionals who can manage the urban forest.

There is a growing demand for students trained in urban forestry and arboriculture each year. Nationally and locally, organizations and businesses are seeking Purdue students to fulfill vital roles in municipalities, utility services, commercial tree care and many other green careers. There are over 2,500 tree-care firms in
the U.S. looking to advance with the assistance of early-career professionals with a degree in Urban Forestry.

The economic impact of urban forestry-related careers in Indiana is remarkable. The latest information on economic activity associated with the industry reported over $200 million in tree care services and over 5,000 jobs. There is no foreseeable reduction in the demand for graduates who choose an urban forestry career path.

2) **Aquatic Sciences major, concentration in Marine and Freshwater Biology** (updated 8-semester plan is attached).

   i) Drop EAPS 40300 Physical Oceanography from seventh semester and replace with Physical Science Selective.

   Justification: EAPS 40300 is no longer being taught. A list of selectives is provided on the second page of the revised plan of study.

**Revised minors**

**A) Urban Forestry minor**

i) Add and delete courses from selects list to better align this minor with current course offerings.

ii) Add one new course to the required course list to take advantage of a new offering that is relevant to this discipline,

iii) Change the total number of selective credits from 9 to 6 to reflect the increase in the number of required credits.

**B) Wood Products Manufacturing Technology minor**

i) Reorganize the minor so that it includes 9 required credits and 6 selective credits (previously the minor was 15 credits, all required courses)

ii) Change the titles of the required courses to reflect changes described elsewhere in this document

iii) Create a list of selective courses to allow students more flexibility

In the following 8-semester plans-of-study, courses that have been dropped from the curriculum are in red font, struck-out; courses that have been added are in green font; and courses that have been retained in the curriculum but moved to a different semester are in blue font, and struck-out in the semester from which they were removed.
Supporting Documents

New Courses

Prefix and Course Number: FNR 43100 (cross-listed with ENTM 43100)

Title: Human Wildlife Conflicts

Semester Offered: Spring

Schedule Type: Lecture 2, Recitation 1

Credits: 3.00

A. Justification: Increases in human and/or wildlife populations and altered landscapes have led to increases in human-wildlife conflicts. 'Human-wildlife conflict management' is a term commonly used to describe any negative interactions between human interests and wildlife. These interactions may be real or perceived, economic or aesthetic, social or political, and may pose risks to human health and safety. As a result various legislation, regulations, and policies have been developed to protect or conserve wildlife, other public resources, and individual property owners.

This course provides practical knowledge for students desiring a career that includes working with wildlife in both rural and urban settings. Professionals who work with wildlife must understand:
1) Why human-wildlife conflicts are on the rise
2) How varying human interests influence resolution alternatives
3) How humans can prevent conflicts, and
4) Tools and strategies commonly utilized to resolve/mitigate conflict.

Professionals who work with wildlife are frequently asked to:
1) Identify common causes of human-wildlife conflicts,
2) Evaluate the impacts of the conflict damage/threat,
3) Prescribe options for resolving the conflict, and
4) Measure effectiveness of applied mitigation strategies.

B. Learning Outcomes and Methods of Assessment

i. Applicable to University Core Curriculum
This course ☐ will ☒ will not be nominated for inclusion on University Foundational Core. If no, skip to section ii.

<table>
<thead>
<tr>
<th>Foundational Learning Outcomes</th>
<th>Check all that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Written Communication</td>
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</tr>
<tr>
<td>2. Information Literacy</td>
<td>□</td>
</tr>
<tr>
<td>3. Oral Communication</td>
<td>□</td>
</tr>
</tbody>
</table>
4. Science

5. Science, Technology and Society

6. Mathematics/Quantitative Reasoning

7. Human Cultures: Humanities

8. Human Cultures: Behavioral & Social Sciences

ii. **Applicable to College of Agriculture Core**

   This course □ will ☒ will not be nominated for inclusion on College of Agriculture Core. If no, skip to section iii.

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<tbody>
<tr>
<td>1. Mathematics and Sciences</td>
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<tr>
<td>2. Written and Oral Communication</td>
<td>□</td>
</tr>
<tr>
<td>3. Humanities and Social Sciences</td>
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<tr>
<td>4. Multicultural Awareness</td>
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<tr>
<td>5. International Understanding</td>
<td>□</td>
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<tr>
<td>6. Capstone</td>
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</table>

iii. **Graduate Learning Outcomes (for 50000 and 60000 level courses only)**

<table>
<thead>
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<th>Graduate Learning Outcomes</th>
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<tbody>
<tr>
<td>1. Advance Knowledge and Scholarship</td>
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</tr>
<tr>
<td>2. Demonstrate Critical Thinking and Problem Solving</td>
<td>□</td>
</tr>
<tr>
<td>3. Exhibit Ethical Conduct</td>
<td>□</td>
</tr>
<tr>
<td>4. Communicate Effectively</td>
<td>□</td>
</tr>
<tr>
<td>5. Develop Professionalism</td>
<td>□</td>
</tr>
</tbody>
</table>
iv. Describe course objectives and student learning outcomes that address the objectives (i.e., knowledge, communication, critical thinking, ethical research, etc.)

Upon completion of the course students will be able to:
1) Identify common causes of human-wildlife conflicts,
2) Evaluate the impacts of the conflict damage/threat,
3) Prescribe options for resolving the conflict, and
4) Measure effectiveness of applied mitigation strategies.

v. Methods of evaluation or assessment:

<table>
<thead>
<tr>
<th>Methods of assessment</th>
<th>Check all that apply</th>
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</thead>
<tbody>
<tr>
<td>1. exams and quizzes</td>
<td>☒</td>
</tr>
<tr>
<td>2. assessment and scoring of in class participation</td>
<td>☒</td>
</tr>
<tr>
<td>3. assignments</td>
<td>☐</td>
</tr>
<tr>
<td>4. class presentations</td>
<td>☐</td>
</tr>
<tr>
<td>5. Other (specify): Click here to enter text</td>
<td></td>
</tr>
</tbody>
</table>

C. Prerequisites
None.

D. Course Instructor and Contact Information

Lee Humberg
Office: SMITH B32 (east basement)
Phone: 765-494-6229
E-mail: Lee.A.Humberg@usda.gov
Campus Mail: ENTM/SMITH

E. Course Outline of Topics

- The many names of wildlife management
- The business of wildlife damage management
- History of human-wildlife conflicts
- The role of agencies and biologists
- Societal and political impacts
- Expanding science and technology
- Biological and economic impacts
- Lethal vs. nonlethal control
- Wildlife concerns in urban environments
• Fertility control
• Wildlife concerns in rural environments
• Habitat modification
• Conflicts with aviation
• Integrated management
• The role of media in conveying wildlife events
• Identifying stakeholders
• Wildlife disease conflicts
• Effective communication strategies
• Rabies management
• Opposition to wildlife management
• Predator management
• NEPA and other four letter words
• Ungulate management
• The N.A. Model of Wildlife Conservation
• Canada goose management
• Threatened and endangered species management
• Feral swine management

Exotic and invasive species management

F. Reading List (include course text)
Click here to enter text.

G. Library Resources
Click here to enter text.

H. Example of Course Syllabus

Example Syllabus
ENTM 43100/FNR 43100  Human-Wildlife Conflicts

Instructor: Lee Humberg
Office: SMITH B32 (East Basement)
Phone: 494-6229
Email: Lee.A.Humberg@usda.gov
Office Hours: M 9:30-10:30

Course Information
Spring Semester
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policies have been developed to protect or conserve wildlife, other public resources, and individual property owners. This course will focus on understanding the causes of and resolutions to human-wildlife conflicts.

Prerequisites
No prerequisites.

Course Goals
Upon completion of the course students will have a greater understanding of; 1) why human-wildlife conflicts are on the rise, 2) how varying human interests influence resolution alternatives, 3) how humans can prevent conflicts, and 4) the various tools and strategies commonly utilized to resolve/mitigate the conflict.

Learning Objectives
Upon completion of the course students will be able to; 1) the various tools and strategies commonly utilized to resolve/mitigate the conflict, 2) evaluate the impacts of the conflict damage/threat, 3) prescribe options for resolving the conflict, and 4) measure effectiveness of applied mitigation strategies.

Course Requirements
Students will be responsible for attending lectures and recitations and reading assigned articles prior to recitation. A total of 8 quizzes and 2 exams, one mid-term and one final, will be administered during lecture or recitation. Participation in class discussion of required readings and lecture topics during recitation sessions will also count toward your final grade. A total of 11 recitations will be held and the lowest recitation grade will be dropped.

Assessment of Learning Outcomes
90 points from Quizzes (6 quizzes, 15 pts each)
200 points from Exams (2 exams, 100 pts each)
50 points from Recitation Participation (top 10 recitations, 5 pts each)
340 Total pts possible

Required Texts
There are no required textbooks for this course. Required readings for discussion will be disseminated via email or Blackboard.

Policies

General Course Policies
Students are strongly encouraged to attend each class as lecture material (i.e., Multimedia presentations) will not be posted on the internet, Blackboard, or made publicly available. Students may arrange with the instructor to review certain portions of a lecture or to clarify points of discussion; however, entire class presentations will not be available for students to copy/take notes from if a lecture is missed without prior notification or documented reason for absence. For further discussion on this topic see the “Attendance” section below.

The use of cell phones or other devices which may distract other students and the instructor will not be permitted during class unless approved by the instructor prior to class.

Questions on course subject matter may be emailed to the instructor; however, visitation during scheduled office hours is preferred to ensure the questions is interpreted correctly and response is understood.

Grading
Grades will be based on a percentage of total points earned from the total 380 points possible using the following scale.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>98% and above</td>
</tr>
<tr>
<td>A</td>
<td>93-97.9%</td>
</tr>
<tr>
<td>A-</td>
<td>90-92.9%</td>
</tr>
<tr>
<td>B+</td>
<td>87-89.9%</td>
</tr>
<tr>
<td>B</td>
<td>83-86.9%</td>
</tr>
<tr>
<td>B-</td>
<td>80-82.9%</td>
</tr>
<tr>
<td>C+</td>
<td>77-79.9%</td>
</tr>
<tr>
<td>C</td>
<td>73-76.9%</td>
</tr>
<tr>
<td>C-</td>
<td>70-72.9%</td>
</tr>
<tr>
<td>D+</td>
<td>67-69.9%</td>
</tr>
<tr>
<td>D</td>
<td>63-66.0%</td>
</tr>
<tr>
<td>D-</td>
<td>60-62.9%</td>
</tr>
<tr>
<td>F</td>
<td>59.9% and below</td>
</tr>
</tbody>
</table>

**Academic Dishonesty**

Simply put, academic dishonesty will not be tolerated. Anyone found cheating on individual quizzes or exams will receive a “0” for that event. For more information on Purdue’s student guide for academic integrity please visit: [http://www.purdue.edu/odos/aboutodos/academicintegrity.php](http://www.purdue.edu/odos/aboutodos/academicintegrity.php)

**Use of Copyrighted Materials**

Lecture materials (i.e., multi-media presentations) presented in class are the intellectual property of the instructor and are therefore protected by copyright laws. Sale or bartering of notes taken during this course to a commercial note taking service is prohibited.

**Attendance**

While attendance will not be taken during class, students are expected to attend each class lecture and recitation. Repeated absences will have a direct effect on class participation points. University policy on attendance:

*Only the instructor can excuse a student from a course requirement or responsibility. When conflicts or absences can be anticipated, such as for many University sponsored activities and religious observations, the student should inform the instructor of the situation as far in advance as possible...For unanticipated or emergency absences when advance notification to an instructor is not possible, the student should contact the instructor as soon as possible by email, or by contacting the main office that offers the course. When the student is unable to make direct contact with the instructor and is unable to leave word with the instructor’s department because of circumstances beyond the student’s control, and in cases of bereavement, the student or the student’s representative should contact the Office of the Dean of Students.*
Grief Absence Policy for Students

University policy on Grief Absence for Students:

Purdue University recognizes that a time of bereavement is very difficult for a student. The University therefore provides the following rights to students facing the loss of a family member through the Grief Absence Policy for Students (GAPS). GAPS Policy: Students will be excused for funeral leave and given the opportunity to earn equivalent credit and to demonstrate evidence of meeting the learning outcomes for misses assignments or assessments in the event of the death of a member of the student’s family.

Missed or Late Work

Make-up quizzes or exams will only be given if advanced notice of absence is given to instructor, or in the event of an emergency or unplanned absence in which written documentation of why the absence occurred must be presented and will be dealt with on a case by case situation. Make-up quizzes or exams must be completed within 7 days, unless extenuating circumstances prevent (e.g., university holiday). Participation points missed due to absences from recitation will not be allowed to be made up since the lowest recitation grade is dropped. Absences and resulting recitation points lost due to University sponsored activities will be allowed to be made up as long as advanced written notice and documentation was provided to the instructor. Make up points will be awarded by submitting a report of 100 written words on a topic/paper assigned by the instructor or other similar activity covered during missed recitation.

Violent Behavior Policy

Purdue policy prohibiting violent behavior:

Purdue University is committed to providing a safe and secure campus environment for members of the university community. Purdue strives to create an educational environment for students and a work environment for employees that promote educational and career goals. Violent Behavior impedes such goals. Therefore, Violent Behavior is prohibited in or on any University Facility or while participating in any university activity.

Students with Disabilities

Purdue policy:

Purdue University is required to respond to the needs of the students with disabilities as outlined in both the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 through the provision of auxiliary aids and services that allow a student with a disability to fully access and participate in the programs, services, and activities at Purdue University.

If you have a disability that requires special academic accommodation, please make an appointment to speak with me within the first three (3) weeks of the semester in order to discuss any adjustments. It is important that we talk about this at the beginning of the semester. It is the student's responsibility to notify the Disability Resource Center (http://www.purdue.edu/drc) of an impairment/condition that may require accommodations and/or classroom modifications.

Emergencies
In the event of an emergency the instructor will attempt to email each student as to any class cancellation or modification. If time permits, a note will also be posted on the door of the classroom where the scheduled class is held. In addition, Purdue policy on emergencies:

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor’s control. Relevant changes to this course will be posted onto the course website or can be obtained by contacting the instructors or TAs via email or phone. You are expected to read your @purdue.edu e-mail on a frequent basis.

Non-discrimination

Purdue policy on non-discrimination:

Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life.

Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, genetic information, marital status, parental status, sexual orientation, gender identity and expression, disability, or status as a veteran. The University will conduct its programs, services and activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in Executive Memorandum No. D-1, which provides specific contractual rights and remedies. Any student who believes they have been discriminated against may visit www.purdue.edu/report-hate to submit a complaint to the Office of Institutional Equity. Information may be reported anonymously.
Class Schedule

Below is a list of topics that will be covered during the course. In addition, current topics in the news or special topics presented by guest lecturers may be added.

<table>
<thead>
<tr>
<th>The many names of wildlife management</th>
<th>The business of wildlife damage management</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of human-wildlife conflicts</td>
<td>The role of agencies and biologists</td>
</tr>
<tr>
<td>Societal and political impacts</td>
<td>Expanding science and technology</td>
</tr>
<tr>
<td>Biological and economic impacts</td>
<td>Lethal vs. nonlethal control</td>
</tr>
<tr>
<td>Wildlife concerns in urban environments</td>
<td>Fertility control</td>
</tr>
<tr>
<td>Wildlife concerns in rural environments</td>
<td>Habitat modification</td>
</tr>
<tr>
<td>Conflicts with aviation</td>
<td>Integrated management</td>
</tr>
<tr>
<td>The role of mass media in conveying wildlife events</td>
<td>Identifying stakeholders</td>
</tr>
<tr>
<td>Wildlife disease conflicts</td>
<td>Effective communication strategies</td>
</tr>
<tr>
<td>Rabies management</td>
<td>Opposition of wildlife management</td>
</tr>
<tr>
<td>Predator management</td>
<td>NEPA and other four letter words</td>
</tr>
<tr>
<td>Ungulate management</td>
<td>The N.A. Model of Wildlife Conservation</td>
</tr>
<tr>
<td>Canada goose management</td>
<td>Threatened and endangered species management</td>
</tr>
<tr>
<td>Feral swine management</td>
<td>Exotic and invasive species management</td>
</tr>
</tbody>
</table>

This schedule may be subject to change.
Supporting Documents
New Course

Course Subject Abbreviation and Number: FNR 43300

Course Title: Grand Challenges in Forest Management

Semester Offered: Spring

Schedule Type: Lecture 2, Recitation 1

Credits: 3.00

A. Justification for the Course

1. Need

Forest management decisions are driven by both ecological and social factors. Throughout their careers, graduates within forest management concentration will have to not only understand these factors, but also understand how they interact and change through time. This course will use the information and experiences students have garnered during previous coursework to examine the major ecological and social issues facing their chosen discipline.

2. Level and target audience

This class is targeted towards seniors in the forest management concentration of the forestry major during their last (8th) semester.

B. Learning Outcomes and Method of Evaluation or Assessment

i. Applicable to University Core Curriculum

This course ☐ will ☒ will not be nominated for inclusion on University Foundational Core. If no, skip to section ii.

<table>
<thead>
<tr>
<th>Foundational Learning Outcomes</th>
<th>Check all that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Written Communication</td>
<td>☐</td>
</tr>
<tr>
<td>2. Information Literacy</td>
<td>☐</td>
</tr>
<tr>
<td>3. Oral Communication</td>
<td>☐</td>
</tr>
<tr>
<td>4. Science</td>
<td>☐</td>
</tr>
<tr>
<td>5. Science, Technology and Society</td>
<td>☐</td>
</tr>
<tr>
<td>6. Mathematics/Quantitative Reasoning</td>
<td>☐</td>
</tr>
</tbody>
</table>
ii. Applicable to College of Agriculture Core

This course ☐ will ☒ will not be nominated for inclusion on College of Agriculture Core. If no, skip to section iii.

<table>
<thead>
<tr>
<th>College of Agricultural Core</th>
<th>Check all that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mathematics and Sciences</td>
<td>☐</td>
</tr>
<tr>
<td>2. Written and Oral Communication</td>
<td>☐</td>
</tr>
<tr>
<td>3. Humanities and Social Sciences</td>
<td>☐</td>
</tr>
<tr>
<td>4. Multicultural Awareness</td>
<td>☐</td>
</tr>
<tr>
<td>5. International Understanding</td>
<td>☐</td>
</tr>
<tr>
<td>6. Capstone</td>
<td>☐</td>
</tr>
</tbody>
</table>

iii. Graduate Learning Outcomes (for 50000 and 60000 level courses only)

<table>
<thead>
<tr>
<th>Graduate Learning Outcomes</th>
<th>Check all that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Advance Knowledge and Scholarship</td>
<td>☐</td>
</tr>
<tr>
<td>2. Demonstrate Critical Thinking and Problem Solving</td>
<td>☐</td>
</tr>
<tr>
<td>3. Exhibit Ethical Conduct</td>
<td>☐</td>
</tr>
<tr>
<td>4. Communicate Effectively</td>
<td>☐</td>
</tr>
<tr>
<td>5. Develop Professionalism</td>
<td>☐</td>
</tr>
</tbody>
</table>

iv. Describe course objectives and student learning outcomes that address the objectives (i.e., knowledge, communication, critical thinking, ethical research, etc.)

At completion of this course, students should be able to:
   i. Identify and discuss major challenges facing the field of forest management.
ii. Describe how these challenges interact and develop an understanding of how these interactions may result in amplified effect on forests.

iii. Understand how these challenges may be viewed from a variety of perspectives by different stakeholders.

iv. Identify how forest management may be used to mitigate some of the effects of these challenges.

v. Organize and present an oral and written case study of a forest management scenario that is linked to multiple challenges discussed in class.

**v. Methods of evaluation or assessment:**

<table>
<thead>
<tr>
<th>Methods of assessment</th>
<th>Check all that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. exams and quizzes</td>
<td>☐</td>
</tr>
<tr>
<td>2. assessment and scoring of in class participation</td>
<td>☒</td>
</tr>
<tr>
<td>3. assignments</td>
<td>☒</td>
</tr>
<tr>
<td>4. class presentations</td>
<td>☒</td>
</tr>
</tbody>
</table>

5. Other (specify): Click here to enter text.

**Grading criteria**

Students will be assessed based upon written summaries of weekly discussion topics, a team oral and written case study report on a management scenario pertinent to course content, and classroom participation. Student presentations will require students to select an examine a real-world case study, identify and read significant literature, synthesize knowledge, formulate potential solutions, present an oral and written synthesis of current knowledge, and lead discussion with the class. Classroom participation will be based on the student’s knowledge of assigned readings and contribution to class discussions. The final grade will be calculated with weights of 20%, 30%, 30%, and 20% for the written summaries, oral case study report, written case study report, and participation, respectively.

**B. Prerequisites**

This course is taught in the final semester as a penultimate synthesis class and assumes that students have completed other course requirements of the major and concentration.

**C. Course Instructor and Contact Information**

This course will be taught by multiple instructors from the forestry faculty within the Department of Forestry and Natural Resources. Michael Jenkins will serve as an instructor and the course coordinator.

**Contact information**

- Michael Jenkins
- Phone: 294-3602
- E-mail: jenkinma@purdue.edu
- Off: PFEN 221D

**D. Course Outline of Topics**
Grand Challenges in Forest Management (FNR 43300)
Fall 20XX

Coordinator/Instructor
Michael Jenkins
Office: 221D PFEN
Phone: 494-3602
E-mail: jenkinma@purdue.edu
Office Hours: 3:00-4:00 PM MW

Classroom: M, W 1:30-2:45 PM, G077 PFEN
Class folder: On Blackboard Learn (BL) at https://mycourses.purdue.edu/
Course Material: All assigned readings for this course will be posted on BL

Course Objectives
At completion of this course students should be able to:

1. Identify and discuss major challenges facing the field of forest management.
2. Describe how these challenges interact and develop an understanding of how these interactions may result in amplified effect on forests.
3. Understand how these challenges may be viewed from a variety of perspectives by different stakeholders.
4. Identify how forest management may be used to mitigate some of the effects of these challenges.
5. As part of a group, organize and present an oral and written case study of a forest management scenario that is linked to multiple challenges discussed in class.

Course Description
This course is taught by multiple instructors in the Department of Forestry and Natural Resources. Mike Jenkins is an instructor and the course coordinator. Each instructor teaches a unit of class pertinent to their area of expertise. The classroom portion of the course consists of both lecture-based and discussion-based formats. Instructors present background information on a topic, highlight its importance, and guide students in a discussion based upon the presented material and assigned readings. Students will be divided into groups and assigned a case study that incorporates the topics/challenges discussed in class. Each group will develop background information for their case study, present the problems/challenges incorporated by the case study, and examine potential mitigating actions from the standpoint of multiple case holders.
Readings: Assigned readings will vary from week-to-week, but will typically consist of 2-4 articles, reports, or book chapter.
Assessment

Students will be assessed based upon written summaries of weekly discussion topics, group oral and written case study reports on a management scenario pertinent to course content, and classroom participation. As part of a team, student presentations require students to examine a case study based upon real-world problems or challenges in forest management, identify and read significant literature, present an oral and written synthesis of current knowledge, and lead discussion with the class. Classroom participation will be based on the student’s knowledge of assigned readings and contribution to class discussions.

Student Case Studies: Each group will be comprised of 3-4 students. Students will divide up roles in the preparation of their written case study report. Groups will present their case studies to the class following a provided outline. Each student will participate in the presentation for their group. Each presentation will be 45 minutes long, with 20 minutes at the end for questions and discussion. As part of their participation grade, non-presenting groups will be required to prepare questions and comments from the perspective of predefined stakeholder groups.

Class Participation: Attendance is required in order to have meaningful discussion of the various topics we will cover. In addition, there may be times we draw on each of you to stimulate the discussion, so keeping up to date on required is critical. Classes such as this only work if students prepare and participate. Please come prepared to share your insights and ask questions.

Grading

Bottom cutoffs for letter-grades will be: A- = 90%; B- = 80%; C- = 70%; and D- = 60%. Plus/minus grading will be used, with the “+” and “-” assigned to the top and bottom 2% of a letter grade, respectively. The final grade will be calculated with the weights shown in the table on the right.

<table>
<thead>
<tr>
<th>Item</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading summaries</td>
<td>20</td>
</tr>
<tr>
<td>Written case study report</td>
<td>30</td>
</tr>
<tr>
<td>Oral case study report</td>
<td>30</td>
</tr>
<tr>
<td>Participation</td>
<td>20</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. Either check the class web page on BV4 or contact me via email or phone to get information about any changes in this course.

[Required statements on diversity, nondiscrimination, disabilities, cheating, etc., are not included here to save space, but are included in semester syllabi.]

Example Schedule: Spring 20XX

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Assignments and readings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 11</td>
<td>Class overview; Introduction; What is a grand challenge?</td>
<td></td>
</tr>
<tr>
<td>Jan 13</td>
<td>Grand challenges throughout history; past challenges for forest management, how’d we do?</td>
<td></td>
</tr>
<tr>
<td><strong>Jan 18</strong></td>
<td><strong>NO CLASS – MARTIN LUTHER KING DAY</strong></td>
<td><strong>Assign case study groups and topics;</strong></td>
</tr>
<tr>
<td>Jan 20</td>
<td>Climate change, how will the future look?</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Topic</td>
<td>Assignments and readings</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------------------------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Jan 25</td>
<td>Climate change; effects on regional and local forest processes and productivity</td>
<td>IPCC 2018, Phillips 2018</td>
</tr>
<tr>
<td>Jan 27</td>
<td>Disturbance ecology; presses, pulses, and interactions</td>
<td>Millar et al. 2007, Vose et al. 2016</td>
</tr>
<tr>
<td>Feb 1</td>
<td>Human alterations to disturbance regimes: history</td>
<td>Greenberg and Collins 2016</td>
</tr>
<tr>
<td>Feb 3</td>
<td>Human alterations to disturbance regimes: contemporary examples and challenges for adaptive management</td>
<td>Bradshaw and Waller 2016, Ryan et al. 2013</td>
</tr>
<tr>
<td>Feb 8</td>
<td>Macroscale changes in the distribution of species</td>
<td>Fei et al. 2017</td>
</tr>
<tr>
<td>Feb 10</td>
<td>Macroscale changes: implications for land management across management and political boundaries</td>
<td>Pimentel et al. 2005, Creutzburg et al. 2017</td>
</tr>
<tr>
<td>Feb 15</td>
<td>Novel ecosystems and the homogenocene</td>
<td>Radeloff et al. 2015, Hobbs et al. 2014</td>
</tr>
<tr>
<td>Feb 17</td>
<td>Ecological and social impacts of invasive insects, plants, and disease</td>
<td>Morse et al. 2014, Simberloff 2013, Ehrenfeld 2010</td>
</tr>
<tr>
<td>Feb 22</td>
<td>Interactions between disturbance and invasive species</td>
<td>Simberloff et al. 2012,</td>
</tr>
<tr>
<td>Feb 24</td>
<td>Regional and global economic constraints on balancing production and sustainability</td>
<td>Buongiorno and Zhu 2015, Hetemäki and Hurmekoski 2016, Venn et al. 2011</td>
</tr>
<tr>
<td>Feb 29</td>
<td>Effects of shifting demographics on nonindustrial private forests</td>
<td>Butler et al. 2017, Butler et al. 2011</td>
</tr>
<tr>
<td>March 2</td>
<td>The growing role of urban forests in ecosystem services and quality of life and the need for stewardship</td>
<td>Wu 2014</td>
</tr>
<tr>
<td>March 7</td>
<td>Developing silvicultural tools to address changing forest conditions: complex adaptive systems</td>
<td>Written case study reports due; Franklin et al. 2018, Hunter et al. 1999</td>
</tr>
<tr>
<td>March 9</td>
<td>Developing silvicultural tools: natural disturbance-based management</td>
<td>Messier et al. 2013</td>
</tr>
<tr>
<td>March 14</td>
<td>NO CLASS - SPRING BREAK</td>
<td></td>
</tr>
<tr>
<td>March 16</td>
<td>NO CLASS - SPRING BREAK</td>
<td></td>
</tr>
<tr>
<td>March 22</td>
<td>Developing silvicultural tools: the triad concept</td>
<td></td>
</tr>
<tr>
<td>March 24</td>
<td>Challenges of afforestation, reforestation, and reclamation</td>
<td></td>
</tr>
<tr>
<td>March 28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>March 30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 4</td>
<td>Student case study presentations</td>
<td></td>
</tr>
<tr>
<td>April 6</td>
<td></td>
<td></td>
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<tr>
<td>April 11</td>
<td></td>
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<tr>
<td>April 13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Topic</td>
<td>Assignments and readings</td>
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<tr>
<td>----------</td>
<td>------------------------------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>April 18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 25</td>
<td>Catching up; Synthesis and discussion of grand challenges</td>
<td></td>
</tr>
<tr>
<td>April 27</td>
<td>Synthesis and discussion of grand challenges: where do we go from here?</td>
<td></td>
</tr>
<tr>
<td>May 4</td>
<td>Finals Week</td>
<td></td>
</tr>
</tbody>
</table>

Reading List


Butler S.M., Butler B.J., and Markowski-Lindsay, M. 2017. Family forest owner characteristics shaped by life cycle, cohort, and period effects. Small-Scale Forestry 16: 1–18.


Supporting Document
New Course

Course Number: FNR 58600

Course Title: Urban Ecology

Semester Offered: Spring

Schedule Type: Lecture 2, Recitation 1

Credits: 3.0

A. Justification for the Course

Need for the course

- Over half of all humans live in cities and 80% of US citizens live in cities. Urban areas are rapidly expanding driving changes in global patterns of resource consumption, waste production, and land-use / land-cover change. All understanding of the natural world and our role in it is incomplete without a thorough examination of the direct and indirect effects of urban ecosystems.
- No other class on Purdue University West Lafayette campus focuses exclusively on exploring and understanding urban ecosystems.
- The FNR Forestry curriculum has been revised to include an Urban Forestry concentration and the proposed course will be a required class in it.
- The Division of Environmental and Ecological Engineering in College of Engineering plans to require the Urban Ecology course as part of their undergraduate major once it is assigned a permanent course number.

Teaching the course at a graduate level

- Primary literature, in conjunction with advanced secondary sources (i.e., advanced textbooks), is used heavily in this course. The primary readings for this class are drawn from a list of peer-reviewed primary literature that is updated annually. Supplemental readings are drawn from the two required textbooks and a variety of additional sources.
- The primary course assessments demonstrate synthesis of concepts and ideas by students through weekly written responses to assigned readings from primary literature and construction of conceptual models of urban flows of matter and energy. These assessments are far more rigorous than conventional methods of testing and require students to demonstrate a systems-level synthesis of the material presented through lectures, course discussions, assigned readings, and guest speakers.
- Topics covered in this course are kept current through the selected readings from primary literature that form the backbone of this course which are updated annually so as to reflect advancements in and to remain current with the field of Urban Ecology. In addition, guest speakers in the class are selected annually to share recent results of their ongoing research in a diversity of related disciplines.
- This course contains components that emphasize research approaches/methods and discovery efforts in Urban Ecology. Students are exposed to and gain experience with research methods in Urban Ecology through a variety of individual and group projects that require them to collect and analyze data and to use this data in later exercises.
- Undergraduate students are expected to participate and perform at the same level as graduate students in this course.
Demand for the course

• This class has been offered three times since Fall 2016. Enrollment has grown with each offering and is currently 126% of enrollment in the initial offering.

• Anticipated enrollment
  o Undergraduate  >50
  o Graduate  15

Online delivery

• The instructor has no plans to deliver the course content online.

B. Learning Outcomes and Methods of Assessment

Upon successful completion of this course, student will be able to:

• Describe and diagram flows of matter and energy in coupled human and natural systems;
• Discuss how drivers in each cycle change across an urban-rural gradient;
• Describe the changes to natural ecosystems imposed by urbanization and other forms of global change (climate change, altered biogeochemical cycling, invasive species, mass extinction, etc.);
• Compare and contrast urban and rural ecosystem structure and function, including diversity and distribution of organisms, landcover types, and ecosystem services;
• Discuss provisioning of ecosystem services in urban and rural ecosystems; compare and contrast green vs grey infrastructure; identify areas of traditionally grey infrastructure that have the potential to integrate green infrastructure;
• Describe the key components of the following ecological concepts and apply them to an analysis of urban vs rural ecosystems:
  o resistance and resilience
  o dynamic equilibrium
  o alternate stable states
  o disturbance and succession

<table>
<thead>
<tr>
<th>Learning Outcomes</th>
<th>Assessment Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe and diagram flows of matter and energy in coupled human and natural systems;</td>
<td>• Conceptual modelling exercises</td>
</tr>
<tr>
<td>Discuss how drivers in each cycle change across an urban-rural gradient</td>
<td>• Conceptual modeling exercises</td>
</tr>
<tr>
<td></td>
<td>• Written literature responses</td>
</tr>
<tr>
<td></td>
<td>• Group/class discussions of primary literature</td>
</tr>
<tr>
<td>Describe the changes to natural ecosystems imposed by urbanization and other forms of global change (climate change, altered biogeochemical cycling, invasive species, mass extinction, etc.);</td>
<td>• Group/class discussions of primary literature</td>
</tr>
<tr>
<td></td>
<td>• Conceptual modeling exercises</td>
</tr>
</tbody>
</table>
| Compare and contrast urban and rural ecosystem structure and function, including diversity and distribution of organisms, landcover types, and ecosystem services | Tree Biomass  
i-Tree Streets Ecosystem Services calculator  
Green Infrastructure Scavenger Hunt |
|---|---|
| Discuss provisioning of ecosystem services in urban and rural ecosystems; compare and contrast green vs grey infrastructure; identify areas of traditionally grey infrastructure that have the potential to integrate green infrastructure | Written literature responses  
Green Infrastructure Scavenger Hunt  
i-Tree Streets Ecosystem Services calculator |
| Describe the key components of the following ecological concepts and apply them to an analysis of urban vs rural ecosystems:  
- resistance and resilience  
- dynamic equilibrium  
- alternate stable states  
- disturbance and succession | Conceptual modeling exercises  
Written literature responses  
Lecture reading quizzes |

Brief description of assessment methods indicated above:

- **Conceptual modelling exercises**: Students are instructed to individually construct a conceptual model for each of the following:
  - urban carbon cycle  
  - urban nitrogen cycle  
  - urban hydrology  
  - urban ecosystem (holistic)  
  - For each of the above, students must synthesize and integrate the major pools of matter and energy in an urban ecosystem and accurately represent the fluxes between them. Conceptual models must include flux drivers and the social, economic, political, and ecological influences relevant to urban ecosystems.

- **Written literature responses**: Each week 1-2 primary literature readings are assigned. These are discussed in class and students must submit a written reflection on the assigned reading prior to coming to class. Responses are evaluated based on evidence of evidence, thoroughness, and critical thinking.

- **Tree biomass**: Student groups are assigned an area on campus and instructed on how to collect data from trees growing in that area. These data are used to calculate the vegetation biomass corresponding to that area of campus. Students submit the data the collected, their calculations, and their written responses to critical reflection questions.

- **i-Tree Streets Ecosystem Services calculator**: Students use data collected in the Tree Biomass assignment (described above) to calculate ecosystem services using an industry-standard modelling tool. Students submit individual reports based on their calculations and written responses to critical reflection questions.

- **Green Infrastructure Scavenger Hunt**: Students are directed to disperse into the Lafayette/West...
Lafayette to visit and critically assess green infrastructure installations. Students submit individual reports based on their observations and written responses to critical reflection questions.

- **Group/class discussions of primary literature:** Students discuss the assigned primary literature readings in their permanent groups. Usually there are 2-3 articles assigned for each week. Papers are selected to match topics covered in lecture, guest speaker, and group/individual projects. Students compare and contrast these readings in their groups before re-convening to discuss them as a class.

- **Lecture reading quizzes:** Small quizzes (5-10 points) administered and automatically graded through Blackboard that evaluate student understanding of textbook readings. Due prior to attending lecture.

**Final Grading Criteria**
Describing the criteria that will be used to assess students and how the final grade will be determined. Add and delete rows as needed.

<table>
<thead>
<tr>
<th>Assessment Methods (should match method types in the previous table)</th>
<th>Weight Toward Final Course Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture Reading Quizzes (10)</td>
<td>12%</td>
</tr>
<tr>
<td>Literature Responses (15)</td>
<td>23%</td>
</tr>
<tr>
<td>Guest Speaker Key Points (10)</td>
<td>10%</td>
</tr>
<tr>
<td>Guest Speaker Discussion Questions (1)</td>
<td>5%</td>
</tr>
<tr>
<td>Green Infrastructure Scavenger Hunt (1)</td>
<td>5%</td>
</tr>
<tr>
<td>Tree Biomass (1)</td>
<td>4%</td>
</tr>
<tr>
<td>Personal Carbon Footprint (1)</td>
<td>3%</td>
</tr>
<tr>
<td>Personal/Class Foodshed (1)</td>
<td>8%</td>
</tr>
<tr>
<td>i-Tree Streets Ecosystem Services calculator (1)</td>
<td>5%</td>
</tr>
<tr>
<td>Urban Ecosystem Conceptual Models (6)</td>
<td>25%</td>
</tr>
</tbody>
</table>

**Methods of Instruction**

<table>
<thead>
<tr>
<th>Class Hrs/Week</th>
<th>Method of Instruction</th>
<th>Contribution to Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lecture</td>
<td>Usually on Monday of each week. Lecture is used to introduce the topic for the week. Fundamental concepts are presented and discussed.</td>
</tr>
<tr>
<td></td>
<td>Class Discussion</td>
<td>Assigned primary literature readings are discussed in small groups and as a class. The reading list is updated annually.</td>
</tr>
<tr>
<td>---</td>
<td>------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The above, AND</td>
</tr>
<tr>
<td>1</td>
<td>Individual/Group Project</td>
<td>A variety of projects designed to expose students to and provided experience employing research methods in Urban Ecology. Projects that require them to collect and analyze data and to critically reflect on their observations and their relevance to course topics.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OR</td>
</tr>
<tr>
<td>1</td>
<td>Guest Speaker</td>
<td>A selection of experts working in disciplines allied with Urban Ecology (e.g., Landscape Ecology, Urban Forestry, Urban Spanning, Social Science, Public Policy) are invited to share their research and expertise with students. Students are incentivized to engage in discussion with the speaker to draw out implications and consequences of the work presented for Urban Ecology.</td>
</tr>
</tbody>
</table>

**C. Prerequisite(s)**

None.

**Rationale**

Most students who enroll in this class have already completed several biology/ecology courses that serve as effective preparation. In addition, the variety of courses that are legitimate preparation for this class is too wide to effectively list. Further, the study of Urban Ecology borrows from a wide array of disciplines; analogously, the teaching of this course is facilitated and improved by enrolling students with diverse backgrounds and perspectives.

**D. Course Instructor(s)**
<table>
<thead>
<tr>
<th>Name</th>
<th>Rank</th>
<th>School, dept., or center</th>
<th>Graduate Faculty or expected date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brady S. Hardiman</td>
<td>Asst. Prof.</td>
<td>FNR (75%), EEE (25%)</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Instructor bio:** Dr. Hardiman is terrestrial ecologist and biogeochemist interested in ecosystem responses to anthropogenic modification including disturbance, management, and land-use change associated with urbanization. His research combines field observations and large-scale ecosystem experiments with remote sensing and ecosystem modeling. He employs this suite of tools to investigate relationships between ecosystem structure and function across a gradient of natural to highly-engineered environments within a global change context.

**Contact for information if questions arise:**

- Name: Brady Hardiman
- Phone: 765-494-3593
- E-mail: bhardima@purdue.edu
- Address: G021F Pfendler Hall

**E. Course Schedule or Outline**
<table>
<thead>
<tr>
<th>Week #</th>
<th>Dates</th>
<th>Topic</th>
<th>Lecture Readings (Due one before class on Monday)</th>
<th>Discussion Readings (Due one before class on Weeks)</th>
<th>Guest Speaker (Policies on Friday)</th>
<th>Activity (Due Fri.)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>08/20 - 08/24</td>
<td>Natural history of cities, Physical geography</td>
<td>-</td>
<td>Grimm et al. (2008) Lahm et al. (2010)</td>
<td>Gordon McIntosh</td>
<td>Ecosystem Conceptual Modelling</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>08/27 - 09/01</td>
<td>Physical geography, Green Infrastructure</td>
<td>Chapin Ch. 1, Bosen Ch. 14.16; Ch. 2; Alberti Ch. 1 1.45</td>
<td>Stemweder BMP materials</td>
<td>Shannon Stane</td>
<td>Infrastructure Scavenger Hunt (M)</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>09/03 - 09/07</td>
<td>Ecosystem dynamics, Carbon Cycle</td>
<td>Alberti Ch. 1 A.36 Alberti Ch. 12.3.16.2</td>
<td>Golubiewski (2012) Kennedy et al. (2012)</td>
<td>-</td>
<td>-</td>
<td>Labor Day (M)</td>
</tr>
<tr>
<td>4</td>
<td>09/10 - 09/14</td>
<td>Carbon Cycle, Urban Forestry</td>
<td>Chapin Ch. 5</td>
<td>Mullany et al. (2015) Marcolilla (2014)</td>
<td>Lindsey Purcell</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>09/24 - 10/08</td>
<td>Nitrogen cycle</td>
<td>Alberti Ch. 6 A.4.4, Altern &amp; Tannen Ch. 1.1,102.11, Chapin Ch. 9</td>
<td>Tolbert et al. (2015) Hobbie et al. (2017)</td>
<td>Jeff Dukes (M)</td>
<td>Urban N Cycle Conceptual Model (M)</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>10/01 - 10/05</td>
<td>Global change</td>
<td>-</td>
<td>Indiana Climate Change Impacts Assessment</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>10/08 - 10/12</td>
<td>Urbanization &amp; landscape change</td>
<td>Alberti Ch. 2.4.25.4</td>
<td>Alberti and Mandall (2004) Chollon et al. (2015)</td>
<td>Andy Reimann</td>
<td>-</td>
<td>October Break (M)</td>
</tr>
<tr>
<td>9</td>
<td>10/15 - 10/19</td>
<td>Catching Capacity, Ecological footprint</td>
<td>Terran Ch. 12</td>
<td>Safi et al. (2013) Stockman et al. (2009)</td>
<td>-</td>
<td>Personal carbon footprint</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>10/22 - 10/26</td>
<td>Foodsheds</td>
<td>-</td>
<td>Basecull et al. (2013) AND (Peters et al. 2016 OR Scrubrough et al. 2013)</td>
<td>-</td>
<td>-</td>
<td>Human respiration, food journal</td>
</tr>
<tr>
<td>11</td>
<td>10/29 - 11/2</td>
<td>Impervious surfaces, Urban Hydrology</td>
<td>Alberti Ch. 5</td>
<td>Walsh et al. (2016) Rich et al. (2012)</td>
<td>-</td>
<td>-</td>
<td>Foodshed (M)</td>
</tr>
<tr>
<td>12</td>
<td>11/06 - 11/09</td>
<td>Social Dynamics</td>
<td>TBD</td>
<td>Gough (2015) Jahanshahi (2013)</td>
<td>Linda Finkle</td>
<td>Ecosystem Services, if free (M)</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>11/13 - 11/16</td>
<td>Urban fauna</td>
<td>Alberti Ch. 35.8</td>
<td>Anderson et al. (2014) Magee et al. (2014)</td>
<td>Liz Flaherty</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>11/26 - 11/30</td>
<td>Environmental Policy</td>
<td>Alberti Ch. 9</td>
<td>Warden et al. (2015) Lorchanko et al. (2011)</td>
<td>Steve Deime</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>12/03 - 12/07</td>
<td>Wrap up</td>
<td>TBD</td>
<td>Geilman et al. (2015) Pati (2011)</td>
<td>-</td>
<td>Final Urban Ecosystem Conceptual Model</td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td>12/10 - 12/14</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>Finals Week</td>
<td>-</td>
</tr>
</tbody>
</table>
F. Reading List (including course text)

Primary Reading List


deer distributions in the Chicago metropolitan area. Urban Ecosystems:875–891.


Secondary Reading List (Required Textbooks)


G. Library Resources
None. All required readings will be supplied by the instructor.

**FNR 58600**  
**Course Syllabus (now required)**

**Time, Place:** M,W,F 11:30 a.m. - 12:20 p.m., Forestry 216

**Instructor:** Dr. Brady Hardiman; Pfendler Hall G021F; bhardima@purdue.edu

**Office Hours:** By appointment

**TA:** Jacob Klaybor

**TA Office hours:** TBD

**Required Texts**


Full text of both books is available online for free from the Purdue Libraries and the publisher. In addition, I have placed PDF copies of both in Course Content > Lecture Readings on the course Blackboard site. Additional course readings are listed on the Syllabus Schedule and are available via Blackboard.

**Teaching Philosophy**

I like learning! I like teaching what I’ve learned! My goal is to facilitate your learning. This means that I will point you to the information you need and guide your exploration of it. It is your responsibility to learn it.

I view each student as an emerging professional. I will treat you as I do my colleagues and expect professionalism in your interactions both with myself and your fellow students. Professionals show up on time, prepared and ready to work. Professionals at all times behave respectfully and ethically. Professionals complete the tasks, projects, and deliverables they are assigned, when they are due. The assignments and grading for FNR 59800 will reflect this.

**Course Rationale and Description**

Urbanization is on the rise, transforming natural ecosystems into coupled human-natural ecosystems that encompass complex, novel functional and structural characteristics shaped by people and the inherent environment. Through local field trips and readings of the primary scientific literature, we will examine the unique characteristics of coupled human-natural ecosystems.

This course will cover fundamental principles of ecology as applied in urban and other coupled human-natural systems with emphasis on the impact of modern industrial society on ecosystem
structure and function. The course is designed to be broadly accessible to students from a variety of backgrounds, interests, and majors who are interested in environmental science and engineering and will emphasize the importance of incorporating an ecological perspective in environmental engineering and natural resource management. Organizing themes addressed in this class include macroscale processes, systems thinking, and topics related to urban systems.

**Learning Objectives**

Upon successful completion of this course, student will be able to:

- Describe and diagram flows of matter and energy in coupled human and natural systems;
- Discuss how drivers in each cycle change across an urban-rural gradient;
- Describe the changes to natural ecosystems imposed by urbanization and other forms of global change (climate change, altered biogeochemical cycling, invasive species, mass extinction, etc.);
- Compare and contrast urban and rural ecosystem structure and function, including diversity and distribution of organisms, landcover types, and ecosystem services;
- Discuss provisioning of ecosystem services in urban and rural ecosystems; compare and contrast green vs grey infrastructure; identify areas of traditionally grey infrastructure that have the potential to integrate green infrastructure;
- Describe the key components of the following ecological concepts and apply them to an analysis of urban vs rural ecosystems:
  - resistance and resilience
  - dynamic equilibrium
  - alternate stable states
  - disturbance and succession

**Student Assessment**

FNR 59800 is being taught at a graduate level and your performance will be evaluated accordingly. This does not mean that undergraduates will have a harder time passing, but be aware that expectations may be different than you are used to. Your grade in class will be based on the following components:

- Discussions of Scientific Literature
- Guest Speaker Discussions
- Conceptual Ecosystem Modeling
- Additional Activities
  - Several additional class activities will be announced in due time as we proceed through the semester. These will be described in detail when we get to them.
<table>
<thead>
<tr>
<th>Week #</th>
<th>Dates</th>
<th>Topic</th>
<th>Lecture Readings (Quiz due before class on Monday)</th>
<th>Discussion Readings (Responses due before class on Weds.)</th>
<th>Activity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>08/21 - 08/25</td>
<td>Natural history of cities, Physical geography</td>
<td>Chapin Ch. 1, Bonan Ch. 1.4-1.6, Ch 2, Alberti Ch. 1.1-1.5</td>
<td>Grimm et al (2008) Kaye et al (2008)</td>
<td>Ecosystem Conceptual Modelling</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>08/28 - 09/01</td>
<td>Physical geography, Green Infrastructure</td>
<td>Chapman Ch. 6</td>
<td>Stormwater BMP materials</td>
<td></td>
<td>Infrastructure Scavenger Hunt</td>
</tr>
<tr>
<td>3</td>
<td>09/04 - 09/08</td>
<td>Urban growing conditions, Urban forestry</td>
<td>Miller Ch. 3</td>
<td>Hardman et al</td>
<td></td>
<td>Labor Day (M)</td>
</tr>
<tr>
<td>5</td>
<td>09/18 - 09/22</td>
<td>Carbon Cycle</td>
<td>Alberti Ch. 3.2, 6.1-6.2</td>
<td>Templer et al (2015)</td>
<td></td>
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<tr>
<td>6</td>
<td>09/25 - 09/29</td>
<td>Nitrogen cycle</td>
<td>Alberti Ch. 6.5 &amp; 6.6, Adler &amp; Tanner Ch. 3, p.102-111, Chapin Ch. 9</td>
<td>Rao et al (2014)</td>
<td></td>
<td></td>
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<tr>
<td>7</td>
<td>10/02 - 10/06</td>
<td>Urbanization &amp; land use change</td>
<td>Alberti Ch. 2.4-2.5, 4</td>
<td>Temp Nad et al (2017)</td>
<td>Urban N Cycle Conceptual Model</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>10/16 - 10/20</td>
<td>Carrying Capacity, Ecological Footprint</td>
<td>Forman Ch. 12</td>
<td>Seo et al (2012)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>10/30 - 11/03</td>
<td>Impervious surfaces, Urban Hydrology</td>
<td>Alberti Ch. 5</td>
<td>Arnold and Gibbons (1996)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>11/06 - 11/10</td>
<td>Ecosystem dynamics</td>
<td>Alberti Ch. 1.6, 3.6</td>
<td>Gotliebowski et al (2012a,b)</td>
<td>Ecosystem Models, iTree</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>11/20 - 11/24</td>
<td>Work day, Crowd source concept list for final conceptual model</td>
<td>-</td>
<td>Wamsler et al (2013)</td>
<td>Thanksgiving Break (WF)</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>11/27 - 12/01</td>
<td>Environmental risk and society</td>
<td>Alberti Ch. 9</td>
<td>Weisheit et al (2013)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>12/04 - 12/08</td>
<td>Ecosystem Models, Game Theory Wrap-Up</td>
<td>-</td>
<td>Groffman et al (2016)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>12/11 - 12/15</td>
<td>Finals Week</td>
<td>-</td>
<td>Paltash et al (2011)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Policies
All Purdue University Student Regulations described at the site below will apply. (http://www.purdue.edu/studentregulations/index.html). In addition, some notes on operation of FNR 598 specifically are described below. All students enrolled in FNR 598 are expected to refer to and be familiar with these documents.

Diversity Statement
In this course, each voice in the classroom has something of value to contribute. Please take care to respect the different experiences, beliefs and values expressed by students and staff involved in this course. We support Purdue's commitment to diversity, and welcome individuals of all ages, backgrounds, citizenships, disability, sex, education, ethnicities, family statuses, genders, gender identities, geographical locations, languages, military experience, political views, races, religions, sexual orientations, socioeconomic statuses, and work experiences.

Teamwork
A significant part of this course will involve working in teams and improving your teamwork skills. You are responsible for contributing to your team and working with your peers to enhance your collective learning experience. Your individual score could be positively or negatively affected by the consensus evaluations of your peers. You may be required to complete peer and self-evaluations periodically throughout the semester. Failure to complete the evaluations will result in a 100% deduction for the work completed during the evaluation period. In addition, failure to complete the final evaluation will result in an ‘Incomplete’ grade report.

Communication
Do not hesitate to ask for my assistance. I enjoy teaching and am eager to help you. Contact me by e-mail or after class so we can arrange a time to discuss any questions you have about the course. Responses to email will occur within a reasonable time period (<36 hours). If no response is received, check with Professor Hardiman to confirm receipt of your email. Students should not depend on immediate responses to email, especially when assignment submission deadlines are imminent. Plan ahead.

You are required to read your @purdue.edu email on a daily basis. Your Purdue email address is provided to course instructors. It is a legitimate method of communication. Read email pertaining to FNR 598 before deleting it. You may use electronic devices in class for only FNR 59800 class work. Use of e-devices to find information during class is encouraged. Non-class e-device use is not permitted.

In-class expectations
Class sessions will entail group work, open discussion and lecture formats. Respect and courtesy for others is expected, which includes listening to whoever has the floor. Advance preparation and in class participation will be required frequently and deficiencies will result in assignment score reduction.

There are about 60 of you. Please save your conversations for outside of class. Even if you whisper, it is disruptive to me and distracting to other students.

Turn off phones (and anything else that makes noise) before coming into class.

Student Responsibilities
It is your obligation to stay informed of the course schedule. All information is posted to Blackboard in advance. It is your responsibility to ask questions if you don’t understand assignment expectations.
**Assignment Submissions**

If you are unable to complete an assignment on time contact the instructor in advance. Late work will not be accepted except in approved cases. Most graded activities in this class are assigned with the goal of improving in-class participation. As a result, turning them in late defeats their purpose and no credit will be given.

All assignments submitted to Blackboard must be completed with an editable text file (no Adobe pdf documents accepted) to ensure readability and so comments and suggestions can be inserted. Hand written work is accepted for hand drawn infographics or assignments which are completed in-class. The Final Exam may be submitted as a pdf file. If submissions cannot be read they will not earn points. It is your responsibility to confirm your work is readable.

**Attendance**

**This is an experiential course!** You must be in class to partake in the experience. There is NO substitute for being in-class. Attendance is not taken. However, there will be MANY in-class assignments, which will be collected for credit. Classroom attendance, advanced preparation and in-class participation by students enrolled in FNR 598 is needed to accomplish the objectives of this course. We will use a “Responsible Adult Attendance” policy in this course. If you are sneezing, coughing or contagious in any way – DO NOT ATTEND CLASSES! Students who miss class due to illness or legitimate professional activities must complete homework, quizzes, and assignments in a timely manner to the extent that is reasonable. Be a responsible person and stay home when you are ill. **In order to obtain an excused absence inform the TA AND Professor Hardiman by email prior to the beginning of the class period.** Good communication with your team members is also essential. In-class activities, quizzes, peer evaluations and other methods will be used to record participation and contributions. The consequences of poor preparation, participation and contributions will be lower scores on assignments. Excessive unexcused absences from class will result in point deductions from your semester score proportional to the frequency of unexcused absences. Make-up work will be allowed for excused absences only.

Missing more than 10% of FNR 598 through absences and tardiness is too much. There are 44 class days of 50 minutes each. You do the math. Students are allocated four excused absences (see above). Hardships and emergencies should be brought to the attention of Professor Hardiman.

Excessive instances of tardiness are not acceptable. Students need to make arrangements to be in class on time on a regular basis. It is possible to walk to Forestry within 10 minutes from almost every academic building where classes are held. It is Purdue University policy that instructors are required to release you from class on-time. The “Responsible Adult Attendance” policy applies to tardiness as well. Inform Professor Hardiman and the course TA in advance if you know you will be late or must leave class early. Students arriving late should minimize disruption to the class.

**Ethics & Academic Dishonesty**

All students are expected to act in an honest and ethical manner consistent with Purdue University regulations. It is your responsibility to read "Academic Integrity: A Guide for Students" [https://www.purdue.edu/odos/academic-integrity/](https://www.purdue.edu/odos/academic-integrity/). The consequences for acts of academic dishonesty will range from punitive grade reduction to course failure. Specifically, students should understand the definition of plagiarism. The information on plagiarism at the link below is required reading: [http://honor council.georgetown.edu/whatisplagiarism](http://honor council.georgetown.edu/whatisplagiarism)

Incidents of academic misconduct in this course will be addressed by the course instructor and referred to the office of Student Rights and Responsibilities (OSRR) for review at the university level. Scholastic dishonesty includes, but is not limited to, cheating, use of illegal crib notes, copying during examinations, copying of assignments, exercises, and computer programs, plagiarism, and knowingly furnishing false information.
Moreover, knowingly aiding and abetting, directly or indirectly, other parties in committing dishonest acts is in itself dishonest.

Any violation of course policies as it relates to academic integrity will result minimally in a failing or zero grade for that particular assignment, and at the lead instructor’s discretion may result in a failing grade for the course. In addition, all incidents of academic misconduct will be forwarded to OSRR, where university penalties, including removal from the university, may be considered. In addition, students should be made aware that they can report issues of academic integrity that they observe, either through the Office of the Dean of Students (purdue.edu/odos), call 765-494-8778 or email integrity@purdue.edu. While information may be submitted anonymously, the more information that is submitted provides the greatest opportunity for the university to investigate the concern.

It is expected that students will follow the Purdue Honors Pledge in this class: “As a boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together – we are Purdue.”

**Mandatory out of class activities**

There are several activities that must be completed as part of FNR 59800 and will need to be completed outside of class hours. Class hours may be adjusted to account for required out of class activities.

**Emergency Preparedness**


**Expectations of Emerging Professionals**

Everyone should be familiar with their rights and responsibilities as members of the Purdue University community: [http://www.purdue.edu/policies](http://www.purdue.edu/policies)

**Mental Health**

Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at 765-494-6995 and [http://www.purdue.edu/caps/](http://www.purdue.edu/caps/) during and after hours, on weekends and holidays or through its counselors physically located in the Purdue University Student Health Center (PUSH) during business hours.
Aquatic Sciences – Marine and Freshwater Biology concentration

Bachelor of Science in Agriculture (AQSC) 120± Credits

The proposed Aquatic Sciences program with a concentration in Marine and Freshwater Biology will prepare students for professional careers in marine and freshwater biology research, management and conservation. Interdisciplinary investigations of current environmental problems are promoted, with an emphasis on the diversity of marine and freshwater systems. Graduates receive a Bachelor of Science in Agriculture degree. Sustainable management and conservation of natural aquatic systems in the real world is emphasized.

Freshman Year

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
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<td>(4) BTNY 11000 Introduction to Plant Science**†</td>
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<tr>
<td>(0.5) AGR 11900 Intro to FNR Academic Programs*</td>
<td>(3) CHM 11200 General Chemistry II**†</td>
</tr>
<tr>
<td>(4) BIOL 11000 Fundamentals of Biology I**†</td>
<td>(3) COM 11400 or COM 21700 or EDPS 31500 Speech or SCLA 10200 †</td>
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<td>(3) CHM 11100 General Chemistry I**†</td>
<td>(3) FNR 12500 Environmental Science &amp; Conservation*†</td>
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<td>(3-4) ENGL 10600 or English 10800 or HONR 19903 or SCLA 10100**†</td>
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<tr>
<td>(3) MA 16010 Applied Calculus I**†</td>
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Sophomore Year

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<tr>
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<th>Fourth Semester</th>
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<tr>
<td>(3) Economics Selective*†</td>
<td>(3) AGRY 25500 Soil Science or AGRY 27000 Forest Soils</td>
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<tr>
<td>(3) FNR 20100 Marine Biology</td>
<td>(2) BOL 28600 Introduction to Ecology and Evolution</td>
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<tr>
<td>(3) FNR 24150 Ecology &amp; Systematics of Fishes, Amphibians, and Reptiles</td>
<td>(3) FNR 21000 Natural Resource Information Management</td>
</tr>
<tr>
<td>(1) FNR 24250 Laboratory in Ecology &amp; Systematics of Fishes, Amphibians, and Reptiles</td>
<td>(3) FNR 25150 Ecology &amp; Systematics of Mammals and Birds</td>
</tr>
<tr>
<td>(3) STAT 30100 Elementary Statistical Methods**†</td>
<td>(1) FNR 25250 Laboratory in Ecology &amp; Systematics of Mammals and Birds</td>
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<tr>
<td>(3) Written or Oral Communication Selective*</td>
<td>(3) FNR 35100 Aquatic Sampling Techniques</td>
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Summer Session

(1) FNR 37010 Natural Resources Practicum
(2) FNR 37100 Fisheries and Aquatic Sciences Practicum
(6)

Junior Year

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<tr>
<th>Fifth Semester</th>
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<tr>
<td>(3) FNR 22310 Introduction to Environmental Policy or POL 22300 Introduction to Environmental Policy</td>
<td>(3) FNR 30500 Conservation Genetics</td>
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<td>(3) FNR 37800 Marine Biology Practicum</td>
<td>(3) FNR 38400 Statistics for Natural Resources</td>
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<td>(4) FNR 45600 Fish and Marine Population Dynamics</td>
<td>(4) FNR 38500 Fish Biology &amp; Ecology</td>
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<td>(3) International Studies Selective</td>
<td>(3) FNR 40100 Limnology</td>
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Senior Year

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<tr>
<th>Seventh Semester</th>
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<tr>
<td>(3) Aquatics Selective</td>
<td>(2) Aquatic Animal Health Selective</td>
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<tr>
<td>(3) EAPS 40300 Physical Oceanography</td>
<td>(3) FNR 37500 Human Dimensions of Nat Res Mgt.</td>
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<tr>
<td>(3) Physical Science Selective</td>
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<tr>
<td>(3) Ethics Selective**†</td>
<td>(3) FNR 45800 Advanced Marine Biology (capstone)</td>
</tr>
<tr>
<td>(1) FNR 47000 Fundamentals of Planning</td>
<td>(3) Humanities or Social Sciences Selective*</td>
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<tr>
<td>(3) Humanities or Social Sciences Selective*</td>
<td>(2-3) Unrestricted Elective</td>
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Selectives List of Courses

Aquatic Animal Health Selective: Choose one from FNR 52700 Ecotoxicology, FNR 52800 Wildlife Forensics, FNR 52900 Disease Ecology.

Aquatic Selective for Fisheries Concentration: Choose one from FNR 45300 Fish Physiology, FNR 45800 Advanced Marine Biology, FNR 37800 Marine Biology Practicum, AGRY 33700 Environmental Hydrology, SFS 31100 Aquaponics, FNR 54300 Conservation Biology, or either of the Aquatic Animal Health Selectives not previously selected.

Aquatic Selective for Marine & Freshwater Biology Concentration: Choose one from FNR 45200 Aquaculture, FNR 45300 Fish Physiology, FNR 45700 Practical Fisheries Management, AGRY 33700 Environmental Hydrology, SFS 31100 Aquaponics, FNR 54300 Conservation Biology or either of the Aquatic Animal Health Selectives (FNR 52700, FNR 52800, FNR 52900) not previously selected.

Economics Selective: AGEC 20300 Introductory Microeconomics for Food and Agribusiness; AGEC 20400 Introduction to Resources Economics and Environmental Policy; ECON 25100 Microeconomics.

Ethics Selective: PHIL 11100 Ethics; PHIL 28000 Ethics and Animals; PHIL 29000 Environmental Ethics.

International Studies Selective: Choose one from FNR 23000 World’s Forests and Society, FNR 48800 Global Environmental Issues.

Physical Science Selective: EAPS 10400 Oceanography. Additional courses in chemistry, physics, geology, and earth sciences, as approved by the FNR plan-of-study coordinator, that meet requirements for the American Fisheries Society’s (AFS) Certified Fisheries Professional program.
**Forestry**

Concentration: Forest Science

Bachelor of Science in Forestry (FORS) 124+ credits

The forest science concentration prepares students to pursue a graduate degree in forest biology or plant sciences-related discipline. Graduates receive a Bachelor of Science in Forestry degree. The program is accredited by the Society of American Foresters.

### Freshman Year

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<td>(3) CHM 11200 General Chemistry</td>
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<td>(BIOL 11000 Fundamentals of Biology I)</td>
<td>(3) Oral Communication Selective</td>
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<td>(3) CHM 11000 General Chemistry</td>
<td>(3) FNR 12500 Environ. Sci. Conservation</td>
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<td>(3) MA 10610 Applied Calculus I</td>
<td>(3) MA 16020 Applied Calculus II</td>
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<td>(4) ENGL 10600 First-year Composition</td>
<td>(3-4) Written Communication Selective</td>
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<td>(3) Oral Communication Selective</td>
<td>(2-3) Unrestricted Elective</td>
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### Sophomore Year

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<td>(3) FNR 22500 Dendrology</td>
<td>(3) AGRY 27000 Forest Soils</td>
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<tr>
<td>(3) FNR 23000 World’s Forests and Society</td>
<td>(2) BIOL 28600 Intro Ecology &amp; Evol</td>
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<tr>
<td>(3) FNR 22310 Introduction to Environmental Policy or POL 22300 Introduction Environmental Policy</td>
<td>(3) FNR 21000 Nat. Res. Info Mgt.</td>
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<tr>
<td>(3) STAT 30100 Elementary Statistical Methods</td>
<td>(3) FNR 35300 Nat Res. Measurement</td>
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<tr>
<td>(3) Ecology and Systematics Selective</td>
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<tr>
<td>(3) Economics Selective</td>
<td>(1) Lab in Ecol. and Systematics Sel.</td>
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<tr>
<td>(3) Humanities / Social Science Selective</td>
<td>(3) Humanities / Social Sciences Selective</td>
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**Summer Session**

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<tr>
<td>(1) FNR 37010 Natural Resources Practicum</td>
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<td>(1) FNR 37050 Forest Habitats and Communities Practicum</td>
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### Junior Year

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<tr>
<td>(2) PDL 22300 Introduction to Environmental Policy or FNR 22310 Introduction to Environmental Policy</td>
<td>(3) FNR 35500 Quantitative Methods</td>
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<td>(3) FNR 30110 Sustainable Wood Prd. Manfac.</td>
<td>(3) FNR 37500 Human Dimensions</td>
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<tr>
<td>(3) FNR 33100 Forest Ecosystems</td>
<td>(3) FNR 40700 Forest Economics</td>
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<tr>
<td>(3) FNR 35700 Fundamental Remote Sensing</td>
<td>(3) Humanities / Social Sciences Selective</td>
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<tr>
<td>(3) FNR 43200 Tree Physiology</td>
<td>(3) Elective</td>
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<tr>
<td>(2) Forest Health Selective</td>
<td>(3) Concentration Selective</td>
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<td>(3) Ethics Selective</td>
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### Senior Year

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<tr>
<td>(3) ENGL 42000 Business Writing or ENGL 42100 Technical Writing</td>
<td>(3) FNR 30110 Sustain Wood Prd. Manfac.</td>
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<tr>
<td>(3) FNR 33990 Principles of Silviculture</td>
<td>(3) FNR 40910 Forest Resource Mgt.</td>
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<td>(3) FNR 47000 Fundamentals of Planning</td>
<td>(3) Forestry Selective</td>
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<td>(2) Elective</td>
<td>(3) Forest Health Selective</td>
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<td>(2) FNR 49900 Thesis</td>
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<td>(3) Concentration Selective</td>
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*You must complete 9 credits of coursework with an international focus and 3 credits in the area of multicultural awareness. These may overlap with other required or selective coursework.*
The most current approved course lists for College of Agriculture Core requirements, including humanities, social sciences, written or oral communications, international understanding, and multicultural awareness, are available at: http://www.ag.purdue.edu/oap/Pages/core_requirements.aspx.

University Common Core requirement are available at: http://www.purdue.edu/provost/initiatives/curriculum/course.html.

**Concentration Selectives**

**Plant Biology:** AGRY 32000 Genetics; AGRY 32100 Genetics Lab; AGRY 48000 Plant Genetics; AGRY 52000 Principles and Methods of Plant Breeding; AGRY 52500 Crop Physiology and Ecology; BIOL 24100 Biology IV: Genetics and Molecular Biology; BIOL 41500 Introduction to Molecular Biology; BIOL 47800 Introduction to Bioinformatics; BTNY 30200 Plant Ecology; BTNY 30500 Fundamentals of Plant Classification; BTNY 31600 Plant Anatomy; BTNY 35000 Biotechnology in Agriculture; BTNY 42000 Plant Cellular and Developmental Biology; BTNY 55200 Molecular Approaches in Plant Biology; CHM 25500 Organic Chemistry; CHM 53300 Introductory Biochemistry; FNR 30500 Conservation Genetics.

**Forest Geospatial Analytics:** AT 20900 Civilian Unmanned Aerial Systems; ASM 21600 Surveying; FNR 35900 Spatial Ecology and GIS; CE 40300 Principles of Photogrammetry and Remote Sensing.

**Forest Ecology and Silviculture:** AGRY 34900 Soil Ecology; BIOL 48300 Great Issues: Environmental and Conservation Biology; BIOL 58500 Ecology; BIOL 59100 Field Ecology; FNR 33300 Fire Effects in Forest Environments; FNR 53500 Forest Regeneration; FNR 53600 Ecology of Disturbance; FNR 53601 Ecology of Disturbance Practicum; FNR 54300 Conservation Biology I.

**Biometrics and Statistics:** BIOL 58210 Ecological Statistics; STAT 50300 Statistical Methods for Biology; STAT 51200 Applied Regression Analysis; STAT 51400 Design of Experiments.

**Ecology and Systematics Selectives:** FNR 24150 Ecology & Systematics of Fishes, Amphibians, and Reptiles or FNR 25150 Ecology & Systematics of Mammals and Birds.

**Economics Selectives:** AGEC 20300 Introductory Microeconomics for Food and Agribusiness; AGEC 20400 Introduction to Resources Economics and Environmental Policy; ECON 25100 Microeconomics.

**Ethics Selective:** PHIL 11100 Ethics; PHIL 28000 Ethics and Animals; PHIL 29000 Environmental Ethics.

**Forest Health Selectives:** BTNY 30100 Introductory Plant Pathology; BTNY 52500 Intermediate Plant Pathology; BTNY 53500 Plant Disease Management; BTNY 55800 Pathogens of Plant Disease; ENTM 20600 General Entomology; ENTM 20700 General Entomology Laboratory; ENTM 41000 Applied Insect Biology; ENTM 41001 Insects of Urban Landscapes; FNR 33300 Fire Effects in Forest Environments.

**Humanities or Social Sciences Selectives:** See approved list at: https://ag.purdue.edu/oap/Pages/core_social-humanities.aspx.

**International Understanding:** See approved list at: https://ag.purdue.edu/oap/Pages/core_international.aspx.

**Multicultural Awareness Selectives:** See approved list at: https://ag.purdue.edu/oap/Pages/core_multicultural.aspx.

**Oral Communication Selectives:** COM 11400 Introduction to Public Speaking; COM 21700 Science Writing and Presentation; or EDPS 31500 Collaborative Leadership: Interpersonal Skills; SCLA 10200 Transformative Texts: Critical Thinking & Communication II: Modern World.
Forestry
Concentration: Forest Management
Bachelor of Science in Forestry (FORS) 124+ credits

The forest management concentration prepares students for careers with organizations that manage forests and as consulting foresters working with private landowners. Students apply biological, ecological, economic, and social knowledge to develop and administer forest management plans on both public and private forestland. Graduates receive a Bachelor of Science in Forestry degree with a concentration in Forest Management. The program is accredited by the Society of American Foresters. Sustainable management of natural resource systems in the real world is emphasized.

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<td>(1) FNR 24250 Lab in Ecol. &amp; Syst. of Fishes, Amphibians &amp; Reptiles or FNR 25250 Lab in Ecol. &amp; Syst. Of Mammals &amp; Birds</td>
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<td>(3) FNR 38400 Statistics for Natural Resources or ENTM 30100 Experimentation &amp; Analysis</td>
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<td>(3) FNR 43400 Tree Physiology</td>
<td>(3) FNR 40700 Forest Economics</td>
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<td>(3) Forestry Health Selective</td>
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<tr>
<td>(3) FNR 33900 Principles of Silviculture</td>
<td>(3) Grand Challenges in Forest Management</td>
</tr>
<tr>
<td>(1) FNR 47000 Fundamentals of Planning</td>
<td>(3) Humanities or Social Sciences Selective*</td>
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<tr>
<td>(3) Ethics Selective†*</td>
<td>(3) Unrestricted Electives</td>
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<tr>
<td>(3) Forest Health Selective</td>
<td>(2) Unrestricted Electives</td>
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<td>(3) Unrestricted Elective</td>
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†University Common Core requirements are explained at: http://www.purdue.edu/provost/initiatives/curriculum/course.html.

*College of Agriculture Core requirements are explained at: https://ag.purdue.edu/oap/Pages/core_requirements.aspx.

**Ethics Selective**: PHIL 11100 Ethics; PHIL 28000 Ethics and Animals; PHIL 29000 Environmental Ethics.

**Forestry Selective**: FNR 30500 Conservation Genetics; FNR 31110 Identification, & Basic Properties of Wood; FNR 35900 Spatial Ecology and GIS, FNR 44400 Arboricultural Practices; FNR 53500 Forest Regeneration; FNR 53600 Ecology of Disturbance; FNR 53601 Ecology of Disturbance Practicum.

**Forest Health Selectives**: BTNY 30100 Introductory Plant Pathology; BTNY 52500 Intermediate Plant Pathology; BTNY 53500 Plant Disease Management; BTNY 55800 Pathogens of Plant Disease; ENTM 20600 General Entomology; ENTM 20700 General Entomology Laboratory; ENTM 41000 Applied Insect Biology; ENTM 41001 Insects of Urban Landscapes; FNR 33300 Fire Effects in Forest Environments.

**Humanities or Social Sciences Selective**: See approved list at: https://ag.purdue.edu/oap/Pages/core_social-humanities.aspx.

**International Understanding**: See approved list at: https://ag.purdue.edu/oap/Pages/core_international.aspx.

**Economics Selective**: AGEC 20300 Introductory Microeconomics for Food and Agribusiness; AGEC 20400 Introduction to Resources Economics and Environmental Policy; ECON 25100 Microeconomics.

**Multicultural Awareness Selective**: See approved list at: https://ag.purdue.edu/oap/Pages/core_multicultural.aspx

**Oral Communication Selective**: COM 11400 Introduction to Public Speaking; COM 21700 Science Writing and Presentation; or EDPS 31500 Collaborative Leadership: Interpersonal Skills; SCLA 10200 Transformative Texts: Critical Thinking & Communication II: Modern World.

**Written Communication Selective**: ENGL 10600 English Composition; ENGL 10800 Accelerated First-Year Composition; HONR 19903 Interdisciplinary Approaches in Writing; SCLA 10100 Transformative Texts: Critical Thinking & Communication I: Antiquity & Modernity.
Forestry
Concentration: Sustainable Biomaterials
Bachelor of Science in Forestry (FORS) 124 credits

The forestry program prepares students for professional careers with organizations that manage forests and related lands. Students apply biological, ecological, economic, and social knowledge to develop and administer forest management plans. Graduates receive a Bachelor of Science in Forestry degree. The program is accredited by the Society of American Foresters. Sustainable management of natural resource systems in the real world is emphasized. The Sustainable Biomaterials concentration specifically familiarizes students with forest products procurement and skills useful in the primary and secondary forest products manufacturing industries.

Freshman Year

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>(0.5) AGR 10100 Intro to College Agriculture &amp; Purdue</td>
<td>(4) BTNY 11100 Principles of Plant Biology</td>
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<tr>
<td>(0.5) AGR 11900 Intro to FNR Academic Programs</td>
<td>(3) CHM 11200 General Chemistry II</td>
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<td>(4) BTNY 11000 Introduction to Plant Science</td>
<td>(3-4) Written Communication Selective</td>
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<tr>
<td>(3) CHM 11100 General Chemistry I</td>
<td>(3) FNR 12500 Environmental Science &amp; Conservation†*</td>
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<td>(3) MA 16010 Calculus</td>
<td>(2-3) Unrestricted Elective</td>
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<td>(3) Oral Communication Selective</td>
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Sophomore Year

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<thead>
<tr>
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<tr>
<td>(3) FNR 22500 Dendrology</td>
<td>(3) AGRY 27000 Forest Soils</td>
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<tr>
<td>(3) FNR 22310 or POL 22300 Introduction to Environmental Policy</td>
<td>(3) FNR 21000 Natural Resource Info. Management</td>
</tr>
<tr>
<td>(3) STAT 30100 Elementary Statistical Methods</td>
<td>(3) FNR 35300 Natural Resources Measurement</td>
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<tr>
<td>(3) Humanities or Social Sciences Selective</td>
<td>(3) Ethics Selective</td>
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<tr>
<td>(3) Microeconomics Selective</td>
<td>(2) Humanities or Social Sciences Selective</td>
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Summer Session

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<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>(1) FNR 37010 Natural Resources Practicum</td>
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<tr>
<td>(1) FNR 37050 Forest Habitats and Communities Practicum</td>
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<tr>
<td>(4) FNR 37200 Forestry Practicum</td>
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Junior Year

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<thead>
<tr>
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<tr>
<td>(3) FNR 33100 Forest Ecosystems</td>
<td>(3) FNR 31110 Identification &amp; Basic Properties of Wood</td>
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<tr>
<td>(3) FNR 35700 Fundamental Remote Sensing</td>
<td>(3) FNR 35500 Quantitative Methods Res. Management</td>
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<tr>
<td>(3) FNR 43400 Tree Physiology</td>
<td>(3) TLI 23500 Intro to Lean and Sustainable Systems</td>
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<tr>
<td>(3) Concentration Selective</td>
<td>(3) FNR 37500 Human Dimensions of Natural Res. Mgt.</td>
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<tr>
<td>(3) Unrestricted Elective</td>
<td>(3) FNR 40700 Forest Economics</td>
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Senior Year

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<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>(3) FNR 30110 Sustainable Wood Prd. Mnfac. Technical Writing</td>
<td>(3) ENGL 42000 Business Writing or ENGL 42100</td>
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<td>(3) FNR 33900 Principles of Silviculture</td>
<td>(3) FNR 40910 Forest Resource Management</td>
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<tr>
<td>(3) FNR 48410 Sustainable Wood Products, Furniture and Manufacturing (Capstone)</td>
<td>(3) TLI 33400 Economic Analysis for Tech. Systems</td>
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<td>(3) Concentration Selective</td>
<td>(3) TLI 31600 Statistical Quality Control</td>
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<td>(3) Unrestricted Elective</td>
<td>(3) Concentration Selective</td>
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</table>

†University Common Core requirements are explained at: http://www.purdue.edu/provost/initiatives/curriculum/course.html.
**SUBO Concentration Selective:** FNR 23000 World Forestry and Society; FNR 35500 Quantitative Methods for Resource Management; FNR 40910 Forest Resource Management; TLI 11200 Foundations of Technology Leadership; TLI 15200 Business Principles for Organizational Leadership; TLI 43530 Operations Planning & Management; TLI 43540 Facilities Planning and Material Handling; ENTR 31000 Marketing and Management for New Ventures; CGT 11000 Technical Graphics Communication; MET 14300 Materials and Processes I; MET 24500 Manufacturing Systems; CSR 30900 Leadership Strategies; CSR 33200 Cross-Cultural Marketing and International Retailing; AGEC 31000 Farm Organizations; AGEC 31100 Accounting for Farm Business Planning; AGEC 32100 Principles of Commodity Marketing; AGEC 33100 Principles of Selling in Ag Business; AD 49000 Special Problems in Art and Design; AD 53500 Furniture Design.

**Ethics Selective:** PHIL 11100 Ethics; PHIL 28000 Ethics and Animals; PHIL 29000 Environmental Ethics.

**International Understanding:** See approved list at: [https://ag.purdue.edu/oap/Pages/core_international.aspx](https://ag.purdue.edu/oap/Pages/core_international.aspx).

**Microeconomics selective:** AGEC 20300 Introductory Microeconomics for Food and Agribusiness; AGEC 20400 Introduction to Resources Economics and Environmental Policy; ECON 25100 Microeconomics.

**Multicultural Awareness Selective:** See approved list at: [https://ag.purdue.edu/oap/Pages/core_multicultural.aspx](https://ag.purdue.edu/oap/Pages/core_multicultural.aspx).

**Oral Communication Selective:** COM 11400 Introduction to Public Speaking; COM 21700 Science Writing and Presentation; or EDPS 31500 Collaborative Leadership: Interpersonal Skills; SCLA 10200 Transformative Texts: Critical Thinking & Communication II: Modern World.

**Humanities or Social Sciences Selective:** See approved list at: [https://ag.purdue.edu/oap/Pages/core_social-humanities.aspx](https://ag.purdue.edu/oap/Pages/core_social-humanities.aspx).

**Written Communication Selective:** ENGL 10600 English Composition; ENGL 10800 Accelerated First-Year Composition; HONR 19903 Interdisciplinary Approaches in Writing; SCLA 10100 Transformative Texts: Critical Thinking & Communication I: Antiquity & Modernity.
Forestry
Concentration: Urban Forestry
Bachelor of Science in Forestry (FORS) 124± credits

The forestry program prepares students for professional careers with organizations that manage forest and related lands. Students apply biological, ecological, economic, and social knowledge to develop and administer forest management plans. Graduates receive a Bachelor of Science in Forestry degree. The program is accredited by the Society of American Foresters. Sustainable management of natural resource systems in the real world is emphasized.

### Freshman Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td>(0.5) AGR 10100 Intro to College Agriculture &amp; Purdue ⁷</td>
<td>(4) BTNY 11000 Introduction to Plant Science ²⁴</td>
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<tr>
<td>(0.5) AGR 11900 Intro to FNR Academic Programs*</td>
<td>(4) BTNY/BIOL 11100 Selective ⁷</td>
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<tr>
<td>(4) BIOL 11000 Fundamentals of Biology ¹²</td>
<td>(3) CHM 11200 General Chemistry II ²⁴</td>
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<td>(4) BTNY/BIOL 11000 Selective ⁷</td>
<td>(3) Oral Communication Selective ⁷</td>
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<td>(3) CHM 11100 General Chemistry I ²⁴</td>
<td>(3) FNR 12500 Environ Science &amp; Conserva²n ³⁷</td>
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<td>(3-4) Written Communication Selective ⁷</td>
<td>(3) MA 16020 Applied Calculus II ²⁴</td>
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<tr>
<td>(3) MA 16010 Applied Calculus I ²⁴</td>
<td>(3) Economics Selective ²⁴</td>
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### Sophomore Year

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<tr>
<th>Third Semester</th>
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<tr>
<td>(3) Economics selective ²⁴</td>
<td>(3) AGRY 27000 Forest Soils</td>
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<td>(3) FNR 22500 Dendrology</td>
<td>(2) BIOL 28600 Intro to Ecology and Evolution</td>
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<tr>
<td>(3) FNR 23000 World’s Forests &amp; Society</td>
<td>(3) Ethics Elective</td>
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<td>(3) Ecology &amp; Systematics Selective</td>
<td>(3) FNR 21000 Natural Resource Info Mgmt.</td>
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<tr>
<td>(1) Ecology &amp; Systematics Laboratory Selective</td>
<td>(4) Ecology &amp; Systematics Laboratory Selective</td>
</tr>
<tr>
<td>(2) STAT 30100 Elementary Statistical Methods ³⁷</td>
<td>(3) FNR 35300 Natural Res. Measure ³⁷</td>
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<tr>
<td>(3) Humanities or Social Sciences Selective ³⁷</td>
<td>(3) Humansities or Social Sciences Selective ³⁷</td>
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<tr>
<td>(3) Written or Oral Communication Selective ³⁷</td>
<td>(2) Written or Oral Communication Selective ³⁷</td>
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### Summer Session

(1) FNR 37010 Natural Resources Practicum
(1) FNR 37050 Forest Habitats & Communities Practicum
(4) FNR 37200 Forestry Practicum
(6) 

### Junior Year

<table>
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<tr>
<th>Fifth Semester</th>
<th>Sixth Semester</th>
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<tr>
<td>(3) FNR 30110 Sustainable Wood Prod Mgt.</td>
<td>(3) FNR 35500 Quant Methods Res. Mgt.</td>
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<td>(3) FNR 33100 Forest Ecosystems</td>
<td>(3) FNR 37500 Human Dimensions</td>
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<tr>
<td>(3) FNR 35700 Fundamental Remote Sensing</td>
<td>(3) FNR 40700 Forest Economics</td>
</tr>
<tr>
<td>(3) FNR 43400 Tree Physiology</td>
<td>(3) FNR 44500 Urban Forestry Issues</td>
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<tr>
<td>(4) FNR 44400 Arboriculture Practices</td>
<td>(3) Concentration Selective</td>
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<td>(3) POL 22300 or FNR 22310 Intro Environ. Policy</td>
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### Senior Year

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<tr>
<th>Seventh Semester</th>
<th>Eighth Semester</th>
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<tr>
<td>(2) ENTM 41000 Appl. Insect Biology</td>
<td>(3) FNR 40910 Forest Resource Mgt.</td>
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<td>(1) ENTM 44101 Insects Urban Landscape</td>
<td>(3) ENGL 42000 Business Writing</td>
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<tr>
<td>(3) FNR 33900 Principles of Silviculture</td>
<td>or ENGL 42100 Technical Writing</td>
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<tr>
<td>(3) FNR 35900 Spatial Ecology and GIS</td>
<td>(3) Humanities / Social Sciences Selective</td>
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<td>(3) FNR 58600 Urban Ecology</td>
<td>(3) Concentration Selective</td>
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<tr>
<td>(1) FNR 47000 Fundamentals of Planning</td>
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<td>(2) Unrestrictive Elective</td>
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<td>(15)</td>
<td>(13-14)</td>
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± You must complete 6 credits of coursework with an international focus and 3 credits in the area of multicultural awareness. These may overlap with other required or selective coursework.
The most current approved course lists for College of Agriculture Core requirements, including humanities, social sciences, written or oral communications, international understanding, and multicultural awareness, are available at:
http://www.ag.purdue.edu/oap/Pages/core_requirements.aspx.

University Common Core requirement are available at: http://www.purdue.edu/provost/initiatives/curriculum/course.html.

**Humanities or Social Science Selectives**: see approved list

**International Understanding Selectives**: See approved list

**Multicultural Awareness Selectives**: See approved list

**Ecology & Systematics Selective**: FNR 24150 Ecology and Systematics of Fishes, Amphibians and Reptiles; FNR 25150 Ecology and Systematics of Mammals and Birds

**Laboratory in Ecology & Systematics Selective**: FNR 24250 Laboratory in the Ecology and Systematics of Fishes, Amphibians and Reptiles; FNR 25250 Laboratory in the Ecology and Systematics of Mammals and Birds

**Economics Selective**: AGEC 20300 Introductory Microeconomics for Food and Agribusiness; AGEC 20400 Introduction to Resources Economics and Environmental Policy; ECON 25100 Microeconomics.

**Ethics Selective**: PHIL 11100 Ethics; PHIL 28000 Ethics and Animals; PHIL 29000 Environmental Ethics.

**Concentration Selective**: FNR 30110 Sustainable Wood Products Manufacturing; FNR 31110 Identification and Basic Properties of Wood; ENTM 40100 Applied Insect Biology; BTNY 30100 Introduction to Plant Pathology.

**Oral Communication Selective**: COM 11400 Introduction to Public Speaking; COM 21700 Science Writing and Presentation; or EDPS 31500 Collaborative Leadership: Interpersonal Skills; SCLA 10200 Transformative Texts: Critical Thinking & Communication II: Modern World.

**Written Communication Selective**: ENGL 10600 English Composition; ENGL 10800 Accelerated First-Year Composition; HONR 19903 Interdisciplinary Approaches in Writing; SCLA 10100 Transformative Texts: Critical Thinking & Communication I: Antiquity & Modernity.
# Urban Forestry Minor

Department of Forestry and Natural Resources

Credit Hours Required: 15-16

Minor Code: UFOR

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<tr>
<th>Credits</th>
<th>Course #</th>
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<td><strong>Required Courses</strong></td>
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<tr>
<td>(4)</td>
<td>FNR 44400</td>
<td>Arboricultural Practices</td>
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<tr>
<td>(3)</td>
<td>FNR 44500</td>
<td>Urban Forest Issues</td>
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<tr>
<td>(3)</td>
<td>FNR 58600</td>
<td>Urban Ecology</td>
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<td><strong>Plus 9-6 credit hours from the following list of selectives</strong>:</td>
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<tr>
<td>(3)</td>
<td>AGEC 33000</td>
<td>Management Methods for Agriculture Business</td>
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<td>(3)</td>
<td>AGEC 33100</td>
<td>Principles of Selling in Ag Business</td>
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<td>(3)</td>
<td>AGRY 25500</td>
<td>Soil Science</td>
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<tr>
<td>(3)</td>
<td>BTNY 44600</td>
<td>Integrate Plant Health Management for Ornamental Plants</td>
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<tr>
<td>(3)</td>
<td>BTNY 30100</td>
<td>Plants</td>
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<td>(2)</td>
<td>ENTM 41000</td>
<td>Introduction to Plant Pathology</td>
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<td>(1)</td>
<td>ENTM 41001</td>
<td>Applied Insect Biology</td>
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<td>Insects of Urban Landscapes</td>
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<td>(3)</td>
<td>FNR 21000</td>
<td>Natural Resource Information Management</td>
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<td>(3)</td>
<td>FNR 22310</td>
<td>Introduction to Environmental Policy</td>
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<tr>
<td>(3)</td>
<td>FNR 31110</td>
<td>Identification and Basic Properties of Wood</td>
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<tr>
<td>(3)</td>
<td>FNR 33900</td>
<td>Principles of Silviculture</td>
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<tr>
<td>(3)</td>
<td>FNR 35700</td>
<td>Fundamental Remote Sensing</td>
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<td>(3)</td>
<td>FNR 35900</td>
<td>Spatial Ecology and GIS</td>
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<td>(3)</td>
<td>FNR 37500</td>
<td>Human Dimensions of Natural Resource Management</td>
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<td>(3)</td>
<td>FNR 43400</td>
<td>Tree Physiology</td>
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<td>(3)</td>
<td>FNR 44100</td>
<td>Forest Entomology</td>
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<td>HORT 21700</td>
<td>Woody Landscape Plants</td>
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<td>(4)</td>
<td>HORT 30100</td>
<td>Plant Physiology</td>
</tr>
<tr>
<td>(3)</td>
<td>HORT 31700</td>
<td>Landscape Contracting and Management</td>
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</tbody>
</table>

Contact: Dr. John Dunning  
Office of Student Services  
Pfendler Hall, room G003  
jdunning@purdue.edu  
765-494-3591
Wood Products Manufacturing Technology Minor  
Department of Forestry and Natural Resources  
Credit Hours Required: **18**  
Minor Code: WPMT

<table>
<thead>
<tr>
<th>Credits</th>
<th>Course #</th>
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<tr>
<td>(3)</td>
<td>FNR 30110</td>
<td>Sustainable Forest Products Manufacturing</td>
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<tr>
<td>(3)</td>
<td>FNR 31110</td>
<td>Structure, Identification, &amp; Properties of Woody Biomaterials</td>
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<tr>
<td>(3)</td>
<td>FNR 41800</td>
<td>Properties of Wood Related to Manufacturing</td>
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<td>(3)</td>
<td>FNR 42500</td>
<td>Secondary Wood Products Manufacturing</td>
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<td>(3)</td>
<td>TLI 11100</td>
<td>Introduction to Manufacturing and Supply Chain Systems</td>
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<td>(3)</td>
<td>TLI 23500</td>
<td>Introduction to Lean and Sustainable Systems</td>
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<tr>
<td>(3)</td>
<td>FNR 30110</td>
<td>Sustainable Wood Products Manufacturing</td>
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<tr>
<td>(3)</td>
<td>FNR 31110</td>
<td>Identification and Basic Properties of Wood</td>
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<tr>
<td>(3)</td>
<td>FNR 48400</td>
<td>Sustainable Wood Products, Furniture Design and Manufacturing</td>
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**Plus 6 credit hours from the following list of selectives:**

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<th>Credits</th>
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<td>AD 53500</td>
<td>Furniture Design</td>
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<td>CGT 11000</td>
<td>Technical Graphics Communication</td>
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<td>MET 14300</td>
<td>Materials and Processes I</td>
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<td>(3)</td>
<td>MET 24500</td>
<td>Manufacturing Systems</td>
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<tr>
<td>(3)</td>
<td>TLI 23500</td>
<td>Introduction to Lean and Sustainable Systems</td>
</tr>
<tr>
<td>(3)</td>
<td>TLI 43530</td>
<td>Operations Planning &amp; Management</td>
</tr>
<tr>
<td>(3)</td>
<td>TLI 43540</td>
<td>Facilities Planning and Material Handling</td>
</tr>
</tbody>
</table>

Contact: Dr. John Dunning  
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jdunning@purdue.edu  
765-494-3591
Department of Horticulture and Landscape Architecture

Proposed Course and Curricular Changes
(College of Agriculture Undergraduate/Graduate)

A. COURSES TO BE ADDED

Prefix and Course Number: HORT 21200

Title: Greenhouse and Landscape Fundamentals for Educators

Course Description for University Catalog (include requisites/restrictions): (crosslist with ASEC 21200) This course will prepare future educators in using a greenhouse and landscape as teaching tools. Laboratories will explore how to identify and produce both woody and herbaceous plants while safely maintaining and operating greenhouse technologies. Students will also explore how to implement landscape design technologies and identify tools, equipment, and landscape plants. May not be used as credit toward a degree in Horticulture (including all Concentrations).

B. CURRICULAR CHANGES

Prelandscape Architecture Plan of Study

From:

Previous language (2010-2011) for CODO and Pre-LA to LA program transition:

Beginning freshman, transfer, and re-entry students are admitted to the prelandscape architecture program as applications are received, subject to the limitations of available facilities.

Prelandscape architecture students who wish to continue into the landscape architecture professional program must qualify by meeting the following criteria:

1. Overall GPA – The student must be in good academic standing. A minimum overall GPA in the professional landscape architecture program will be reviewed and announced each year at the beginning of the fall semester.
2. Grade point average of passing grades in the following prelandscape architecture core courses (LA Index): LA 10100, 11600, 21600 and 25000. This grade point index will be reviewed and announced each year at the beginning of the fall semester.
3. The student must have completed 32 credit hours in the prelandscape architecture curriculum.
Transfer students not enrolled in the Purdue University prelandscape architecture curriculum will be admitted to the professional landscape architecture program subject to:

1. Overall GPA – The student must be in good academic standing. A minimum overall GPA in the professional landscape architecture program will be reviewed and announced each year at the beginning of the fall semester.
2. Grade point average of passing grades in the following prelandscape architecture core courses or equivalent (LA Index): LA 10100, 11600, 21600 and 25000. This grade point index will be reviewed and announced each year at the beginning of the fall semester.
3. The student must have completed 32 credit hours in the prelandscape architecture curriculum or approved equivalent courses.

Students not meeting the above criteria may request an interview with the landscape architecture faculty to determine whether or not there are sufficient extenuating circumstances that would indicate a readiness to enter the professional landscape architecture program.

To:

Proposed language for CODO, Transfer and Pre-LA to LA program transition:

Change of Option from Pre-landscape Architecture to the Professional Landscape Architecture Program

Pre-landscape architecture students, who wish to continue into the landscape architecture professional program, or transfer students from other institutions, must qualify by meeting the following criteria, or through further assessment as described below:

1. Overall GPA – The student must be in good academic standing. A minimum overall GPA of 2.5 across all Purdue and transferred credit coursework is necessary for acceptance into the landscape architecture professional program.
2. Grade point average of 3.0 or higher in all landscape architecture prefixed courses taken (LA Index).
3. Completion of LA 10600; or 11600 and 21600; or approved equivalent, and a minimum of 24 credit hours of Purdue accepted college level coursework are the minimum necessary for acceptance into the landscape architecture professional program.

Students transferring from another institution meet minimum credit requirements set by the Office of Admissions. Before being admitted into the landscape architecture professional program students must have completed coursework equivalent to LA11600 and LA21600.

Students not meeting the above criteria will be reviewed by faculty according to a program specific project-based rubric to assess readiness to enter the professional landscape architecture program.
Rubric criteria
Students who do not meet the minimum criteria for overall GPA and LA index may be admitted to the professional landscape architecture program upon further review. Criteria include:
1. GPA comparison. LA index vs. Overall GPA. GPA proximity to the minimum criteria.
2. Individual course grades comparison.
3. Professionalism. Attendance, class participation, and effort in LA courses as assessed by faculty.
4. Faculty review of representative projects from LA 116/ 216; LA 106; or equivalent.

Justification/Rationale:
This updated language serves to clarify the current requirements and creates secondary criteria for use if a student fails to meet the primary requirements.

Sustainable Food and Farming Plan of Study

From:

<table>
<thead>
<tr>
<th>Credits</th>
<th>Fall 3rd Year</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>ANSC 23000 Physiology of Domestic Animals or HORT 30100 Plant Physiology</td>
<td>BIOL 11000 or 11100/CHM 25700</td>
</tr>
</tbody>
</table>

To:

<table>
<thead>
<tr>
<th>Credits</th>
<th>Fall 3rd Year</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-4</td>
<td>Physiology or Production Selective</td>
<td></td>
</tr>
</tbody>
</table>

Physiology or Production Selectives (3-4 credits)
ANSC 23000 Physiology of Domesticated Animals
HORT 30100 Plant Physiology
HORT 31800 Field Production of Horticultural Crops
HORT 31900 Controlled Environment Production of Horticultural Crops

Justification/Rationale:
Students in the SFS major vary in their focus and career interest. HLA has two new production courses of direct value to SFS students that we want to offer as additional options in the core requirements for the program. Faculty advising guides students in the proper direction to meet their goals.

Horticulture: Horticulture Production and Marketing Concentration Plan of Study

From:

<table>
<thead>
<tr>
<th>Credits</th>
<th>Spring 2nd Year</th>
<th>Prerequisite</th>
</tr>
</thead>
</table>
To:

<table>
<thead>
<tr>
<th>Credits</th>
<th>Spring 2nd Year</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>SFS 21000 Small Farm Experience I or SFS 21100 Small Farm Experience II</td>
<td></td>
</tr>
</tbody>
</table>

Justification/Rationale:

This change is intended to provide students in the HPMK Concentration with a valuable experiential learning opportunity in horticultural crop production, something that has been lacking in the curriculum in recent years.

From:

<table>
<thead>
<tr>
<th>Credits</th>
<th>Fall 4th Year</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Business Selective</td>
<td></td>
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</table>

To:

<table>
<thead>
<tr>
<th>Credits</th>
<th>Fall 4th Year</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Concentration Selective</td>
<td></td>
</tr>
</tbody>
</table>

Justification/Rationale:

This change introduces greater flexibility into the HPMK Concentration and allows students to tailor their course choices to their interests and career direction. Faculty advising guides students in the proper direction to meet their goals.

The new concentration selectives list includes all the courses previously listed as concentration selectives and business selectives, except as indicated.
Supporting Document for:

HORT 21200 Greenhouse and Landscape Fundamentals for Educators

Semester(s) Offered: Spring

Schedule Type (e.g. Lecture/Lab) and Hours: Lab: Mon and Wed 9:30-11:20; Mon 11:30-12:20

Credits: 3.00

A. Justification for the course:
Agriculture Education teacher licensure programs are faced with a growing list of coursework needed to meet requirements and standards, with a shrinking number of credit hours available to meet those needs. Students often leave university programs with limited knowledge of specific Agricultural content that they are then expected to teach at secondary schools where they are employed following graduation. To address one such problem in the area of Horticulture, this new course – ‘Greenhouse and Landscape Fundamentals for Educators’ was developed. Data utilized in creating the course, around the topics of landscape horticulture, greenhouse management, plant propagation and basic plant science, included: 1) an evaluation of current Agriculture Education coursework students commonly enrolled in; 2) a review of state and national Agriculture Education curriculum and academic standards; and 3) a survey of current Indiana Agriculture teachers and teaching methodology utilized.

B. Learning Outcomes and Methods of Assessment

   i. Applicable to University Core Curriculum
This course ☐ will ☒ will not be nominated for inclusion on University Foundational Core. If no, skip to section ii.

<table>
<thead>
<tr>
<th>Foundational Learning Outcomes</th>
<th>Check all that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Written Communication</td>
<td>☐</td>
</tr>
<tr>
<td>2. Information Literacy</td>
<td>☐</td>
</tr>
<tr>
<td>3. Oral Communication</td>
<td>☐</td>
</tr>
<tr>
<td>4. Science</td>
<td>☐</td>
</tr>
<tr>
<td>5. Science, Technology and Society</td>
<td>☐</td>
</tr>
<tr>
<td>6. Mathematics/Quantitative Reasoning</td>
<td>☐</td>
</tr>
<tr>
<td>7. Human Cultures: Humanities</td>
<td>☐</td>
</tr>
<tr>
<td>8. Human Cultures: Behavioral &amp; Social Sciences</td>
<td>☐</td>
</tr>
</tbody>
</table>
ii. Applicable to College of Agriculture Core
This course ☐ will ☒ will not be nominated for inclusion on College of Agriculture Core. If no, skip to section iii.

<table>
<thead>
<tr>
<th>College of Agricultural Core</th>
<th>Check all that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mathematics and Sciences</td>
<td>☐</td>
</tr>
<tr>
<td>2. Written and Oral Communication</td>
<td>☐</td>
</tr>
<tr>
<td>3. Humanities and Social Sciences</td>
<td>☐</td>
</tr>
<tr>
<td>4. Multicultural Awareness</td>
<td>☐</td>
</tr>
<tr>
<td>5. International Understanding</td>
<td>☐</td>
</tr>
<tr>
<td>6. Capstone</td>
<td>☐</td>
</tr>
</tbody>
</table>

Graduate Learning Outcomes (for 50000 and 60000 level courses only)

<table>
<thead>
<tr>
<th>Graduate Learning Outcomes</th>
<th>Check all that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Advance Knowledge and Scholarship</td>
<td>☐</td>
</tr>
<tr>
<td>2. Demonstrate Critical Thinking and Problem Solving</td>
<td>☐</td>
</tr>
<tr>
<td>3. Exhibit Ethical Conduct</td>
<td>☐</td>
</tr>
<tr>
<td>4. Communicate Effectively</td>
<td>☐</td>
</tr>
<tr>
<td>5. Develop Professionalism</td>
<td>☐</td>
</tr>
</tbody>
</table>

iv. Describe course objectives and student learning outcomes that address the objectives (i.e., knowledge, communication, critical thinking, ethical research, etc.)

Student Learning Outcomes
1. Students will identify and apply basic propagation techniques.
2. Students will identify and describe plant species specific to greenhouse and landscape plantings.
3. Students will interpret funding for greenhouses, greenhouse technologies, and landscape design equipment.
4. Students will apply IPM, irrigation, and propagation techniques while safely maintaining and operating a greenhouse.
5. Students will analyze and utilize landscape design software and tools to design a landscape.
v. Methods of evaluation or assessment:

<table>
<thead>
<tr>
<th>Methods of assessment</th>
<th>Check all that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. exams and quizzes</td>
<td>☒</td>
</tr>
<tr>
<td>2. assessment and scoring of in class participation</td>
<td>☒</td>
</tr>
<tr>
<td>3. assignments</td>
<td>☒</td>
</tr>
<tr>
<td>4. class presentations</td>
<td>☒</td>
</tr>
<tr>
<td>5. Other (specify): micro teaching</td>
<td></td>
</tr>
</tbody>
</table>

C. Prerequisites: **None**

D. Course Instructor and Contact Information

Dr. Kathryn Orvis  
Office: Rm 3-231 LILY  
Phone: 494-8433;  
Email: orvis@purdue.edu

E. Course Outline of Topics  
Class Schedule and Topics

<table>
<thead>
<tr>
<th>Topic</th>
<th>Activity/ Theme</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welcome and Course Overview</td>
<td>GH Tour, Course Details</td>
<td></td>
</tr>
<tr>
<td>Greenhouse Use and Management and Design</td>
<td>Safety; Creating Plant ID Learning Materials; Plant Propagation: Seeds</td>
<td>Plant Prop Lab</td>
</tr>
<tr>
<td></td>
<td>Greenhouse How-to: Plan, Design and Construction, Quiz</td>
<td></td>
</tr>
<tr>
<td>Vegetative Propagation</td>
<td>Ordering Plants and Supplies; Greenhouse management topics– IPM, nutrition, weeds, and light; Vegetative Propagation: Specialty Structures</td>
<td>Lesson Plan</td>
</tr>
<tr>
<td></td>
<td>Deppe Guest Lecture; Vegetative Propagation: Cuttings</td>
<td>Plant Prop Lab</td>
</tr>
<tr>
<td></td>
<td>Grants, Hallet Guest Lecture; Teaching content lessons- methods (Guest lecture) Quiz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Business Components, Farmers Markets; Torres Guest Lecture</td>
<td>Lesson Plan</td>
</tr>
<tr>
<td>Landscape Design</td>
<td>Landscape Design Software Guest Lecture</td>
<td></td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Nemali Guest lecture (Controlled Environment Ag); Plant Selection and ID; Landscape Design and Planning; Guest Lecture; Quiz</td>
<td>Greenhouse Plan</td>
<td></td>
</tr>
<tr>
<td>Landscape Maintenance</td>
<td>Installation of Landscape Design</td>
<td>Lesson Plan</td>
</tr>
<tr>
<td>Maintaining Landscape - irrigation, nutrition, care, etc. ; Guest Lecture; Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintaining landscape examples in school district; Guest Lecture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Businesses in Greenhouse and Landscape</td>
<td>How to: Plant Sale</td>
<td>Landscape Design</td>
</tr>
<tr>
<td></td>
<td>Landscape businesses; Field trip</td>
<td></td>
</tr>
<tr>
<td>Presentations of designs and plans</td>
<td>Course wrap up</td>
<td>Reflection</td>
</tr>
</tbody>
</table>

* Quiz

F. Reading List (include course text)

G. Library Resources

H. Example of Course Syllabus

Greenhouse and Landscape Fundamentals for Educators
ASEC and HORT 21200

Dr. Orvis                          
Office: Rm 3-231 LILY              
Phone: 494-8433                    
12:20                             
Email: orvis@purdue.edu

Course Information
Spring 2018
Mon – Wed 9:30-11:20; Mon 11:30-12:20
HRGH 1104

Course Description
This course will prepare future educators in using a greenhouse and landscape as teaching tools. The key focus will be preparing students to apply greenhouse and landscape management fundamentals in order to teach these concepts in the classroom. Laboratories will explore how to identify and produce both woody and herbaceous plants while safely maintaining and operating greenhouse technologies. Students will also explore how to implement landscape design technologies and identify tools, equipment, and landscape plants.
Learning Outcomes
1. Students will identify and apply basic propagation techniques.
2. Students will identify and describe plant species specific to greenhouse and landscape plantings.
3. Students will interpret funding for greenhouses, greenhouse technologies, and landscape design equipment.
4. Students will apply IPM, irrigation, and propagation techniques while safely maintaining and operating a greenhouse.
5. Students will analyze and utilize landscape design software and tools to design a landscape.

Required Texts
None. Various online materials will be provided.

Course Requirements
1) Blackboard Course site
2) Resources (will be available on BB):
   a. Online information and readings
   b. Links for:
      i. Content teaching resources
      ii. Grant applications
      iii. Lesson plan libraries - MyCaert, AgEdNet, CASE iv. Greenhouse/landscape plant information and ID v. Landscape design software and tools

Class Schedule and Topics

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Activity/ Theme</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 8</td>
<td>Welcome and Course Overview</td>
<td>GH Tour, Course Details</td>
<td></td>
</tr>
<tr>
<td>10, 17</td>
<td>Greenhouse Use and Management and Design</td>
<td>Safety; Creating Plant ID Learning Materials; Plant Propagation: Seeds</td>
<td>Plant Prop Lab</td>
</tr>
<tr>
<td>22*, 24</td>
<td></td>
<td>Greenhouse How-to: Plan, Design and Construction, Quiz</td>
<td></td>
</tr>
<tr>
<td>29, 31</td>
<td>Vegetative Propagation</td>
<td>Ordering Plants and Supplies; Greenhouse management topics – IPM, nutrition, weeds, and light; Vegetative Propagation: Specialty Structures</td>
<td>Lesson Plan</td>
</tr>
<tr>
<td>Feb. 5, 7</td>
<td>Deppe Guest Lecture; Vegetative Propagation: Cuttings</td>
<td></td>
<td>Plant Prop Lab</td>
</tr>
<tr>
<td>12*, 14</td>
<td>Grants, Hallett Guest Lecture; Teaching content lessons- methods (Guest lecture) Quiz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Component</td>
<td>Lesson Plan</td>
<td></td>
</tr>
<tr>
<td>------</td>
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<td>----------------------------------</td>
<td></td>
</tr>
<tr>
<td>19, 21</td>
<td>Business Components, Farmers Markets; Torres Guest Lecture</td>
<td>Lesson Plan</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Landscape Design</td>
<td>Landscape Design Software Guest Lecture</td>
<td>Greenhouse Plan</td>
</tr>
<tr>
<td>28, March 5*</td>
<td>Nemali Guest lecture (Controlled Environment Ag); Plant Selection and ID; Landscape Design and Planning; Guest Lecture; Quiz</td>
<td>Greenhouse Plan</td>
<td></td>
</tr>
<tr>
<td>March 19, 21</td>
<td>Landscape Maintenance</td>
<td>Installation of Landscape Design</td>
<td>Lesson Plan</td>
</tr>
<tr>
<td>26, 28, April 2*</td>
<td>Maintaining Landscape - irrigation, nutrition, care, etc.; Guest Lecture; Quiz</td>
<td>Lesson Plan</td>
<td></td>
</tr>
<tr>
<td>April 9, 11</td>
<td>Maintaining landscape examples in school district; Guest Lecture</td>
<td>Lesson Plan</td>
<td></td>
</tr>
<tr>
<td>16, 18</td>
<td>Businesses in Greenhouse and Landscape</td>
<td>How to: Plant Sale Landscape businesses; Field trip</td>
<td>Landscape Design</td>
</tr>
<tr>
<td>23*, 25</td>
<td>Presentations of designs and plans</td>
<td>Course wrap up</td>
<td>Reflection</td>
</tr>
</tbody>
</table>

* Quiz

Note: some topics may be added or dropped, as needed, to manage various learning opportunities. Course Assignments

Teaching (250 pts)
- Teaching resource development for Greenhouse Plants or Landscape Plants, for example, create PowerPoint file or Quizlet or some other appropriate and functional resource (50 pts)
- Develop lesson for teaching propagation lab (50 pts)
- Develop lesson plan to teach an aspect of Landscape Design (50 pts)
- Lesson plan or teaching resource, or equivalent, of topic related to course materials and standards - instructor approval of topic required (50 pts)
- Practice teaching lesson with activity (25 pts)
- Reflection of classroom teaching lesson (25 pts)

Doing (150 pts)
- Greenhouse Development Plan (50 pts) o Description of greenhouse to build including: Size; Heating/cooling system; Irrigation system; Materials for structure; Benches, flooring type, walls, roof, doors, etc.; greenhouse supply resources
- Plant Propagation Lab Activities (25 pts)
- Landscape Design Plan – using appropriate software (50 pts)
• Business Plan: for Plant Sale, Greenhouse fundraising (25 pts)

Assessment (100 pts)
• Quizzes – 25 pts each (100 pts total) o Week 3, 6, 9, 12

How to Succeed in This Course
Show up to class, do your best work and turn it in, ON TIME. Be respectful and kind, & use your experience in this course to help your future teaching endeavors.

Grading Scale
Final grades will be calculated on the estimated point total (500 pts). The official final point total will be posted on Blackboard, and will include all of the above, plus any extra credit. The instructor reserves the right to adjust the point total!

The grading scale depicted in the table will be utilized to assigned letter grades to your percentage of total points at the end of the semester.

<table>
<thead>
<tr>
<th>Grade</th>
<th>% of total points</th>
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<tbody>
<tr>
<td>A</td>
<td>93-100</td>
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<tr>
<td>A-</td>
<td>90 – 92</td>
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<tr>
<td>B+</td>
<td>87 – 89</td>
</tr>
<tr>
<td>B</td>
<td>83- 86</td>
</tr>
<tr>
<td>B-</td>
<td>80 – 82</td>
</tr>
<tr>
<td>C+</td>
<td>77 – 79</td>
</tr>
<tr>
<td>C</td>
<td>73 – 76</td>
</tr>
<tr>
<td>C-</td>
<td>70 – 72</td>
</tr>
<tr>
<td>D+</td>
<td>67 – 69</td>
</tr>
<tr>
<td>D</td>
<td>63 – 66</td>
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<tr>
<td>D-</td>
<td>60 – 62</td>
</tr>
<tr>
<td>F</td>
<td>&lt; 60.0</td>
</tr>
</tbody>
</table>

Missed or Late Work
All reports, plans and other assignments must follow given guidelines and format, and should be uploaded into Blackboard. Handwritten work will not be accepted. Work MUST be done independently. Any student that is a party to work that is copied (whether you are the originator or copier) will be given a score of zero for that assignment! The instructor reserves the right to contact the Dean of Students in any event of academic dishonesty.

Grade Appeals
All grade change inquiries, including incorrectly scored quizzes or assignments, must be submitted in writing to Dr. Orvis. One or two sentences should do.

Policies

Student Conduct
You are expected to conduct yourselves as adults, with respect for yourself and others. Please turn off cell phones, pagers, and etc. while in class or lab. Your full attention while in class and lab will make the learning experience a quality one for you, your classmates and your instructors. If you don’t intend to pay attention and be engaged, then don’t come, however…. please see attendance policy below.

Attendance Policy
Students are expected to attend the class sessions, and complete the course assignments. Students are responsible for material covered in class, as well as material that is assigned via
Blackboard or other computer mediated delivery systems. All matters relative to attendance, including the make-up of missed work, are to be arranged between you and Dr. Orvis. In the case of an illness, accident, or an emergency, you should make direct contact with your professor as soon as possible, preferably before the class. If Dr. Orvis cannot be reached directly, a message should be left with her secretary in YDAE (494-8433) or the HLA main office (494-1306).

The University recognizes that the learning mission can be enhanced significantly by extracurricular experiences. Students participating in University-sponsored activities may be permitted to make up classwork missed as a result of this participation. Ultimately, students are responsible for all required coursework and bear full responsibility for any academic consequences that may result due to absence. Please let Dr. Orvis know as soon as possible if you have planned excused absences so that we may arrange to make up missed course work.

**GAPS Policy:** Students will be excused for funeral leave and given the opportunity to earn equivalent credit and to demonstrate evidence of meeting the learning outcomes for missed assignments or assessments in the event of the death of a member of the student’s family.

**Academic Dishonesty**

Purdue’s Honor Pledge- purdu.edu/provost/teachinglearning/honor-pledge.html

“As a boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together - we are Purdue.”

Purdue prohibits "dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty." [Part 5, Section IIIB-2-a, Student Regulations] Furthermore, the University Senate has stipulated that "the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest." [University Senate Document 72-18, December 15, 1972] Please see https://www.purdue.edu/odos/academic-integrity/ for more information.

**Accessibility and Accommodations**

Purdue University strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, you are encouraged to let Dr. Orvis know so that we can discuss options. If accommodations are needed, please schedule a meeting with Dr. Orvis as soon as possible. You are also encouraged to contact the Disability Resource Center at: drc@purdue.edu or by phone: 765-494-1247.

**Use of Copyrighted Materials**

Please refer to: http://www.purdue.edu/policies/academic-research-affairs/ia3.html

**Violent Behavior Policy**
Purdue University is committed to providing a safe and secure campus environment for members of the university community. Purdue strives to create an educational environment for students and a work environment for employees that promote educational and career goals. Violent Behavior impedes such goals. Therefore, Violent Behavior is prohibited in or on any University Facility or while participating in any university activity. See the University’s website for additional information: http://www.purdue.edu/policies/facilities-safety/iva3.html

Nondiscrimination
Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life.

Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, genetic information, marital status, parental status, sexual orientation, gender identity and expression, disability, or status as a veteran. The University will conduct its programs, services and activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in Executive Memorandum No. D-1, which provides specific contractual rights and remedies. Any student who believes they have been discriminated against may visit www.purdue.edu/report-hate to submit a complaint to the Office of Institutional Equity. Information may be reported anonymously.

Student Health Resources
Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at (765)494-6995 and http://www.purdue.edu/caps/ during and after hours, on weekends and holidays, or through its counselors physically located in the Purdue University Student Health Center (PUSH) during business hours. https://www.purdue.edu/push/

Wellness Services are also available at the REC center: http://www.purdue.edu/recwell/programs/wellnessPrograms/index.php

In situations of an emergency, where you are hospitalized or may need to go home for medical care, please work with the Dean of Students to assist in accommodations.

Emergencies
In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. Relevant changes to this course will be posted onto the course website
or can be obtained by contacting the instructors or TAs via email or phone. You are expected to read your @purdue.edu email on a frequent basis. Additional emergency preparedness information can be found at: http://www.purdue.edu/ehps/emergency_preparedness/index.html

Disclaimer
This syllabus is subject to change.
Horticultural Production and Marketing  
Horticulture & Landscape Architecture Department / College of Agriculture

COA-HLA-BS / Major: HOSC/HPMK 202010  
120 credits for graduation

Name:_________________________ PUID:_________________________ Date:____________________

Required Major Courses (24 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>HORT 10100</td>
<td>Fundamentals of Horticulture</td>
</tr>
<tr>
<td>HORT 11000</td>
<td>Survey of Horticulture</td>
</tr>
<tr>
<td>HORT 20100</td>
<td>Plant Propagation</td>
</tr>
<tr>
<td>HORT 30100</td>
<td>Plant Physiology</td>
</tr>
<tr>
<td>HORT 31800</td>
<td>Field Production of Horticultural Crops</td>
</tr>
<tr>
<td>HORT 31900</td>
<td>Controlled Environment Production of Horticultural Crops</td>
</tr>
<tr>
<td>HORT 42700</td>
<td>Horticulture Capstone</td>
</tr>
<tr>
<td>HORT 43500</td>
<td>Principles of Marketing &amp; Management for Horticultural Businesses</td>
</tr>
<tr>
<td>HORT 51300</td>
<td>Nutrition of Horticultural Crops</td>
</tr>
<tr>
<td>HORT 54100</td>
<td>Postharvest Technology of Fruits and Vegetables</td>
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Other Department/Program Course Requirements (88-89 credits) (See Advising Resources)

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>AGEC 20300</td>
<td>Introductory Microeconomics <em>(satisfies Human Cultures: Behavioral/Social Science for core)</em></td>
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<tr>
<td>AGEC 33000</td>
<td>Management Methods for Agricultural Business</td>
</tr>
<tr>
<td>AGEC 33100</td>
<td>Principles of Selling in Agricultural Business</td>
</tr>
<tr>
<td>AGR 10100</td>
<td>Introduction to the College of Agriculture and Purdue University</td>
</tr>
<tr>
<td>AGR 12000</td>
<td>Introduction to Horticulture and Landscape Architecture Academic Programs</td>
</tr>
<tr>
<td>AGRY 25500</td>
<td>Soil Science</td>
</tr>
<tr>
<td>AGRY 30000</td>
<td>Genetics</td>
</tr>
<tr>
<td>AGEC 33000</td>
<td>Management Methods for Agricultural Business</td>
</tr>
<tr>
<td>BTNY 11000</td>
<td>Introduction to Plant Science</td>
</tr>
<tr>
<td>BTNY 30100</td>
<td>Introductory Plant Pathology</td>
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<tr>
<td>BTNY 30400</td>
<td>Introductory Weed Science</td>
</tr>
<tr>
<td>BTNY 35000</td>
<td>Biotechnology in Agriculture</td>
</tr>
<tr>
<td>CHM 11100</td>
<td>General Chemistry <em>(satisfies Science #1 for core)</em></td>
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<tr>
<td>CHM 11200</td>
<td>General Chemistry <em>(satisfies Science #2 for core)</em></td>
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<td>CHM 25700</td>
<td>Organic Chemistry</td>
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<tr>
<td>MA 15800</td>
<td>Pre calculus - Functions and Trigonometry <em>(satisfies Quantitative Reasoning for core)</em></td>
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<td>MGMT 20000</td>
<td>Introductory Accounting or MGMT 2010 Business Accounting</td>
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<td>SFS 21000</td>
<td>Small Farm Experience I or SFS 21100 Small Farm Experience II</td>
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<td>Concentration Selective</td>
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<tr>
<td>Concentration Selective</td>
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<tr>
<td>Entomology Selective</td>
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</tr>
<tr>
<td>UCC Human Cultures: Humanities Selective <em>(satisfies Human Cultures: Humanities for core)</em></td>
<td></td>
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<tr>
<td>UCC Science, Technology, &amp; Society Selective <em>(satisfies Science, Technology &amp; Society Selective for core)</em></td>
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<tr>
<td>Humanities or Social Sciences Selective</td>
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<td>Humanities or Social Sciences Selective</td>
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<tr>
<td>ENGL 10600 First-Year Composition or ENGL 10800 Accelerated First-Year Composition or HONR 19903 Interdisciplinary Approaches in Writing <em>(satisfies Written Communication for core, satisfies Information Literacy Selective for core)</em></td>
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<tr>
<td>COM 11400</td>
<td>Fundamentals of Speech Communication or COM 21700 Science Writing and Presentation or EDPS 31500 Collaborative Leadership: Interpersonal Skills <em>(satisfies Oral Communication for core)</em></td>
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<tr>
<td>Written or Oral Communication Selective <em>(20000+level English/Communication Selective)</em></td>
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Electives (7-8)

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<td>University Core Requirements <em>(<a href="http://www.purdue.edu/provost/students/s-initiatives/curriculum/coreCurriculum.html">http://www.purdue.edu/provost/students/s-initiatives/curriculum/coreCurriculum.html</a>)</em></td>
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Human Cultures Humanities

Science, Technology & Society Selective

Human Cultures Behavioral/Social Sciences

Written Communication

Information Literacy

Oral Communication

Science Selective

Quantitative Reasoning

Science Selective

College of Agriculture & University Level Requirements *(https://ag.purdue.edu/oap/Pages/core_requirements.aspx)*

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<th>Requirement</th>
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<tbody>
<tr>
<td>3 credits - Multicultural Awareness</td>
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<tr>
<td>9 credits - International Understanding</td>
</tr>
<tr>
<td>9 credits - Humanities and/or Social Sciences outside the College of Agriculture</td>
</tr>
<tr>
<td>3 credits - Humanities and/or Social Sciences at 30000+level or higher</td>
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11/14/18
![Suggested Arrangement of Courses]

### Credits

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<tr>
<th>Credits</th>
<th>Fall 1st Year</th>
<th>Prerequisite</th>
<th>Credits</th>
<th>Spring 1st Year</th>
<th>Prerequisite</th>
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<td>0.5</td>
<td>AGR 10100 Introduction to the College of Agriculture and Purdue University</td>
<td>3</td>
<td>CHM 11200 General Chemistry</td>
<td>CHM 11000</td>
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<tr>
<td>0.5</td>
<td>AGR 12000 Introduction to Horticulture and Landscape Architecture Academic Programs</td>
<td>1</td>
<td>HORT 11000 Survey of Horticulture</td>
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<tr>
<td>4</td>
<td>BTNY 11000 Introduction to Plant Science</td>
<td>3</td>
<td>HORT 20100 Plant Propagation</td>
<td>BTNY 11000 or HORT 10100</td>
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<tr>
<td>3</td>
<td>CHM 11100 General Chemistry</td>
<td>3</td>
<td>MA 15800 Precalculus – Functions and Trigonometry</td>
<td>ALEKS 60+</td>
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<tr>
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<td>COM 11100 Fundamentals of Speech Communication or COM 21700 Science Writing and Presentation or EDPS 31500 Collaborative Leadership: Interpersonal Skills (UCC Oral Communication Selective)</td>
<td>3</td>
<td>UCC Human Cultures: Humanities Selective</td>
<td>SFS 21000 Small Farm Experience I or SFS 21100 Small Farm Experience II</td>
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<td>3</td>
<td>HORT 10100 Fundamentals of Horticulture</td>
<td>3-4</td>
<td>ENGL 10600 First-Year Composition or ENGL 10800 Accelerated First-Year Composition or HONR 19903 Interdisciplinary Approaches in Writing (UCC Written Communication Selective, UCC Information Literacy Selective)</td>
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<table>
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<th>Credits</th>
<th>Spring 2nd Year</th>
<th>Prerequisite</th>
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<tbody>
<tr>
<td>3</td>
<td>AGEC 20300 Introductory Microeconomics (UCC Human Cultures: Behavioral/Social Sciences)</td>
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<td>BCHM 30700 Biochemistry</td>
<td>UCC Human Cultures: Humanities Selective</td>
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<td>3</td>
<td>AGRY 25500 Soil Science</td>
<td>3</td>
<td>BTNY 30100 Introductory Plant Pathology</td>
<td>BTNY 11000</td>
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<tr>
<td>4</td>
<td>CHM 25700 Organic Chemistry</td>
<td>4</td>
<td>HORT 30100 Plant Physiology</td>
<td>BTNY 11000 and CHM 25700</td>
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<td>Statistics Selective</td>
<td>3</td>
<td>MGMT 20000 Introductory Accounting or MGMT 20010 Business Accounting Selective</td>
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<td>UCC Science, Technology &amp; Society Selective</td>
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<th>Prerequisite</th>
<th>Credits</th>
<th>Spring 3rd Year</th>
<th>Prerequisite</th>
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<tbody>
<tr>
<td>3</td>
<td>AGEC 33100 Principles of Selling in Agricultural Business</td>
<td>3</td>
<td>AGEC 33000 Management Methods for Agricultural Business</td>
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<tr>
<td>3</td>
<td>AGRY 32000 Genetics</td>
<td>3</td>
<td>BTNY 35000 Biotechnology in Agriculture</td>
<td>BTNY 11000</td>
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<tr>
<td>3</td>
<td>BTNY 30400 Introductory Weed Science</td>
<td>3</td>
<td>HORT 31900 Controlled Environment Production of Horticultural Crops</td>
<td>BOL 11000 or BTNY 11000 or HORT 10100</td>
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<td>3</td>
<td>HORT 31800 Field Production of Horticultural Crops</td>
<td>3</td>
<td>Humanities or Social Sciences Selective</td>
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<td>Entomology Selective</td>
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<td>Elective</td>
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<table>
<thead>
<tr>
<th>Credits</th>
<th>Fall 4th Year</th>
<th>Prerequisite</th>
<th>Credits</th>
<th>Spring 4th Year</th>
<th>Prerequisite</th>
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<tbody>
<tr>
<td>4</td>
<td>HORT 43500 Principles of Marketing and Management for Horticultural Businesses</td>
<td>1</td>
<td>HORT 42700 Horticulture Capstone</td>
<td>Work experience or internship</td>
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<tr>
<td>3</td>
<td>Business Selective Concentration Selective</td>
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<td>HORT 51300 Nutrition of Horticultural Crops</td>
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<td>Concentration Selective</td>
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<td>HORT 54100 Postharvest Technology of Fruits and Vegetables</td>
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<tr>
<td>3-4</td>
<td>Elective</td>
<td>12-13</td>
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</table>

1) 120 credits listed above are required for Bachelor of Science degree.
2) 2.0 graduation GPA required for Bachelor of Science degree.
3) 32 credits of upper division courses (30000 level or higher) must be taken at Purdue University, West Lafayette.
4) ANY COURSE TAKEN AT PURDUE CAN BE ATTEMPTED NO MORE THAN THREE TIMES (INCLUSIVE OF W, WF, I and IF).
5) *cc* is considered a critical course.

See next page for all supplemental information.
## Sustainable Food and Farming Systems

### Horticulture & Landscape Architecture Department / College of Agriculture

**COA-HLA-BS / Major: HOSC/SFS 202010**

120 credits for graduation

### Name: ___________________________  PUID: ___________________________  Date: ___________________________

### Required Major Courses (13 credits)

- (3) SFS 21000**cc** Small Farm Experience I (Spring)
- (3) SFS 21100**cc** Small Farm Experience II (Fall)
- (3) SFS 30100 Agroecology
- (3) SFS 30200 Principles of Sustainability
- (1) SFS 35100 SFS Capstone Project

### Other Departmental/Program Course Requirements (100-102 credits) (See Advising Resources)

- (3) AGEC 20300 Introduction to Microeconomics (satisfies College of Ag Economics Selective and Human Cultures: Behavioral/Social Sciences for core)*
- (0.5) AGR 10100 Introduction to the College of Agriculture and Purdue University
- (0.5) AGR 12000 Introduction to Horticulture and Landscape Architecture Academic Programs
- (3) AGRY 10500 Crop Production or HORT 10100 Fundamentals of Horticulture
- (3) AGRY 25500**cc** Soil Science or AGRY 27000 Forest Soils
- (3) AGRY 32000 Genetics
- (3) ANSC 10200 Introduction to Animal Agriculture (satisfies Science, Technology & Society Selective for core)
- (4) BIOL 11000 Fundamentals of Biology I
- (4) BTNY 20700 The Microbial World or BIOL 22100 Introduction to Microbiology
- (3) CHM 11100 General Chemistry (satisfies Science #1 for core)
- (3) CHM 11200 General Chemistry (satisfies Science #2 for core)
- (3) MA 15800 Precalculus – Functions and Trigonometry (satisfies Quantitative Reasoning for core)
- (3) STAT 30100 Elementary Statistics Methods (satisfies Information Literacy for core)
- (3) Agronomy/Horticulture Selective
- (3) Animal Science Selective
- (3) Business Management Selective
- (6) Ecology/Environment Selective
- (3) Economics Selective
- (3) Food Science Selective
- (6) Pest Management Selectives
- (3-4) Physiology or Production Selective
- (3) Soil Science Selective
- (6) Systems Modules Selectives
- (3) Humanities or Social Sciences Selective
- (3) Humanities or Social Sciences Selective
- (3) Humanities or Social Sciences Selective (30000+level)
- (3) UCC Human Cultures: Humanities Selective (satisfies UCC Human Cultures: Humanities for core)
- (3) COM 11400 Fundamentals of Speech Communication or COM 21700 Science Writing and Presentation or EDPS 31500 Collaborative Leadership: Interpersonal Skills (satisfies Oral Communication for core)
- (3) ENGL 10600 First-Year Composition or ENGL 10800 Accelerated First-Year Composition or HONR 19903 Interdisciplinary Approaches in Writing (satisfies Written Communication for core, satisfies Information Literacy Selective for core)

### Electives (5-7 credits)

- (5-7) Electives

### University Core Requirements ([http://www.purdue.edu/provost/students/s-initiatives/curriculum/coreCurriculum.html](http://www.purdue.edu/provost/students/s-initiatives/curriculum/coreCurriculum.html))

- Human Cultures Humanities
- Human Cultures Behavioral/Social Sciences
- Information Literacy
- Science Selective
- Science Selective

### College of Agriculture & University Level Requirements ([https://ag.purdue.edu/oap/Pages/core_requirements.aspx](https://ag.purdue.edu/oap/Pages/core_requirements.aspx))

- 3 credits - Multicultural Awareness
- 9 credits - International Understanding
- 9 credits - Humanities and/or Social Sciences outside the College of Agriculture
- 3 credits - Humanities and/or Social Sciences at 30000+level or higher

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11/14/2018
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<th>Credits</th>
<th>Fall 1st Year</th>
<th>Prerequisite</th>
<th>Credits</th>
<th>Spring 1st Year</th>
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<tr>
<td>0.5</td>
<td>AGR 10100 Introduction to the College of Agriculture and Purdue University</td>
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<td>AGRY 10500 Crop Production or HORT 10100 Fundamentals of Horticulture</td>
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<td>0.5</td>
<td>AGR 12000 Introduction to Horticulture and Landscape Architecture Academic Programs</td>
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<td>4</td>
<td>BTNY 11000 Introduction to Plant Science</td>
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<td>4</td>
<td>BIOL 11000 Fundamentals of Biology</td>
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<th>Credits</th>
<th>Spring 2nd Year</th>
<th>Prerequisite</th>
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<tr>
<td>3</td>
<td>ANSC 10200 Introduction to Animal Sciences (UCC Science, Technology &amp; Society)</td>
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<td>AGEC 20300 Introductory Microeconomics (UCC Human Cultures: Behavioral/Social Sciences)</td>
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<td>SFS 21100 Small Farm Experience</td>
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<td>3</td>
<td>AGRY 25500 Soil Science or AGRY 27000 Forest Soils</td>
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<td>SFS 30100 Agroecology</td>
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<td>BTNY 20700 The Microbial World or BIOL 22100 Introduction to Microbiology</td>
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<td>Agronomy/Horticulture Selective</td>
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<td>SFS 30200 Principles of Sustainability</td>
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<td>Systems Modules Selective</td>
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<tr>
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<td>Written or Oral Communication Selective (20000+ level English or Communication Selective)</td>
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<td>3</td>
<td>AGRY 32000 Genetics</td>
<td>BTNY 11000 and HORT 30100</td>
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<td>ANSC 23000 Physiology of Domestic Animals or HORT 30100 Plant Physiology or Production Selective</td>
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<td>STAT 30100 Elementary Statistics Methods</td>
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<td>Pest Management Selective</td>
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<td>Animal Science Selective</td>
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<td>Soil Science Selective</td>
<td></td>
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<td>Pest Management Selective</td>
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<tr>
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<td>UCC Humanities Selective</td>
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<td>Humanities or Social Sciences Selective</td>
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<th>Prerequisite</th>
<th>Credits</th>
<th>Spring 4th Year</th>
<th>Prerequisite</th>
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<tr>
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<td>Ecology/Environment Selectives</td>
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<td></td>
<td><strong>14-16</strong></td>
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</tbody>
</table>

1) 120 credits listed above are required for Bachelor of Science degree.
2) 2.0 graduation GPA required for Bachelor of Science degree.
3) 32 credits of upper division courses (30000 level or higher) must be taken at Purdue University, West Lafayette.
4) ANY COURSE TAKEN AT PURDUE CAN BE ATTEMPTED NO MORE THAN THREE TIMES (INCLUSIVE OF W, WF, I and IF).
5) *cc* is considered a critical course.

See next page for all supplemental information.

The student is ultimately responsible for knowing and completing all degree requirements. myPurdue Plan is a knowledge source for specific requirements and completion.
Change of Degree Objective, Transfer and Pre-Landscape Architecture Transition Criteria

Change of Option from Pre-landscape Architecture to the Professional Landscape Architecture Program

Pre-landscape architecture students, who wish to continue into the landscape architecture professional program, or transfer students from other institutions, must qualify by meeting the following criteria, or through further assessment as described below:

1. Overall GPA – The student must be in good academic standing. A minimum overall GPA of 2.5 across all Purdue and transferred credit coursework is necessary for acceptance into the landscape architecture professional program.
2. Grade point average of 3.0 or higher in all landscape architecture prefixed courses taken (LA Index).
3. Completion of LA 10600; or 11600 and 21600; or approved equivalent, and a minimum of 24 credit hours of Purdue accepted college level coursework are the minimum necessary for acceptance into the landscape architecture professional program.

Students transferring from another institution meet minimum credit requirements set by the Office of Admissions. Before being admitted into the landscape architecture professional program students must have completed coursework equivalent to LA11600 and LA21600.

Students not meeting the above criteria will be reviewed by faculty according to a program specific project-based rubric to assess readiness to enter the professional landscape architecture program.

Rubric criteria
Students who do not meet the minimum criteria for overall GPA and LA index may be admitted to the professional landscape architecture program upon further review. Criteria include:
1. GPA comparison. LA index vs. Overall GPA. GPA proximity to the minimum criteria.
2. Individual course grades comparison.
3. Professionalism. Attendance, class participation, and effort in LA courses as assessed by faculty.
4. Faculty review of representative projects from LA 116/ 216; LA 106; or equivalent.
## Required Major Courses (9 credits)

<table>
<thead>
<tr>
<th>Credits</th>
<th>Course</th>
<th>Description</th>
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</thead>
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<tr>
<td>2</td>
<td>LA 10110</td>
<td>Survey of Landscape Architecture</td>
</tr>
<tr>
<td>3</td>
<td>LA 11600</td>
<td>Precalculus - Functions and Trigonometry (satisfies Quantitative Reasoning for core)</td>
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<td>3</td>
<td>LA 16100</td>
<td>Land and Society (satisfies Science, Technology &amp; Society for core)</td>
</tr>
<tr>
<td>3</td>
<td>LA 21600</td>
<td>Landscape Architectural Design I</td>
</tr>
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</table>

## Other Departmental/Program Course Requirements (21-22 credits) (See Advising Resources)

- 0.5 AGR 10100 Introduction to the College of Agriculture and Purdue University
- 0.5 AGR 12000 Introduction to Horticulture and Landscape Architecture Academic Programs
- 4 BIOL 11000 Fundamentals of Biology I
- 4 BIOL 11100 Fundamentals of Biology II or BTNY 11000 Introduction to Plant Science
- 3 MA 15800 Precalculus - Functions and Trigonometry (satisfies Quantitative Reasoning for core)
- 3 Art & Design Selective I
- 3-4 ENGL 10600 First-Year Composition or ENGL 10800 Accelerated First-Year Composition or HONR 19903 Interdisciplinary Approaches in Writing (satisfies Written Communication for core, satisfies Information Literacy Selective for core)
- 3 COM 11400 Fundamentals of Speech Communication or COM 21700 Science Writing and Presentation (satisfies Oral Communication for core)

## Arrangement of Courses

<table>
<thead>
<tr>
<th>Credits</th>
<th>Fall 1st Year</th>
<th>Prerequisite</th>
<th>Credits</th>
<th>Spring 1st Year</th>
<th>Prerequisite</th>
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<td>AGR 10100 Introduction to the College of Agriculture and Purdue University</td>
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<td>AGR 12000 Introduction to Horticulture and Landscape Architecture Academic Programs</td>
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<td>BIOL 11000 Fundamentals of Biology II or BTNY 11000 Introduction to Plant Science</td>
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<td>4</td>
<td>BIOL 11000 Fundamentals of Biology I</td>
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<td>3</td>
<td>COM 11400 Fundamentals of Speech Communication or COM 21700 Science Writing and Presentation or EDPS 31500 Collaborative Leadership: Interpersonal Skills (satisfies Oral Communication for core)</td>
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<tr>
<td>3-4</td>
<td>ENGL 10600 First-Year Composition or ENGL 10800 Accelerated First-Year Composition or HONR 19903 Interdisciplinary Approaches in Writing (satisfies Written Communication for core)</td>
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<td>3</td>
<td>LA 21600^2 Landscape Architectural Design</td>
<td>LA 11600</td>
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<tr>
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<td>LA 10110 Survey of Landscape Architecture</td>
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<td>3</td>
<td>MA 15800 Precalculus – Functions and Trigonometry I</td>
<td>ALEKS 60+</td>
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<td>LA 11600 Graphic Communication for Landscape Architects and Design Graphic Communication In Design I</td>
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<td>1</td>
<td>LA 16100 Land and Society (UCC Science, Technology and Society Selective)</td>
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</table>

^1 University Core Curriculum Human Cultures: Humanities Selective (3 credits)

^2Art Design Selective I (3 credits). These three credits also counts towards the 15 credits of humanities and social sciences selectives.

## PRLA Supplemental Information

All prerequisites must be met.

University Core Curriculum Human Cultures: Humanities Selective (3 credits)

See approved Humanities list at: [http://www.purdue.edu/provost/students/s-initiatives/curriculum/courses.html](http://www.purdue.edu/provost/students/s-initiatives/curriculum/courses.html)

(Some course subjects will also count toward the College of Agriculture humanities selectives requirement [https://ag.purdue.edu/oa/p/pages/core-social_humanities.aspx](https://ag.purdue.edu/oa/p/pages/core-social_humanities.aspx))

Art Design Selective I (3 credits). These three credits also counts towards the 15 credits of humanities and social sciences selectives.

11/14/2018
Part I. Update to Core Curriculum Lists (For Information Only)
The Agricultural Faculty authorized the Curriculum and Student Relations Committee to make adjustments to the lists of courses that may fulfill core curriculum requirements in undergraduate plans of study and to report changes to the total faculty. The Curriculum and Student Relations Committee has approved the following modifications to the core curriculum lists.

Written Communications:

The following class will be added to the list of those classes fulfilling the Written Communications requirement:

   SLCA 10100 Transformative Texts: Critical Thinking & Communication I: Antiquity to Modernity

Justification: This course meets the UCC Written Communication requirement and review of the syllabus and course material by CSRC suggested this course met CoA expectations for written communications. This course is also part of the Cornerstone Certificate program offered by the College of Liberal Arts.

Oral Communications:

The following class will be added to the list of those classes fulfilling the Oral Communications requirement:

   SLCA 10200 Transformative Texts: Critical Thinking & Communication II: Modern World

Justification: This course meets the UCC Oral Communication requirement and review of the syllabus and course material by CSRC suggested this course met CoA expectations for oral communications. This course is also part of the Cornerstone Certificate program offered by the College of Liberal Arts.

Humanities and/or Social Sciences:

The following class will be added to the list of those classes fulfilling the Humanities and/or Social Sciences requirement:

   HDFS 28000 Diversity in Individual and Family Life

Justification: Review of the syllabus and course material by CSRC indicated this course met CoA expectations for humanities.
Capstone Course

The following class will be added to the list of those classes fulfilling the Capstone requirement

AGRY 48500 – Precision Crop Management

Part II. Expiration of a course (For Information Only)
The Agricultural Faculty authorized the Curriculum and Student Relations Committee to approve expiration of courses and to report these to the total faculty. The Curriculum and Student Relations Committee has approved expiration of the following courses:

ANSC 10100 – Animal Agriculture
  Justification: Online course offered at regional campus and has not been offered since 2010
  Decision process:
  First reading: 10-16-2018
  Second reading: 10-23-18
  Final vote: 10-30-18; 13 in favor, 0 opposed

ENTM 55100 – Insect Physiology and Biochemistry
  Justification: No longer being taught
  Decision process:
  First reading: 10-30-18
  Second reading: 11-6-18
  Final vote: 11-13-18, 12 in favor, 0 opposed

ENTM 69000 – Seminar
  Justification: Course is no longer part of the graduate program
  Decision process:
  First reading: 10-30-18
  Second reading: 11-6-18
  Final vote: 11-13-18, 12 in favor, 0 opposed

FNR 37400 – International Natural Resources Practicum
  Justification:
  This course was designed to replace either FNR 37100, FNR 37200 or FNR 37300 (summer camp classes) with international experiences for students. However, the course has not been taken for credit in the last 10 years, to our knowledge, and should be expired.
  Decision process:
  First reading: 04-10-18
  Second reading: 04-17-18
  Final vote: 04-24-18, 10 in favor, 0 opposed
Part III. Modifications of a course (For Information Only)
The Agricultural Faculty authorized the Curriculum and Student Relations Committee to approve
minor changes to courses (such as changes in title, course number, pre-requisites, etc.) and to
report these changes to the total faculty. The Curriculum and Student Relations Committee has
approved modifications to the following courses:

ABE 59000 – Special Problems
Justification: Adding Distance Learning Option
Decision process:
  First reading: 10-30-18
  Second reading: 11-6-18
  Final vote: 11-13-18, 12 in favor, 0 opposed

ABE 59100 – Special Topics
Justification: Adding Distance Learning Option
Decision process:
  First reading: 10-30-18
  Second reading: 11-6-18
  Final vote: 11-13-18, 12 in favor, 0 opposed

ABE 69100 – Special Topics
Justification: Adding Distance Learning Option
Decision process:
  First reading: 10-30-18
  Second reading: 11-6-18
  Final vote: 11-13-18, 12 in favor, 0 opposed

AGRY 25500 – Soil Science
Justification: change of pre-reqs
Decision process:
  First reading: 10-2-18
  Second reading: 10-16-18
  Final vote: 10-23-18, 13 in favor, 0 opposed

AGRY 27000 – Forest Soils
Justification: change of pre-reqs
Decision process:
  First reading: 10-2-18
  Second reading: 10-16-18
  Final vote: 10-23-18, 13 in favor, 0 opposed

AGRY 36500 – Soil Fertility
Justification: change of pre-reqs
Decision process:
  First reading: 10-2-18
  Second reading: 10-16-18
  Final vote: 10-23-18, 13 in favor, 0 opposed
AGRY 48500 – Precision Crop Management
    Justification: change of pre-reqs
    Decision process:
    First reading: 10-2-18
    Second reading: 10-16-18
    Final vote: 10-23-18, 13 in favor, 0 opposed

AGRY 56500 – Soils and Landscapes
    Justification: change of pre-reqs
    Decision process:
    First reading: 10-2-18
    Second reading: 10-16-18
    Final vote: 10-23-18, 13 in favor, 0 opposed

AGRY 58500 – Soils and Land Use
    Justification: change of pre-reqs
    Decision process:
    First reading: 10-2-18
    Second reading: 10-16-18
    Final vote: 10-23-18, 13 in favor, 0 opposed

AGRY 60500 – Advanced Plant Breeding
    Justification: Adding Distance Learning option
    Decision process:
    Final vote: 11-13-18, 12 in favor, 0 opposed

ASM 59000 – Special Topics
    Justification: Adding Distance Learning Option
    Decision process:
    First reading: 10-30-18
    Second reading: 11-6-18
    Final vote: 11-13-18, 12 in favor, 0 opposed

ASM 59100 – Special Topics
    Justification: Adding Distance Learning Option
    Decision process:
    First reading: 10-30-18
    Second reading: 11-6-18
    Final vote: 11-13-18, 12 in favor, 0 opposed

FNR 21000 – Natural Resources Information Management
    Justification: Cross-listing with NRES 21000
    Decision process:
    First reading: 10-2-18
    Second reading: 10-16-18
    Final vote: 10-23-18, 13 in favor, 0 opposed

FNR 30110 – Sustainable Wood Products Manufacturing
    Justification: Change course title and description
    Decision process:
    First reading: 10-30-18
    Second reading: 11-6-18
    Final vote: 11-13-18, 12 in favor, 0 opposed
FNR 30500 – Conservation Genetics
   Justification: Changes of pre-reqs
   Decision process:
      First reading: 10-30-18
      Second reading: 11-6-18
      Final vote: 11-13-18, 12 in favor, 0 opposed

FNR 31110 – Identification and Basic Properties
   Justification: Change course title and description
   Decision process:
      First reading: 10-30-18
      Second reading: 11-6-18
      Final vote: 11-13-18, 12 in favor, 0 opposed

FNR 33100 – Forest Ecosystems
   Justification: Changes of pre-reqs
   Decision process:
      First reading: 10-30-18
      Second reading: 11-6-18
      Final vote: 11-13-18, 12 in favor, 0 opposed

FNR 34800 – Wildlife Investigative Techniques
   Justification: Changes of pre-reqs
   Decision process:
      First reading: 10-30-18
      Second reading: 11-6-18
      Final vote: 11-13-18, 12 in favor, 0 opposed

FNR 35100 – Aquatic Sampling Techniques
   Justification: Change of pre-reqs
   Decision process:
      First reading: 04-10-18
      Second reading: 04-17-18
      Final vote: 04-24-18, 10 in favor, 0 opposed

FNR 37300 – Wildlife Practicum
   Justification: Changes of Pre-reqs
   Decision process:
      First reading: 04-10-18
      Second reading: 04-17-18
      Final vote: 04-24-18, 10 in favor, 0 opposed

FNR 38400 – Statistics for Natural Resources
   Justification: Changes of pre-reqs
   Decision process:
      First reading: 10-30-18
      Second reading: 11-6-18
      Final vote: 11-13-18, 12 in favor, 0 opposed
FNR 43400 – Tree Physiology
   Justification: Changes of pre-reqs
   Decision process:
   First reading: 10-30-18
   Second reading: 11-6-18
   Final vote: 11-13-18, 12 in favor, 0 opposed

FNR 44700 – Vertebrate Population Dynamics
   Justification: Changes of pre-reqs
   Decision process:
   First reading: 10-30-18
   Second reading: 11-6-18
   Final vote: 11-13-18, 12 in favor, 0 opposed

FNR 47000 – Fundamentals of Planning
   Justification: Cross-listing with NRES 47000
   Decision process:
   First reading: 10-2-18
   Second reading: 10-16-18
   Final vote: 10-23-18, 13 in favor, 0 opposed

FNR 48410 – Sustainable Wood Products, Furniture Design and Manufacturing
   Justification: Change of course title and description
   Decision process:
   First reading: 10-30-18
   Second reading: 11-6-18
   Final vote: 11-13-18, 12 in favor, 0 opposed

FS 16100 – Science of Food
   Justification: Revised course description
   Decision process:
   First reading: 10-30-18
   Second reading: 11-6-18
   Final vote: 11-13-18, 12 in favor, 0 opposed

HORT 27000 – Floral Design and Interior Plant Arrangement
   Justification: Formally HORT 36000 – change of course number, title and description
   Decision process:
   First reading: 10-30-18
   Second reading: 11-6-18
   Final vote: 11-13-18, 12 in favor, 0 opposed

HORT 42700 – Horticulture Capstone
   Justification: Revised course description
   Decision process:
   First reading: 10-30-18
   Second reading: 11-6-18
   Final vote: 11-13-18, 12 in favor, 0 opposed
HORT 43500 – Developing and Agriculture Startup  
Justification: Change of course title  
Decision process:  
First reading:  10-30-18  
Second reading: 11-6-18  
Final vote:  11-13-18, 12 in favor, 0 opposed

LA 11600 – Graphic Communication in Design I  
Justification: Change of course title and description  
Decision process:  
First reading:  10-30-18  
Second reading: 11-6-18  
Final vote:  11-13-18, 12 in favor, 0 opposed

LA 11700 – Graphic Communication in Design II  
Justification: Change of course title and description  
Decision process:  
First reading:  10-30-18  
Second reading: 11-6-18  
Final vote:  11-13-18, 12 in favor, 0 opposed

NRES 21000 – Natural Resources Information Management  
Justification: Cross-listing with FNR 21000  
Decision process:  
First reading:  03-06-18  
Second reading: 04-10-18  
Final vote:  04-17-18, 11 in favor, 0 opposed

NRES 39300 – Interdisciplinary Approaches to Environmental and Sustainability Studies  
Justification: Crosslisting with ANTH 39300/EEE 39500/ENGL 39300  
Decision process:  
First reading:  03-06-18  
Second reading: 03-20-18  
Final vote:  03-27-18, 12 in favor, 0 opposed

NRES 47000 – Fundamentals of Planning  
Justification: Cross-listing with FNR 47000  
Decision process:  
First reading:  03-06-18  
Second reading: 04-10-18  
Final vote:  04-17-18, 11 in favor, 0 opposed

Part IV. Administrative Change to Plan of Study (For Information Only)  
After the March 28, 2018 Agriculture Faculty Meeting, it was discovered that the Insect Biology: Forensic Entomology concentration was missing the BIOL 11100 prerequisite for AGRY 32000. BIOL 11100 was added to the plan of study and ENTM 31200 and one credit of free elective was removed. The updated plan is as follows:
**Insect Biology: Forensic Entomology**  
Entomology Department / College of Agriculture  
COA-ENTM-BS / Major: IBIO/FRSC 202010  
120 Credits for graduation

**Name:** __________________________  
**PUID:** __________________________  
**Date:** __________________________  
**Required**

1. **ENTM 10100** Insect Biology and Societal Grand Challenges
2. **ENTM 10200** The Practice of Science
3. **ENTM 20100** Scientific and Technical Communication
4. **ENTM 20600** General Entomology (1)
5. **ENTM 20700** General Entomology Laboratory
6. **ENTM 21000** Introduction to Insect Behavior (2)
7. **ENTM 22810** Forensic Investigation (4)
8. **ENTM 22820** Forensic Analysis (4)
9. **ENTM 22830** Forensic Testimony & Ethics (3)
10. **ENTM 23000** Insect Physiology & Biochemistry (3)
11. **ENTM 30100** Experimentation & Analysis (3)
12. **ENTM 31100** Insect Ecology (3)
13. **ENTM 32810** Practical Molecular Biology (3)
14. **ENTM 32820** Medico-Legal Entomology (3)
15. **ENTM 33500** Introduction to Insect Identification (4)
16. **ENTM 39300** Insect Biology Practicum (1)
17. **ENTM 40100** Addressing Grand Challenges Through Insect Biology (3)
18. **ENTM 42820** Carrion Ecology (4)
19. **ENTM 49390** Insect Biology Capstone Forum (4)

**Other Departmental/ Program Course Requirements (67-68 credits)**

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ENTM 10100</td>
<td>Insect Biology and Societal Grand Challenges</td>
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<td>ENTM 10200</td>
<td>The Practice of Science</td>
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<td>ENTM 20100</td>
<td>Scientific and Technical Communication</td>
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<tr>
<td>ENTM 20600</td>
<td>General Entomology</td>
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<td>ENTM 20700</td>
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**Electives (1-2 credits)**

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**University Core Requirements**

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<td>Human Cultures Humanities</td>
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<tr>
<td>Human Cultures Behavioral/Social Science</td>
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<tr>
<td>Information Literacy</td>
<td>3</td>
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<td>Science Selective</td>
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<tr>
<td>College of Agriculture &amp; University Level Requirements</td>
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</table>

**College of Agriculture & University Level Requirements**

1. **Science, Technology & Society Selective**
2. **Written Communication**
3. **Oral Communication**
4. **Quantitative Reasoning**

**University Core Requirements**

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<tr>
<th>Requirement</th>
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<td>9</td>
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<td>Information Literacy</td>
<td>9</td>
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<td>Science Selective</td>
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<table>
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<tr>
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<td>3 credits Multicultural Awareness</td>
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<tr>
<td>9 credits International Understanding</td>
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<td>9 credits of Hum. And/or Social Sciences outside the College of Agriculture</td>
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<tr>
<td>3 credits of Hum. And/or Social Science at 30000 or higher</td>
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# Insect Biology: Forensic Entomology

## Suggested Arrangement of Courses:

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<tr>
<th>Credits</th>
<th>Fall 1st Year</th>
<th>Prerequisite</th>
<th>Credits</th>
<th>Spring 1st Year</th>
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<tr>
<td>0.5</td>
<td>AGR 10100 Introduction to the College of Agriculture and Purdue University</td>
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<td>BIOL 11000 Fundamentals of Biology I</td>
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<td>STAT 30100 Elementary Statistical Methods</td>
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<td>PHYS 22000 General Physics</td>
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<td>ENTM 30100 Experimentation &amp; Analysis</td>
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<td>ENTM 32810 Practical Molecular Biology</td>
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1) 120 credits listed above are required for Bachelor of Science degree.
2) 2.0 Graduation GPA required for Bachelor of Science degree.
3) 32 credits of upper division courses (30000 level or higher) must be taken at Purdue University, West Lafayette.
4) ANY COURSE TAKEN AT PURDUE CAN BE ATTEMPTED NO MORE THAN THREE TIMES (INCLUSIVE OF W, WF, I AND IF).
5) CC = is considered a critical course

See next page for all supplemental Information

The student is ultimately responsible for knowing and completing all degree requirements. myPurdue Plan is knowledge source for specific requirements and completion

11/26/2018 (effective Fall 2019)
Part V: College of Agriculture: Transfer Credit Process

This document outlines and explains the process used for evaluating agriculture courses for transfer to Purdue University – West Lafayette from other colleges and universities. The College of Agriculture uses these same procedures to evaluate transfer courses for all transfer students, regardless of their program of study. The steps outlined below apply from the time Credit Evaluation in the Office of the Registrar begins to initially evaluate a student’s official transcript from another college to the point when the student’s transfer credit is awarded and posted to their transcript at Purdue.

The following transfer credit process is organized by department, along with the specific type of transfer course being evaluated, as follows:

I. Credit Evaluation Review: Current Credit

II. Office of Academic Programs Review:

   A. College Undistributed Credit
   B. Non-Land Grant Credit

III. Academic Department Review:

   A. New Course
   B. Outdated Credit
I. Transfer Credit Process: Credit Evaluation Review

When an agriculture transfer course has been reviewed within the last 5 years and determined equivalent to Purdue credit by the College of Agriculture (CoA), Credit Evaluation (CE) awards the credit without CoA review.

**Current Credit:** The transfer course is equivalent to Purdue credit, as determined by academic department review that was completed within the last 5 years in the College of Agriculture (COA).

**Note:**
- Transcripts of all transfer students, regardless of student’s program of study, are initially evaluated by CE staff in the Office of the Registrar.
- CE saves all CoA approved credit in the appropriate tables in Banner, allowing their staff to assign the credit for future applicants.
- CoA approved transfer credit requires the academic department to re-evaluate the transfer courses if more than 5 years since last reviewed (see Section III: Academic Department Review).
- CoA approved transfer credit will be posted in the Purdue Transfer Credit Course Equivalency Guide and Purdue’s Transfer Equivalency Self-Service.

**Guiding Questions...**
- Is course college-level?
- Is course in Transfer Equivalency Guide?
II. Transfer Credit Process: Office of Academic Programs Review

When Credit Evaluation (CE) needs to have an agriculture transfer course reviewed, the evaluation is assigned to the Assistant Director of Transfer (ADT) in the Office of Academic Programs (OAP).

A. College Undistributed Credit (AGR XXXXX): The transfer course is college-level, but the College of Agriculture (CoA) at Purdue does not offer any courses in that subject area.

1. If determined the transfer course is college-level, but the subject area is not offered in CoA, OAP approves AGR undistributed credit (AGR XXXXX). This type of undistributed credit applies toward general elective requirements, if needed.

   EXAMPLE: Course from a university in “Range Management” = AGR 1XXXX

2. If determined the transfer course does not meet Purdue’s CoA rigor (i.e., does not meet the academic rigor expected of courses required for a CoA bachelor’s degree), OAP denies the credit. CE then designates general undistributed credit (i.e., UND 1XXXX).

   EXAMPLE: Course from a community college required for a 2-year “terminal” associate’s degree (i.e., A.A.S.) in agriculture

B. Non-Land Grant Credit: The course is from a non-land grant college/university that transfers to the home state’s land grant institution.

1. If OAP determines the non-land grant course transfers to their land grant institution, and that equivalent land grant course has already been approved for transfer credit by the College of Agriculture (CoA), OAP awards transfer credit without academic department review. Credit Evaluation (CE) then saves the transfer equivalency for the non-land grant institution to the Banner tables.

   EXAMPLE:

   IF...
   ANSI 101 (Illinois Central College, non-land grant) is equivalent to ANSC 101 (University of Illinois Urbana Champaign, land grant)
   AND...
   ANSC 101 (University of Illinois Urbana Champaign) is equivalent to ANSC 10200 (Purdue University)
   THEN...
   ANSI 101 (Illinois Central College) becomes equivalent to ANSC 10200 (Purdue University)

2. If OAP is unable to determine the non-land grant course transfers to the land grant institution, OAP forwards the evaluation to the academic department for their review (see Section III: Academic Department Review).
Guiding Questions...

- Does course meet Purdue CoA rigor?
- Does course apply to a specific CoA department?
- Is course from a Land Grant? If yes, faculty reviews.
- Is course from a Non-Land Grant?
  - Is course transferable to their Land Grant?
  - Is equivalent Land Grant course already in Transfer Equivalency Guide (i.e., already determined the equivalent course from the Land Grant transfers to Purdue)?
III. Transfer Credit Process: Academic Department Review

Unless evaluated by the Office of Academic Programs (OAP) by meeting the conditions stated above, the academic department evaluates any new course and outdated credit for transfer course subjects from their academic discipline area.

A. New Course: The transfer course has not been evaluated previously.

B. Outdated Credit: The transfer course was determined to be equivalent to Purdue credit in the College of Agriculture (CoA), but it has been more than 5 years since reviewed.

1. The Assistant Director of Transfer (ADT) in the Office of Academic Programs (OAP) receives an evaluation request from Credit Evaluation (CE).

2. The ADT requests the course syllabus from the student and attaches the syllabus to the evaluation when received.

3. The ADT forwards the request to the faculty/staff person identified as the Subject Matter Expert (SME) for the course within the academic department.

   Note: Only the similar academic department can approve equivalent credit. SMEs may consult with faculty within their academic departments to assist with evaluating transfer courses.

4. The SME reviews the course description and syllabus provided.

To complete their review, the SME has 4 primary choices:

a. Award credit for a specific CoA course: If the academic department determines the transfer course is equivalent to an agriculture course in their academic department, the SME awards transfer credit for that specific CoA course. For future students, transfer credit continues to be awarded for the course without academic department approval, until reviewed again after 5 years.

   Note: Equivalency is generally defined by the CoA as the course meeting roughly 80% of the Purdue course objectives.

   **Guiding Question: Is course equivalent to a specific CoA course?**

b. Award departmental undistributed credit: If the academic department determines they do not have a specific course that is equivalent to the transfer course, but decides the course meets the academic rigor expected of courses required for a CoA bachelor’s degree, the SME awards transfer credit for departmental undistributed credit (i.e., AGEC 1XXXX).

   Departmental undistributed credit means the department offers courses in that general subject area and the course is college-level (i.e., 100-level or higher); however, the department does not offer an equivalent course. The credit is listed with the appropriate CoA course prefix (i.e., AGEC - to indicate the academic department)
and course number (1XXXX, 2XXXX, 3XXXX, 4XXXX - to indicate the course level). This type of undistributed credit may be used to meet degree requirements, if approved by the CoA.

**Note:** As indicated on official Purdue transcripts, 100/200 level courses are lower-division and normally scheduled for freshmen/sophomores and 300/400 level courses are upper-division and normally scheduled for juniors/seniors.

**Guiding Question:** Is course depth/rigor equivalent to 100/200/300/400 level courses in CoA department?

c. **Reassign to another department:** If the academic department makes either of the following determinations, they reassign the request as listed below:

   i. If the course content appears more similar to courses in another academic department, the person forwards the evaluation request to that academic department

      **Guiding Question:** Is course more similar to courses in another CoA department? OR…

   ii. If the course content is not similar enough to any specific course in the department, but the academic department recommends general CoA credit (i.e., AGR 1XXXX), the person returns the evaluation request by reassigning to the ADT in OAP.

      **Guiding Question:** Is course more appropriate for general CoA credit (AGR XXXXX)?

d. **Deny credit:** If determined transfer credit is not appropriate, the academic department denies the credit. CE then designates general undistributed credit (i.e., UND 1XXXX).
Additional Notes:

- Transfer Equivalency Service (TES) by College Source is a third-party-vendor system used for course description comparisons. TES has a workflow built into the product for these reviews. Each department will need to identify and request account authorization for the initial reviewer and any secondary reviewers. (For example, a department may assign the initial review to an academic advisor. If the academic advisor cannot make the decision, the evaluation would then be reassigned to a faculty member for review. Each reviewer needs an account authorization).

- Because transfer students are expecting to know how their courses will transfer after submitting their transcripts to CE, course evaluation reviews are due within 2 weeks of receiving the course description and syllabus.

- Transfer credit for any agriculture-related courses designated with “UND” course prefixes cannot be used toward any requirement for any major in the College of Agriculture.

- Departmental undistributed credit used toward the CoA core requires OAP approval. Departmental undistributed credit used for all other degree requirements requires academic department approval. All approvals to use departmental undistributed credit are entered as Exceptions by advisors in myPurduePlan.

- Any credit used for the University Core Curriculum (UCC) can only be approved by the UCC Committee (http://www.purdue.edu/provost/students/s-initiatives/curriculum/courses.html).
Summary of CoA Transfer Credit Process – Guiding Questions
(Red indicates evaluation ends at that point in the process)

**CREDIT EVALUATION:**

- **Is course college-level?**
  - If No –> No credit
  - If Yes –> Proceed to next question

- **Is course in Transfer Equivalency Database?**
  - **Note:** Equivalencies will ONLY be listed for courses approved by CoA within last 5 years
  - If Yes –> Credit awarded
  - If No –> OAP reviews

Evaluation moves on to OAP if course is 1) college-level and 2) NOT in Transfer Equivalency Database...

**OAP:**

- **Is course of Purdue CoA rigor?**
  - If No –> *UND 1XXXX*
  - If Yes –> Proceed to next question

- **Is course from CoA-specific department?**
  - If No –> AGR 1XXXX (Ex. Range Management)
  - If Yes –> Proceed to next question

- **Is course from Non-Land Grant with both conditions met below?**
  1. Course transfers to Land Grant in home state
  2. Land Grant course is listed in Transfer Equivalency Database
  - If Yes –> Credit awarded
  - If No –> Faculty reviews

Evaluation moves on to FACULTY when review above determines transfer course 1) is NOT in Transfer Equivalency Database, 2) meets Purdue CoA rigor, and 3) is from CoA-specific department...

**FACULTY:**

- **Is course equivalent to a specific CoA course (meets at least 80% of course objectives)?**
  - If Yes –> Faculty approves equivalent Purdue course
  - If No –> Proceed to next question

- **Is course depth/rigor similar to 100/200/300/400-level courses in department?**
  - If Yes –> Faculty approves CoA department & course level credit (Ex. AGRY 1XXXX)
  - If No –> Proceed to next question

- **Is course more similar to courses in another academic department OR more appropriate for general CoA credit (Ex. AGRY 1XXXX)?**
If Yes ->  Faculty forwards evaluation request
If No ->  Faculty denies credit
Credit Evaluation enters UND 1XXXX

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<td>Allen Talbert (Ag Education)</td>
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<td>SFS</td>
<td>Steven Hallett</td>
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Not Faculty
Subject to the approval of the Agricultural Faculty, the following graduation candidates who complete degree requirements during the current semester will be recommended to the Board of Trustees to receive their degrees as of December 16, 2018. Also, the Interim Dean of Agriculture, or her designee shall be authorized to act for the faculty regarding the certification of qualified candidates.

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<tr>
<th>Name</th>
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