AGRICULTURAL FACULTY MEETING

Wednesday, December 4, 2019
3:00 p.m.
Deans of Agriculture Auditorium, Pfendler Hall

1. Call to Order – Dean Karen Plaut

2. Approval of Agenda

3. Announcement of College of Agriculture Faculty Awards – John Lumkes and Shawn Donkin

4. Consent Agenda – Action Items
   - Approval of Minutes of March 21, 2019 Agricultural Faculty Meeting
   - Approval of Minutes of April 29, 2019 Agricultural Virtual Faculty Meeting
   - Document I – Agricultural Economics
   - Document II – Agricultural Sciences Education and Communications
   - Document III – Agriculture - Data Science course and Digital Ag Minor
   - Document IV – Biochemistry
   - Document V – Forestry and Natural Resources
   - Document VI – Horticulture and Landscape Architecture
   - Document VII – Natural Resources and Environmental Sciences
   - Document VIII – Curriculum and Student Relations Committee
     - Part I – Update to Core Curriculum Lists
     - Part II – Deletions of courses
     - Part III – Modifications of courses
     - Part IV – Dual Degree – Masters of Science in Agricultural Economics
   - Approval of 2019 December Degree Candidates

5. Memorial Resolutions

6. Report Items
   - University Senate Report – Robert Pruitt

7. Other Business

8. College of Agriculture Strategic Plan – Rab Mukerjae
A. COURSES TO BE ADDED

Prefix and Course Number: AGEC 60900
Long Title: Applied Welfare Analysis

B. CURRICULAR CHANGES (If new major, concentration or minor, need plan of study, description, proposed head count, UEAC justification (See CSRC sharepoint for example))

None
Supporting Document

A. **Short Title:** Applied Welfare Analysis

B. **Semester(s) Offered:** Spring

C. **Schedule Type (e.g. Lecture/Lab) and Hours:** Lecture, 3 hrs/week

D. **Credits:** 3

E. **Justification for the course:** This proposed course will replace the AGEC 60400/60800 sequence currently offered in the Department of Agricultural Economics. AGEC 60400 is a one-credit course covering the first 5 weeks of the semester, and AGEC 60800 is a two-credit course covering the remainder of the same semester.

For background, AGEC 60400 is a course in welfare economics that was originally intended to serve as a prerequisite for a number of AGEC PhD-level courses, including AGEC 60800 (Benefit Cost Analysis). However, the AGEC 60400 prerequisite is not actively enforced for any course currently taught in Agricultural Economics. Furthermore, AGEC 60400 is technically quite rigorous and covers a range of topics not directly relevant to AGEC 60800, the "main" course in the sequence. This makes AGEC 60400 somewhat of an obstacle to enrollment, particularly among students outside Agricultural Economics. As a result, many students either audit AGEC 60800 or enroll in 60800 without satisfying the prerequisite.

*Hence, the proposed course seeks to better serve students in Agricultural Economics and beyond by eliminating the AGEC 60400 prerequisite and extending the material from AGEC 60800 into a new, three-credit, semester-long course.*

More specifically, the proposed course will start with the primary material currently taught in AGEC 60800 (measures of project worth, discounting, treatment of risk and uncertainty, and shadow pricing techniques for project evaluation in developing countries) and add material on nonmarket valuation and risk efficiency. These topics are (i) highly relevant to conducting cost benefit analyses in practice and (ii) are currently not taught elsewhere in the graduate curriculum in Agricultural Economics. These topics are currently taught in competing graduate programs, and their inclusion in the proposed course may help improve our students' competitiveness in graduate program admissions and on the job market.

This course will replace the 60400/60800 sequence as an elective in the following Agricultural Economics Department's graduate specialty areas:
i. Energy, Resources and Environmental Economics;
ii. International Development; and
iii. Space, Health and Population Economics.

More broadly, benefit-cost analysis has long been a strength of the Department of Agricultural Economics at Purdue. The course trains students for undertaking rigorous economic analyses as part of interdisciplinary research projects, novel technology development, environmental projects and policies, and international development projects. For this reason, AGEC 60800 has historically attracted a number of students from outside Agricultural Economics (including students from Agronomy, Horticulture, Animal Sciences, Ag & Biological Engineering, and various departments within the College of Engineering and College of Pharmacy). I expect the proposed course to continue serving as an elective for graduate students from these disciplines.

F. **Course Description for University Catalog**: This course develops the theory and methods used to assess the benefits and costs of economic policies and projects. Topics include benefit-cost analysis, economic impact analysis, nonmarket valuation, and analysis of risk and uncertainty.

G. **Requisites (Pre-Reqs/Co-Reqs/concurrent pre-req)**: A graduate course in microeconomic theory; a graduate course in regression analysis

H. **Restrictions**: Graduate status

I. **Learning Outcomes**: The primary objective of this course is to prepare students to conduct rigorous applied economic policy and project analyses. Students who complete this course will be able to:

1. Estimate a project’s benefits and costs, including shadow pricing project inputs and outputs and valuing non-market goods and services;

2. Appropriately apportion various benefits and cost across different project stakeholders to estimate the distribution of project benefits and costs across society;

3. Derive and interpret economic measures of project performance, including net present value, internal rate of return, and benefit-cost ratios; and

4. Incorporate risk and uncertainty into project analysis.

J. **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.

K. **Link to curriculog (if applicable)**: [https://purdue.curriculog.com/proposal:9858/form](https://purdue.curriculog.com/proposal:9858/form)
Department of Agricultural Sciences Education and Communication
Proposed Course and Curricular Changes
(College of Agriculture Undergraduate/Graduate)

A. COURSES TO BE ADDED

Prefix and Course Number: ASEC 54100

Long Title: Program Development in School-Based Agricultural Education

B. CURRICULAR CHANGES (If new major, concentration or minor, need plan of study, description, proposed head count, UEAC justification (See CSRC sharepoint for example))

None
A. **Short Title:** Program Development In SBAE

B. **Semester(s) Offered:** Summer

C. **Schedule Type (e.g. Lecture/Lab) and Hours:** LEC and Distance

D. **Credits:** 3.0

E. **Justification for the course:** This course is utilized by the Transition to Teaching Program to prepare alternatively certified agriculture teachers to meet the needs of their local agriculture programs. Previously, this course was taught under a different course number and title, but was combined with a focus on extension education, and not taught in a manner which directly related to the needs of the new school-based agricultural education teacher. Purdue University is the primary program leader in school-based agricultural education, and thus provides for the professional development needs of agriculture teachers throughout Indiana. This course assists teachers who did not complete an undergraduate degree in agricultural education in planning and implementing local school-based agricultural education programs in middle and high schools.

F. **Course Description for University Catalog:** Credit Hours: 3.00. This graduate course in agricultural education concentrates on program planning and delivery of secondary programs in agriculture. Special emphasis is placed on utilizing school and community resources to develop programmatic offerings, recruit and retain students, organize FFA activities, direct supervised agricultural experience programs, and manage the agricultural education program. Various topics to be discussed will be determined based upon current trends in the field of agricultural education as well as the needs and interests of the students enrolled. Foundational procedures involved in conducting a secondary agricultural education program will be addressed. Permission of instructor required. Typically offered Summer.

G. **Requisites (Pre-Reqs/Co-Reqs/concurrent pre-req):** None

H. **Restrictions:** None

I. **Learning Outcomes:** Facilitate learning through a well-planned school-based agricultural education program utilizing classroom and laboratory instruction, Supervised Agricultural Experience, and FFA. Describe the qualities of a successful school-based agricultural education program. Identify areas for growth and support within local school-based agricultural education program. Demonstrate comprehension of the foundational philosophies of agricultural education and career and technical education which guide successful implementation of modern school-based agricultural education.

J. **Applicable to College of Agriculture Core**
This course ☐ will ☒ will not be nominated for inclusion on College of Agriculture Core.

K. Instructor Information: Sarah LaRose, slarose@purdue.edu

L. Link to curriculog (if applicable): https://purdue.curriculog.com/proposal:10969/form
Agriculture
Proposed Course and Curricular Changes
(College of Agriculture Undergraduate/Graduate)

A. COURSES TO BE ADDED

Prefix and Course Number: AGR 33300
Long Title: Data Science for Agriculture

B. CURRICULAR CHANGES (If new major, concentration or minor, need plan of study, description, proposed head count, UEAC justification (See CSRC sharepoint for example))

Justification/Rationale: Data Driven Agriculture

Purdue needs a data driven agriculture minor to: 1. Provide concise counsel to direct students toward a coherent package of courses that industry indicates as necessary competence; 2. Provide a visible and telegraphic package for the advanced data science knowledge of our graduates; and 3. Aid in recruitment of students by highlighting our collective efforts in data driven agriculture which includes data science.

Agricultural professionals will be increasingly using data in both research and production/processing. The increase in intensity and volume is causing industry to expect increased programming and data skills. To remain the leader in education and training of professionals in most all of our disciplines, we must delineate proficiencies and efficiently package and deliver content appropriately. Data is becoming more automated, but even with artificial intelligence and machine learning, human input will continue to be a critical input to assist with decision-making and data-inference. Our graduates need to remain on the forefront of these developments.

This data revolution is the result of a proliferation in sensing and communication technologies. Cheaper and more portable sensors are enabling measurements at previously unimagined spatial and temporal resolutions (i.e. new data products). At the same time, data such as publicly available soil and weather information can more easily flow between sources (i.e. new data connections). As technology develops, this proliferation in data products and connections will only increase. The challenge for the agriculture workforce in this data revolution will be to have the data science skills and domain expertise to leverage these complex data sources in new and emerging decision-support frameworks.
Students are looking to show their proficiency to potential employers, and employers are seeking students that can demonstrate they have the skills needed to provide for their business needs into the future.

The Data Driven Agriculture minor will develop sets of skills that provide value to employers, including:

- A foundation in statistics
- Data literacy, management, and analytics
- Knowledge of how data is used in agriculture
- Data acquisition and sensors
- Data architecture and usage, including Geographic Information Systems
- Data-driven decision-making

Purdue recently established a Certificate in Applications of Data Science and many agriculture courses are listed as meeting categories of the requirements. This minor encapsulates that certificate—students getting this minor should also get that certificate. But this minor adds requirements relevant to agricultural domains such as relevant types of data. Namely, we are requiring the new AGR 33300 Data Science for Agriculture course and explicitly calling for students to have at least one course in categories of data origination, data architecture, and decision making (hence lists A, B, C below).

**Requirements for the Minor:**

Three credits in each category for a total of 21 credits (but students would also likely get the Certificate in Data Science Applications and many courses should be a part of their major now or soon, anyway)

- Statistical Methods – STAT 30100
- Data Literacy, Management, and Analytics – ENTM 24200
- Computation – ASM 10500, HORT 53000, or CS 17700
- Data Science for Agriculture - AGR 33300, the IDSI funded course currently proposed
- Data acquisition (sensor & data origination) – list A below
- Data architecture and usage (addressing the alignment and use via formats of data in your discipline) – List B below
- Data to decisions – List C below

We would recommend that a small oversight committee be assigned to this minor with representation from at least 4 different departments. That oversight committee would approve exceptions to requirements, propose changes to the Ag CSRC, and report to the Associate Dean for Academic Programs in this regard. There would be one person “in charge” and convening that group; likely candidates are Dennis Buckmaster, Bruce Erickson, and Jeff Holland.
Data Driven Agriculture Minor (selective lists)

List A: Sensors and data acquisition
ABE 31400 Design of Electronic Systems
ABE 46000 Sensors and Process Control
ABE 53100 Instrumentation and Data Acquisition
ASM 42000 Electric Power and Controls
AGRY 54500 Remote Sensing of Land Resources
FNR 35700 Fundamental Remote Sensing

List B: Data architecture and usage (for many, this is GIS, but for some, it is something else)
ABE 20500 Computations for Engineering Systems
ABE 30100 Numerical and Computational Modeling in Biological Engineering
AGEC 45100 Applied Econometrics
ASM 54000 Geographic Information System Application
BCHM 49500/CS 49000 (pending permanent number of BCHM 42200) Computational Genomics
BCHM 49500 (pending permanent number of BCHM 52100) Comparative Genomics
FNR 35900 Spatial Ecology and GIS
FNR 55500 Fisheries Stock Assessment and Modeling
HORT 59000 Applied Plant Genomics
FNR 55800 Remote Sensing Analysis and Applications

List C: Data to Decisions (linking agriculture and data science back to the discipline through improved insight)
ABE 52700 Computer Models in Environmental and Natural Resource Engineering
AGEC 30500 Agricultural Prices
AGEC 35200 Quantitative Techniques for Firm Decision Making
AGEC 45100 Applied Econometrics
AGEC 50600 Agricultural Marketing and Price Analysis
AGEC 51600 Mathematical Tools for Agricultural and Applied Economics
AGRY 44400 Weather Analysis and Forecasting
AGRY 48500 Precision Crop Management
ANSC 31100 Animal Breeding
ASM 42200 Advanced Machine Technology for Agricultural Crop Production
ASM 53000 Power and Machinery Management
BCHM 49500 (pending permanent number of BCHM 42100) R for Molecular Biosciences
BTNY 53500 Plant Disease Management
ENTM 41000 Insect Pest Management
FNR 35500 Quantitative Methods for Resource Management
FNR 48800 Global Environmental Issues
FNR 55500 Fisheries Stock Assessment and Modeling
FNR 55800 Remote Sensing Analysis and Applications
FS 44400 Statistical Process Control
HORT 31900 Controlled Environment Production of Horticultural Crops
HORT 531 (2 cr) Applied Plant Genomics
A. **Short Title:** Data Science for Agriculture

B. **Semester(s) Offered:** Fall and Spring

C. **Schedule Type (e.g. Lecture/Lab) and Hours:**
   - LEC/50 min per mtg/1 mtg per wk/16 wks per term
   - DIS/50 min per mtg/1 mtg per wk/16 wks per term
   - LAB/170 min per mtg/1 mtg per wk/16 wks per term

D. **Credits:** 3.0

E. **Justification for the course:** The primary reasons for the course include:
   1. It is rooted in decision making across several disciplines.
   2. It will enable students to better grasp the context of data-driven processes and decisions.
   3. The course covers data science in an applied manner so it is more interesting and motivating.
   4. It will provide a point of integration between the data science skills and disciplinary knowledge and applications.

In this data-rich future, agriculture professionals will need to integrate domain expertise with data science to guide decision-making and problem solving. This need for integrated domain and data expertise stretches across all departments and disciplines in the College of Agriculture (e.g. forestry, animal science, agronomy, soil and water resources, and economic) and business sectors (i.e. research, public policy, private industry, etc.). This course is team-developed and team-taught with input from several departments.

While there will be more and more sensors with more and more data, more doesn’t always create the correct solution. “I would rather be approximately right than precisely wrong,” is a statement associated with investment billionaire Warren Buffett. The data must be interpreted in the context of the application. To apply data correctly, domain expertise is essential; there must be some understanding of how data describes the system. Users need to be familiar with their specific domain so they can sort out erroneous results. Even with artificial intelligence and machine learning, there will likely still need to be people in the system to assist with the decision-making and data-inference. In this context, data-science and data driven agriculture content needs to have a domain-specific component.

F. **Course Description for University Catalog:** Credit Hours: 3.00. Students will apply data processes including identifying data needs, acquiring data, assessing data quality, data wrangling, filtering, and visualization. In each of several topic areas (forestry,
animal science, agronomy, food science, entomology, engineering, economics), data-driven insights and improved decision making will be the culmination of applied data skills. Students will understand data ethics and practice data management skills including the merging of disparate but related data sets. Typically offered Fall Spring.

G. Requisites (Pre-Reqs/Co-Reqs/concurrent pre-req): STAT 30100

H. Restrictions: None

Learning Outcomes: LEARNING OBJECTIVES:

1. Construct a research question that helps address a decision.
2. Describe different types of experimental designs and discuss the differences between observational and experimental studies.
3. Identify data needed to address various research questions.
4. Identify how these data sources are used in data analysis:
   a. Agronomic
   b. Machine data
   c. Maps
   d. Spreadsheets
   e. Sensor data
5. Describe how various data sets are acquired.
6. Describe how the following impact data ethics:
   a. Ownership
   b. Storage
   c. Access
7. Assess data quality and utility.
8. Identify potential limitations of a dataset.
9. Describe the following aspects of data wrangling:
   a. Data formats
   b. Data compatibility
   c. Mobility
10. Describe the following aspects of data management:
    a. Storage
    b. Curation
    c. Metadata
    d. FAIR: findable, accessible, interoperable, reusable
11. List reasons for filtering, cleaning, and pre-processing data.
12. Describe tools for data cleaning.
13. Integrate disparate data sets.
14. Describe uses for the following in data visualization:
    a. Bar charts
    b. Line charts
    c. Maps
15. Use the following tools to analyze data
   a. Correlation
   b. Mean generation
   c. Confidence intervals
   d. Simple model building
   e. R, Python

16. Make decisions based on data outcomes.

I. **Applicable to College of Agriculture Core**
   This course ☐ will ☒ will not be nominated for inclusion on College of Agriculture Core.

J. **Instructor Information:**

   **Jason P. Ackerson**  
   *Assistant Professor, Agronomy*  
   915 W. State St. West Lafayette, IN 47907-2054  
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   **Jacquelyn P Boerman**  
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K. Link to curriculog (if applicable): [https://purdue.curriculog.com/proposal:12277/form](https://purdue.curriculog.com/proposal:12277/form)
A. COURSES TO BE ADDED

Prefix and Course Number: BCHM 42100  
Long Title: R for the Molecular Biosciences

Prefix and Course Number: BCHM 42200  
Long Title: Computational Genomics

Prefix and Course Number: BCHM 52100  
Long Title: Comparative Genomics

B. CURRICULAR CHANGES (If new major, concentration or minor, need plan of study, description, proposed head count, UEAC justification (See CSRC sharepoint for example))

Justification/Rationale: The Department of Biochemistry proposes to create a new 16 credit minor in Bioinformatics. The goal of the Bioinformatics minor is to increase career opportunities for our graduates and also to meet a critical need of Indiana’s stakeholders. Analysis of ongoing trends in scientific publications indicates that bioinformatics is nearly as important as biochemistry as a discipline and has led to a call for inclusion of bioinformatics courses in standard curriculums related to biology (Journal of Microbiology and Biology Education, December 2015, p198-202). In recognition of the importance and transformative potential of data-driven fields such as bioinformatics, Purdue recently created the Integrative Data Science Initiative to promote data science-enabled research and education. The proposed minor is thus in line with both national needs and Purdue educational priorities and will help us to attract larger numbers of students to both Biochemistry and the larger life science community.
Bioinformatics Minor  
Offered by the Department of Biochemistry

Pre-requisite coursework (5-7 credit hours)

A. A life science course:

- BCHM 10000 Introduction to Biochemistry (2 credits)
- BTNY 11000 Introduction to Plant Science (4 credits)
- BTNY 12000 Principles of Plant Biology I (4 credits)
- BIOL 12100 Biology I: Diversity, Ecology, And Behavior (2 credits)
- BIOL 13100 Biology II: Development, Structure, And Function of Organisms (3 credits)
- BIOL 11000 Fundamentals of Biology I (4 credits)
- BIOL 11100 Fundamentals of Biology II (4 credits)
- BCHM 307 Biochemistry (3 credits)

B. A statistics course:

- STAT 30100 Elementary Statistical Methods (3 credits)
- STAT 50100 Experimental Statistics I (3 credits)
- STAT 50300 Statistical Methods for Biology (3 credits)
- STAT 51100 Statistical Methods (3 credits)

C. Required coursework (13 credit hours)

- CS 17700 Programming with Multimedia Objects (4 credits)
- BCHM 42100 R for Molecular Biosciences (3 credits)
- BCHM 42200 Computational Genomics (3 credits)
- BCHM 52100 Comparative Genomics (3 credits)

D. Bioinformatics selective (select one) (3 credits)

- BCHM 61200 (3 credits) Bioinformatic Analysis of Genome Scale Data (instructor permission required to register for this course)
- BIOL 47800/CS 47800 (3 credits) Introduction to Bioinformatics
- BIOL 56310 (3 credits) Protein Bioinformatics
• CHM 57900 (3 credits) Computational Chemistry
• CS 59000 (3 credits) Computing for Life Sciences
• HORT 53000 (3 credits) Introduction to Computing for Biologists

It is the student’s responsibility to ensure that all pre-requisites are met.
A. **Short Title:** R for Molecular Biosciences

B. **Semester(s) Offered:** Fall and/or Spring

C. **Schedule Type (e.g. Lecture/Lab) and Hours:** 2 hours lecture/2 hours lab per week

D. **Credits:** 3.0

E. **Justification for the course:** This course will provide students in the domain of molecular biosciences experience in data science. Students will be introduced to robust, open source data science tools such as R and Linux to acquire, assess, clean, visualize and analyze biological data sets related to the Central Dogma of Molecular Biology. The course has prerequisites in biology and statistics, but there is no computer science prerequisite because 1) there are no CS courses in R programming and 2) the primary objective of the course is to make students data literate not to make them programmers. This course meets a primary goal of Purdue’s Integrative Data Science Education Ecosystem to make all students, regardless of domain, data literate upon graduation. In addition, this course is the first course in a nascent bioinformatics minor, and it has been carefully designed to complement later courses in this minor.

F. **Course Description for University Catalog:** Students will learn R to acquire, clean, explore and analyze biological data sets. Lectures and example data sets will show how data are linked to biological phenomena through human observation or instrumentation with inherent limitations. Students will learn how to organize data sets to optimize clarity and analytic possibilities while minimizing errors with examples drawn from the literature or biological databases. R programming will be taught starting with small-scale data such as drug sensitivity assays, qPCR, and metabolomics, moving to genome-scale analyses such as gene expression and pathway analysis later in the course. These skills will be taught in the light of enabling reproducible research through clear documentation of data sets and analyses. Relevant concepts from statistics will be reviewed, but it assumed that students are familiar with statistical analyses.

G. **Requisites (Pre- Reqs/Co- Reqs/concurrent pre- req):** (STAT 30100 or STAT 50100 or STAT 50300 or STAT 51100) AND (BIOL 11100 OR BCHM 30700)

H. **Restrictions:** None

I. **Learning Outcomes:** 1) Understand how complex biological phenomena are captured as data. 2) Learn how to manage data science projects using tools such as R, Linux and remote computing. 3) Use R to acquire, assess, clean, organize, visualize and analyze biological data. 4) Use R to document and communicate analysis of biological data.
J. Applicable to College of Agriculture Core
   This course ☐ will ☒ will not be nominated for inclusion on College of Agriculture Core.

K. Instructor Information: Pete Pascuzzi, Phone: 765-494-3620, email: ppascuzz@purdue.edu

L. Link to curriculog (if applicable): https://purdue.curriculog.com/proposal:12306/form
A. **Short Title:** Computational Genomics

B. **Semester(s) Offered:** Fall

C. **Schedule Type (e.g. Lecture/Lab) and Hours:** 2 hours lecture/2 hours lab per week

D. **Credits:** 3.0

E. **Justification for the course:** With the explosion of data available in the life sciences, students must not only understand biology, biochemistry and genetics, they also need to develop additional competency in handling data and data analytics as well as coding. Bioinformatics is an interdisciplinary field that develops methods and software tools for understanding biological data. Computational Genomics is one area of bioinformatics that focuses on using whole genomes (rather than individual genes) to understand the principles of how the DNA of a species controls its biology. With the current abundance of massive biological datasets, computational literacy will be an important skill that will enhance marketability of Purdue students.

F. **Course Description for University Catalog:** This course introduces students to modern genomics and computational tools that will be used for screening. Students will review the notion of gene, genomic, transcriptome, and epigenome, and show how next generation sequencing technologies are utilized to measure these with cell.

**Requisites (Pre-Req/Co-Reqs/concurrent pre-req):** BIOL 23100 OR BCHM 30700 OR STAT 30100 OR STAT 50300 OR STAT 35000 OR STAT 51100 OR CS 18200 or CS 24000

G. **Restrictions:** None

H. **Learning Outcomes:**
   - Evaluate features of a genome (e.g. conservation, GC content, gene coding potential)
   - Understand how data from next-generation sequencing experiments (e.g. RNA-seq) are generated and processed
   - Analyze next-generation sequencing data (e.g. RNA-seq, ChIP-seq) from various experiments
   - Integrate various genomics data to answer specific biological question related to genomics and gene regulation

I. **Applicable to College of Agriculture Core**
   - This course ☐ will ✗ will not be nominated for inclusion on College of Agriculture Core.

J. **Instructor Information:** Majid Kazemian, phone: 765-494-9350, e-mail: kazemian@purdue.edu

K. **Link to curriculog (if applicable):** [https://purdue.curriculog.com/proposal:12303/form](https://purdue.curriculog.com/proposal:12303/form)
Supporting Document
BCHM 52100

A. **Short Title:** Comparative Genomics

B. **Semester(s) Offered:** Spring

C. **Schedule Type (e.g. Lecture/Lab) and Hours:** 2 hours lecture/2 hours lab per week

D. **Credits:** 3.0

E. **Justification for the course:** This course provides an understanding of modern comparative genomics, such that students can apply the principles of the field to their own independent research. Often, students focus on a particular gene or biological process in a single model organism. In contrast, this course teaches students to identify related sequences in public databases and interpret phylogenetic trees and genome sequence information in the context of multiple organisms. This context gives the students a better understanding of the evolutionary history of their gene/process/organism of interest.

F. **Course Description for University Catalog:** This course provides an understanding of the forces that act on genome content and organization, and the ability to interpret genetic variation between genomes. Students will acquire skills to utilize public genome databases, visualize genomic regions/features of interest using a genome browser, and perform phylogenetic analysis.

**Requisites (Pre-Reqs/Co-Reqs/concurrent pre-req):** Graduate standing; or Undergraduates enrolled in the course must have completed at least one semester of independent research (e.g., BCHM 49800 or equivalent).

G. **Restrictions:** None

H. **Learning Outcomes:**
   After completing the course, students will be able to
   • Understand the composition, organization and structure of genomes
   • Understand processes that cause these genome features to change over time
   • Interpret gene and genome information in common display formats
   • Evaluate common methods used to interpret genetic variation between genomes
   • Perform, present and discuss a research project in comparative genomics

I. **Applicable to College of Agriculture Core**
   This course □ will ☒ will not be nominated for inclusion on College of Agriculture Core.

J. **Instructor Information:** Jen Wisecaver, phone: 765-494-4157, e-mail: jwisecav@purdue.edu

K. **Link to curriculog (if applicable):** [https://purdue.curriculog.com/proposal:12301/form](https://purdue.curriculog.com/proposal:12301/form)
Department of Forestry and Natural Resources
Proposed Course and Curricular Changes
(College of Agriculture Undergraduate/Graduate)

A. COURSES TO BE ADDED

Prefix and Course Number: FNR 15000
Long Title: The Nature of Wild Things Learning Community

Prefix and Course Number: FNR 35910
Long Title: Spatial Ecology

Prefix and Course Number: FNR 35950
Long Title: Spatial Ecology Laboratory

Prefix and Course Number: FNR 58700
Long Title: Advanced Spatial Ecology and GIS

B. CURRICULAR CHANGES (If new major, concentration or minor, need plan of study, description, proposed head count, UEAC justification (See CSRC sharepoint for example))

Justification/Rationale: The proposed new courses FNR 35910 and 35950 has been offered previously as a single course: FNR 35900. As such, FNR 35900 is included in the plans of study for a number of majors and minors. We propose changing these plans of study to reflect the new course numbers and have included the plans of study below. Deletion of FNR 35900 is shown in red strikethrough text, while addition of FNR 35910 and 35950 is shown in green text.
Forestry – Urban Forestry
Bachelor of Science in Forestry (FORS-UFOR) 124± credits

The urban forestry concentration prepares students for professional careers with community organizations and arboriculture companies that manage forest lands and trees in urban settings. A growing portion of the demand for forest professionals is for graduates trained to work in the towns and cities that support 80% of our population on only 3.5% of our land base. Students apply sustainable management principles and social knowledge to take care of trees and develop management plans for urban landowners, governments, and businesses such as utilities. Graduates earn a Bachelor of Science in Forestry degree, which is accredited by the Society of American Foresters.

### Freshman Year

#### First Semester
- (0.5) AGR 10100 Intro to College Agriculture & Purdue*  
- (0.5) AGR 11900 Intro to FNR Academic Programs*  
- (4) BTNY 11000 Intro to Plant Science†  
- (3) CHM 11100 General Chemistry I†  
- (3) MA 16010 Applied Calculus I†  
- (3-4) Written Communication Selective†  
- (14-15)

#### Second Semester
- (4) BTNY 11100 Principles of Plant Biology†  
- (3) CHM 11200 General Chemistry II†  
- (3) Oral Communication Selective†  
- (3) Microeconomics Selective†  
- (16)

### Sophomore Year

#### Third Semester
- (3) FNR 22500 Dendrology  
- (3) FNR 23000 World’s Forestry and Society  
- (3) Ecology & Systematics Selective  
- (1) Laboratory in Ecology & Systematics Selective  
- (2) STAT 30100 Elementary Statistical Methods‡  
- (13)

#### Fourth Semester
- (3) FNR 21000 Natural Resource Information Management  
- (3) FNR 35300 Natural Resources Measurement  
- (3) Ethics Selective  
- (3) Humanities or Social Sciences Selective  
- (15)

**Summer Session**

(Courses in bold are prerequisites for FNR 37010, 37050 or 37200. Courses in italics are prerequisites for courses in bold.)

- (1) FNR 37010 Natural Resources Practicum  
- (1) FNR 37050 Forest Habitats and Communities Practicum  
- (4) FNR 37200 Forestry Practicum  
- (6)

### Junior Year

#### Fifth Semester
- (3) FNR 33100 Forest Ecosystems  
- (3) FNR 35700 Fundamental Remote Sensing  
- (3) FNR 43400 Tree Physiology  
- (4) FNR 44400 Arboriculture Practices  
- (2) POL 22300 Introduction to Environmental Policy* or  
FNR 22310 Introduction to Environmental Policy  
- (16)

#### Sixth Semester
- (3) FNR 35500 Quantitative Methods for Resource Management  
- (3) FNR 37500 Human Dimensions of Natural Resource MGMT  
- (3) FNR 40700 Forest Economics  
- (3) FNR 44500 Urban Forestry Issues  
- (3) Concentration Selective  
- (15)

### Senior Year

#### Seventh Semester
- (2) ENTM 41000 Applied Insect Biology  
- (1) ENTM 41001 Insects of Urban Landscapes  
- (3) FNR 33900 Principles of Silviculture  
- (2) FNR 35910 Spatial Ecology and GIS  
- (2) FNR 35900 Spatial Ecology and GIS  
- (1) FNR 47000 Fundamentals of Planning  
- (2) Unrestricted Elective  
- (15)

#### Eighth Semester
- (3) FNR 40910 Forest Resources Management  
- (3) ENGL 42000 Business Writing or  
ENGL 42100 Technical Writing  
- (3) Humanities or Social Sciences Selective*  
- (3) Concentration Selective  
- (1-2) Unrestricted Elective  
- (13-14)

†University Common Core requirements are explained at [http://www.purdue.edu/provost/initiatives/curriculum/course.html](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](https://ag.purdue.edu/oap/Pages/core_requirements.aspx).

**Concentration Selective:** AGEC 33000 Management Methods for Ag Business; AGEC 33100 Principles of Selling in Ag Business; BTNY 30100 Introduction to Plant Pathology; ENTM 41000 Applied Insect Biology; FNR 30110 Sustainable Wood Products Manufacturing; FNR 31110 Identification and Basic Properties of Wood; FNR 35900 Spatial Ecology and
GIS; HORT 21700 Woody Landscape Plants; HORT 30100 Plant Physiology; HORT 31700 Landscape Contracting and Management; LA 32500 Planting Design II; LA 32600 Landscape Architectural Design IV; OLS 25200 Human Relations in Organizations

**Ecology & Systematics Selective:** FNR 24150 Ecology and Systematics of Fishes, Amphibians, and Reptiles; FNR 25150 Ecology and Systematics of Mammals and Birds

**Ethics Selective:** PHIL 11100 Ethics; PHIL 28000 Ethics and Animals; PHIL 29000 Environmental Ethics.

**Humanities or Social Sciences Selectives:** See approved list at https://ag.purdue.edu/oap/Pages/core_social-humanities.aspx.

**International Understanding Selectives:** See approved list at https://ag.purdue.edu/oap/Pages/core_international.aspx.

**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

**Microeconomics Selective:** AGEC 20300 Intro Microeconomics Food and Agribusiness; AGEC 20400 Intro to Resources Economics and Environmental Policy.

**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.
The wildlife program prepares students for professional careers in wildlife research, management, and education. Students apply biological, ecological, economic, and social knowledge to develop and administer wildlife management plans. Graduates earn a Bachelor of Science in Agriculture degree, and meet most of the academic certification requirements of The Wildlife Society. 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>
</tr>
</thead>
<tbody>
<tr>
<td>(0.5) AGR 10100 Intro to College Agriculture &amp; Purdue*</td>
<td>(4) BTNY 11000 Introduction to Plant Science†</td>
</tr>
<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) FNR 12500 Environmental Science &amp; Conservation†</td>
</tr>
<tr>
<td>(3) CHM 11100 General Chemistry I†</td>
<td>(3) Microeconomics Selective</td>
</tr>
<tr>
<td>(3) MA 16010 Applied Calculus I‡</td>
<td>(3) Oral Communication Selective†</td>
</tr>
<tr>
<td>(3-4) Written Communication Selective†</td>
<td>(14-15)</td>
</tr>
<tr>
<td>(14-15)</td>
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</table>

### Sophomore Year

<table>
<thead>
<tr>
<th>Third Semester</th>
<th>Fourth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3) FNR 22500 Dendrology</td>
<td>(3) AGRY 27000 Forest Soils</td>
</tr>
<tr>
<td>(3) FNR 24150 Ecology &amp; Systematics of Fishes, Amphibians, and Reptiles</td>
<td>(2) BIOL 28600 Introduction to Ecology and Evolution</td>
</tr>
<tr>
<td>(1) FNR 24250 Laboratory in Ecology &amp; Systematics of Fishes, Amphibians, and Reptiles</td>
<td>(3) FNR 21000 Natural Resource Information Management</td>
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<tr>
<td>(3) STAT 30100 Elementary Statistical Methods†</td>
<td>(3) FNR 25150 Ecology &amp; Systematics of Mammals &amp; Birds</td>
</tr>
<tr>
<td>(2) Humanities or Social Sciences Selective‡</td>
<td>(3) FNR 25250 Laboratory in Ecology &amp; Systematics of Mammals and Birds</td>
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</tr>
</tbody>
</table>

### Summer Session

(Courses in bold are prerequisites for FNR 37010, 37050, or 37300. Courses in italics are prerequisites for courses in bold.)

| (1) FNR 37010 Natural Resources Practicum |
| (1) FNR 37050 Forest Habitats and Communities Practicum |
| (4) FNR 37300 Wildlife Practicum |

### Junior Year

<table>
<thead>
<tr>
<th>Fifth Semester</th>
<th>Sixth Semester</th>
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</thead>
<tbody>
<tr>
<td>(3) POL 22300 Intro to Environmental Policy or FNR 22310 Intro to Environmental Policy</td>
<td>(3) FNR 37500 Human Dimensions of Natural Resource Management*</td>
</tr>
<tr>
<td>(3) FNR 33100 Forest Ecosystems</td>
<td>(3) FNR 38400 Statistics for Natural Resources</td>
</tr>
<tr>
<td>(3) FNR 34100 Wildlife Habitat Management</td>
<td>(2) Botany Selective</td>
</tr>
<tr>
<td>(3) Humanities or Social Sciences Selective‡</td>
<td>(3) Wildlife Selective</td>
</tr>
<tr>
<td>(2) Written or Oral Communication Selective (200+)</td>
<td>(2) Unrestricted Elective</td>
</tr>
<tr>
<td>(15)</td>
<td>(14)</td>
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</tbody>
</table>

### Senior Year

<table>
<thead>
<tr>
<th>Seventh Semester</th>
<th>Eighth Semester</th>
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</thead>
<tbody>
<tr>
<td>(3) FNR 35900 Spatial Ecology &amp; GIS</td>
<td>(3) FNR 30500 Conservation Genetics</td>
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<tr>
<td>(2) FNR 35910 Spatial Ecology</td>
<td>(3) Ethics Selective</td>
</tr>
<tr>
<td>(1) FNR 35950 Spatial Ecology Lab</td>
<td>(3) Humanities or Social Sciences Selective‡</td>
</tr>
<tr>
<td>(4) FNR 44700 Vertebrate Population Dynamics</td>
<td>(3) Wildlife Selective</td>
</tr>
<tr>
<td>(1) FNR 46500 Hunting and Conservation</td>
<td>(1-2) Unrestricted Elective</td>
</tr>
<tr>
<td>(1) FNR 47000 Fundamentals of Planning</td>
<td></td>
</tr>
<tr>
<td>(2) Wildlife Health Selective</td>
<td></td>
</tr>
<tr>
<td>(2) Unrestricted Elective</td>
<td></td>
</tr>
<tr>
<td>(13)</td>
<td>(13-14)</td>
</tr>
</tbody>
</table>

*University Common Core requirements are explained at [http://www.purdue.edu/provost/initiatives/curriculum/course.html](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](https://ag.purdue.edu/oap/Pages/core_requirements.aspx).

**Botany Selective:** BTNY 30100 Introductory Plant Pathology; BTNY 30200 Plant Ecology; BTNY 30400 Introductory Weed Science; BTNY 30500 Fundamentals of Plant Classification; BTNY 31600 Plant Anatomy; FNR 43400 Tree Physiology; FNR 53600 Ecology of Disturbance; HORT 20100 Plant Propagation; HORT 21820 Hardy Herbaceous Landscape Plants.
**Ethics selective:** PHIL 11100 Ethics; PHIL 28000 Ethics and Animals; PHIL 29000 Environmental Ethics.

**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).

**International Understanding Selectives:** 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 Intro Microeconomics Food and Agribusiness; AGEC 20400 Intro to Resources Economics and Environmental Policy.

**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.

**Wildlife Health Selective:** FNR 52700 Ecotoxicology; FNR 52800 Wildlife and Environmental Forensics; FNR 52900 Disease Ecology.

**Wildlife Selective:** Approved courses in ABE, AGRY, ANSC, BIOL, BTNY, CHM, ENTM, FNR, HORT, STAT and other areas that contribute to the student’s understanding of wildlife. Check with your academic advisor before enrolling.

**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.

**Written or Oral Communication Selective (200+):** See approved list at [https://ag.purdue.edu/oap/Pages/core_written-oral.aspx](https://ag.purdue.edu/oap/Pages/core_written-oral.aspx).
A. **Short Title:** Wild Things Learning Comm.

B. **Semester(s) Offered:** Fall

C. **Schedule Type (e.g. Lecture/Lab) and Hours:** Lecture, 1 hour

D. **Credits:** 1.0

E. **Justification for the course:** This course is part of the required curriculum for the Department’s The Nature of Wild Things Learning Community. It has been taught multiple times under a temporary course number (FNR 19800). We propose to assign the course a permanent course number because the Department of Forestry and Natural Resources is committed to continuing our first-year student learning community. Proposed course number has been approved by the Office of the Registrar for this course.

F. **Course Description for University Catalog:** (1 credit) FNR 15000 is the core course for “The Nature of Wild Things” learning community. The course focuses on the majors offered in the Department of Forestry and Natural Resources (FNR), and new student integration into the University and department. FNR 15000 expands knowledge of academic programs and career options in FNR, and resources available on campus to facilitate student success in the first year.

G. **Requisites (Pre-Reqs/Co-Reqs/concurrent pre-req):** Must be accepted into The Nature of Wild Things Learning Community

H. **Restrictions:** The course is limited to AQSC, FORS, WLDL majors, Exploratory Studies and Pre-Environmental Science (PENV) students.

I. **Learning Outcomes:** 1. Understand the importance of being engaged in FNR as a new student. 2. Be familiar with many of the faculty and some of the staff in FNR. 3. Be familiar with many of the available resources offered by Purdue University, the College of Agriculture, and FNR that facilitate student success in the first year on campus. 4. Understand proper classroom etiquette, and how to conduct oneself appropriately when interacting with faculty, academic advisors, graduate students, upperclassmen, and other members of the campus community. 5. Feel a sense of community with others in cohort.

J. **Applicable to College of Agriculture Core**

   This course ☐ will ☒ will not be nominated for inclusion on College of Agriculture Core.

K. **Link to curriculog (if applicable):** [https://purdue.curriculog.com/proposal:12257/form](https://purdue.curriculog.com/proposal:12257/form)
A. **Short Title:** Spatial Ecology

B. **Semester(s) Offered:** Fall

C. **Schedule Type (e.g. Lecture/Lab) and Hours:** Lecture, 2 hours

D. **Credits:** 2.0

E. **Justification for the course:** This course has been taught as a combined lecture and lab course in landscape and spatial ecology under the course number FNR 35900. In the recent revision of the Wildlife major, we added this course as a required part of the curriculum for the first time. But due to the 120-credit limit for most majors, we could only include the lecture portion of the class. Therefore, we are proposing to split the course into a 2-credit lecture class and a 1-credit lab class. The lab class is available as a Selective in the curriculum. The proposed course number has been approved by the Office of the Registrar for this course.

F. **Course Description for University Catalog:** (2 credits) Introduction to the principles of landscape ecology and biogeography. Landscape ecology focuses on the important relationships of landscape structure (pattern, heterogeneity) and ecological processes (movement of animals, hydrologic dynamics) and how this information is used for natural resource management. Biogeography examines ecological patterns and processes at larger scales (generally at subcontinental to global) for the purposes of managing plants and animals of global importance. Typically offered Fall.

G. **Requisites (Pre-Req/Co-Req/concurrent pre-req):** Prerequisites – Undergraduate level FNR 21000 Minimum Grade of C- and Undergraduate level MA16010 Minimum Grade of C-.

H. **Restrictions:** None.

I. **Learning Outcomes:** Students should be able to understand the theory, applications (how theory is applied) can be used to study landscape and larger scale problems related to natural resources. By the end of the semester, students should know: 1) What a landscape is, 2) Methods to quantify landscape pattern, 3) Understand important terms in landscape ecology and biogeography, 4) Understand the causes (natural and human) of landscape pattern, 5) Understand the threats to biodiversity locally and globally, 6) Be able to explain the theory of island biogeography, and 7) Define sustainability and know how to calculate an ecological footprint cohort.

J. **Applicable to College of Agriculture Core**
   This course ☐ will ☒ will not be nominated for inclusion on College of Agriculture Core.

L. **Link to curriculog (if applicable):** [https://purdue.curriculog.com/proposal:12265/form](https://purdue.curriculog.com/proposal:12265/form)
A. **Short Title:** Spatial Ecology Laboratory

B. **Semester(s) Offered:** Fall

C. **Schedule Type (e.g. Lecture/Lab) and Hours:** Lab, 1 hour

D. **Credits:** 1.0

E. **Justification for the course:** This course has been taught as a combined lecture and lab course in landscape and spatial ecology under the course number FNR 35900. In the recent revision of the Wildlife major, we added this course as a required part of the curriculum for the first time. But due to the 120-credit limit for most majors, we could only include the lecture portion of the class. Therefore, we are proposing to split the course into a 2-credit lecture class and a 1-credit lab class. The lab class, as proposed here, is available as a Selective in the curriculum. The proposed course number has been approved by the Office of the Registrar for this course.

F. **Course Description for University Catalog:** (1 credit) This lab course will focus on the use and application of spatial databases that are common in natural resource management settings. Introduction to the principles of landscape ecology and biogeography through laboratory exercises devoted to the analysis of spatial data using geographic information systems and other database tools. Landscape ecology focuses on the important relationships of landscape structure (pattern, heterogeneity) and ecological processes (movement of animals, hydrologic dynamics) and how this information is used for natural resource management. Biogeography examines ecological patterns and processes at larger scales (generally at subcontinental to global) for the purposes of managing plants and animals of global importance. In the last 15 years, tremendous efforts have been made to create spatial databases that help support research and management of natural resources at various scales. Typically offered Fall.

G. **Requisites (Pre-Req/Co-Req/concurrent pre-req):** Prerequisites – Undergraduate level FNR 21000 Minimum Grade of C- and Undergraduate level MA16010 Minimum Grade of C-.

H. **Restrictions:** None.

I. **Learning Outcomes:** Students should be able to understand the theory, applications (how theory is applied) and how technology (GIS, spreadsheets, models) can be used to study landscape and larger scale problems related to natural resources. By the end of the semester, students should know: 1) Methods to quantify landscape pattern, 2) Use GIS to conduct simple and moderately complex analyses using common public domain databases, 3) Know where to get important geospatial data from the internet, and 4) Be able to work with US government data and understand the various levels of aggregation of spatial data.

J. **Applicable to College of Agriculture Core**

   This course ☐ will ☒ will not be nominated for inclusion on College of Agriculture Core.

K. **Link to curriculog (if applicable):** [https://purdue.curriculog.com/proposal:12266/form](https://purdue.curriculog.com/proposal:12266/form)
A. **Short Title:** Adv. Spatial Ecol. GIS

B. **Semester(s) Offered:** Fall

C. **Schedule Type (e.g. Lecture/Lab) and Hours:** Lecture, 3 hours

D. **Credits:** 3.0

E. **Justification for the course:** This course has been taught multiple times under a temporary course number (FNR 59800). We propose to assign the course a permanent course number because the course will be used in a proposed graduate certificate program in Spatial Data Science. Proposed course number has been approved by the Office of the Registrar for this course.

F. **Course Description for University Catalog:** (3 credit) Introduction to the principles of landscape ecology and biogeography with a laboratory devoted to the analysis of spatial data using geographic information systems and other database tools. Landscape ecology focuses on the important relationships of landscape structure (pattern, heterogeneity) and ecological processes (movement of animals, hydrologic dynamics) and how this information is used for natural resource management. Biogeography examines ecological patterns and processes at larger scales (generally at subcontinental to global) for the purposes of managing plants and animals of global importance. In the last 15 years, tremendous efforts have been made to create spatial databases that help support research and management of natural resources at various scales. The lab will focus on the use and application of these databases that are common in natural resource management settings. Typically offered Fall.

G. **Requisites (Pre-Reqs/Co-Reqs/concurrent pre-req):** None.

H. **Restrictions:** None.

I. **Learning Outcomes:** Students should be able to understand the theory, applications (how theory is applied) can be used to study landscape and larger scale problems related to natural resources. By the end of the semester, students should know: 1) What a landscape is, 2) Methods to quantify landscape pattern, 3) Understand important terms in landscape ecology and biogeography, 4) Understand the causes (natural and human) of landscape pattern, 5) Understand the threats to biodiversity locally and globally, 6) Be able to explain the theory of island biogeography, and 7) Define sustainability and know how to calculate an ecological footprint cohort.

J. **Applicable to College of Agriculture Core**
   This course ☑ will ☑ will not be nominated for inclusion on College of Agriculture Core.

K. **Link to curriculog (if applicable):** [https://purdue.curriculog.com/proposal:12262/form](https://purdue.curriculog.com/proposal:12262/form)
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: LA 48100
Long Title: Special Topics In Landscape Architecture

Prefix and Course Number: LA 48200
Long Title: Contemporary Issues In Landscape Architecture

Prefix and Course Number: LA 50100
Long Title: Research Methods for Design Applications

Prefix and Course Number: LA 58100
Long Title: Special Topics In Landscape Architecture

Prefix and Course Number: LA 58200
Long Title: Contemporary Issues In Landscape Architecture

B. CURRICULAR CHANGES (If new major, concentration or minor, need plan of study, description, proposed head count, UEAC justification (See CSRC SharePoint for example))

Changes and Justification/Rationale:
1. Declare ENGL10600 or ENGL 10800 as the courses represented on the landscape architecture undergraduate plan of study to fulfill the UCC Written Communication and UCC Information Literacy outcomes. This does not preclude students or transfer students from fulfilling the requirement with other UCC acceptable courses. Desired course of LA faculty.
2. Add LA 50100 Research Methods in the undergraduate plan of study in the fall semester, senior year.
   This course takes the research methods module currently embedded into LA 41600 into a standalone course with more depth and rigor possible within a studio environment. It is intended as the pre-capstone course for LA undergrads AND as the intro course for students entering the LA MS graduate program who may not have experience in design research. As stated in the rationale above, this course content is necessary for undergraduates to begin their capstone project process. The credit for this course is available through the reduction of LA 41600 from 5 to 4 credits.
3. Require two credits of “LA 48200 Contemporary Issues In Landscape Architecture” in the undergraduate plan of study.
   This course fills a content gap in the undergraduate program plan of study. If design studios focus on application of landscape architectural theory and methods, then this course provides
exposure to contemporary theories and insight into modern practice. The credit for this course comes from the removal of one credit from LA 42600 and the removal of LA 25000.

4. Require two credits of “Landscape Architecture Selectives” in the undergraduate plan of study. Using the remaining credits from the senior studio reduction and removal of LA25000, these selectives will allow students to pursue areas of interest through focused interaction with course faculty. Topics will be advertised in advance and will be chosen by the faculty of record. The LA faculty plan to offer at least one of these courses per spring semester and occasionally one in fall. Additionally, HORT and extra-departmental courses will be included in the selectives list to provide students with options outside of the LA faculties areas of expertise that still pertain to LA practice and theory.

5. Landscape Architecture Co-op Participation Metric Proposal.

Change and Justification/Rationale:
Recently, we have had a few issues with students who were unable to secure co-op internships due to their work/portfolios being sub-standard and with students who have “checked out” after securing a co-op position, failing coursework in the Junior year.

This proposal outlines a metric similar to the Pre-Landscape Architecture Index before students are approved to enroll in LA39000. This proposed Co-op Index would be an automatic gatekeeper, ensuring that students have to have demonstrated success in all appropriate coursework through the Junior year before acting as an ambassador for the LA program while away on co-op.

The Co-op Index:

In order to enroll in LA39000 a student must:
1. Have a C- or better average in ALL LA courses taken to date
2. Have a passing grade in ALL required LA plan of study coursework through the Junior year. These include:

   • LA10100
   • LA11600
   • LA11700
   • LA22700
   • LA31600
   • LA34600
   • LA32600
   • HORT21700

   • LA16100
   • LA21600
   • LA24600
   • LA22600
   • LA32500
   • LA30900
   • LA35600
   • HORT31700

Note: special circumstances stemming from study abroad or similar curricular opportunities may allow for leeway within this requirement system, but no leeway will be granted due to negligence or poor performance by the student.

Failsafe and review:
If a student fails to meet these standards, the default judgement of NO ENROLLMENT is to be applied unless their case is reviewed by the LA faculty for the possibility of special dispensation due to circumstances outside of the students control.

6. Proposed Major Title: Master of Science (MS) in Landscape Systems and Design

Justification: As an environmental design discipline, landscape architecture holistically integrates a multitude of natural sciences, social and behavioral sciences, and creative arts dimensions into analysis and design of living environments. As such, it can be called an ‘interdisciplinary discipline’ that synthesizes various disciplines with creative approaches to problem-solving for natural and built systems and environments.

The landscape architecture program at Purdue University resides in the Department of Horticulture and Landscape Architecture (HLA). The horticulture discipline is highly acclaimed around the nation and the world by way of its stellar and path breaking research accomplishments. However, the landscape architecture discipline offers only an undergraduate program. While it also is nationally and internationally recognized for its professional design/practice preparation, the research dimension in this program has been quite limited. The nation-wide need for research in this discipline has been well established, and career opportunities for graduates with a research-focused degree have been expanding. Such a graduate degree will also accord the program an advanced competitive edge among its peers.

Thus, in keeping with Purdue’s global reputation as a ‘Research-One’ university, and HLA’s highly prominent research signatures in Horticulture, the following proposal for a research-focused graduate degree in landscape systems theory, and design/practice, initially at the master’s level (MS), as an additional major for the current MS degree in HLA, is submitted for approval.
# Landscape Architecture

## Horticulture & Landscape Architecture Department / College of Agriculture

**COA-HLA-BS / Major: HOSC/LARC 202110**

120 credits for graduation

### Name: ___________________________ UID: ___________________________ Date: ___________________________

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## Required Major Courses (60 credits)

<table>
<thead>
<tr>
<th>Credit</th>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>(2)</td>
<td>LA 10110</td>
<td>Survey of Landscape Architecture</td>
</tr>
<tr>
<td>(3)</td>
<td>LA 11600</td>
<td>Graphic Communication In Design I</td>
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<td>(3)</td>
<td>LA 11700</td>
<td>Graphic Communication In Design II</td>
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<td>(1)</td>
<td>LA 16100</td>
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</tr>
<tr>
<td>(4)</td>
<td>LA 22600</td>
<td>Landscape Architectural Design II</td>
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<td>Professional Cooperative Programs in Landscape Architecture</td>
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<td>Capstone Course in Landscape Architecture</td>
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<td>(2)</td>
<td>LA 47600</td>
<td>Professional Practice of Landscape Architecture</td>
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<td>(2)</td>
<td>LA 48200</td>
<td>Contemporary Issues in Landscape Architecture*</td>
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### Other Department/Program Course Requirements (54 credits) (See Advising Resources)

<table>
<thead>
<tr>
<th>Credit</th>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>(0.5)</td>
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<td>Introduction to the College of Agriculture and Purdue University</td>
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<tr>
<td>(0.5)</td>
<td>AGR 12000</td>
<td>Introduction to Horticulture and Landscape Architecture Academic Programs</td>
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<tr>
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<td>ASM 21600</td>
<td>Surveying</td>
</tr>
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<td>(4)</td>
<td>BIOL 11000</td>
<td>Fundamental of Biology I</td>
</tr>
<tr>
<td>(4)</td>
<td>BIOL 11100</td>
<td>Fundamentals of Biology II or BTNY 11000 Introduction to Plant Science</td>
</tr>
<tr>
<td>(3)</td>
<td>EAPS/AGRY/FNR/NRES 12500 Environmental Science and Conservation <em>(satisfies Additional Mathematics or Sciences Selective, 3 credits)</em></td>
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<td>(4)</td>
<td>HORT 21700</td>
<td>Woody Landscape Plants</td>
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<td>(3)</td>
<td>HORT 31700</td>
<td>Landscape Contracting and Maintenance</td>
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<td>(MA 15800)</td>
<td>Pre Calculus - Functions and Trigonometry <em>(satisfies Quantitative Reasoning for core)</em></td>
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<td>Art &amp; Design Selective II*</td>
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<td>Economics Selective*(satisfies Human Cultures: Behavioral/Social Sciences for core)*</td>
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<td>(3)</td>
<td>UCC Human Cultures: Humanities Selective*(satisfies Human Cultures: Humanities for core)*</td>
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<td>(3)</td>
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<td>(3)</td>
<td>Humanities or Social Sciences Selective (30000+level)*</td>
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<tr>
<td>(3)</td>
<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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<td>(4-3)</td>
<td>ENGL 10600/10800 Accelerated First-Year Composition <em>(satisfies Written Communication for core, satisfies Information Literacy for core)</em></td>
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<td>Written or Oral Communication Selective * (20000+level English or Communication Selective)</td>
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### Electives (6-7)

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<tr>
<th>Credit</th>
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<th>Course Title</th>
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## University Core Requirements *(http://www.purdue.edu/provost/students/s-initiatives/curriculum/coreCurriculum.html)*

<table>
<thead>
<tr>
<th>Requirement</th>
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<tbody>
<tr>
<td>Human Cultures Humanities</td>
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<tr>
<td>Human Cultures Behavioral/Social Sciences</td>
<td>☐</td>
</tr>
<tr>
<td>Information Literacy</td>
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<tr>
<td>Science Selective</td>
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</table>

## College of Agriculture & University Level Requirements *(https://ag.purdue.edu/oap/Pages/core_requirements.aspx)*

<table>
<thead>
<tr>
<th>Requirement</th>
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<tr>
<td>3 credits - Multicultural Awareness</td>
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<tr>
<td>9 credits - International Understanding</td>
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<tr>
<td>9 credits - Humanities and/or Social Sciences outside the College of Agriculture</td>
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<tr>
<td>3 credits - Humanities and/or Social Sciences at 30000+level or higher</td>
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## Suggested Arrangement of Courses

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<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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<tr>
<td>0.5</td>
<td>AGR 10100 Introduction to the College of Agriculture and Purdue University</td>
<td>3</td>
<td>Art and Design Selective I, 6</td>
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<td>0.5</td>
<td>AGR 12000 Introduction to Horticulture and Landscape Architecture Academic Programs</td>
<td>4</td>
<td>BIOL 11100 Fundamentals of Biology II or BTNY 11000 Introduction to Plant Sciences</td>
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<td>BIOL 11000 Fundamentals of Biology I</td>
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<td>ENGL 10600 First Year Composition or ENGL 10800 Accelerated First-Year Composition – UCC Written Communication</td>
<td>3</td>
<td>LA 21600 Fundamentals of Landscape Architectural Design I</td>
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<td>2</td>
<td>LA 10110 Survey of Landscape Architecture</td>
<td>3</td>
<td>MA 15800 Precalculus – Functions and Trigonometry</td>
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<td>3</td>
<td>LA 11600 Graphic Communication In Design I</td>
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14 - 15 Credits

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<tr>
<th>Credits</th>
<th>Fall 2nd Year</th>
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<th>Credits</th>
<th>Spring 2nd Year</th>
<th>Prerequisite</th>
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<td>HORT 21700 Woody Landscape Plants</td>
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<td>LA 11700 Communication In Design II</td>
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<td>LA 16600 History and Theory of Landscape Architecture</td>
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<td>4</td>
<td>LA 24600 Site Systems I</td>
<td>LA 21600</td>
<td>4</td>
<td>LA 22600 Fundamentals of Landscape Architectural Design II</td>
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<td>EAPS/AGRY/FNR/NRES 12500 Environmental Science and Conservation (Latches Additional Math or Sci Selective, 3 credits)</td>
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<td>LA 22700 Fundamentals of Planting Design</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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14 Credits

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<tr>
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<th>Spring 3rd Year</th>
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<td>HORT 21700</td>
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<td>LA 30900 Co-op Preparation</td>
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<td>LA 35600 Fundamentals of Landscape Architectural Site Systems III</td>
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<td>LA 31600 Landscape Architectural Design III</td>
<td>LA 21600</td>
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<td>LA 32500 Planting Design II</td>
<td>HORT 21700</td>
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<td>Economics Selective (UCC Human Cultures: Behavioral/Social Sciences)</td>
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<td>LA 34600 Site Systems II</td>
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14 Credits

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<tr>
<th>Credits</th>
<th>Fall 4th Year</th>
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<th>Spring 4th Year</th>
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<tr>
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<td>LA 39000 Professional Cooperative Programs in Landscape Architecture</td>
<td>0</td>
<td>LA 39000 Professional Cooperative Programs in Landscape Architecture</td>
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16 Credits

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<th>Spring 5th Year</th>
<th>Prerequisite</th>
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<tr>
<td>4</td>
<td>LA 41600 Landscape Architectural Design V</td>
<td>LA 36600 and LA 35600</td>
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<td>LA 42600 Capstone Course in Landscape Architecture</td>
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<tr>
<td>2</td>
<td>LA 47600 Professional Practice of Landscape Architecture</td>
<td>LA 36600 and LA 35600</td>
<td>2</td>
<td>LA 48200 Contemporary Issues in Landscape Architecture</td>
<td></td>
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<td>1</td>
<td>LA 50100 Research Methods for Design Applications</td>
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<td>3</td>
<td>Humanities or Social Sciences Selective (30000+level)</td>
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<td>Mathematics or Sciences Selective</td>
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</tbody>
</table>

16 Credits

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) ** = 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.
LARC Supplemental Information
All prerequisites must be met.

1 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
(Some course subjects will also count toward the College of Agriculture humanities selectives requirement
https://ag.purdue.edu/oap/pages/core-social_humanities.aspx)

Economics Selective (3 credits)
Any of these courses will fulfill the University Core Curriculum Human Cultures Behavioral/Social Sciences foundational learning outcome and the College of Agriculture Social Sciences selective.
AGEC 20300 Introductory Microeconomics for Food and Agribusiness
ECON 21000 Principles of Economics
AGEC 20400 Introduction to Resource Economics and Environmental Policy
ECON 25100 Microeconomics
AGEC 21700 Economics
ECON 25200 Macroeconomics

Additional Math and Science Selective (3 credits)
See approved Math and Science list at: https://ag.purdue.edu/oap/Pages/core_math-science.aspx

Art Design Selective I (3 credits) These three credits also count towards the 15 credits of humanities and social sciences selectives.
AD 10500 Design I
AD 10600 Design II
AD 11300 Basic Drawing
AD 11400 Drawing II
AD 11700 Photography I: Black and White Processes and Aesthetics
AD 11900 Photography II: Color Imaging and Studio Practice
AD 12500 Introduction to Interior Design
AD 20000 Beginning Painting
AD 21300 Life Drawing I
AD 22000 Computers in Art
AD 22200 Introduction to Photography
AD 22600 History of Art to 1400
AD 22700 Art History since 1400
AD 23300 Photo Silk Screen
AD 26200 Jewelry and Metalwork
AD 26500 Relief Printmaking
AD 26600 Silkscreen Printmaking
AD 26700 Digital Media I: Photography and Digital Imaging
AD 27000 Constructed Textiles
AD 27100 Dyed Textiles
AD 30400 Video Art
AD 31400 Illustrative Drawing
AD 33300 Photo Silk Screen
AD 36200 Jewelry and Metalwork
AD 36500 Intermediate Painting
AD 36800 Etching and Intaglio Printmaking
AD 36900 Lithographic Printmaking
AD 37000 Woven Textiles
AD 44200 Ceramics III
AD 46200 Metalsmithing
AD 46800 Printmaking III

Art Design Selective II (3 credits) These three credits also count towards the 15 credits of humanities and social sciences selectives.
AD 10600 Design II
AD 11300 Basic Drawing
AD 22600 History of Art to 1400
AD 22700 Art History since 1400
AD 25500 Art Appreciation
AD 36200 Jewelry and Metalwork
AD 22700 Art History since 1400
AD 22700 Art History since 1400
AD 25500 Art Appreciation
AD 45400 Modern Architecture

Humanities and Social Sciences Selectives (15 credits)
(9 credits of Humanities and/or Social Sciences must be taken outside the College of Agriculture)
See approved list at: https://ag.purdue.edu/oap/Pages/core-social_humanities.aspx

Written or Oral Communication Selective (3 credits)
AGR 20100 Communication Across Culture
ASL 10000-59900
COM 20000-59900
ENGL 20000-59900
YDAE 44000 Methods of Teaching Agriculture Education

Contemporary Issues In Landscape Architecture (2 credits)
Check LA 48200 in the current Schedule of Classes for topics offered that semester.

Landscape Architecture Selectives (2 credits)
LA 48100 Special Topics in Landscape Architecture
HORT 21820 Hardy Herbaceous Landscape Plants
SFS 31500 Principles of Permaculture
SFS 30200 Principles of Sustainability
LA 48200 Contemporary Issues in Landscape Architecture
HORT 21000 + HORT 21100 Fundamentals of Turfgrass Culture
SFS 31200 Urban Agriculture

Students in Landscape Architecture fulfill the foundational mathematics requirement by (1) completing MA 15800 or higher or (2) completing STAT 30100.
Enrolling in STAT 30100 requires either successfully completing MA 15300 and MA 15400 or taking the advanced credit examination for MA 15300 and MA 15400 to establish competency. Three (3) credits of MA 15300 or MA 15400 may be used as an unrestricted elective in the College of Agriculture Undergraduate plans of study, but may not be used as Mathematics and Sciences selective.
Justification: HORT/AGRY 21000 Fundamentals of Turfgrass Culture moved to the spring semester. Updating plan of study to reflect the course semester offered. Flipping HORT 21000 with BTNY 30100.

Move HORT 21000 Fundamentals of Turfgrass Culture from Fall 3rd Year to Spring 3rd Year.
Move BTNY 30100 Introductory Plant Pathology from Spring 3rd Year to Fall 3rd Year.
Proposed Major Title: Master of Science (MS) in Landscape Systems and Design

New Courses and Introduction

Graduate Program: MS (HLA)
Title of Concentration: Master of Science (MS) in Landscape Systems and Design
Effective Session: Fall 2020
Degrees: MS only
Mode of Delivery: Residential

Justification:
As an environmental design discipline, landscape architecture holistically integrates a multitude of natural sciences, social and behavioral sciences, and creative arts dimensions into analysis and design of living environments. As such, it can be called an ‘interdisciplinary discipline’ that synthesizes various disciplines with creative approaches to problem-solving for natural and built systems and environments.

The landscape architecture program at Purdue University resides in the Department of Horticulture and Landscape Architecture (HLA). The horticulture discipline is highly acclaimed around the nation and the world by way of its stellar and pathbreaking research accomplishments. However, the landscape architecture discipline offers only an undergraduate program. While it also is nationally and internationally recognized for its professional design/practice preparation, the research dimension in this program has been quite limited. The nation-wide need for research in this discipline has been well established, and career opportunities for graduates with a research-focused degree have been expanding. Such a graduate degree will also accord the program an advanced competitive edge among its peers.

Thus, in keeping with Purdue’s global reputation as a ‘Research-One’ university, and HLA’s highly prominent research signatures in Horticulture, the following proposal for a research-focused graduate degree in landscape systems theory, and design/practice, initially at the master’s level (MS), as an additional major for the current MS degree in HLA, is submitted for approval.

Focus of the research or professional program:
The graduate studies program in landscape architecture is proposed at the master’s level (MS) to be based on theory and research, as well as design inquiry bearing translational impact on the landscape architecture profession.

Based on the premise justification above, the program is intended to accommodate research interests of students that will be matched with faculty expertise, drawing from the entire HLA department, the College of Agriculture, and extending to selected disciplines across other colleges. The program is proposed in response to the need to advance competitiveness in research areas of landscape architecture, and to the call for such a program to inform with new knowledge, the landscape architecture practicing professions in Indiana as well as nationwide.
As noted earlier, Purdue’s peer landscape architecture programs also offer graduate degrees, as do all landscape architecture programs with varying specialties and focus areas in the Big-Ten region universities. As such, these other institutions enjoy a competitive edge over Purdue in advancing landscape architecture student and faculty recruitment and development of expertise with national and global visibility. (Historically as well as currently, landscape architecture studies have been quite attractive also to international communities as borne out by their sustained enrollment patterns in the undergraduate program, and the participation of exchange students from other countries.)

A graduate program will help establish a strong research base that will add tremendous value to the knowledge and skill resources of the landscape architecture program, its faculty and students, its graduates and professional practitioners, and quite importantly, to the preparation of future generations of faculty in this professional academia. It will provide opportunities for students and faculty in the entire department and the college to expand interdisciplinary interactions, and further expand such interactions across the university.

**Participating Faculty:**

- Aaron Thompson, PhD  Assistant Professor of Landscape Architecture  765.494.1324 awthomps@purdue.edu
- David Barbarash  Associate Professor of Landscape Architecture & Coordinator of Cooperative Education Program 765.496.3887 dbarbara@purdue.edu
- Sean Rotar  Associate Professor of Landscape Architecture  765.494.6007 srotar@purdue.edu
- Paul Siciliano  Professor of Horticulture & Landscape Architecture  765.494.1346 sicilian@purdue.edu
- Rob Sovinski  Professor of Landscape Architecture  765.494.1341 sovinski@purdue.edu

**Expected Enrollment:**
High achieving students with baccalaureate degrees will be recruited to this graduate program. Their baccalaureate preparations may be in landscape architecture or other fields of studies. Depending on their background and achievements, two tracks of studies may be provided—one for those with landscape architecture degrees, and another for those with degrees in other fields of studies. These other fields of studies could include disciplines such as in agriculture, natural resource sciences, engineering, management, education, social and behavioral sciences, life sciences, and others with demonstrable connectivity and potential contribution to the discipline of landscape architecture.

Student enrollment will be ramped up to a steady state of 5-7 new students enrolled each year corresponding to the faculty resources available in the program and its interdisciplinary partners in the college and the university.

The careers of these graduates will vary depending on their baccalaureate backgrounds and, of course, the mastery in their areas of research focus. Their potential employers would include, private sector landscape architecture practicing professions, public sector employers at the federal, state, and local levels, and in academia to conduct teaching/learning to prepare future generations of professionals, research, and community engagement. Above all, they would be expected to demonstrate responsible citizenship, leadership in their professions, and inspirations to future generations of students for their career development.
Assessment for LA MS Program || 24 course credits + 6 credits hours of HORT 698 Research MS Thesis

Individual plan of study will be developed by MS student with support from major advisor and graduate advisory committee. The plan of study will reflect the priorities of the individual thesis and should reflect coursework with relevant methodological and knowledge areas to support the professional growth of the individual student and their ability to complete a Master's Thesis.

Core Requirements: Landscape Systems & Design (9 credits total)

- LA Listed Courses:
  - *New Course: LA 50100 (1 credit)
    - **Title:** Research Methods in Landscape Systems Theory and Design
    - **Course Description:** Developing proficiency in multiple approaches for supporting research in landscape theory and systems. Analysis tools and techniques. Modeling relationships between research variables and types of methods. Information bases for social, ecological, and physical information. Analyses of tools and techniques for both theory-driven research and systems design evaluation.
    - **Prerequisite:** Accredited undergraduate degree in landscape architecture; or Completion of a summer course providing foundational skills and background in the field of landscape architecture.
  - *New Course: LA 58100 (2 credits)
    - **Title:** Contemporary issues in landscape architecture systems, design, and practice
    - **Course Description:** A broad survey of issues affecting multiple systems, informing design methods, and shaping contemporary landscape architecture practice. Examination of the factors influencing contemporary issues and their impact on application of theories. Methodological approaches for responding to issues involving the integration of multiple design factors and variables.
    - **Prerequisite:** Accredited undergraduate degree in landscape architecture; or Completion of a summer course providing foundational skills and background in the field of landscape architecture.

- Department Requirements:
  - HORT 601 Planning and Presenting Horticulture Research (1 credit)
  - HORT 602 Horticulture Research Seminar (1 credit)
  - Grad 612: Ethical Conduct of Research (1 credit)

- Foundational Research Skill Development (3 credits)

- Thesis Requirement: Students must also complete 6 credits hours of HORT 698 Research MS Thesis and successfully defend / complete thesis consistent with Graduate School requirements.

- Elective Requirements: In addition to the core requirements listed above each student will need to complete 18 credits of elective coursework based on a committee approved plan of study.
Examples
The following examples are based on the strengths of existing graduate course offerings across the Purdue campus relevant to potential graduate studies in landscape architecture. However, neither these examples nor the list above is comprehensive as the strength of the typical Purdue MS thesis-based program of study is that each individual student has the ability to work through this process with their primary advisor and their graduate advisory committee.

Example 1
**MS Option Example: Landscape Systems & Design**
A student pursuing an MS degree who has already obtained an accredited Landscape Architecture BS degree with a research thesis in the area of landscape ecology.

**Assessment for LA MS Program || 24 course credits + 6 credits hours of HORT 698 Research MS Thesis**

- Landscape Theory & Systems Design (6 credits total)
  - LA Listed Courses:
    - LA 501 Research Methods (1 credit)
    - LA 581 Contemporary issues in landscape architecture systems, design, and practice (2 credits)
  - Department Requirements:
    - HORT 601 Planning and Presenting Horticulture Research (1 credit)
    - HORT 602 Horticulture Research Seminar (1 credit)
    - Grad 612: Ethical Conduct of Research (1 credit)
  - Thesis Requirement: Students must also complete 6 credits hours of HORT 698 Research MS Thesis and successfully defend / complete thesis consistent with Graduate School requirements.

- Foundational Research Skill Development (6 credits total)
  - Spatial Analysis**
    - FNR 359 Spatial Ecology & GIS (3 credits) – 3 of 6 credits at 300-400 level
    - ASM 540 Geographic Information Systems (3 credits)

- Electives (12 credits total)
  - Natural Systems
    - SFS 301 Agroecology (3 credits) – 6 of 6 credits at 300-400 level
    - FNR 598 Urban Ecology (3 credits)
    - AGRY 565 Soils and Landscapes (3 credits)
  - Environmental Policy / Analysis
    - POL 523 Introduction to Environmental Policy (3 credits)
Example 2

**MS Option Example: Landscape Systems & Design**

A student pursuing an MS degree who has already obtained an accredited Landscape Architecture BS degree with a research thesis in the area of community engagement and design.

**Assessment for LA MS Program || 24 course credits + 6 credits hours of HORT 698 Research MS Thesis**

- **Landscape Theory & Systems Design (6 credits total)**
  - LA Listed Courses:
    - LA 501 Research Methods (1 credit)
    - LA 581 Contemporary issues in landscape architecture systems, design, and practice (2 credits)
  - Department Requirements:
    - HORT 601 Planning and Presenting Horticulture Research (1 credit)
    - HORT 602 Horticulture Research Seminar (1 credit)
    - HORT 603 Grants & Grantsmanship {Proposal Writing} (1 credit)
    - Grad 612: Ethical Conduct of Research (1 credit)
  - Thesis Requirement: Students must also complete 6 credits hours of HORT 698 Research MS Thesis and successfully defend / complete thesis consistent with Graduate School requirements.

- **Foundational Research Skill Development (6 credits total)**
  - Data Collection, Analysis, Interpretation, and Communication
    - ASEC 590 Qualitative Coding & Analysis (3 credits)
    - FNR 580 Research Methods for Natural Resource Social Science (3 credits)

- **Electives (12 credits total)**
  - Community Engagement
    - FNR 572 Community Involvement in Natural Resources (3 credits)
    - SOC 531 Community Organization (3 credits)
  - History, Human-Environment Relationships, and Cultural Exploration
    - FNR 375 Human Dimensions of Natural Resource Management (3 credits) – 3 of 6 credits at 300-400 level
  - Graphics, Art, and Design
    - AD 397 Sustainability in the Built Environment (3 credits) – 6 of 6 credits at 300-400 level allowed
    - OR AD 542 Information Visualization Design (3 credits)
A. **Short Title:** Special Topics In Land Arch

B. **Semester(s) Offered:** Fall, Spring

C. **Schedule Type (e.g. Lecture/Lab) and Hours:** LEC, LAB, LBP, PRS, IND

D. **Credits:** 1.0-3.0 May be repeated for credit.

E. **Justification for the course:** This course is part of a new series of landscape architecture focused selectives that will be planned in advance and offered to Landscape Architecture students in the professional Landscape Architecture program (sophomores, juniors, co-op, and seniors). Non-Landscape Architecture students may gain enrollment with permission of instructor.

F. **Course Description for University Catalog:** Rotating topics dealing with skills, knowledge, and experiences related to landscape architectural theory, expression, and practice.

G. **Requisites (Pre-Reqs/Co-Reqs/concurrent pre-req):** None.

H. **Restrictions:** Major – Landscape Architecture

I. **Learning Outcomes:** Varies by topic.

J. **Applicable to College of Agriculture Core**
   This course ☐ will ☒ will not be nominated for inclusion on College of Agriculture Core.

K. **Instructor Information:** Varies by topic.

L. **Link to curriculog (if applicable):**
A. Short Title: Contemporary Issues - Land Arch

B. Semester(s) Offered: Fall, Spring

C. Schedule Type (e.g. Lecture/Lab) and Hours: LEC, LAB, LBP, PRS, IND

D. Credits: 2.0 May be repeated for credit.

E. Justification for the course: This course fills a content gap in the Landscape Architecture undergraduate program and provides foundations in contemporary landscape architectural theory, practice, and methods. The course will be topic driven, with topics chosen by the faculty of record, but presented and filtered through a lens of contemporary issues, projects, designers/firms, and theories at the forefront of practice and academia.

F. Course Description for University Catalog: Rotating topics that explore focused issues in landscape architecture theory and practice. Analysis and experience of contemporary issues, designs, and designers explored through presentation, discussion, critique, and practice of thematic content. Non-Landscape Architecture students may gain enrollment with permission of instructor.

G. Requisites (Pre-Reqs/Co-Reqs/concurrent pre-req): None.

H. Restrictions: Major – Landscape Architecture

I. Learning Outcomes: Varies by topic.

J. Applicable to College of Agriculture Core
   This course ☐ will ☒ will not be nominated for inclusion on College of Agriculture Core.

K. Instructor Information: Varies by topic.

L. Link to curriculog (if applicable):
A. **Short Title:** Research Methods For Design Applications

B. **Semester(s) Offered:** Fall

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

D. **Credits:** 1.0

E. **Justification for the course:** This course takes the research methods module currently embedded into LA 41600 into a standalone course with more depth and rigor possible within a studio environment. It is intended as the pre-capstone course for Landscape Architecture undergrads AND as the introduction course for students entering the Landscape Architecture M.S. graduate program who may not have experience in design research.

F. **Course Description for University Catalog:** The growing need for understanding the role of individuals, communities, and society in shaping the natural environment has led to a greater emphasis on landscape architectural research and the need to provide training in the research methods to support these efforts. It is an exciting time to enter this arena as landscape architects are collaborating with natural and social scientist to achieve better conservation outcomes, promote sustainable behaviors, and increase awareness and understanding of the complex environmental challenges facing our society. Non-Landscape Architecture students may gain enrollment with permission of instructor.

G. **Requisites (Pre-Reqs/Co-Reqs/concurrent pre-req):** None.

H. **Restrictions:** Major - Landscape Architecture

I. **Learning Outcomes:** Developing your research skills is a continuous process that are enhanced by each opportunity to expand the tools available to you by building your understanding of the methods that drive this work. It is important to know that many of our community and environmental design challenges cannot be addressed solely by applying one set of research tools, but rather it is common that researchers apply the best set of methods -- often using a mixed methods approach -- to assist them in achieving their research objectives. Over the course of the semester students will cultivate a number of professional skills based on the following objectives:

1. To understand the need for social science research in landscape architecture practice and how this informs design theory development.

2. To conceptually model the relationship between social and ecological variables and understand the types of research methods available to explore these relationships.

3. To learn how to access demographic information about communities and user groups.
4. To develop a basic understanding of analysis tools and techniques, such as the use of GIS applications, Microsoft Excel, and SPSS (Statistical Package for Social Science) to conduct analysis of quantitative data.

5. To understand the common phases of developing theory-driven research and systems design evaluation.

J. Applicable to College of Agriculture Core
This course ☒ will ☐ will not be nominated for inclusion on College of Agriculture Core.

K. Instructor Information: Dr. Aaron Thompson, Office: HORT 324, Phone: (765) 494-1324, Email: awthomps@purdue.edu.

L. Link to curriculog (if applicable):
Supporting Document
LA 58100

A. **Short Title:** Special Topics In Land Arch

B. **Semester(s) Offered:** Fall, Spring

C. **Schedule Type (e.g. Lecture/Lab) and Hours:** LEC, LAB, LBP, PRS, IND

D. **Credits:** 1.0 – 3.0 May be repeated for credit.

E. **Justification for the course:** This course is part of a new series of landscape architecture focused electives that will be planned in advance and offered to Landscape Architecture students in the graduate landscape systems and design program. The topics chosen will serve to introduce new topics and to and broaden foundational understanding in landscape topics and theories for new graduate students. Permission of instructor.

F. **Course Description for University Catalog:** Rotating topics dealing with skills, knowledge, and experiences related to landscape architectural theory, expression, and practice. Permission of Instructor required.

G. **Requisites (Pre-Reqs/Co-Reqs/concurrent pre-req):** None.

H. **Restrictions:** Permission of Instructor.

I. **Learning Outcomes:** Varies by topic.

J. **Applicable to College of Agriculture Core**
   This course ☐ will  ☒ will not be nominated for inclusion on College of Agriculture Core.

K. **Instructor Information:** Varies by topic.

L. **Link to curriculog (if applicable):** Click here to enter text.
Supporting Document
LA 58200

A. **Short Title:** Contemporary Issues – Land Arch

B. **Semester(s) Offered:** Fall, Spring

C. **Schedule Type (e.g. Lecture/Lab) and Hours:** LEC, LAB, LBP, PRS, IND

D. **Credits:** 2.0

E. **Justification for the course:** This course creates a graduate level course that will provide foundations in contemporary landscape architectural theory, practice, and methods. The course will be topic driven, with topics chosen by the faculty of record, but presented and filtered through a lens of contemporary issues, projects, designers/firms, and theories at the forefront of practice and academia.

F. **Course Description for University Catalog:** Rotating topics that explore focused issues in landscape architecture theory and practice. Analysis and experience of contemporary issues, designs, and designers explored through presentation, discussion, critique, and practice of thematic content. Permission of instructor.

G. **Requisites (Pre-Reqs/Co-Reqs/concurrent pre-req):** None.

H. **Restrictions:** Permission of Instructor.

I. **Learning Outcomes:** Varies by topic.

J. **Applicable to College of Agriculture Core**
   - This course ☐ **will** ☒ **will not** be nominated for inclusion on College of Agriculture Core.

K. **Instructor Information:** Varies by topic.

L. **Link to curriculog (if applicable):** Click here to enter text.
Natural Resources and Environmental Sciences Program
Proposed Course and Curricular Changes
(College of Agriculture Undergraduate/Graduate)

A. COURSES TO BE ADDED

Prefix and Course Number: NRES 12100
Long Title: Environmental Sciences Learning Community

B. CURRICULAR CHANGES (If new major, concentration or minor, need plan of study, description, proposed head count, UEAC justification (See CSRC sharepoint for example))

None
A. **Short Title:** Env Sci L C

B. **Semester(s) Offered:** Fall

C. **Schedule Type (e.g. Lecture/Lab) and Hours:** Lab 170/1/16

D. **Credits:** 1

E. **Justification for the course:** This is the companion course for the Environmental Sciences Learning Community. We have found that it is essential to receive a three hour time block for the learning community each week, so that we know students have time available to participate in field trips and activities.

F. **Course Description for University Catalog:** This learning community is intended to expose first-year students to emerging environmental problems and innovative solutions, to support their transition to Purdue through a sense of community and increased engagement, and to provide students access to faculty in the environmental sciences in a small group setting. Activities include field trips, hands-on learning, study halls, and meals together. Enrollment is restricted to members of the environmental science learning community.

G. **Requisites (Pre-Reqs/Co-Reqs/concurrent pre-req):** NRES 12500 (co-req)

H. **Restrictions:** Application to the Learning Community

I. **Learning Outcomes:** 1) Recognize environmental service and awareness groups on campus and in the local community. 2) Identify local environmental challenges. 3) Increase knowledge of potential solutions for increasing food-water-energy sustainability.

J. **Applicable to College of Agriculture Core**
   - This course ☐ will ☒ will not be nominated for inclusion on College of Agriculture Core.

K. **Instructor Information:** Laura Bowling, Linda Prokopy, and Michael Mashtare

L. **Link to curriculog (if applicable):** [https://purdue.curriculog.com/proposal:12267/form](https://purdue.curriculog.com/proposal:12267/form)
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.

Mathematics and Sciences:

FNR 24150 Ecology and Systematics of Fish and Reptiles
FNR 25150 Ecology and Systematics of Birds and Mammals

Capstone Course:

The following classes will be added to the list of those classes fulfilling the Capstone requirement

FNR 49900 Thesis
FNR 43300 Grand Challenges in Forest Management
FNR 58600 Urban Ecology

International Understanding:

The following classes will be added to the list of those classes fulfilling the International Understanding requirement

ASEC 43100 Planning for International Engagement Methods
ASEC 43120 Evaluating International Engagement Methods
HIST 37005 Queens and Empresses in Early Modern Europe

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:

AGEC 60400 Fundamentals of Applied Welfare Economics

Justification: Replaced by AGEC 60900.

Decision process:
First reading: 10/22/19
Second reading: 10/29/19
Final vote: 11/05/19, 10 in favor, 0 opposed
AGEC 60800 Benefit – Cost Analysis

Justification: Replaced by AGEC 60900.

Decision process:
First reading: 10/22/19
Second reading: 10/29/19
Final vote: 11/05/19, 10 in favor, 0 opposed

AGRY 20400 (BTNY 20400) Crop and Weed Identification

Justification: No longer taught. This course was cross-listed with BOTANY 20400 and Botany has also deleted this course.

Decision process:
First reading: 08/27/19
Second reading: 09/03/19
Final vote: 09/10/19, 12 in favor, 0 opposed

AGRY 30500 Seed Analysis And Grain Grading

Justification: No longer taught.

Decision process:
First reading: 08/27/19
Second reading: 09/03/19
Final vote: 09/10/19, 12 in favor, 0 opposed

AGRY 30600 Seed Technology

Justification: No longer taught.

Decision process:
First reading: 08/27/19
Second reading: 09/03/19
Final vote: 09/10/19, 12 in favor, 0 opposed

AGRY 38000 Field Diagnostic Techniques

Justification: No longer taught.

Decision process:
First reading: 08/27/19
Second reading: 09/03/19
Final vote: 09/10/19, 12 in favor, 0 opposed
AGRY 46000 (ANTH 46000) Contemporary Issues In Agriculture

Justification: No longer taught.

Decision process:
First reading: 08/27/19
Second reading: 09/03/19
Final vote: 09/10/19, 12 in favor, 0 opposed

AGRY 55300 Intro SAS Programming

Justification: No longer taught.

Decision process:
First reading: 08/27/19
Second reading: 09/03/19
Final vote: 09/10/19, 12 in favor, 0 opposed

AGRY 57200 Molecular Cytogenetics

Justification: No longer taught.

Decision process:
First reading: 08/27/19
Second reading: 09/03/19
Final vote: 09/10/19, 12 in favor, 0 opposed

AGRY 57300 Molecular Cytogenetics Lab

Justification: No longer taught.

Decision process:
First reading: 08/27/19
Second reading: 09/03/19
Final vote: 09/10/19, 12 in favor, 0 opposed

AGRY 65500 Soils Genesis and Classification

Justification: No longer taught.

Decision process:
First reading: 08/27/19
Second reading: 09/03/19
Final vote: 09/10/19, 12 in favor, 0 opposed
**BTNY 20400** (AGRY 20400) Crop and Weed Identification

*Justification:* No longer taught. This course was cross-listed with AGRY 20400 and Agronomy has also deleted this course.

*Decision process:*
First reading: 10/01/19
Second reading: 10/15/19
Final vote: 10/22/19, 8 in favor, 0 opposed

**BTNY 20900** Plant Diversity

*Justification:* No longer taught.

*Decision process:*
First reading: 10/01/19
Second reading: 10/15/19
Final vote: 10/22/19, 8 in favor, 0 opposed

**BTNY 21100** Plants and the Environment

*Justification:* No longer taught.

*Decision process:*
First reading: 10/01/19
Second reading: 10/15/19
Final vote: 10/22/19, 8 in favor, 0 opposed

**BTNY 31600** Plant Anatomy

*Justification:* No longer taught.

*Decision process:*
First reading: 10/01/19
Second reading: 10/15/19
Final vote: 10/22/19, 8 in favor, 0 opposed

**ENTM 35100** Bee Biology And Bee Keeping

*Justification:* No longer taught.

*Decision process:*
First reading: 10/22/19
Second reading: 10/29/19
Final vote: 11/05/19, 10 in favor, 0 opposed
ENTM 61500 Advanced Insect Behavior

Justification: No longer taught.

Decision process:
First reading: 10/22/19
Second reading: 10/29/19
Final vote: 11/05/19, 10 in favor, 0 opposed

LA 25000 Architectural Design

Justification: No longer taught; Change in curriculum.

Decision process:
First reading: 10/22/19
Second reading: 10/29/19
Final vote: 11/05/19, 11 in favor, 0 opposed

NRES 30500 Environmental Decision Making

Justification: No longer taught.

Decision process:
First reading: 10/01/19
Second reading: 10/15/19
Final vote: 10/22/19, 8 in favor, 0 opposed

NRES 49700 Natural Resources and Environmental Sciences Seminar

Justification: No longer taught.

Decision process:
First reading: 10/01/19
Second reading: 10/15/19
Final vote: 10/22/19, 8 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:

AGEC 33100 Course Title and Description Change

From: AGEC 33100 Principles of Selling in Agribusiness - Credit Hours: 3.00. The principles of salesmanship and their application to the agricultural business. Topics include attitudes and value systems, basic behavioral patterns, the purchase decision process, relationship of sales to marketing, selling strategies, preparing for sales calls, making sales presentations, handling objections, and closing sales. Emphasis is placed on application of principles to real-world
situations and on building selling skills through class projects. Requires class trips. Students will pay individual lodging or meal expenses when necessary. Typically offered Fall Spring. **Credits:** 3.00

**To:**

**AGEC 33100** Principles of Industrial Selling - Credit Hours: 3.00. The principles of **selling and their application to the industrial businesses.** Topics include attitudes and value systems, basic behavioral patterns, the purchase decision process, relationship of sales to marketing, selling strategies, preparing for sales calls, making sales presentations, handling objections, and closing sales. Emphasis is placed on application of principles to real-world situations and on building selling skills through class projects. Requires class trips. Students will pay individual lodging or meal expenses when necessary. Typically offered Fall Spring. **Credits:** 3.00

*Justification:* Modernizes the language.

**Decision process:**
First reading: 10/22/19
Second reading: 10/29/19
Final vote: 11/05/19  10 in favor, 0 opposed

**AGEC 43100 Course Title and Description Change**

**From:** **AGEC 43100** Advanced Agri-Sales and Marketing - Credit Hours: 4.00. Advanced techniques of salesmanship, field application of selling techniques, improving communication skills, study of agribusiness marketing strategies, interaction with industry agri-marketers, and strategies for career development in agri-marketing. Requires class trips. Students will pay individual lodging or meal expenses when necessary. Permission of instructor required. Typically offered Fall. **Credits:** 4.00 (CAPSTONE for SLMK Major)

**To:**

**AGEC 43100** Advanced Industrial Sales and Marketing - Credit Hours: 4.00. Advanced presentation techniques, sales management and analysis, improving communication skills, study of industrial marketing strategies, interaction with industry executives, and strategies for career development. Requires class trips. Students will pay individual lodging or meal expenses when necessary. Permission of instructor required. Typically offered Fall. **Credits:** 4.00 (CAPSTONE for SLMK Major)

*Justification:* Modernizes the language.

**Decision process:**
First reading: 10/22/19
Second reading: 10/29/19
Final vote: 11/05/19, 10 in favor, 0 opposed
AGR 12100 Introduction to Agricultural Sciences Education and Communications Academic Programs

*Justification:* Name change to reflect Departmental name change.

*Decision Process:*
First reading: 04/16/19
Final vote: 04/23/19, 10 in favor, 0 opposed

AGRY 33500 Weather And Climate

Remove Physics Prerequisites

*Justification:* Not necessary for student success.

*Decision process:*
First reading: 10/29/19
Second reading: 11/05/19
Final vote: 11/12/19, 9 in favor, 0 opposed

AGRY 54500 Remote Sensing of Land Resources

Add Distance Learning

*Justification:* The curriculum of the asynchronous online Spatial Data Science Graduate Certificate includes four courses, one of which is AGRY 54500, Remote Sensing of Land Resources. Inclusion of AGRY 54500 as a distance education graduate certificate course requires the proposed modification.

*Decision process:*
First reading: 11/05/19
Second reading: 11/12/19
Final vote: 11/19/19, 11 in favor, 0 opposed

BCHM 60100 Critical Analysis of BCHM Research Literature I

*Change title to:* Critical Thinking and Communication in Biochemistry I

*Justification:* The new name more accurately reflect the content of the courses. This removes confusion for the students and the faculty regarding what the courses are about.

*Decision process:*
First reading: 10/01/19
Second reading: 10/15/19
Final vote: 10/22/19, 8 in favor, 0 opposed

BCHM 60200 Critical Analysis of BCHM Research Literature II

*Change title to:* Critical Thinking and Communication in Biochemistry II
**Justification:** The new name more accurately reflect the content of the courses. This removes confusion for the students and the faculty regarding what the courses are about.

**Decision process:**
First reading: 10/01/19  
Second reading: 10/15/19  
Final vote: 10/22/19, 8 in favor, 0 opposed

**ENTM 39300 Insect Biology Practicum**
From: Credit Hours 0.50 To: Credit Hours 1.00

*Justification:* Addresses the issue of denials for students who are required to register for 2 X 8 week sessions of the same course number in the same semester. Combining 2 X 8 week units into 1 X16 week unit was proposed by the Registrar Office to simply proper enrollment.

**Decision process:**
First reading: 10/22/19  
Second reading: 10/29/19  
Final vote: 11/05/19, 10 in favor, 0 opposed

**FNR 35100 Aquatic Sampling Techniques**
Remove MA 16010 as a prerequisite

*Justification:* Students typically take their major-specific techniques course (FNR 348, 351 or 353) in the spring of their sophomore year before they attend the Natural Resources Practicum (FNR 37010) that summer. However, if they fail MA 16010 in their freshman year or need to take too many remedial math classes, they typically need to delay completing their techniques course and the practicum by one year. This can be disruptive to their plan of study. To minimize this delay, we propose to move the MA 16010 prerequisite from the techniques courses (where it is not necessary) to the practicum (where it is necessary). This will allow students to take MA 16010 concurrently in the spring semester with their techniques course if needed, so that they can stay on track for practicum in the summer between their sophomore and junior years.

**Decision process:**
First reading: 04/16/19  
Final vote: 04/23/19, 10 in favor, 0 opposed

**FNR 35300 Natural Resources Measurement**
Remove MA 16010 as a prerequisite

*Justification:* Students typically take their major-specific techniques course (FNR 348, 351 or 353) in the spring of their sophomore year before they attend the Natural Resources Practicum (FNR 37010) that summer. However, if they fail MA 16010 in their freshman year or need to take too many remedial math classes, they typically need to delay completing their techniques course and the practicum by one year. This can be disruptive to their plan of study. To minimize
this delay, we propose to move the MA 16010 prerequisite from the techniques courses (where it is not necessary) to the practicum (where it is necessary). This will allow students to take MA 16010 concurrently in the spring semester with their techniques course if needed, so that they can stay on track for practicum in the summer between their sophomore and junior years.

**Decision Process:**
First reading: 04/16/19
Final vote: 04/23/19, 10 in favor, 0 opposed

**FNR 37010 Natural Resources Practicum**

Add MA 16010 as a prerequisite

**Justification:** Students typically take their major-specific techniques course (FNR 348, 351 or 353) in the spring of their sophomore year before they attend the Natural Resources Practicum (FNR 37010) that summer. However, if they fail MA 16010 in their freshman year or need to take too many remedial math classes, they typically need to delay completing their techniques course and the practicum by one year. This can be disruptive to their plan of study. To minimize this delay, we propose to move the MA 16010 prerequisite from the techniques courses (where it is not necessary) to the practicum (where it is necessary). This will allow students to take MA 16010 concurrently in the spring semester with their techniques course if needed, so that they can stay on track for practicum in the summer between their sophomore and junior years.

**Decision Process:**
First reading: 04/16/19
Final vote: 04/23/19, 10 in favor, 0 opposed

**FNR 37200 Forestry Practicum**

Drop FNR 37010 as prerequisite. Add FNR 37050 as prerequisite

**Justification:** Improves progression to graduation for some students.

**Decision process:**
First reading: 11/05/19
Second reading: 11/12/19
Final vote: 11/19/19, 11 in favor, 0 opposed

**FNR 37300 Wildlife Practicum**

Drop FNR 37010 as prerequisite. Add FNR 37050 as prerequisite.

**Justification:** Improves progression to graduation for some students.

**Decision process:**
First reading: 11/05/19
Second reading: 11/12/19
Final vote: 11/19/19, 11 in favor, 0 opposed
FNR 37500 Human Dimensions of Natural Resources

Drop POL 22300/ FNR 22310 as prerequisite. Require Junior standing to enroll

Justification: Improves progression to graduation for some students.

Decision process:
First reading: 11/05/19
Second reading: 11/12/19
Final vote: 11/19/19, 11 in favor, 0 opposed

FNR 44400 Arboricultural Practices

From: Typically taught Fall Semester
To: Typically taught Fall Semester of Odd Years

Justification: The curriculum of the asynchronous online Spatial Data Science Graduate Certificate includes four courses, one of which is AGRY 54500, Remote Sensing of Land Resources. Inclusion of AGRY 54500 as a distance education graduate certificate course requires the proposed modification.

Decision process:
First reading: 11/05/19
Second reading: 11/12/19
Final vote: 11/19/19, 11 in favor, 0 opposed

FS 16100 The Science of Food

From: Unrestricted enrollment
To: Initial enrollment limited to Freshmen and second semester sophomores

Justification: Addresses the issue of a lack of seats for Freshmen and Sophomore majors.

From: Credit Hours: 3.00. Chemical and physical properties of foods; issues pertaining to safety, food-diet-health relationship; government regulations pertaining to food safety, quality and additives; preservation techniques and transformation of agricultural commodities to food products; Food facts, myths, and practices that are important for making intelligent food decisions. Course may also be offered for dual credit with cooperating Indiana high schools upon documented approval by the Department of Food Science. Typically offered Fall. Credits: 3.00

To: Credit Hours: 3.00. Chemical and physical properties of foods; issues pertaining to safety, food-diet-health relationship; government regulations pertaining to food safety, quality and additives; preservation techniques and transformation of agricultural commodities to food products; Food facts, myths, and practices that are important for making intelligent food decisions. Typically offered Fall. Credits: 3.00

Justification: Not offered as a dual credit course
Decision process:
First reading: 11/05/19
Second reading: 11/12/19
Final vote: 11/19/19, 11 in favor, 0 opposed

HORT 30100 Plant Physiology

From: Typically offered Fall To: Typically offered Spring

Decision process:
First reading: 10/22/19
Second reading: 10/29/19
Final vote: 11/05/19, 11 in favor, 0 opposed

HORT 52500. The Plant Microbiome

From: Typically offered spring To: Typically offered fall (even years)
Justification: This change will better accommodate the instructor’s field schedule, as well as students who have field projects that extend into the fall.

From: 3h LEC To: 2h LEC, 2h LAB
Justification: Response to requests for hands-on experience.

Decision process:
First reading: 10/22/19
Second reading: 10/29/19
Final vote: 11/05/19, 11 in favor, 0 opposed

NRES 28000 Hazardous Waste Handling

Modify course description and Learning Objectives

Justification: Reflects changes to the way the course is taught currently.

Decision process:
First reading: 10/01/19
Second reading: 10/15/19
Final vote: 10/22/19, 8 in favor, 0 opposed
Part IV.

Dual Degree Proposal for

Master of Jurisprudence
and
Master of Science in Agricultural Economics

Indiana University Robert H. McKinney School of Law
and
Purdue University College of Agriculture, Department of Agricultural Economics

1. Characteristics of the Program

This proposal is for a dual MJ-MS degree. Students who successfully complete this dual degree program will receive a Master of Jurisprudence Degree (MJ) from the Indiana University Robert H. McKinney School of Law (hereinafter, “IU McKinney” or “McKinney”) and a Master of Agricultural Economics from the Purdue College of Agriculture’s Department of Agricultural Economics.

Both the MJ from IU McKinney and the MS in Agricultural Economics at Purdue University are currently offered. Therefore, no changes to the degree requirements at either institution are needed. As stand-alone degrees, the MJ degree requires completion of 30 credit hours and the MS degree is a 36-credit program of study, with 21 of the 36 credits in required courses. The remaining 15 credits are electives. The proposed MJ-MS degree is 51 credit hours.

The proposed MJ-MS is a multidisciplinary, dual-degree program. Students would first receive a Master of Science (MS) degree from Purdue University after completing 21 credits from Purdue University’s Department of Agricultural Economics, plus 15 credits from the Indiana University Robert H. McKinney School of Law. The student would receive the Master of Jurisprudence degree after completion of the 30 law credits. (Fifteen of the 30 IU McKinney credits would count toward the 36-credit requirement for the Purdue MS degree.)

Relationship to Existing Programs
A primary purpose of any dual-degree program is to engage the student in interdisciplinary studies. The agricultural economics part of this program provides a foundation in the economics of the food system and the economic concepts and theories required to make effective decisions in a dynamic industry. Among other things, law emphasizes understanding of regulatory oversight, the role of administrative agencies, policy questions, and transactional structures. Students with a multidisciplinary education in agricultural economics and law will be able to make creative and significant contributions to their companies and, more broadly, the food and agribusiness industries, and food and agriculture policies in Indiana and elsewhere.
Currently, a dual MJ-MS degree program does not exist in Indiana or, according to our research, elsewhere in the United States. IU McKinney is well-positioned to offer this dual degree because of IUPUI’s, IU McKinney’s, and Purdue’s proximity to agribusinesses and other agriculture-based employers that would benefit from professionals trained in legal and agricultural economics concepts. The MJ degree program offered by McKinney offers evening, online, and hybrid courses to help those already in the workforce achieve their degrees while continuing with their current careers. The Masters of Agricultural Economics degree at Purdue University College of Agriculture’s Department of Agricultural Economics consists primarily of online courses. (However, in addition to the online courses, students in the Agricultural Economics program are required to complete three periods of residency. Two of three sessions are held at Purdue’s West Lafayette campus. The third session is held at an international partner school. Each of the residency sessions is a continuation of the online education courses required for the MS degree.)

2. Rationale for the Program

Alignment with the IUPUI Campus Mission
The dual MJ-MS degree supports the IUPUI campus mission of advancing the intellectual growth of the citizens of Indiana. The collaboration of the IU McKinney and the Purdue University College of Agriculture Department of Agricultural Economics in developing the MJ-MS offers Indiana students additional opportunities to develop skills in multiple areas, thus offering these students the ability to increase both their graduate education and employment options.

Alignment with Purdue University Mission
The College of Agriculture wants to continue to serve the educational needs of practicing food and agribusiness managers. The dual MJ-MS degree supports Purdue Agriculture’s mission of helping make Indiana, our nation, and our world better through: (1) Students prepared to make a difference; (2) Research with purpose, leading to discovery with impact; (3) Engagement/Extension that strengthens lives and livelihoods; (4) An inclusive culture that supports excellence in all we do.

A dual-degree program with IU combines the strengths of Purdue agriculture with McKinney’s offering of a Master of Jurisprudence degree offered to professionals who do not intend to practice law.

National, State, or Regional Need
In 2017, after several years of discussion, the legislature of the State of Indiana approved two years of funding for a pilot program focused on the exploration of Agricultural Law. The funding was directed to IU McKinney, with a mandate requiring collaboration between McKinney and the Purdue University College of Agriculture. Given the status of Indiana University and Purdue University as two of Indiana’s premier public universities, and the longstanding Indiana University-Purdue University partnership, there was a great deal of interest in creating dual degrees.

**Indiana Commission of Higher Education Feasibility Study:**
The Indiana Commission for Higher Education conducted a feasibility study in anticipation of the then-proposed legislative action to fund an agricultural program to be offered by IU McKinney and the Purdue University College of Agriculture.1 The Commission described the benefits of an agricultural law program as follows:

> Each year, agriculture contributes approximately $31 billion to Indiana’s gross domestic product. Over 100,000 Hoosiers are employed directly or indirectly by agriculture related activities and over 14.7 million acres of farmland are within the state’s borders.

> Agriculture is a mainstay of Indiana’s economy and way of life, and legal services are often required to help sustain and support it. Agricultural law is a far-ranging, complex and growing area. Expertise is needed for businesses to operate successfully. Agricultural law topics are as varied as drainage issues, probate issues, environmental considerations, food safety and food law, interstate commerce, technology, patents, and much more. Beyond traditional legal services, university-led research can help identify issues to address and assist in disseminating information on relevant topics.

> ....

> Despite the potential benefits to businesses, states, and students, formal agricultural law programs are relatively rare. As of the 2016 academic year, there is no such program offering in the State of Indiana, and few large programs exist nearby. (Emphasis added.)

The Commission’s study concluded:

> Such a program may be beneficial to the state economy and be of economic value to both institutions. The Commission encourages representatives of both institutions to further explore this matter and to commit to jointly developing a strategic plan for such a program.

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McKinney and Purdue engaged an Indiana-based national expert and practitioner in the field of agricultural law (who is an alumna of both schools) to serve as the director of the nascent program. In order to explore the opportunities afforded by the legislature’s funding, the schools constituted a steering committee composed of Indiana and national leaders in the field. (See Attachment A for a list of the Steering Committee’s members.)

The steering committee determined that the first educational program outcome of the McKinney-Purdue collaboration should be the dual Master of Jurisprudence-Master of Agricultural Economics degree to be offered by McKinney and Purdue.

In addition to the strategic planning undertaken in collaboration with Purdue and the steering committee, the agricultural law program at IU McKinney has engaged in robust activities. These include: (1) a Summer 2018 food law conference organized by McKinney and Renmin Law School at Renmin’s campus in Beijing, China, as part of the commemoration of McKinney’s 30-year relationship with Renmin; (2) the Spring 2019 Indiana Law Review Symposium “Harvesting the Future: Issues and Opportunities in Agricultural Law” held at the Indiana State Library; and (3) presentations by McKinney attendees at the 2019 Future Farmers of America (FFA) Annual Conference. These programs have elicited positive feedback from the food and agriculture community in Indiana and internationally.

Employment Outlook
The MJ program at McKinney is specifically built for professionals who already have successful careers but want to enhance their knowledge of the legal system. Thus, many students remain in their current jobs after attaining the MJ degree but seek promotions based on it. The MS degree at Purdue College of Agriculture is delivered online and designed for students pursuing career growth who need general business management expertise with industry-specific knowledge, that plan to remain in with their current employer.

With the combined bodies of knowledge gained through the dual-degree program proposed here, MJ-MS graduates of McKinney and Purdue will be able to seek entry or advancement in a variety of agriculture-based endeavors and agribusinesses in Indiana and elsewhere in the United States.

3. Cost of and Support for the Program

The dual MJ-MJ program is designed to create no new teaching or cost demands on IU McKinney faculty or new demands on university resources. The MS degree already exists in the Department of Agricultural Economics. It will be offered and sustained within the already existing law and agricultural economics degree programs. We anticipate that the dual degree will add minimal incremental burdens on the law school’s administrative staff to admit candidates into the programs.
4. Similar and Related Programs

We believe that this degree will be the first dual degree in Agricultural Law offered to non-JD law students by a U.S. law school. The 2017 Indiana Commission of Higher Education’s feasibility study quoted above had identified a number of then-existing programs in agricultural law offered by three U.S. law schools (University of Arkansas School of Law, Drake University Law School, University of Colorado Law School), as well as centers or institutes at Ohio State University and Iowa State University. McKinney’s more recent research identified dual degrees offered by the following law schools to their JD students: Texas Tech University School of Law, University of Arizona James E. Rogers College of Law, and Vermont Law School. We were not able to identify any law schools that offer a dual degree in agricultural law to non-JD law students pursuing a masters degree in legal studies (in degree programs such as Master of Legal Studies, Master of Jurisprudence, etc.)

5. Quality and Other Aspects of the Program

Students in both the MJ and MS degree programs are typically working professionals who pursue the existing degrees on a part-time basis for professional advancement purposes.

Proposed Timetable

- Dual degree students will start Year 1 at McKinney; Year 2 will be at Purdue; Year 3 will be at both Purdue and McKinney
- Students will graduate from Purdue first, at the end of the Fall Semester of Year 3, and will graduate from McKinney at the end of the Spring Semester of Year 3. (See Attachment B for a sample timetable.)

Cost for Students

- Purdue’s current cost is $1,165 per credit hour including all fees
- McKinney’s current cost is $879 per credit hour for Indiana residents and $1505 per credit hour for out-of-state students [To be Updated for 2020-21]

Degree Requirements

- Total Credit Requirements: 51
  - Purdue’s MS degree program requires 36 credits
    - 21 are taught by Purdue University
    - 15 credit hours will come from McKinney
  - McKinney’s MJ Program requires 30 credit hours
    - All 30 will come from McKinney
Admissions: Process and Requirements
Applicants to the dual MJ-MS degree must apply and be admitted to each program separately and must adhere to the admissions requirements and prerequisite courses stipulated by each program. The student’s decision to complete the dual MJ-MS degree must be declared to the MJ and MS programs.

Admission to the program will begin at Purdue as it requires GRE scores and has an application fee. Prospective student applicants will then be referred to McKinney for McKinney’s independent admission decision.

Purdue Admissions Requirement
In order to be admitted to the program, candidates must submit three letters of reference, a statement of purpose written by the applicant, access to academic transcripts, and a GRE test score.

Admission Requirements to the Master of Jurisprudence (MJ) Program
- A bachelor’s degree from a U.S. institution of higher learning or an equivalent academic degree from an educational institution in a country other than the United States
- Complete MJ Application
- Undergraduate and graduate school transcripts
- Resume
- Personal statement
- Two letters of recommendation

Accreditation
IU McKinney is accredited by the American Bar Association. The Master of Jurisprudence degree program was introduced in 2014 with the acquiescence of the ABA, and with the approval of Indiana University and the Indiana Commission of Higher Education.

6. Projected Headcount and FTE Enrollments and Degrees Conferred

<table>
<thead>
<tr>
<th></th>
<th>Year 1 (2020)</th>
<th>Year 2 (2021)</th>
<th>Year 3 (2022)</th>
<th>Year 4 (2023)</th>
<th>Year 5 (2024)</th>
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</thead>
<tbody>
<tr>
<td>Enrollment</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Projection</td>
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<td>9</td>
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<tr>
<td>Full-Time</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Degrees Conferred</td>
<td>0</td>
<td>0</td>
<td>3</td>
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</tr>
</tbody>
</table>
Agricultural Law Steering Committee Members

- Amy Cornell, Director of McKinney Agricultural Law program (ex officio)
- Assistant Dean Shawn Donkin, Purdue University College of Agriculture
- Bill Even, National Pork Board
- Brandt Hershman, McKinney Law '14, Barnes & Thornburg
- Eric Hobson, Dow AgroSciences
- Professor Maria Marshall, Purdue University
- Kathy Mayberry, AgReliant Genetics, LLC
- John Newton, American Farm Bureau Federation
- Harrison Pitman, The National Agricultural Law Center
- Sarah Simpson, Indiana Board of Animal Health
- Ron Walker, The Nature Conservancy
- Professor Tom Wilson, IU Robert H. McKinney School of Law
Attachment __

Example of Proposed Schedule of Classes (showing 2020-21 academic year star)

<table>
<thead>
<tr>
<th>Module</th>
<th>Date</th>
<th>Course Title with Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year One</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summer 2020</td>
<td>July</td>
<td>Legal Process LAW-N 836</td>
<td>2</td>
</tr>
<tr>
<td><strong>Fall 2020</strong></td>
<td>August - December</td>
<td>Contracts and Sales I LAW-D/N512</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>McKinney Selective or Elective*</td>
<td>3</td>
</tr>
<tr>
<td><strong>Spring 2021</strong></td>
<td>January-May</td>
<td>McKinney Selective or Elective*</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>McKinney Selective or Elective*</td>
<td>3</td>
</tr>
<tr>
<td><strong>Year Two</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summer 2021</td>
<td>May-July</td>
<td>McKinney Selective or Elective*</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>McKinney Selective or Elective*</td>
<td>3</td>
</tr>
<tr>
<td><strong>Fall 2021</strong></td>
<td>August-November</td>
<td>AGEC 684 Applied Quantitative Methods for Decision Making (Online)</td>
<td>3</td>
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<tr>
<td></td>
<td></td>
<td>AGEC 681 Economics for Food and Agribusiness Managers (Online)</td>
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</tr>
<tr>
<td></td>
<td>October Residency 1</td>
<td>Purdue residency session held in West Lafayette, IN. This residency is a continuation of the distance education courses above.</td>
<td></td>
</tr>
<tr>
<td><strong>Spring 2022</strong></td>
<td>February-May</td>
<td>AGEC 687 Problem Solving and Project Management for Decision Makers (Online)</td>
<td>3</td>
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<tr>
<td></td>
<td>May</td>
<td>AGEC 686 Strategic Food and Agribusiness Management (Online)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Residency 1 week</td>
<td>International residency session held at an international partner school. This residency is a continuation of the distance education courses above.</td>
<td></td>
</tr>
<tr>
<td><strong>Year Three</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summer 2022</td>
<td>May-July</td>
<td>McKinney Elective</td>
<td>2-3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>McKinney Elective</td>
<td>2-3</td>
</tr>
<tr>
<td><strong>Fall 2022</strong></td>
<td>August-November</td>
<td>AGEC 685 Quantitative Managerial Decision Making (Online)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AGEC 682 The Macroeconomic Trade and Policy Environment of the Food System (online)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>October Residency 1</td>
<td>Purdue residency session held in West Lafayette, IN. This residency is a continuation of the distance education courses above.</td>
<td></td>
</tr>
<tr>
<td><strong>Purdue Sessions Complete, M.S Awarded</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Commencement December 2022</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Total Needed for MS degree= 36</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purdue = 21; IU=25-27</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Minimum Needed from IU is 15</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Continue with MJ Program Need between 3-5 credits from electives</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Spring 2023</strong></td>
<td></td>
<td>McKinney Elective</td>
<td>2-3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>McKinney Elective</td>
<td>2-3</td>
</tr>
</tbody>
</table>
McKinney Sessions Complete, MJ
Awarded Graduation from
McKinney Spring 2023

Total Needed for MJ degree: 30 credits

| IU: 30 credits; Purdue: 21 credits | Total: 51 |

Required Courses from MJ Program for MS Program

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal Process</td>
<td>The course explores the development of and relationship between common and statutory law. The course also focuses on skills needed to address effectively the meaning of law: the careful reading and briefing of cases; the interpretation of statutes; the application of precedent and the synthesis of rules from a series of cases; and the ability to support each party’s position on debatable issues. In addition, this course includes a writing component, which introduces basic principles of effective legal analysis and communication, including how to structure a legal analysis and how to communicate that analysis to a legal reader.</td>
<td>2</td>
</tr>
<tr>
<td>Contracts and Sales I D/N 512</td>
<td>Introduces students to exchange relationships in contemporary American society, with some emphasis on classic contract doctrine and introduction to the Uniform Commercial Code.</td>
<td>3</td>
</tr>
</tbody>
</table>

*Selectives: For MS degree, 6 credits must be chosen from these electives of MJ program

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contracts and Sales II LAW-D/N 511</td>
<td>3</td>
</tr>
<tr>
<td>Agriculture Law and the Environment LAW-D/N 659</td>
<td>2</td>
</tr>
<tr>
<td>Animals and the Law LAW-D/N 640</td>
<td>2</td>
</tr>
<tr>
<td>Bioethics and Law LAW-D/N 838</td>
<td>2 or 3</td>
</tr>
<tr>
<td>Clean Air Law LAW-D/N 683</td>
<td>2</td>
</tr>
<tr>
<td>Closely Held Business Organizations LAW-D/N 645</td>
<td>3</td>
</tr>
<tr>
<td>Energy Law and Policy LAW-D/N</td>
<td>2 or 3</td>
</tr>
<tr>
<td>Environmental and Toxic Tort Law LAW-D/N 611</td>
<td>2 or 3</td>
</tr>
<tr>
<td>Environmental Compliance and Enforcement LAW-D/N 673</td>
<td>2</td>
</tr>
<tr>
<td>Environmental Justice LAW-D/N 681</td>
<td>3</td>
</tr>
<tr>
<td>Environmental Law LAW-D/N 891</td>
<td>3 or 4</td>
</tr>
<tr>
<td>Food and Drug Law LAW-D/N 888</td>
<td>2 or 3</td>
</tr>
<tr>
<td>Land Use LAW-D/N 740</td>
<td>2 or 3</td>
</tr>
<tr>
<td>Law and Economics (3 cr.) D/N 624 Law and LAW-D/N</td>
<td>2 or 3</td>
</tr>
<tr>
<td>Natural Resources Law LAW-D/N 717</td>
<td>3</td>
</tr>
</tbody>
</table>

* Students may choose their remaining 19 McKinney courses from the list of courses available to all McKinney MJ students. (See Attachment C for list of courses.)
Master of Jurisprudence Degree: Available Courses
(as of Summer 2019; subject to further updating)

Required Courses:
Legal Process (2 cr.) LAW-N 836;

and

One of the following first-year required courses:
Constitutional Law (4 cr.) LAW-D/N 620
Contracts and Sales I and II (3-3 or 4-2 cr.) LAW-D/N 512 and LAW-D/N 513
Criminal Law (3 cr.) LAW-D/N 533
Property (4 cr.) LAW-D/N 509
Torts (4 cr.) LAW-D/N 541

Elective Courses:
Accounting for Law Students (2 cr.) LAW-D/N 675
Administrative Law (3 cr.) LAW-D/N 647
Admiralty Law (2 cr.) LAW-D/N 775
Advanced Course Related Experience (ACRE) (1-3 cr.) LAW-D/N 803
Advanced Field Research (AFR) (1-4 cr.) LAW-D/N 775
Advanced Legal Research (2 or 3 cr.) LAW-D/N 664
Advanced Research in Health Law (2 cr.) LAW-D/N 662
Advanced Sales (2 or 3 cr.) LAW-D/N 616
Advanced Torts (2 or 3 cr.) LAW-D/N 822
Advanced Topics in IP Law: Social Media (2 or 3 credits) LAW-D/N 636
Agriculture Law and the Environment (2 cr.) LAW-D/N 659
Alternative Dispute Resolution (2 or 3 cr.) LAW-D/N 844
Animals and the Law (2 cr.) LAW-D/N 640
Antitrust and the Health Care Industry (2 cr.) LAW-D/N 866
Antitrust Law (3 cr.) LAW-D/N 751
Appellate Practice (2 cr.) LAW-D/N 810
<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art and Museum Law</td>
<td>2 cr.</td>
<td>LAW-D/N 896</td>
</tr>
<tr>
<td>Aviation Law</td>
<td>3 cr.</td>
<td>LAW-D/N 779</td>
</tr>
<tr>
<td>Bankruptcy Law</td>
<td>3 cr.</td>
<td>LAW-D/N 619</td>
</tr>
<tr>
<td>Bioethics and Law</td>
<td>2 or 3 cr.</td>
<td>LAW-D/N 838</td>
</tr>
<tr>
<td>Business and Legal Aspects of Health Care Organizations</td>
<td>2 cr.</td>
<td>LAW-D/N 859</td>
</tr>
<tr>
<td>Civil Rights</td>
<td>2 or 3 cr.</td>
<td>LAW-D/N 872</td>
</tr>
<tr>
<td>Clean Air Law</td>
<td>2 cr.</td>
<td>LAW-D/N 683</td>
</tr>
<tr>
<td>Closely Held Business Organizations</td>
<td>3 cr.</td>
<td>LAW-D/N 645</td>
</tr>
<tr>
<td>Comparative Competition Law</td>
<td>3 cr.</td>
<td>LAW-D/N 742</td>
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<tr>
<td>Comparative Law</td>
<td>2 or 3 cr.</td>
<td>LAW-D/N 821</td>
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<tr>
<td>Conflict of Laws</td>
<td>2 or 3 cr.</td>
<td>LAW-D/N 804</td>
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<tr>
<td>Consumer Law</td>
<td>2 cr.</td>
<td>LAW-D/N 799</td>
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<tr>
<td>Copyright Law</td>
<td>3 cr.</td>
<td>LAW-D/N 626</td>
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<tr>
<td>Corporate Reorganization and Bankruptcy</td>
<td>2 cr.</td>
<td>LAW-D/N 846</td>
</tr>
<tr>
<td>Criminal Procedure: Adjudication</td>
<td>3 cr.</td>
<td>LAW-D/N 704</td>
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<tr>
<td>Criminal Procedure: Investigation</td>
<td>3 cr.</td>
<td>LAW-D/N 702</td>
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<tr>
<td>Criminal Sentencing</td>
<td>2 cr.</td>
<td>LAW-D/N 741</td>
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<tr>
<td>Directed Reading</td>
<td>1 cr.</td>
<td>LAW-D/N 676</td>
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<tr>
<td>Discrimination in Employment</td>
<td>2 or 3 cr.</td>
<td>LAW-D/N 653</td>
</tr>
<tr>
<td>Domestic Violence and the Law</td>
<td>2 or 3 cr.</td>
<td>LAW-D/N 609</td>
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<tr>
<td>Drug Innovation and Competition Law</td>
<td>2 or 3 cr.</td>
<td>LAW-D/N 635</td>
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<tr>
<td>Elder Law</td>
<td>2 cr.</td>
<td>LAW-D/N 720</td>
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<tr>
<td>Election Law</td>
<td>2 or 3 cr.</td>
<td>LAW-D/N 601</td>
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<tr>
<td>Employment Law</td>
<td>3 cr.</td>
<td>LAW-D/N 672</td>
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<tr>
<td>Energy Law and Policy</td>
<td>2 or 3 cr.</td>
<td>LAW-D/N _____</td>
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<tr>
<td>Entertainment Law</td>
<td>2 or 3 cr.</td>
<td>LAW-D/N 731</td>
</tr>
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<td>Environmental and Toxic Tort Law</td>
<td>2 or 3 cr.</td>
<td>LAW-D/N 611</td>
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<tr>
<td>Environmental Compliance and Enforcement</td>
<td>2 cr.</td>
<td>LAW-D/N 673</td>
</tr>
<tr>
<td>Environmental Justice</td>
<td>3 cr.</td>
<td>LAW-D/N 681</td>
</tr>
<tr>
<td>Environmental Law</td>
<td>3 or 4 cr.</td>
<td>LAW-D/N 891</td>
</tr>
<tr>
<td>ERISA Retirement Plans: Formation and Structure</td>
<td>2 cr.</td>
<td>LAW-D/N 656</td>
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<tr>
<td>European Union Law-Doing Business in the Internal Market</td>
<td>2 or 3 cr.</td>
<td>LAW-D/N 770</td>
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<td>European Union Law – Foundations</td>
<td>2 or 3 cr.</td>
<td>LAW-D/N 769</td>
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<td>Evidence</td>
<td>4 cr.</td>
<td>LAW-D/N 632</td>
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<td>Family Law</td>
<td>3 cr.</td>
<td>LAW-D/N 610</td>
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<tr>
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Higher Education Law (2 cr.) LAW-D/N 678
Housing Discrimination and Segregation (2 or 3 cr.) LAW-D/N 743
Immigration Law and Procedure (2 or 3 cr.) LAW-D/N 709
Income Taxation of Individuals, Fiduciaries & Business Ass. (4 cr.) LAW-D/N 648
Intellectual Property Law (2 or 3 cr.) LAW-D/N 862
Intellectual Prop. of Pharma. Products & Medical Devices (2 or 3 cr.) LAW-D/N 698
International Property Transactions & Licensing (2 cr.) LAW-D/N 627
International and Comparative Family Law (2 or 3 cr.) LAW-D/N 604
International Business Transactions (3 cr.) LAW-D/N 783
International Commercial Arbitration (2 or 3 cr.) LAW-D/N 784
International Criminal Law (2 or 3 cr.) LAW-D/N 713
International Environmental Law (2 or 3 cr.) LAW-D/N 754
International Human Rights Law (3 cr.) LAW-D/N 813
International Intellectual Property Law (2 or 3 cr.) LAW-D/N 634
International Law (2 or 3 cr.) LAW-D/N 818
International Tax (2 or 3 cr.) LAW-D/N 674
International Trade Law (2 cr.) LAW-D/N 857
Internet Law (2 or 3 cr.) LAW-D/N 732
Introduction to Health Care Law and Policy (3 cr.) LAW-D/N 785
Islamic Law (2 cr.) LAW-D/N 700
Issues in Death and Dying (2 cr.) LAW-D/N 694
Japanese Law (2 cr.) LAW-D/N 773
Jurisprudence (2 cr.) LAW-D/N 849
Juvenile Justice (2 cr.) LAW-D/N 842
Juvenile Law (2 or 3 cr.) LAW-D/N 612
Labor Arbitration/Collective Bargaining (3 cr.) LAW-D/N 703
Labor Law (4 cr.) LAW-D/N 651
Land Use (2 or 3 cr.) LAW-D/N 740
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Law and Public Health (2 or 3 cr.) LAW-D/N 761 Law
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Law of Nonprofit Organizations (2 cr.) LAW-D/N 843
Law Practice Management (2 cr.) LAW-D/N 658
Legal Aspects of Government Finance Law of (2 cr.) LAW-D/N 758
Legislature Law of (2 or 3 cr.) LAW-D/N 602
Life Sciences Compliance Law (2 or 3 cr.) LAW-D/N 693
Mediation (2 cr.) LAW-D/N 876
Mediation Practice (2 cr.) LAW-D/N 897
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National Security Law (3 cr.) LAW-D/N 889
Natural Resources Law (3 cr.) LAW-D/N 717
Neuroscience and the Law (2 cr.) LAW-D/N 686
Partnership Tax (2 or 3 cr.) LAW-D/N 730
Patent Law (2 or 3 cr.) LAW-D/N 873
Patent Litigation (2 cr.) LAW-D/N 625
Patent Prosecution (2 cr.) LAW-D/N 643
Payment Systems (2 or 3 cr.) LAW-D/N 617
Popular Constitutional Change (3 or 4 cr.) LAW-D/N 649
Products Liability (2 or 3 cr.) LAW-D/N 894
Professional Responsibility (2 or 3 cr.) LAW-D/N 861
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Public Policy Mediation with State Government (2 cr.) LAW-D/N 714
Publically Traded corporations (2 cr.) LAW-D/N 646
Race and the Law (2 or 3 cr.) LAW-D/N 685
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Representing the Government (2 cr.) LAW-D/N 781
Secured Transactions (2 or 3 cr.) LAW-D/N 618
Securities Regulation (3 cr.) LAW-D/N 738
Sex Discrimination (3 cr.) LAW-D/N 826
Sexual Harassment Law (3 cr.) LAW-D/N 811
Social Regulation of the Body and Its Processes (2 cr.) LAW-D/N 691
Sports Law: Individual, Amateur and Olympic Sports (2 or 3 cr.) LAW-D/N 727
Sports Law: Professional League Sports (2 or 3 cr.) LAW-D/N 728
State and Local Government Law (2 cr.) LAW-D/N 756
State and Local Taxation (2 cr.) LAW-D/N 805
State Constitutional Law (2 cr.) LAW-D/N 757
Supervised Research (1 or 4 cr.) LAW-D/N 661
Tax Procedure (2 cr.) LAW-D/N 893
Taxation of Corporations and Shareholders (2 cr.) LAW-D/N 869
Taxation of Transferors, Fiduciaries & Beneficiaries [Est. and Gift] (3 cr.) LAW-D/N 725
The Right of Publicity (2 cr.) LAW-D/N 633
Topics in Health Law (2 or 3 cr.) LAW-D/N 763
Topics in Transportation Law (2 cr.) LAW-D/N 648
Trademark Law (2 or 3 cr.) LAW-D/N 630
Trusts and Estates (3 or 4 cr.) LAW-D/N 722
Water Law (2 or 3 cr.) LAW-D/N 882
White Collar Crime (2 or 3 cr.) LAW-D/N 699
Worker’s Compensation (2 cr.) LAW-D/N 736
World Trade Organization (WTO) (3 cr.) LAW-D/N 650

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Seminar in Business and Estate Planning (2 cr.) D/N 854
Seminar in Comparative National Security Law (2 cr.) D/N 895
Seminar in Cybercrime (2 cr.) D/N 789
Seminar in Education Law (2 cr.) D/N 856
Seminar in Illicit International Markets (2 cr.) D/N 755
Seminar in International Legal Transactions (2 cr.) D/N 820
Seminar in Judicial Selection (2 cr.) D/N 744
Seminar Law & Justice: Amnesty, Apology, Reconciliation & Reparation (2 cr.) D/N 788
Seminar in Law and Medicine (2 cr.) D/N 841
Seminar in Law and Religion (2 or 3 cr.) D/N 890
Seminar in Law and Technology (2 or 3 cr.) D/N 778
Seminar in Property Rights (2 cr.) D/N 639
Seminar in Public Utilities Regulation (2 cr.) D/N 858
Online Courses Available to MJ Students Indiana University Robert H. McKinney School of Law

(as of Summer 2019; subject to further updating)

(Courses marked with a * are currently offered in a “hybrid” (part-online) format, with a full online version potentially forthcoming.)

- Comparative and International Competition Law
- Comparative Law
- Comparative Middle Eastern Law
- Cybercrime
- Entertainment Law
- Health Information Privacy*
- Information Privacy
- International Criminal Law
- International Law*
- Payment Systems
- Publicly Traded Corporations
- Secured Transactions
- Trusts and Estates
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 15, 2019. Also the Dean of Agriculture, or her designee shall be authorized to act for the faculty regarding the certification of qualified candidates.

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