DEPARTMENT OF BIOCHEMISTRY

BCHM 100 Syllabus
Fall 2020

INSTRUCTOR: Dr. Clint Chapple
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TEL: 494-0494
e-mail: chapple@purdue.edu
pronouns: he/him/his
Office hours: By appointment online

LECTURE TA:
Name: Kedric Milholland
Office: BCHM 214
TEL: 494-0716
e-mail: kmilholl@purdue.edu

LECTURES:
Non-synchronous online via Brightspace

VIRTUAL OFFICE HOURS
I will hold virtual office hours as synchronous sessions on Tuesdays and Kedric Milholland will hold virtual office hours Thursdays at 8:30 a.m. Eastern time, both online via Brightspace. Sessions will be recorded for those students who live in time zones other than Eastern. Questions can be submitted in advance in writing for those who cannot be online at the appointed time but have a question they would like answered.

COURSE OBJECTIVES
Students in BCHM 100 aren’t necessarily biochemists. Some have future career interests in human or veterinary medicine, plant sciences, and pharmacy, but many just want to understand how living things “work”. In this course, we will explore what happens when things “stop working” as a way to understand topics as varied as human disease, nerve gases, herbicides, and Siamese cats. In doing so, we will explore the scale, structure, and function of small molecules and proteins and learn to visualize biochemical molecules and processes. In parallel, we will discuss these topics in the context of technologies and issues relevant to society such as the development and deployment of transgenic plants and the consequences of genetic conditions such as PKU and sickle cell anemia.

LEARNING OUTCOMES
- BCHM 100 students will understand the molecular principles of life based on the core disciplines of biology, chemistry and physics.
- BCHM 100 students will understand the scientific method.
• BCHM students will appreciate the ethical issues facing professionals in the life sciences.
• BCHM 100 students will understand the contributions of our discipline to society, including improvements to medicine, agriculture, the economy and the environment.

Additional, module-specific learning outcomes are listed in Brightspace at the beginning of each module.

TEXTBOOK

There is no recommended textbook for this course. Links to appropriate web resources for additional reading will be provided in your lectures notes and online.

COMPUTERS

Many lecture activities will require the use of a laptop or tablet computer. Necessary software (Pymol) can be downloaded via the links provided on Brightspace.

BRIGHTSPACE

The syllabus for the course and lecture notes will be available via the Purdue University Brightspace site at: https://purdue.brightspace.com/d2l/login

ASSESSMENT

The grading for this course will be as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm Exam</td>
<td>100</td>
</tr>
<tr>
<td>Final Exam</td>
<td>100</td>
</tr>
<tr>
<td>Quizzes (5 @ 20 points each)</td>
<td>100</td>
</tr>
<tr>
<td>Assignments (5 @ 20 points)</td>
<td>100</td>
</tr>
</tbody>
</table>

There are six quizzes and six homework assignments throughout the course. If you choose to do all of these, only the top five scores for each will count toward your final grade. Alternatively, you can choose to simply skip a quiz or homework, in which case a grade of zero will be recorded and that quiz or homework assignment grade will be dropped as your lowest grade.

The final exam will not be cumulative but the second half course material depends heavily on the material covered in the first half of the course. I strongly advise that you review the major concepts covered in the first half of the course as part of your studying for the final exam.

The cutoff values for letter grades are as follows:

<table>
<thead>
<tr>
<th>Points</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>360</td>
<td>A</td>
</tr>
<tr>
<td>320</td>
<td>B</td>
</tr>
<tr>
<td>280</td>
<td>C</td>
</tr>
<tr>
<td>240</td>
<td>D</td>
</tr>
<tr>
<td>239</td>
<td>F</td>
</tr>
</tbody>
</table>

Failing to submit a quiz or exam during the designated time period will result in a grade of 0 being recorded unless documented justification is presented. Any request to be excused from a quiz or exam must include official documentation (doctor’s note, request from academic advisor, etc.) explaining why the exam was or will be missed. If a quiz or exam is excused, a makeup evaluation may be scheduled by the instructor.
If you have any disagreements with the way any of your quizzes or exams have been graded, please consult the grading key and then discuss them with the lecture TA. In the event this does not resolve your concerns, please take them up with the instructor.

Requests for re-grades must be submitted no later than the end of the second class period after the graded test or assignment has been returned.

EXTRA CREDIT

There will be no opportunity for extra credit.

OBTAINING EXTRA HELP

The lecture TA will hold office hours for at least 3 hours per week online, and will be able to answer additional questions, also online, by appointment.

CLASS ATTENDANCE

This is an online course, so attendance is not required. Nevertheless, students should pay attention to the Campus-wide Attendance Policy during COVID-19: Students should stay home and contact the Protect Purdue Health Center (496-INFO) if they feel ill, have any symptoms associated with COVID-19, or suspect they have been exposed to the virus. In the current context of COVID-19, in-person attendance will not be a factor in the final grades, but the student still needs to inform the instructor of any conflict that can be anticipated and will affect the submission of an assignment or the ability to take an exam. Only the instructor can excuse a student from a course requirement or responsibility. When conflicts can be anticipated, such as for many University-sponsored activities and religious observations, the student should inform the instructor of the situation as far in advance as possible. For unanticipated or emergency conflict, when advance notification to an instructor is not possible, the student should contact the instructor as soon as possible by email, through Brightspace, or by phone. When the student is unable to make direct contact with the instructor and is unable to leave word with the instructor’s department because of circumstances beyond the student’s control, and in cases of bereavement, quarantine, or isolation, the student or the student’s representative should contact the Office of the Dean of Students via email or phone at 765-494-1747. Our course Brightspace includes a link on Attendance and Grief Absence policies under the University Policies menu.

ACADEMIC GUIDANCE IN THE EVENT A STUDENT IS QUARANTINED/ISOLATED

If you become quarantined or isolated at any point in time during the semester, in addition to support from the Protect Purdue Health Center, you will also have access to an Academic Case Manager who can provide you academic support during this time. Your Academic Case Manager can be reached at acmq@purdue.edu and will provide you with general guidelines/resources around communicating with your instructors, be available for academic support, and offer suggestions for how to be successful when learning remotely. Importantly, if you find yourself too sick to progress in the course, notify your academic case manager and notify me via email or Brightspace. We will make arrangements based on your particular situation. The Office of the Dean of Students (odos@purdue.edu) is also available to support you should this situation occur.

PROTECT PURDUE PLAN
The Protect Purdue Plan, which includes the Protect Purdue Pledge, is campus policy and as such all members of the Purdue community must comply with the required health and safety guidelines. Required behaviors in this class include: staying home and contacting the Protect Purdue Health Center (496-INFO) if you feel ill or know you have been exposed to the virus, wearing a mask in classrooms and campus buildings, at all times (e.g., no eating/drinking in the classroom), disinfecting desk/workspace prior to and after use, maintaining proper social distancing with peers and instructors (including when entering/exiting classrooms), refraining from moving furniture, avoiding shared use of personal items, maintaining robust hygiene (e.g., handwashing, disposal of tissues) prior to, during and after class, and following all safety directions from the instructor.

Students who are not engaging in these behaviors (e.g., wearing a mask) will be offered the opportunity to comply. If non-compliance continues, possible results include instructions asking the student to leave class and instructors dismissing the whole class. Students who do not comply with the required health behaviors are violating the University Code of Conduct and will be reported to the Dean of Students Office with sanctions ranging from educational requirements to dismissal from the university.

Any student who has substantial reason to believe that another person in a campus room (e.g., classroom) is threatening the safety of others by not complying (e.g., not wearing a mask) may leave the room without consequence. The student is encouraged to report the behavior to and discuss next steps with their instructor. Students also have the option of reporting the behavior to the Office of the Student Rights and Responsibilities. See also Purdue University Bill of Student Rights.

ACADEMIC MISCONDUCT

Academic misconduct of any kind will not be tolerated in any course offered by the Department of Biochemistry. Information on Purdue’s policies with regard to academic misconduct can be found at http://www.purdue.edu/studentregulations/student_conduct/regulations.html

Any incidence of academic misconduct will be reported to the Office of the Dean of Students. Academic misconduct may result in disciplinary sanctions including expulsion, suspension, probated suspension, disciplinary probation, and/or educational sanctions. In addition, such misconduct will result in punitive grading such as:

- receiving a lower or failing grade on the assignment, or
- assessing a lower or failing grade for the course

Punitive grading decisions will be made after consultation with the Office of the Dean of Students. Please note reported incidences of academic misconduct go on record for reference by other instructors. Further, a record of academic misconduct is likely to influence how current/future situations are handled.

To provide you with an unambiguous definition of academic misconduct, the following text has been excerpted from "Academic Integrity: A Guide for Students", written by Stephen Akers, Ph.D., Executive Associate Dean of Students (1995, Revised 1999, 2003), and published by the Office of the Dean of Students in cooperation with Purdue Student Government, Schleman Hall of Student Services, Room 207, 475 Stadium Mall Drive West Lafayette, IN 47907-2050.

"Purdue prohibits "dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty." [Part 5, Section III-B-2-a, Student Regulations] Furthermore, the University Senate has stipulated that "the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of
illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest." [University Senate Document 72-18, December 15, 1972]

More specifically, the following are a few examples of academic dishonesty which have been discovered at Purdue University.

- substituting on an exam for another student
- substituting in a course for another student
- paying someone else to write a paper and submitting it as one’s own work
- giving or receiving answers by use of signals during an exam
- copying with or without the other person’s knowledge during an exam
- doing class assignments for someone else
- plagiarizing published material, class assignments, or lab reports
- turning in a paper that has been purchased from a commercial research firm or obtained from the internet
- padding items of a bibliography
- obtaining an unauthorized copy of a test in advance of its scheduled administration
- using unauthorized notes during an exam
- collaborating with other students on assignments when it is not allowed
- obtaining a test from the exam site, completing and submitting it later
- altering answers on a scored test and submitting it for a regrade
- accessing and altering grade records
- stealing class assignments from other students and submitting them as one’s own
- fabricating data
- destroying or stealing the work of other students

Plagiarism is a special kind of academic dishonesty in which one person steals another person's ideas or words and falsely presents them as the plagiarist's own product. This is most likely to occur in the following ways:

- using the exact language of someone else without the use of quotation marks and without giving proper credit to the author
- presenting the sequence of ideas or arranging the material of someone else even though such is expressed in one’s own words, without giving appropriate acknowledgment
- submitting a document written by someone else but representing it as one’s own

Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breaches of this value by either emailing integrity@purdue.edu or by calling 765-494-8778. While information may be submitted anonymously, the more information that is submitted provides the greatest opportunity for the university to investigate the concern.

NOTICE OF COPYRIGHT PROTECTION OF COURSE MATERIALS

Among the materials that may be protected by copyright law are the lectures, notes, and other material presented in class or as part of the course. Always assume the materials presented by an instructor are protected by copyright unless the instructor has stated otherwise. Students enrolled in, and authorized visitors to, Purdue University courses are
permitted to take notes, which they may use for individual/group study or for other non-commercial purposes reasonably arising from enrollment in the course or the University generally.

Notes taken in class are, however, generally considered to be “derivative works” of the instructor’s presentations and materials, and they are thus subject to the instructor’s copyright in such presentations and materials. No individual is permitted to sell or otherwise barter notes, either to other students or to any commercial concern, for a course without the express written permission of the course instructor. To obtain permission to sell or barter notes, the individual wishing to sell or barter the notes must be registered in the course or must be an approved visitor to the class. Course instructors may choose to grant or not grant such permission at their own discretion, and may require a review of the notes prior to their being sold or bartered. If they do grant such permission, they may revoke it at any time, if they so choose.

EMERGENCY PREPAREDNESS

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. To get information about changes in this course consult the class Brightspace site or e-mail or phone the instructor.

ON-LINE COURSE EVALUATIONS

During the last two weeks of the semester, you will be provided an opportunity to evaluate this course and your instructor(s). During the last week of classes, you will receive an official email from evaluation administrators with a link to the online evaluation site. You will have two weeks to complete this evaluation. Your participation in this evaluation is an integral part of this course. Your feedback is vital to improving education at Purdue University. I strongly urge you to participate in the evaluation system.

NON-DISCRIMINATION POLICY

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

Purdue University views, evaluates, and treats all persons in any University related activity or circumstance in which they may be involved, solely as individuals on the basis of their own personal abilities, qualifications, and other relevant characteristics.

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

For more information, see http://www.purdue.edu/purdue/ea_eou_statement.html.
MENTAL HEALTH

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

ACCESSIBILITY AND ACCOMODATIONS

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

DISCLAIMER

This syllabus is subject to change.
LECTURE SCHEDULE

<table>
<thead>
<tr>
<th>Module</th>
<th>Topic</th>
<th>Recommended review start date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
<td>August 24</td>
</tr>
<tr>
<td>2</td>
<td>Scale and organization</td>
<td>August 24</td>
</tr>
<tr>
<td>3</td>
<td>Case study 1: PKU part 1</td>
<td>August 31</td>
</tr>
<tr>
<td>4</td>
<td>Central Dogma</td>
<td>September 7</td>
</tr>
<tr>
<td>5</td>
<td>Case study 1: PKU part 2</td>
<td>September 14</td>
</tr>
<tr>
<td>6</td>
<td>Amino acids</td>
<td>September 21</td>
</tr>
<tr>
<td>7</td>
<td>Case study 2: alcaptonuria</td>
<td>September 28</td>
</tr>
<tr>
<td>8</td>
<td>Protein structure and function</td>
<td>October 12</td>
</tr>
<tr>
<td>9</td>
<td>Case study 3: insecticides and nerve gases</td>
<td>October 19</td>
</tr>
<tr>
<td>10</td>
<td>Enzymes</td>
<td>October 26</td>
</tr>
<tr>
<td>11</td>
<td>Case study 4: Roundup and enzyme inhibition</td>
<td>November 2</td>
</tr>
<tr>
<td>12</td>
<td>Case study 5: antibiotics</td>
<td>November 9</td>
</tr>
<tr>
<td>13</td>
<td>Case study 6: sickle cell anemia</td>
<td>November 16</td>
</tr>
</tbody>
</table>

Except for the first two modules, each module will be available earlier than the recommended review start date shown above. I recommend that you watch the lecture material regularly each week. Some modules will take longer to review than others, so if you finish one module quickly, you may want to consider moving ahead with the next module in case it is longer or more challenging. The dates given here represent the recommended minimum pace to complete the lectures in a timely fashion. The quiz and exam schedule is based upon the dates provided above.

QUIZ AND EXAM SCHEDULE

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>Coverage</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiz 1</td>
<td>Modules 2-3</td>
<td>September 17</td>
</tr>
<tr>
<td>Quiz 2</td>
<td>Modules 4-5</td>
<td>October 1</td>
</tr>
<tr>
<td>Quiz 3</td>
<td>Modules 6-7</td>
<td>October 15</td>
</tr>
<tr>
<td>Exam 1*</td>
<td>Modules 2-7</td>
<td>October 22</td>
</tr>
<tr>
<td>Quiz 4</td>
<td>Modules 8-9</td>
<td>November 5</td>
</tr>
<tr>
<td>Quiz 5</td>
<td>Modules 10-11</td>
<td>November 19</td>
</tr>
<tr>
<td>Quiz 6</td>
<td>Modules 12-13</td>
<td>December 3</td>
</tr>
<tr>
<td>Exam 2</td>
<td>Modules 8-13</td>
<td>date to be determined</td>
</tr>
</tbody>
</table>

*Last day to drop the course is October 26

HOMEWORK SCHEDULE

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>Topic</th>
<th>Due date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The Madness of King George</td>
<td>September 11</td>
</tr>
<tr>
<td>2</td>
<td>Back of the envelope calculations</td>
<td>September 18</td>
</tr>
<tr>
<td>3</td>
<td>Diagramming PKU</td>
<td>September 25</td>
</tr>
<tr>
<td>4</td>
<td>Two letter genetic code</td>
<td>October 30</td>
</tr>
<tr>
<td>5</td>
<td>Translation and mutations</td>
<td>November 13</td>
</tr>
<tr>
<td>6</td>
<td>Enzyme kinetics</td>
<td>December 4</td>
</tr>
</tbody>
</table>