Instructors: Please come and talk with us if you need help or have questions!

Lectures on Microbiology (Jan. 23 – Feb. 10)
Daad Saffarini, Lapham Hall N309, Phone 229-2964, daads@uwm.edu
Office hours: M 10-11 or by appointment

Lectures on Plant Biology (Feb 13 – Mar 31)
Erica Young, Lapham Hall S593, ebyoung@uwm.edu
Office hours: M 10 – 10.45 am or by appointment

Lectures on Animal Biology (Apr 4 - May 12)
Terry Bott, Lapham Hall 447, Phone 229-4909, mtbott@uwm.edu
Office hours: M 12-1:00 or by appointment

Lecture times: M, W, F 9:00-9:50 in LAP N103
Note: for information concerning cancellation of classes due to severe weather, please call 229-4444 or go to http://www4.uwm.edu/news/weather/

Laboratory: Times vary according to section, all meet in Lapham S286

Prerequisites: Biology 150 (grade of C or better)

Hardbound book: ISBN 9781464109478 OR
Three-hole punched book: 9781464184697

Lab Manual for Biological Sciences: 152 individual exercises will be available for download from D2L. Use a 3-ring binder to store and organize the lab exercises.

D2L: Announcements, lectures, and other support materials will be posted on D2L.

COURSE DESCRIPTION:
Introduction to microbiology, plant biology, and animal biology. Second half of the two-semester introductory course sequence for majors in Biological Sciences, Conservation and Environmental Science, and other natural science majors.
Note: for more information on the Department of Biological Sciences and Biological Sciences majors, please visit our Web Home Page: http://www.uwm.edu/Dept/Biology/
GRADING:

*Lecture exam* score accounts for 65% of the total course grade and is based on 5 equally weighted non-cumulative exams covering lecture material. Exams are multiple choice.

*Lecture in-class activities* and completion of all on-line review quizzes in d2l account for 5% of the total course grade.

*Lab Score* accounts for 30% of the total course grade and will be based on weekly quizzes, lab reports, and completion of lab manual question sheets. See Laboratory Section below for grading details.

Final grades will be assigned following the scale below:  This scale will not be made more stringent.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage Range</th>
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<tbody>
<tr>
<td>A</td>
<td>93-100%</td>
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<tr>
<td>A-</td>
<td>90-92%</td>
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<tr>
<td>B+</td>
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<td>B</td>
<td>83-86%</td>
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<td>C+</td>
<td>77-79%</td>
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<td>C</td>
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<td>D-</td>
<td>60-62%</td>
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<tr>
<td>F</td>
<td>0-59%</td>
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</tbody>
</table>

You need to earn a C or better in BIO SCI 152 to continue with courses in Biological Sciences programs.

WORKLOAD STATEMENT:

As well as attending all lecture and laboratory classes, you will need to spend at least an additional 4 hours per week reviewing lecture material and completing textbook readings to prepare for exams, 3 hours per week studying for and completing on-line quizzes, and a minimum of 3 hours per week preparing for laboratory class materials and quizzes.

MISSED CLASSES:

If you miss an exam, please contact the instructor as soon as possible to discuss options. Make-up exams will be considered for legitimate reasons (serious illness, family emergency, religious holiday). Non-emergency absence from an exam must be discussed with the instructor prior to the exam date. Make-up exams may not be the same as the ones taken by the rest of the class.

You cannot make up a missed lab. If you miss a lab class, please contact your TA immediately to discuss options to catch up on the material.

ON-LINE QUIZZES:

Research shows that regular testing on material drastically improves retention. To help you with keeping up with self-testing on lecture material, and prepare for the exams we have provided a series of on-line quizzes on d2l as review of material covered in lecture. Completion of all quizzes will count for 2.5% of your total course grade (see above). You need to complete each quiz at least once but can take quizzes many times to improve your review for lecture exams. Quizzes are not graded but you will get a score and feedback about each question after quiz submission. You will gain most benefit from using quizzes as a test, after studying the material, without referring to your notes or text. (see Study Tips below)

IN-CLASS ACTIVITIES:

Some lectures will include in-class activities you will complete and submit during the lecture. Submission of these activities will contribute 2.5% to your final course grade.

LEARNING SUPPORT:

Resources including a Study Guide will be provided on d2l to help you structure your study and learning for this class. Lecture material posted on d2l includes Learning Objectives which help you focus on the material to be learned for the exam. If you need help with how to study, please contact the instructors!

If you need special accommodations to support your learning in this course, please contact the instructors as soon as possible. Link to Student Accessibility Center: [http://www4.uwm.edu/sac/](http://www4.uwm.edu/sac/)
Come to class, listen and engage in the lecture material – write notes or annotate the notes provided on d2l to help you engage with the material.

- Engage with the in-class exercises and questions
- Use active learning strategies for your revision at home by yourself or with a study partner.

**Active Learning strategies:** You need to make your learning and revision as active as possible! Just reading through the lecture material and reassign the book is useful but it is very passive and so has limited value on its own.

For most of the lecture notes posted on d2l, there are **learning objectives** and **vocabulary words**. Use these to work out what material to focus on – these are clear lists of what we want you to know and therefore what will be included in the exam! [For course sections without learning objectives, go through the notes and find you own key points]

**EIGHT-STEP PROCESS for more active learning**

1. **Reading Review:** Begin by reading short sections of the material (from lecture notes or slides posted on d2l, and/or your own lecture notes).

2. **Write out** key ideas, highlight words, draw diagrams to summarize ideas and relationships – writing engages your mind more than passive reading and therefore provides better quality learning.

3. **Review vocabulary:** Using flash cards to test yourself or study partners on vocabulary words and their meanings (in both directions - look at the term and try to remember the meaning, look at the meanings and try to remember the term).

4. **Learning Objectives:** Then go to the learning objectives for each lecture, which are in the lecture pdf files. Put your notes aside (so you can’t see them) and try to remember and write down all you can for each learning objective. Keep going until you have finished the lecture.

5. **Review:** If you get stuck on a learning objective, repeat step 1 and 2 above.

6. **Repetition:** Do these steps as many times as you can to test yourself on the material.

7. **Quizzes:** When you have done the steps above, you can go to the quizzes on d2l and take the quiz, without any lecture material visible – test yourself! Identify questions you got wrong, and do not understand or can’t remember, and then go back to step 1 and 2 to review that specific material. You can take the quiz again if you need to test yourself again after more review.

8. **Repetition:** This will take several study sessions, over several days to a few weeks, not just the evening before the exam!

Please talk with the instructors if you need help with understanding and learning the material!

**Additional Resources:** There are many resources to help you at UWM, including the general resource at [www4.uwm.edu/letsci/services/](http://www4.uwm.edu/letsci/services/) Other resources: Student Success Center [uwm.edu/studentsuccess/](http://uwm.edu/studentsuccess/) Writing Center: [http://www4.uwm.edu/writingcenter/](http://www4.uwm.edu/writingcenter/) Tutoring and Academic Resource Center: [http://www4.uwm.edu/pass/](http://www4.uwm.edu/pass/)
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Text Reading (in addition to class notes on d2l)</th>
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<tbody>
<tr>
<td>Jan. 23</td>
<td>A short history of life on earth: ‘The age of microbes’</td>
<td>1-5, 402-404</td>
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<tr>
<td>Jan. 25</td>
<td>Microbial Cell structure and function</td>
<td>61-65, 216-221, 379-383</td>
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<tr>
<td>Jan. 27</td>
<td>Bacterial diversity and metabolism</td>
<td>394-396</td>
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<tr>
<td>Jan 30</td>
<td>Archaeal diversity and metabolism</td>
<td>388-390</td>
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<tr>
<td>Feb. 1</td>
<td>Microbial ecology</td>
<td>390-396</td>
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<td>Feb. 3</td>
<td>Symbiosis and disease</td>
<td>390-393</td>
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<td>Feb. 6</td>
<td>Viruses</td>
<td>225-226, 396-399</td>
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<tr>
<td>Feb. 8</td>
<td>Protists</td>
<td>406-415</td>
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<td>Feb. 10</td>
<td><strong>Exam I</strong> (covers material Jan. 23 - Feb. 8)</td>
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<tr>
<td>Feb. 13</td>
<td>Intro and Fungi</td>
<td>450-68</td>
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<td>Feb. 15</td>
<td>Introduction to Plants - diversity and habitats</td>
<td>420-27, 854-7</td>
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<tr>
<td>Feb. 17</td>
<td>Plant diversity I: Evolution from algae, nonvascular plants</td>
<td>138-43, 423-8</td>
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<tr>
<td>Feb. 20</td>
<td>Plant diversity II: Seedless vascular plants</td>
<td>428-33</td>
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<tr>
<td>Feb. 22</td>
<td>Plant diversity III: Seeded vascular plants - Gymnosperms</td>
<td>433-380</td>
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<tr>
<td>Feb. 24</td>
<td>Plant diversity IV: Flowering plants, pollination</td>
<td>440-9, 573-8, 585-8</td>
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<tr>
<td>Feb. 27</td>
<td>Plant form and function I: Flowering plants - fruit and seeds</td>
<td>440-9, 555-7, 573-8</td>
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<td>Mar. 1</td>
<td>Plant F &amp; F II: Cells, tissues, meristems</td>
<td>521-28, 66-80</td>
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<td>Mar. 3</td>
<td><strong>Exam II</strong> (covers material Feb. 13 – Mar. 1)</td>
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<tr>
<td>Mar. 6</td>
<td>Plant F &amp; F III: Leaf anatomy and photosynthesis</td>
<td>118-26, 531, 548-50 Chapt 6</td>
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<tr>
<td>Mar. 8</td>
<td>Plant F&amp; F IV: Water and nutrient transport in plants</td>
<td>528-30, 538-52, 597-600</td>
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<td>Mar. 10</td>
<td>Plant F&amp; F V: Plant nutrition</td>
<td>537-40</td>
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<tr>
<td>Mar. 13</td>
<td>Plant F&amp; F VI: Plant nutritional adaptations</td>
<td>541-5</td>
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<td>Mar. 15</td>
<td>Plant F&amp; F VII Plant sensory responses and hormones</td>
<td>555-71, 579-86</td>
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<tr>
<td>Mar. 17</td>
<td>Plant F&amp; F VIII Secondary compounds and medicinal plants</td>
<td>593-7</td>
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<td>Mar. 19 – 26</td>
<td><strong>Spring Break</strong></td>
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<tr>
<td>Mar. 27</td>
<td>Plant breeding, GM crops, and genetic diversity</td>
<td>253-71</td>
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<tr>
<td>Mar. 29</td>
<td>Plants and preservation of habitats</td>
<td>861-3, 875-8, 890-2, 926-33</td>
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</tbody>
</table>
Exam III (covers material Mar. 6 - Mar. 29)

Apr. 3  Introduction to Animals and Animal development I  273-290
Apr. 5  Animal development II: Stages of development  787-807
Apr. 7  Animal diversity I: Key innovations and themes of protostome animals  469-496
Apr. 10 Animal diversity II: Key innovations, themes of deuterostomes  497-519
Apr. 12 Animal Form and Function: fundamentals  605-616, 619-623
Apr. 14  Nutrition, feeding and digestion  624-642
Apr. 17  Respiratory gas exchange  643-660, 677-679
Apr. 19  Circulatory Systems  661-676, 679-680
Apr. 21  Exam IV (covers material Apr. 3 – Apr. 19)
Apr. 24  Muscles and Movement  681-691, 695-698
Apr. 26  Nervous Systems  699-714, 723-734
Apr. 28  Sensory Systems  714-723
May 1  Control systems: endocrine and neural integration  733-750
May 3  Excretory systems: nitrogen waste, water and salt balance  751-767
May 5  Animal reproduction  768-786
May 8  Immune Systems  809-826
May 10  Semester wrap up and review

Final exam: Wednesday May 17, 10 am – 12 pm (covers material Apr 24 – May 19).

Exam schedule: http://uwm.edu/registrar/students/final-exam-schedule-information/spring-final-examination-schedule/

Academic Misconduct – The university’s responsibilities include the promotion of academic honesty and integrity and procedures to deal effectively with instances of academic dishonesty. You are responsible for the honest completion and representation of your work, for the appropriate citation of sources, and for the respect of others’ academic endeavors. Cheating, plagiarism (including ‘self-plagiarism’), or other acts of misconduct will result in a severe penalty to you. You are responsible for knowing what behavior constitutes academic misconduct. Student academic misconduct procedures are specified in Chapter UWS 14 and Faculty Document No. 1686 and can be found at http://www4.uwm.edu/acad_aff/policy/academicmisconduct.cfm

The following UWM web page is dedicated to campus-wide policies regarding religious observances, incompletes, academic misconduct, grade appeal procedures, final examination policy, students called to military service, discriminatory conduct, and complaint procedures. More details can be found at: www.uwm.edu/Dept/SecU/SyllabusLinks.pdf.
If you have questions about the lab class material, need help with how to do as well as you can in quizzes and reports, or miss a lab class for any reason, please contact your Teaching Assistant for help! You can find them during office hours, or email them to agree on an alternative time to meet.

Our Teaching Assistants:

Ashley Smith  
Sections: 801, 808, 814  
Email: schul468@uwm.edu  
Office hours: Wednesdays 2 - 4 pm  
Office location: Lapham W457

Kane Strathman  
Sections: 802, 803  
Email: stratma8@uwm.edu  
Office hours: Thursdays 2 – 3 pm, Wednesdays 12 - 1pm  
Location: Lapham S294 (Anuran Ecology Lab)

Deb Fobbe  
Sections: 804, 805, 811  
Email: djfobbe@uwm.edu  
Office Hours: Tuesdays 11:30 am - 1:30 pm  
Location: Lapham S568

Genelle Uhrig  
Sections: 806, 812  
Email: gnuhrig@uwm.edu  
Office Hours: Thursdays 1 – 3 pm  
Office Location: Lapham N316

Bretta Speck  
Sections: 807, 813  
Email: blspeck@uwm.edu  
Office hours: Mondays 11 am -12 pm, Tuesday 1 – 2 pm  
Office location: Lapham N128

Vibhuti Jansari  
Sections: 809, 810  
Email: vjansari@uwm.edu  
Office hours: Tuesdays 9 – 11 am  
Office location: Lapham W459
Required Lab Text: Biology 152 Lab Manual available as individual lab exercises on d2l.

General lab policies for your safety and fair assessment
1. Please turn off cell phones and store away from the lab bench.
2. No food or drink permitted in the lab.
3. Read the lab before coming to class, and bring with you to the lab each week.
4. Lab assignments are due as noted on the schedule.
5. Lab quizzes can only be made up with prior permission. (Your lowest lab quiz score will be dropped from the grade calculations)
6. Please have the lab manual with you during the lab as it may be needed as part of quizzes.
7. We expect and promote academic honesty and do not tolerate cheating, plagiarism (including self-plagiarism) or other forms of misconduct. You are responsible for knowing what constitutes academic misconduct: www4.uwm.edu/acad_aff/policy/academicmisconduct.cfm

Attendance Policy: You are required to attend all laboratory classes. In extreme circumstances and illness, it is your responsibility to contact your TA and to arrange attendance at an alternative lab.

Laboratory Grading - Assessment and Assignments: The laboratory portion of this course is worth 30% of the final grade for the course. There are multiple components of your lab grade:

1. Quizzes, 11 (each 15 points each, lowest score dropped) 150 points
2. Hypothesis and experimental design – slime mold experiment 10 points
3. Gene transfer report outline 20 points
4. Gene transfer report 40 points
5. Design your own experiment – slime mold report 40 points
6. Animal Diversity lab practical exam 40 points
Total 300 points

If you have questions about the laboratory grading components or are unsure about the expectations for written reports or quizzes, please talk with your TA!
LABORATORY SCHEDULE
All lab exercise manuals must be downloaded from d2l. Please read before class.

Jan 30 – Feb 2
Lab 1. Scientific method and hypothesis testing AND
Lab 2. Gene transfer in *E. coli*
_Hypothesis and Experimental Design (Lab 4) due 3 days after your lab (i.e. 2/2 – 2/5/17)_

Feb 6 - 9
Lab 2 (cont.) Gene transfer in *E. coli*
Lab 3. Microbial symbiosis
**Quiz 1; Exp Design Assignment approved and returned**

Feb 13 - 16
Lab 4. Survey of fungal, protist and algal diversity
**Quiz 2;** Set up Slime mold experiment

Feb 20 - 23
Lab 5. Survey of plant diversity and life cycles
**Quiz 3; Gene transfer lab report outline due**

Feb 27 - Mar 2
Lab 6. Flowers, fruits and plant reproduction (at Greenhouse)
**Quiz 4**

Mar 6 - 9
Lab 7. Plant morphology and adaptations
Set up for Lab 8 - Plant nutrition, hormones, and tropisms
**Quiz 5; Graded report outlines returned**

Mar 13 - 16
Lab 8. Plant nutrition, hormones, and tropisms
**Quiz 6; Gene transfer lab report due.**

Mar 20 - 24
Spring Recess - **No Lab Class**

Mar 27 - 30
Lab 9. Leaf structure and function
No quiz. **Graded Gene transfer lab report returned**

Apr 3 - 6
Lab 10. Animal development I: Echinoderms and amphibians
**Quiz 7; Slime mold report due**

Apr 10 - 13
Lab 11. Animal development II: Chicken
**Quiz 8**

Apr 17 - 20
Lab 12. Animal diversity I: Porifera, Cnidaria and Lophotrochozoa
**Quiz 9; Graded Slime mold report returned**

Apr 24 - 27
Lab 13. Animal diversity II: Ecdysozoa (nematodes, arthropods); Annelid responses.  
**Quiz 10**

May 1 - 4
Lab 14. Animal diversity III: Deuterostomes
**Quiz 11**

May 8 - 11
Lab 15. Animal practical exam (based on Labs 10-14).