BIOL 112
General Biology II
Spring 2019

Mission Statements for Saint Xavier University and the Department of Biological Sciences can be found at the end of this document.

Credit: 5 credit hours

Pre-requisite: none

SXU Undergraduate Catalog description:
Pre-requisite: E (RQ) BIOLB-112

This course is an introduction to the principles of biological systems. Structural organization and functional interactions are studied at cellular, organismal and population levels. General Biology is a two-semester course designed for students majoring in biological sciences. Biology majors must pass both BIOL 111 and 112 with a C or better to enroll in courses for which 111 and 112 are prerequisites. Lecture 3, Discussion and Laboratory 3.

Instructor: Liane Cochran-Stafira, Ph.D. Associate Professor
Office: S223
Lab: S221
Phone: 773-298-3514

Office hours: Feel free to stop by any time my office door is open. However, if you come outside of my designated office hours, please don't be offended if I'm really busy and ask you to come back at a later time. My formal office hours are: Monday and Wednesday 2-4:30 PM, Friday 11 AM to 12:50 PM, Tuesday 10 am-12 noon; other times are by appointment. I'm usually involved with field trips, meetings, or research on Thursdays, so it would probably be best to schedule an appointment to ensure my availability.

A note about meetings and class attendance: I have a very rare blood cancer (a type of lymphoma), and fourteen years ago I underwent a bone marrow stem cell transplant. I was in remission for several years, but the disease has become active again, and I am taking a new drug that helps to maintain the disease in a near-remission state. The problem is, my immune system is not functioning normally. I am immunosuppressed and VERY susceptible to infections. It is extremely important that you let me know if you are ill or have been around someone who is ill. If you have the sniffles or don't feel well, simply don't get too close to me. I might have to take the precaution of wearing a surgical mask if you are really sneezing, and coughing. Right now, a cold or the flu could easily lead to pneumonia for me, as it did a few years ago. This is not an excuse to miss class! Just come to class and sit in the back of the room, keep your distance from me and we’ll both be fine.

Course Description: General Biology is a two semester course designed for students majoring in Biological Sciences. BIOL 112 is the second half of the sequence, and focuses on the following topics:

- The history and diversity of life on earth.
- Form and function (selected aspects) as related to the biological success of organisms.
- An introduction to the scientific study of Animal Behavior.
- An introduction to the science of Ecology
- An introduction to the science of Evolution

General Education Learning Outcomes:

1. Students will evaluate and apply the scientific method to the science of Biology.
2. Students can articulate how the scientific method is used to explore the natural world – through observations, hypotheses, experimental investigations, and theoretical explanations
3. Students will demonstrate a knowledge of the fundamental concepts, principles, theories, and laws derived from the application of the scientific method in Biology
4. Students will utilize scientific resources, including those that rely on equations, graphs, diagrams and tables, to evaluate scientific claims.
Course Objectives: How many species are there? How did they come into existence? Scientists agree that the Earth’s diversity is a result of evolutionary processes. Furthermore, scientists believe that understanding evolutionary processes is essential for understanding biological concepts. The diversity of life, which has taken billions of years to develop, is being lost at an alarming rate primarily as a result of human impacts. Extinction rates for species have increased many times that of the normal rate. What is the future of the world’s biodiversity? It all depends on the importance our society places on maintaining biodiversity. In this semester, we will explore the mechanisms involved with life’s origin and the current threats to its persistence. Specifically, Biology 112 is an introduction to life on earth. The course focuses on the morphological, physiological and reproductive variations that characterize each of the six kingdoms of life. We will describe the characteristics of each phylum within an evolutionary framework that looks at each feature as the result of evolutionary events leading to adaptation to a specific set of environmental conditions. We will also learn how living things are classified and named. The course will also cover ecological principles, and will conclude with a look at current environmental concerns such as global warming and what has been called the sixth mass extinction.

Blatant advertising: My research focuses on evolutionary and community ecology, and you are welcome to visit my web page or my lab to see what types of research projects we are doing. The web page features abstracts of some of the papers and posters that my students and I have delivered at the Annual Meetings of the Ecological Society of America over the last few years. The web site presents just a brief overview of what we do in my lab - there are many other possibilities. If you would like to discuss student research opportunities in my lab, just send me an email. I will be happy to meet with you. The Biology Faculty usually start research students in their junior year, but second semester sophomores are occasionally accepted.


Instructional Uses of Technology: The content, delivery and assessment of this course is augmented by the use of the following academic technologies:

Tools/Applications Used to Aid in the Delivery of Instructional Content
- Power Point
- WIX Website Creation Software
- Productivity Tools (e.g., Word, Excel)
- Canvas Learning Management System

Content Applications
- WIX Website Development Tools
- Textbook website – has animations, detailed diagrams
- Canvas Learning Management System

Assessment Tools
- Excel spreadsheet for recording and calculating grades
- Canvas Learning Management System for reporting grades to students

Student Use of Technology: 21st Century Literacy skills are enhanced through the students’ use of the following academic technologies:
- PowerPoint Presentation
- Productivity Tools (Word, Excel)
- Textbook website – has animations, detailed diagrams, practice quizzes

- Email: You must have and use an SXU email account. In order to ensure secure disclosure of student information (grades, etc.), all correspondence must be through your official Saint Xavier account. This is per University regulations. Please write BIOL 112 in the subject line, because emails with a blank subject line may be sorted into my junk folder, and I’ll never see them. Also, I teach more than one course. Until I learn
I really need you to tell me which class you are in. Finally, if you send me an attachment or ask me a question in email format and you don’t hear from me within 24 hours, please check with me. I probably never received the email, or it went to my junk mail.

- **Canvas:** I use both Canvas and a course website to communicate materials for this class. The course syllabus, lecture notes in both Power Point and PDF formats, as well as study questions and supplemental lecture material will be available on Canvas as well as the course web page.

- **Course website:** [http://faculty.sxu.edu/dlc1/genbioweb19/genbiohome19.html](http://faculty.sxu.edu/dlc1/genbioweb19/genbiohome19.html) I use this website for rapid access to class materials. I will post my Power Point notes and the accompanying PDF files to this website as well as to Canvas. I will also provide links to additional resources for topics discussed in class. If you find additional websites that are particularly useful, please bring them to my attention, and I will review them for inclusion in the course links. **Check the web site frequently for updates.**

### Course Supplements:

- My **Power Point notes** for each lecture will be available as PDF and PPT files on Canvas and the course web page prior to each week’s lectures. There is space to take notes on the pdf pages; however, I also post the Power Point slide files for those who prefer to take notes on the slides themselves. It is your responsibility to obtain the notes. I use the slides as an outline of the lecture, so you must attend class to fill in the details! I do cover many topics that are not in the book.

- Don't forget, there is a student web site that accompanies the text. There is considerable study help on the site, and it’s worth taking a look at this free resource. The link for this site is on the course website.

- We will utilize several excellent videos that **supplement** the material covered throughout the course. These films will be available on Canvas, so you can watch them at your convenience. I will provide a brief set of questions that you should be able to answer based on the film. Questions based on concepts presented in films and other formats will be included on the exams.

- The quality of your writing will count in determining your grade on assignments.

  - I recommend copy of **McMillan, V. E. 2012. Writing Papers in the Biological Sciences 5th Ed. Bedford/St. Martin's, N.Y.** This little book is a veritable goldmine for students writing papers in the Biological Sciences. It tells you how to do everything from picking a topic to details on how to present figures and tables. Writing styles, *the good, the bad, and the ugly*, are laid out for you in an easy to follow format.

  - I urge you to locate a copy of **Strunk, Wm. Jr., and E.B. White. 2000. Elements of Style. Allyn & Bacon, N.Y.** It’s the classic “rules of the road” manual on grammar and other technical aspects of writing. You can purchase one online, or use the web version of this classic guide to writing that is available at [http://www.bartleby.com/141/index.html](http://www.bartleby.com/141/index.html).

  - I also strongly recommend that you avail yourself of the tutors in the **Learning Center in L-108.** There is a Biology writing tutor, a fellow SXU student who has been hired to assist with your biology writing assignments. Please use this tutor to help improve your science writing skills.

  - For additional help with writing you may also find this SXU resource helpful: [https://my.sxu.edu/academics/learningcenter/Learning_Center/Pages/Writing-Tools.aspx](https://my.sxu.edu/academics/learningcenter/Learning_Center/Pages/Writing-Tools.aspx)

### Pedagogy:

You may find the teaching style in this class a little different from the usual lecture model to which you are accustomed. Biology is a very synthetic subject, and isn’t amenable to “cramming” and memorization. Instead, it is best approached as a team effort between students and the instructor. This class will incorporate both individual and group activities that might include group quizzes (multiple choice and short answer), minute papers, and group presentations. For a brief synopsis of the values of this student-centered approach to learning, I point you to the following web site [http://k12education.gatesfoundation.org/2016/10/personalized-learning-helping-teachers-spark-a-love-of-learning-in-every-student/?gclid=CP7Gp_ahi9ECFXW4wAoDL4sFeg](http://k12education.gatesfoundation.org/2016/10/personalized-learning-helping-teachers-spark-a-love-of-learning-in-every-student/?gclid=CP7Gp_ahi9ECFXW4wAoDL4sFeg). Hopefully, you will develop the skills necessary to "learn to learn" the subject material. It may sound strange at first, but this is exactly what employers are looking for - independent employees who can find answers for themselves.

**So how do I prepare for class?** My **Power Point notes** for each lecture will be available as PDF files on the course web site. Please **print out a copy of the pdf** and bring it to class, or **download the slides to your laptop or tablet** so you can
take notes during class. The Power Point slides are just an outline of the material that we cover each day, so you will need to take good notes in class to fill in the details! I will provide additional handouts to accompany some of the lecture topics. You are also responsible for material presented during non-lecture activities in class.

Obviously, you must attend all class sessions and commit yourself to reading the materials prior to class time to benefit from the active learning approach. These methods have been used for many years in colleges and graduate schools (especially medical and law schools), but they won't help you if you don't do your part. The textbook and other readings will provide the basic introduction to the material, but the lectures and in-class activities will supply more depth as well as additional facts and interpretations. Exam questions will be drawn from the lectures, readings, labs, and in-class activities.

**Study hints:** 1) Rework your lecture and textbook notes to provide a coherent narrative for each topic; 2) Form a study group or study with a partner and “teach” each other the material. One sure way to test your knowledge of the material is to present it verbally to someone else. If you find yourself stumbling and becoming confused, you know you have more work to do; 3) Finally, don’t wait until the last minute before an exam to come see me with problems. I will be happy to discuss any questions you might have, but I will not help you cram. If you think you need an extended help session, it would probably be best to set up an appointment to reserve as much time as you wish. You might also want to check into working with one of the tutors in the Learning Assistance Center, located in L108.

You will encounter a great deal of material over the next fifteen weeks. Because of that fact, introductory courses such as this one are often surprisingly difficult for students (and instructors)!. In order to succeed you will need to come to class prepared. Study the notes/text pages from the previous lecture, and read the new material so you will know what we’ll be talking about in lecture. **To be successful in BIOL 112, you should plan to devote a significant amount of time (at least 6-8 hours per week) to studying outside of class.**

**Disabilities:** If you have a disability that qualifies under the Americans with Disabilities Act and require accommodations for this course, please contact the Learning Assistance Center (room L-108) to make arrangements for accommodations. This information will be kept confidential. [https://my.sxu.edu/academics/learningcenter/Disability_Services/Pages/default.aspx](https://my.sxu.edu/academics/learningcenter/Disability_Services/Pages/default.aspx)

**Academic Integrity:** Cheating and plagiarism are serious offenses. I will expect all students to follow the honesty code as outlined in the Undergraduate Academic Catalog. 2013-2014 edition at [http://catalog.sxu.edu/Shared/aca/integrity.html](http://catalog.sxu.edu/Shared/aca/integrity.html) Confirmed instances of cheating will merit stiff penalties. I suggest that you read the following essay on plagiarism so that you are clear about its meaning. [http://science.widener.edu/svb/essay/plagiar.html](http://science.widener.edu/svb/essay/plagiar.html)

**Attendance:** Attendance at all lectures is expected and lab attendance is mandatory. A daily sign-in sheet will be circulated. It is your responsibility to sign the sheet each day. If you are late, make sure you sign the sheet before leaving class. You are allowed 3 unexcused absences from lecture; **you will lose 2 points from your final point total for each additional unexcused lecture absence.** If you know that you must miss a class (serious illness, death in the family, sanctioned athletic event, etc.), please let me know in advance if at all possible. I require documentation for excused absences (note with a diagnosis from a physician, letter from your coach, official funeral home note). Note, a family vacation IS NOT a valid excuse, so come back on time from spring and Easter breaks. **You will be penalized 10 points for each unexcused absence from lab - 3 or more unexcused lab absences will result in an F for the course.** Persistent tardiness (especially for labs) will be recorded, and will figure into decisions about borderline grades. If you are 30 minutes late for lab, it will be recorded as a missed lab.

**Assignments must be turned in on time.** Unless you see me or your lab instructor ahead of time with a truly serious reason, late assignments will be penalized at a rate of 10% per day.

**Grading:** Your course grade will be based on:

**Lecture Grade**

1. Four lecture exams: 4 x 100 points = 400 points
2. Comprehensive Final Exam: (100 points) replaces lowest lecture exam score
3. Quizzes (11 quizzes, lowest score will be dropped) 100 points
4. Phylogeny homework assignment (Toucans) 50 points
5. Phylum characteristics chart 50 points

**Laboratory Grade  Update coming soon**

<table>
<thead>
<tr>
<th>Total:</th>
<th>points</th>
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4
Grades will be assigned as follows: A=90-100%; B=80-89%; C=70-79%; D=60-69%; F<60%.

Your grade is determined by the number of points earned relative to the total possible points. I do not curve grades; however, I may slide the scale down a bit depending on class performance. For instance, I might make an 89% the cutoff for an A or 68 the cutoff for a C.

Extra Credit: THERE IS NO EXTRA CREDIT SO DON'T ASK.

If you blow an exam or a quiz, use it as an opportunity to learn from your mistakes. Maybe you need to study more or use a different approach. Come talk to me so we can figure out where your strategy went wrong. We can work together to develop a different study method and improve your performance. I do take improved performance into consideration when I determine final grades.

Those all-important bonus points: There will be bonus questions on each exam. In addition, you may submit, by email, suggestions for short answer questions for the exams. If I select one of your questions, you will, in addition to probably getting the answer correct, receive a bonus point. If you find bloopers in the text or in my lectures, you should also email me. I'll review them, post them on the web page, and give the submitter a bonus point. I usually give at least one extra credit assignment, and there are bonus points on the exams and quizzes.

And finally:

- Be sure to save electronic copies of your written reports in multiple formats (your hard drive, a jump drive, an external hard drive). Do not come to me with the modern version of My dog (computer) ate my homework. You should also retain all graded work that is returned until final grades are written in stone. If you are trying to justify receiving a higher grade, we can’t even begin the conversation until we have all of the documents.

- Print assignments the day before they are due. Don’t tell me, My printer died, or my favorite, all of the printers are down. You will be docked late points if you do not hand in assignments in class or lab as requested. If you truly cannot get to a printer because of illness or some other serious reason, you may request permission to email the file to me before it is due. You will still need to provide a hardcopy as soon as possible.

- Please be on time for class. It disrupts my train of thought and disturbs the entire class when students come barging in late. I realize that sometimes there are emergencies – traffic, car trouble, etc. - but this should be a rare occurrence. Persistent tardiness (especially for labs) will be recorded, and will figure into decisions about borderline grades. In the event of a quiz, you will not be given extra time to finish. Arriving thirty or more minutes late for lab will be counted as a missed lab.

- Cell phones and beepers must be turned off in class - see student handbook. If you have a legitimate reason for having your phone or beeper on, please set it to silent mode. If I see a cell phone or other electronic device in use during an exam, I will confiscate that device until you turn in your exam.

- If you have a question in class, please ask it. I guarantee, several other people will have the same question. If you are having trouble understanding the material or need me to repeat something just say so, and I'll be happy to assist you. If you don’t call my attention to a problem, I have no way of knowing the problem exists.
## Proposed Lecture and Laboratory Schedule

Open to modification at any time

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic(s)</th>
<th>Text Readings</th>
<th>Lab Topics and Exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wk 1</td>
<td>Intro/Characteristics of Life/Phylogenetics</td>
<td>CH 1, 23</td>
<td></td>
</tr>
<tr>
<td>Jan 14-18</td>
<td></td>
<td></td>
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</tbody>
</table>

**January 21, Martin Luther King Day No Classes**

<table>
<thead>
<tr>
<th>Week 2</th>
<th>Wk 2 Jan 22-25</th>
<th>Lab Activity - Phylogenetics</th>
</tr>
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<tbody>
<tr>
<td>Bacteria, Archaea, and Viruses:</td>
<td>Morphological and physiological characteristics of Bacteria and Archaea</td>
<td>Establish criteria for systematic organization, distinguish synapomorphies, create a taxonomic system,</td>
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<tr>
<td></td>
<td>Mechanisms of genetic information transfer in prokaryotic domains</td>
<td>Construct a cladogram based on measurable characteristics</td>
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<tr>
<td></td>
<td>CH 24, 25</td>
<td></td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Wk 3</th>
<th>Wk 3 Jan 28-Feb 1</th>
<th>Lab - Introduction to basic microscopy, use of a dichotomous key for specimen identification, basic experimental design for testing hypotheses regarding protist movement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey of Life on Earth:</td>
<td>Begin Phylum Charts - Due at Final Exam Kingdom Protista</td>
<td>CH 26</td>
</tr>
<tr>
<td></td>
<td>Lecture - Recognize morphological characteristics and distinguish major subgroups</td>
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<td></td>
<td>Understand how the paraphyletic nature of the kingdom leads to differences in classification and the various methodologies employed to resolve relationships</td>
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<tr>
<td></td>
<td>Address and describe the ecological and physiological diversity in Protista</td>
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**Wednesday February 13 Lecture Exam I**

Assessment - 100 pts, 50 question short answer/multiple choice covering weeks 1-3
| Wk 4  | Feb 4-8  | **Survey of Life on Earth**  
**Kingdom Plantae - Seedless Plants**  
- **Lecture** - Recognize morphological, physiological, and reproductive characteristics that distinguish major phyla and groups of seedless plants.  
- Alternation of generations in the plant life cycle. Ecological and evolutionary factors leading to shift from dominant gametophyte to dominant sporophyte | CH 27  
- **Lab** - Survey and comparison of macro and microscopic characteristics of bryophytes and ferns.  
- Spore production and dispersal mechanisms |
| Wk 5  | Feb 11-15 | **Kingdom Plantae - Seed Plants**  
- **Lecture** - Recognize morphological, physiological, and reproductive characteristics that distinguish major phyla and groups of seed plants.  
- Describe the reduction of the gametophyte stage seen in flowering plants | CH 28  
- **Lab** - Gymnosperm campus “tree walk” Micro and megaspore characteristics and comparison in flowering plants, Flower dissection, “Fruit Lab” - identification of tissue differentiation, seed production, and classification of fruit types. |
| Wk 6  | Feb 18-22 |  
- **Kingdom Fungi**  
- **Lecture** - Recognize morphological, genetic, and reproductive characteristics that distinguish major phyla of Fungi.  
- Describe the ecological interactions and symbiotic relationships associated with various fungi. | CH 29  
- **Lab** - Survey of major fruiting body forms, comparison of sexual vs asexual spore production, application of yeast to fermentation experiment, lichen interaction with heavy metals experiment. |

**Wednesday March 6 Lecture Exam II**

**Assessment** - 100 pts, 50 question short answer/multiple choice covering weeks 4-6

| Wk 7  | Feb 25-Mar 1 | **Kingdom Animalia: Sponges, Jellies, and Worms**  
- **Lecture** - Recognize morphological, physiological, and reproductive characteristics that distinguish major phyla and groups.  
- Transition and organization from specialized cells to tissues to organs.  
- Significance of germ layers and symmetry in animal body plans | CH 30, 31  
- **Lab** - Comparison of levels of organization (cells, tissues, organs) Introduction to dissection techniques and safety |
<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Topic</th>
<th>Lecture Content</th>
<th>Lab Content</th>
</tr>
</thead>
</table>
| Wk 8       | Mar 4-8        | Kingdom Animalia: Mollusca and Annelida    | • Lecture - Recognize morphological, physiological, and reproductive characteristics that distinguish major phyla and classes.  
• Understand driving forces leading to evolution of complexity | CH 31                                                      |
|            |                |                                            |                                                                                  | Lab - Advanced dissection techniques (Clam, earthworm, squid) |
| Wk 9       | Mar 11-17      | Spring Break                               |                                                                                 |                                                            |
|            |                |                                            | **Week 9**                                                                      |                                                            |
|            |                | *March 11 – March 17 Spring Break*         |                                                                                 |                                                            |
|            |                | *Be Safe, Have Fun*                        |                                                                                 |                                                            |
| Wk 10      | Mar 18-22      | Kingdom Animalia: Arthropoda               | • Lecture - Recognize morphological, physiological, and reproductive characteristics that distinguish major subphyla.  
• Effect of diversity of arthropoda to taxonomic classification.  
• Influence of Hox genes and genetic control of development to body plan diversity | 31                                                           |
|            |                |                                            |                                                                                  | Lab - Create a poster comparing major arthropod groups      |
| Wk 11      | Mar 25-29      | Kingdom Animalia: Echinodermata, Urochordata, Chordata | • Lecture - Recognize and describe morphological, physiological, and reproductive characteristics that distinguish major groups. | CH 32                                                      |
|            |                |                                            |                                                                                  | Lab - Fetal pig dissection                                 |
| Wednesday  | April 10       | Lecture Exam III                           | **Wednesday April 10 Lecture Exam III**                                         |                                                            |
|            |                | *Assessment - 100 pt, 50 question short answer/multiple choice covering weeks 7-11.* |                                                                                 |                                                            |
| Wk 12 | Apr 1-5 | Kingdom Animalia: Vertebrates  
- *Lecture* - Recognize and describe morphological, physiological, and reproductive characteristics that distinguish major groups.  
- Describe the influence of ecology on the evolution of complex organ systems (e.g. evolution of lungs).  
- Understand the relationship between structure and function in complex anatomical/physiological characteristics. | CH 32 | *Lab* - Fetal pig dissection |
| Wk 13 | Apr 8-12 | Kingdom Animalia: Vertebrates  
- *Lecture* - continued from week 12 | CH 32 | *Lab* - Fetal pig dissection continued, Histology overview of human and vertebrate tissues |
| Wk 14 | Apr 15-17 | Easter Break (Catch up)  
- Catch up on missed topics or introduce new material | | *Survey of Life on Earth*  
- Fetal pig LM Appendix I |

**April 18 - April 21**  
**Easter Holiday**

| Wk 15 | Apr 22-26 | Ecology  
- *Lecture* - Population ecology, changes in population size and demographics.  
- Community ecology, role of competition in community stability | CH 54 | *Assessment* - 100 point Lab Practical Examination |
| Wk 16 | Apr 29-May 3 | Evolution  
- *Lecture* - Convergence, artificial selection, sexual selection, and speciation | CH 19, 20 |

**Friday May 8**  
**10:00-11:50**  
**Final Exam**

*Exam Week:* 50 question short answer/multiple choice covering weeks 12-16.  
*Optional comprehensive exam:* 50 question short answer/multiple choice covering weeks 1-11.
Biology Department Mission Statement:
The Department of Biological Sciences addresses the mission of Saint Xavier University in the following ways:

“Educates men and women to search for the truth” by the diversity of courses that includes the study of animal biology, plant biology, microbiology, evolution, ecology, and the environment; stressing the learning of factual information in lecture and laboratory presentations; providing undergraduate student research opportunities; and with opportunities for discussion during the course of lectures and laboratory applications.

“To think critically” by evaluating diverse forms of biology-related literature or conversation (academic discourse, scientific reports, and public opinion).

“To communicate effectively” by interconnecting biological ideas, concepts, and findings to the general public and the scientific community through speech, writing and visual displays.

“To serve wisely and compassionately in support of human dignity and the common good” with supporting activities such as participation in the student-led activities of the Tri-Beta Biological Honor Society chapter; providing training, instruction, and encouragement in support of student applications to graduate and health professions programs; and aiding students in their participation in local, regional, and national scientific meetings.

Biology Department Student Learning Outcomes:
1. Students will be able to demonstrate both a theoretical and a practical mastery of biology.
2. Students will be able to demonstrate appropriate laboratory techniques and mastery of basic laboratory skills in multiple fields of biology.
3. Students will be able to find, interpret, and use appropriate literature for scientific writing and research.
4. Students will be able to generate logical interpretations and conclusions from graphs, models, and data of scientific research.
5. Students will be able to explain and apply the scientific method including designing and conducting experiments and testing hypotheses.

Saint Xavier University Mission Statement:
Saint Xavier University, a Catholic institution inspired by the heritage of the Sisters of Mercy, educates men and women to search for truth, to think critically, to communicate effectively, and to serve wisely and compassionately in support of human dignity and the common good.

Course Evaluations (SEI's):
At the end of the term you will receive an email asking you to submit an evaluation of the course from courseevaluations@sxu.edu. Your input is very important to the University as a whole and to me as a teacher. I take your comments very seriously, and I use them to improve the course the next time I teach it. Please help me by filling out the evaluation. Your thoughtful feedback will help future students who enroll in the course.

Statement Regarding Students with Disabilities
If you believe that you need accommodations for a disability, please contact the Center for Accessibility Resources (CAR) in L-108 or call 773-298-3308 to discuss your needs and the process for requesting accommodations. CAR is responsible for coordinating disability-related accommodations and will issue students with documented disabilities "Confidential Accommodation Plan" letters, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact CAR as soon as possible.

Academic Honesty
Students are expected to adhere to the Saint Xavier University Academic Honesty Policy

ACADEMIC INTEGRITY
Consistent with the mission of Saint Xavier University and the statement regarding the Catholic Identity of Saint Xavier University, the University operates within an atmosphere of high ethical standards. All academic communities must assume a high standard of integrity to govern the interactions of its members, students and faculty. When such a standard is not met, the entire community suffers. To ensure just and accurate assessment of each student's academic accomplishments, teachers must be certain that the work of the student is his/her own, and that all records of accomplishment are authentic and reliable. However, cases of academic dishonesty will inevitably arise, and the Saint Xavier University policy to handle these cases is one that emphasizes fairness and the integrity of the institution.

Academic dishonesty includes but is not limited to:

-Cheating on an examination, including using cheat sheets, unauthorized materials, copying from peers, or obtaining copies of tests through unauthorized means; -Plagiarizing; that is:
A. Copying phrases or sentences word for word from a source without enclosing the copied words in quotation marks and indicating the actual source; or
B. Changing the wording of a source slightly, but still incorporating all the ideas of the source; or altering the wording significantly but still incorporating the main ideas from other sources without indicating, through standard forms of documentation, which sources have been used, thereby implying that the ideas were original to the writer of the plagiarized paper;

- Using unauthorized or falsified instruments of identification with the intent of academic fraud;
- Supplying false academic records (transcripts, grade reports, etc.)
- To any official of the university;
- Forging, altering, or making unauthorized use of University records or documents;
- Abusing library or other instructional materials.

These forms of academic dishonesty include those perpetrated physically, visually, or electronically.

The faculty member or administrator who discovers the violation may handle the instance of academic dishonesty. The penalty for academic dishonesty may include failure for the assignment, failure for the course, a semester-long to permanent notation of academic dishonesty on the student’s transcript, suspension from the University, or permanent dismissal from the University. When the proposed penalty for the offense entails suspension, dismissal, or notation on the student’s transcript, the faculty member or administrator should consult with the appropriate Dean and the Provost.