**BIO135-O1 Introduction to Biotechnology**

**Syllabus St Bonaventure University**

**Class meetings: Instructor:** Mrs. Laura Kopec

**Lecture:**  Olean High School, Rm. 329

2:14 – 3:06 MTWRF 716-375-8010, x3329

OHS, Room 329 lkopec@olean.wnyric.org

**Office Hours:** 3:15-4:00 pm, MWF

**Credit Hours:** 3 Credits.

**Course Description:**

This course communicates the importance of scientific practices and their multifaceted application in daily life. The lecture focuses on a current topic in biotechnology that relates to human life and that has caused social concerns. Students survey historical and current evidence to learn about the philosophy of science, the nature of the problem, the cause of concern, and the scientific findings. Students then use the knowledge and skills learned in the course to construct a scientific investigation.

**Department Learning Outcomes** may be found at <http://www.sbu.edu/academics/schools/arts-and-sciences/departments-majors-minors/biology/learning-outcomes>.

**Course Learning Outcomes:**

a. Students will understand the mode of inquiry of the natural sciences and apply basic investigatory skills in the context of GMOs as related to food safety.

b. Students will know fundamental discoveries in biotechnology.

c. Students will appreciate the basic principle and approaches in biotechnology and its contributions to the model society.

d. Students will be able to design and perform a complete scientific investigation independently

**Required Text:**

There is no textbook required.

Power Point slides, supplemental materials, and reading assignments the lab descriptions will be provided on Moodle in a weekly manner.

***All assigned readings, lecture slides, lecture notes and supplemental materials will be used for exam purpose!***

**References:**

1. Livio, M. Brilliant Blunders. From Darwin to Einstein – Colossal Mistakes by Great Scientists That Changed Our Understanding of Life and the Universe. 2013. Simon & Schuster Paperbacks, NY. ISBN 978-1-4391-9236-8.

2. Oxlade, C. The Top Ten Scientific Discoveries that Changed the World. 2010. The Rosen Publishing Group, Inc., NY. ISBN 978-1-4358-9170-8.

**Grading:**

**Grade Ranges**

A 93% and above B-80 to 82% D+67 to 69%

A-90 to 92% C+77 to 79% D 63 to 66%

B+87 to 89% C 73 to 76% D-60 to 62%

B 83 to 86% C-70 to 72% F 59 % and below

**Value of Items Graded**

Quizzes (13; drop lowest) 12 x 20 = 240

Major Exams 2 x 100 = 200

Final Exam 1 x 150 = 150

Debate 1 x 50 = 50

Classroom points = 80

Total points = 720

**Exams and Final Exam:** Topic exams will be given at the conclusion of each section. Two major exams will be given during the year. Each major exam will cover about one third of the course material. Final exam will be cumulative. All exams must be submitted as scheduled.

**Debate:** Students will pick their debate topic within the first marking period of the year, prepare in the second and third marking periods, and carry out a debate on the topic during a class time close to the end of the course. Each student is required to submit a one-page write-up on the debate topic on Moodle prior to the debate for grading purpose. **Any delay in submission will result in 5% point deduction per day.**

**Classroom Points:** Some of the class meetings include group-learning exercises, multi-week projects for which students hand in written answers to be graded. Students are expected to be present and engaged in these active learning exercises.

**Attendance and Missing Exams:**

Full attendance and completing graded items as scheduled is expected. It is the student’s responsibility to make up for the coursework if he/she chooses to miss a lecture(s). Missing an exam and desiring accommodation for an alternative exam time requires a significant reason with official documentations, a demonstrated pattern of regular attendance, and the student contacting the instructor at least a week prior to the scheduled exam. In case of emergency, the student should contact the instructor immediately.

**Intellectual Property and Academic Honesty:**

All material cited in the course content is copyrighted, by virtue of its publication on the internet, under the [Millennium Act](http://www.copyright.gov/legislation/dmca.pdf). Therefore, students are asked to respect the intellectual property of the authors. It is illegal to copy or distribute any of these materials unless it is for personal use, or you have obtained the consent of the authors of the materials.

**Discussions** on course subjects among students are highly encouraged only if it is to improve one’s understanding and learning. **Cheating** and **plagiarism** are prohibited. Once identified, it will lead to a grade of “**ZERO**” and will be reported to the dean’s office and the university. It is a serious matter and will be dealt with according to “*St. Bonaventure Academic Honesty Policy*” ([http://web.sbu.edu/friedsam/governing/ academic\_policies/academic\_honesty\_policy.pdf](http://web.sbu.edu/friedsam/governing/%20academic_policies/academic_honesty_policy.pdf)).

The following are some examples of academic dishonesty:

* Collaborating with another student in the planning, writing, or editing of a project without the knowledge of the instructor, or in ways that go beyond the instructor’s expectations.
* Obtaining general background information for an assignment from a printed or electronic source which is not acknowledged, and paraphrasing without citations.
* Inserting phrasing or paragraphs from printed or electronic sources without sufficient rewriting to demonstrate your own synthesis of ideas, *with or without crediting the original source*.

**Students with disabilities** are encouraged to contact the Disability Support Services Office, Doyle room 26, 375-2065 and shall follow the procedure stated in <http://web.sbu.edu/friedsam/governing/academic_policies/students_with_disabilities.htm>. Should a student need accommodations on the basis of disabilities, a discussion with instructor shall take place within the first week of the semester.

**Tentative Lecture Schedule**

 **Topics**

1. Introduction and Modes of Scientific Inquiry

2. What is life? How do living things survive?

3. How do living things evolve, and inheritance.

4. Why do we resemble our parents?

5. Big race to DNA structure and central dogma.

6. What are GMOs and existing GMOs.

**Review for Exam 1**

**Exam 1 (covers topics 1-6)**

7. What motivates human to modify genes?

8. What is biotechnology?

9. What has biotechnology accomplished?

10. How to use biotechnology to create GMOs?

11. What is the future of biotechnology?

**Review for Exam 2**

**Exam 2 (covers topics 7-11)**

12. What are the current concerns towards GMOs & causes for these concerns.

13. Are GMOs safe for human consumption? (class debate)

14. What is the future of GMOs?

15. Ethics and communication of GMOs.

**Review for final exam**

**Final Exam will cover all course materials including topics 1-15.**

**Final exam will be given during the week of May 13-17, 2019, date TBA.**