BIOL 820 Course Syllabus

Instructor: Dr. Moghe

INTRODUCTION TO GRADUATE STUDY, BIOL 820 (3 CREDITS)

FALL 2021

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INSTRUCTOR INFORMATION

Instructor: Dr. Saili Moghe

Email: moghes1@unk.edu

Office Hours: You may contact me through email (using your Lopermail account) or Canvas inbox messages. The "General Questions" discussion board on Canvas can also be used to post general comments/questions/concerns. I will respond to emails, inbox messages and discussion board posts within 48 hours. If a video/voice call appointment is needed, please email me to set up a time.

COURSE DESCRIPTION

An introduction to graduate study and requirements at UNK, with emphasis on research methods and biological techniques for the professional teacher and biologist will be provided. Students will gain an appreciation for the scientific method by formulating good scientific questions including sound null and alternative hypotheses, design experimental methods addressing the hypotheses, and propose appropriate statistical tests for evaluation of results. Students will practice the art of locating and understanding scientific literature. In addition, students will engage in scientific writing, which will include the submission of a research proposal.

LEARNING OBJECTIVES

1. Understand the requirements for the degree program (thesis and non-thesis) and complete plausible plans for completion of the degree requirements.
2. Effectively apply appropriate formatting, style and language in professional electronic communications.
3. Develop scientific questions and develop testable hypotheses to answer a specific aspect of a scientific question.
4. Effectively search for scientific literature using open-source databases and UNK Library resources.
5. Design methods to test a scientific hypothesis with an understanding of the interdependence of data collection and statistical methods.
6. Effectively read scientific literature.
7. Appreciate the role of the IACUC and IRB in research projects.
8. Complete a generic application for funding and have familiarity with common funding sources.
9. Write a well-developed scientific review paper on a chosen topic.
10. Use proper citation methods and understand the importance of academic honesty.

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COURSE MATERIALS

- Required Textbooks:
  - Writing Papers in the Biological Sciences, 7th edition, Victoria E. McMillan, Bedford/St. Martin's, Boston, 2021 (ISBN 9781319268466).
  - McDonald, J.H. 2014. Handbook of Biological Statistics, 3rd ed. Sparky House Publishing, Baltimore, Maryland. The free PDF is used for this course and can be obtained online. (http://www.biostathandbook.com/HandbookBioStatThird.pdf)
- Technical Requirements:
  - Full access to a computer and high-speed internet
  - Word processor for written assignments (including ability to convert into PDF).
  - Software for spreadsheets (e.g., Open Office Calc, Excel, Calc, Quattro, etc.)

COURSE STRUCTURE

Weekly materials will be posted on Canvas every Monday by 8:00 am (CST), and an announcement will always go up at this same time letting you know that all materials are up and provide any information or other details you need to know for the week.

Each week the following will be posted:

- Video lectures
- Outline lecture notes corresponding to the lecture videos
- Assigned readings from the textbook or supplemental readings
- Quiz or Assignment
- Link to the weeks discussion board for questions/concerns/comments
- Any needed supplementary materials/resources

ASSESSMENTS

Your progress in class will be assessed by discussions, assignments, and exams.

- Discussions (D) - Discussion boards will cover topics introduced during the course. Full credit will require meaningful contribution to the discussion as demonstrated by a minimum of 2 thoughtful postings per discussion (generic "I agree with …" are not viewed as thoughtful). Severe point deductions are assessed for any breach in earnest and intelligent discourse (i.e., cordial comments and discussion that is well intentioned and supported by rational thought, is expected).
- Mini-Assignments (mA) - Small assignments done throughout the semester to reinforce introduced concepts and provide an opportunity to practice skills. Instructions will be posted on Canvas.
- Assignments (A) - Assignments are more detailed and rigorous than mini-assignments. Instructions will be posted on Canvas.

- **Exams -** Exams will be time-limited, single attempt, "closed book" (no reference to notes, books, or any other external material/information). There will be two parts to each exam. Part A will be 50 multiple choice questions, worth 75 pts (timed at 1 hour) and Part B will be 5 short answer questions worth 25pts (timed at 1 hour)

GRADING SCHEME

ASSESSMENT TYPE	POINTS
3 Discussions (5 points each)	15
6 Mini Assignments (10 points each)	60
6 Assignments - A1: Bibliography @ 30 pts - A2: Review paper @ 70 pts - A3: Hypotheses and design @ 70 pts - A4: IRB or IACUC protocol @ 30 pts - A5: Student grant reviews @ 20 pts - A6: Generic grant @ 50 pts	270
3 Exams (100 points each)	300
Total Points	**645**

GRADE ASSIGNMENT

A+	97 - 100%	B+	88 - 89%	C+	78 - 79%	D+	68 - 69%	F	Below 60%
A	93 - 96%	B	83 - 87%	C	73 - 77%	D	63 - 67%		
A-	90 - 92%	B-	80 - 82%	C-	70 - 72%	D-	60 - 62%		

Finals grades will be assigned using the following grade scale. All grades are final unless there is a calculation error.

EXPECTATIONS FROM STUDENTS

As students enrolled in this class it is your responsibility to meet the following basic expectations:

- Log on to Canvas at least weekly and keep up with the posted course materials. Make sure that you read the Announcements and stay informed about what is happening and going to happen in class.
- Complete exams and quizzes within the time that they are available and make any assignment submissions by the given deadlines (keep in mind all times are in Central Standard Time, so please account for any time differences if needed).
- Seek help when you need it and do not wait till the last moment to do this.
- You are encouraged to utilize the discussion board not only for any comments/questions/concerns that you may have, but also to interact with your classmates (provided you keep such interactions primarily related to the class). Always be respectful to everyone when using discussion boards.

Understandably, you all have several commitments in your life other than this class. Nonetheless, as a student who has registered for this class, it is your full responsibility to ensure that you can meet the above requirements and commit the needed time for this course.

CLASS POLICIES

- **Assignments, quizzes, exams will receive zero (0) points if they are not completed by the given due dates**
- **Extensions or rescheduling** of exams/quizzes/assignments will NOT be possible unless circumstances are exceptional – a legitimate excuse (based on my discretion) with provided documentation will be required for such considerations
- **Policy on academic dishonesty:** Anyone caught plagiarizing or cheating on any exercise you will receive a 0 for that exercise; subsequent violations will result in referral to the Vice Chancellor for Academic Affairs for dismissal from the university. UNK's Students Code of Conduct is outlined here: https://www.unk.edu/offices/reslife/_documents/university-of-nebraska-at-kearney-student-code-of-conduct.pdf.

COURSE WITHDRWALS & INCOMPLETES

Dropping/Withdrawing: Students may withdraw from the course before **5pm, Oct 22** and a (W) will appear on the transcript. Students are responsible for completing this process using the MyBlue self-service. Instructors are not able to withdraw students. If the student drops the class, the (W) will not contribute to the student's overall GPA.

Incomplete: In unusual circumstances beyond the student's control, an incomplete (I) may be issued. The (I) is issued as a final grade with the student having 12 months to complete the necessary work. If the coursework is not completed in this time, the (I) will be converted to a failing grade (F) on the student's transcript. When needed, requests for an Incomplete must be made before the end of the semester and will require valid documentation.

COPYRIGHT LAW AND COMPLIANCE

Materials in this course are be protected by copyright and are intended only for the use of students enrolled in this course for the purposes of this course. Materials from this course may not be disseminated, adapted, copied, or published. Any violation of this is a violation of Federal copyright law.

STUDENTS WITH DISABILITIES

It is the policy of the University of Nebraska at Kearney to provide flexible and individualized reasonable

accommodation to students with documented disabilities. To receive accommodation services for a disability, students must be registered with the UNK Disabilities Services for Students (DSS) office, 175 Memorial Student Affairs Building, 308-865-8214 or by email unkdso@unk.edu.

UNK STATEMENT OF DIVERSITY AND INCLUSION

UNK stands in solidarity and unity with our students of color, our LatinX and international students, our LGBTQIA+ students and students from other marginalized groups in opposition to racism and prejudice in any form, wherever it may exist. It is the job of institutions of higher education, indeed their duty, to provide a haven for the safe and meaningful exchange of ideas and to support peaceful disagreement and discussion. In our classes, we strive to maintain a positive learning environment based upon open communication and mutual respect. UNK does not discriminate on the basis of race, color, national origin, age, religion, sex, gender, sexual orientation, disability or political affiliation. Respect for the diversity of our backgrounds and varied life experiences is essential to learning from our similarities as well as our differences. The following link provides resources and other information regarding D&I: https://www.unk.edu/about/equity-access-diversity.php

STUDENTS WHO ARE PREGNANT

It is the policy of the University of Nebraska at Kearney to provide flexible and individualized reasonable accommodation to students who are pregnant. To receive accommodation services due to pregnancy, students must contact Cindy Ference in Student Health, 308-865-8219. The following link provides information for students and faculty regarding pregnancy rights.http://www.nwlc.org/resource/pregnant-and-parenting-students-rights-faqs-college-and-graduate-students

REPORTING STUDENT SEXUAL HARASSMENT, SEXUAL VIOLENCE OR SEXUAL ASSAULT

Reporting allegations of rape, domestic violence, dating violence, sexual assault, sexual harassment, and stalking enables the University to promptly provide support to the impacted student(s), and to take appropriate action to prevent a recurrence of such sexual misconduct and protect the campus community. Confidentiality will be respected to the greatest degree possible. Any student who believes she or he may be the victim of sexual misconduct is encouraged to report to one or more of the following resources: **Local Domestic Violence, Sexual Assault Advocacy Agency** 308-237-2599, **Campus Police (or Security)** 308-865-8911, **Title IX Coordinator** 308-865-8655. Retaliation against the student making the report, whether by students or University employees, will not be tolerated. If you have questions regarding this information please contact Mary Chinnock Petroski, Chief Compliance Officer (petroskimj@unk.edu or phone 308-865-8400).

UNIVERSITY POLICIES RELATED TO COVID-19

All vaccinated faculty, staff and students, as well as visitors to campus, are encouraged, but not required, to wear face masks indoors. Unvaccinated individuals should continue to wear masks. (Masks are required indoors for all individuals at the University of Nebraska Medical Center.) https://nebraska.edu/news-and-events/news/2021/08/university-of-nebraska-system-updates-covid-19-protocols. Consistent with the University of Nebraska's guiding protocols, there are circumstances in which many people in our community may not be able to be vaccinated. Faculty may request, not require, that students wear masks in class under circumstances that clearly indicate unnecessary yet controllable risk of infection. Please note that pandemic precautions are subject to change.

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TENTATIVE CLASS SCHEDULE, BIOL 820

- All weekly materials will be posted by 8 am on Mondays
- Quizzes and exams will be available from 8 am on Monday until 11:59pm on the following Tuesday
- All times in the syllabus and Canvas are in U.S Central Standard Time

Week	Topic	Reading	Assessment
Week 1 Aug 23	Module1.1: Introduction & Syllabus Module 1.2: Why graduate school? Module 1.3: Online Etiquette	-Syllabus -Email advice	D1: Class introductions (open: Aug 23 – Aug 31) mA1: Why graduate school? (due: Aug 31)
Week 2 Aug 30	Module 2.1: Fields in Biology Module 2.2: UNK Biology Faculty Module 2.3: Scope of Research Projects	-Biology wiki -Biology faculty at UNK	mA2: What area of Biology is most interesting to you? (due: Sep 7)
Week 3 Sep 6 **Labor Day: Sep 6*	Module 3.1: MS Degree Requirements Module 3.2: What is Science? Module 3.3: Doing Good Science	-Department of Biology Graduate Student Handbook and Graduate Catalog -McDonald, pp.16-17	mA3: hypothetical program of study (due: Sep 14) mA4: preliminary scientific question, null and alternative hypotheses (due: 21)
Week 4 Sep 13	Module 4.1: Using Scientific Literature Module 4.2: Reading Scientific Papers Module 4.3: Writing Scientific material Module 4.4: Writing Research Papers	-McMillan, Chapter 1 & 4 -Papers posted for D2	D2: Scientific paper evaluation (open: Sep 13 - Sep 21)
Week 5 Sep 20	Module 5.1: Writing review papers Module 5.2: Proper citation of sources	-McMillan Chapters 5 and 6 -Paper on graduate writing	A1: annotated bibliography (due: Oct 5) A2: Review Paper (due: Nov 9)
Week 6 Sep 27	EXAM WEEK		EXAM 1 (available: Sep 27 – Oct 5)
Week 7 Oct 4	Module 6.1: Fundamentals of experimental Design Module 6.2: Types of Data Module 6.3: Data Collection & Management	McMillan, Chapter 2 McDonald, pp 3-17; 24-28	mA5: critical evaluation of scientific questions and hypotheses with preliminary experimental design (due: Oct 12)

Week 8 Oct 11	Module 7.1: Statistical Theory Module 7.2: Descriptive Statistics Module 7.3: Hypothesis Tests	McDonald,16-23; 101-131; 146-157;173-179	D3: experimental design and statistics (open: Oct 11 - Oct 20)
Week 9 Oct 18 **Fall break: Oct 18 -19* **Last day to drop class: Oct 22*	Module 8.1: Displaying Data	McMillan Chapter 3	mA6: table and graphs for provided data sets (due: Nov 2)
Week 10 Oct 25	Module 9.1: Evaluation of Study Design	McDonald, pp. 296-299	A3: final scientific question with hypotheses, experimental design and proposed statistical tests (due: Nov 16)
Week 11 Nov 1	EXAM WEEK		EXAM 2 (available: Nov 1 – Nov 9)
Week 12 Nov 8	Module 10.1: Research and Regulations Module 10.2: Research Using Vertebrate Animals Module 10.3: Research Using Human Participants	-IRB instructions and forms -IACUC instructions and forms, NIH guide Federal collection permit forms, Nebraska collection permit forms -Protected plants and non-vertebrates	A4: IRB or IACUC as required for your hypothesis, or provided option (due: Nov 23)
Week 13 Nov 15	Module 11.1: Scientific Presentations Module 11.2: Research Proposals (Grants) Module 12.1: Student research funding	-McMillan Chapter 10 -Funding sources	A5 part 1: Submit generic grant application initial draft for review by peers (due: Nov 30) A6: Generic grant application final draft (due: Dec 14)
Week 14 Nov 22 **Thanksgiving break: Nov 24-27*			
Week 15 Nov 29	Peer review of grants	-Peer grants	A5 part 2: Review peers submitted grant applications on discussion board (due: Dec 7)
Week 16 Dec 6	FINALS		FINAL EXAM Available: Dec 6 – Dec 14
Week 17 Dec 13	FINALS		FINAL EXAM Available: Dec 6 – Dec 14

END OF DOCUMENT