Spring, 2019

Course Syllabus:
Introduction to Graduate Studies BIOL 820, 3 credits
Spring 2019

Instructor:

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NOTE: Email is my preferred method of contact if you inquire about a personal issue. General questions about the course can be posted on the "Frequently Asked Questions Discussion Board" on Canvas.

Office Hours: Email to arrange a time for a phone discussion

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. 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.

COURSE OBJECTIVES:

1. Students will understand the requirements for their degree program and complete plausible plans for completion of the degree requirements.
2. The use of appropriate formatting, style and language in professional electronic communications will be emphasized and practiced. Essential aspects for successfully using Canvas will be introduced.
3. Students will develop a scientific question and develop testable hypotheses to answer a specific aspect of the question.
4. Skills related to use of the UNK Library for research will be developed.
5. Students will gain an appreciation for the design and testing of a scientific hypothesis with an emphasis on the interdependence of data collection to statistical methods.
6. Students will practice the skill of reading the scientific literature.

7. An appreciation for the role of the IACUC and IRB in research projects will be gained.
8. Sources of funding for student-based research will be reviewed. Students will complete an application for funding (generic).
9. Students will practice the art of writing scientific papers and will demonstrate skills by completion of a scientific review paper. Students will learn proper citation methods and be instructed on strategies to avoid plagiarism.

INSTRUCTOR ROLE: As your instructor I will provide feedback to students in two ways. First, students will receive individual feedback for specific writing assignments (e.g., grant proposal outline, rough draft of grant proposal and the final version of the grant proposal; see assignment list below). Second, I will read and may comment on student journal class discussions, and provide clarification or summary information for student questions. Any general comments or observations that would be helpful to the class as a whole will be made available to all students via announcement. I will respond to every email sent from student UNKlopermail accounts, you can expect a response to your emails within 24 hours of sending, Monday-Friday. However emails sent on the weekends (or late on Friday) will not be seen until Monday morning.

REQUIRED TEXT:

1. Writing in the Biological Sciences. Angelika Hofmann. 2nd Edition, ISBN9780190245603

The required book can be purchased at The Antelope Bookstore http://unk.bncollege.com/webapp/wcs/stores/servlet/BNCBHomePage?catalogId=10001&langId=-1&storeId=87923 or with your favorite online bookseller.

RECOMMENDED TEXTS:
It is recommended that students have a style book. Two options are as follows:

1. Elements of Style by William Strunk Jr. and EB White
2. The Bedford Handbook by Diana Hacker

Any edition is acceptable and can be found on Amazon currently for $4.00 or below.

REQUIRED HARDWARE/SOFTWARE: Students should refer to the following eCampus website to make sure you meet the minimum hardware/software and internet connection speed required by all UNK eCampus students.

eCampus requirements: http://www.unk.edu/academics/ecampus/resources-info/students/technology/requirements.php

NOTE: Microsoft Office Word is the only acceptable word processing software for this course (All other file formats are unacceptable for submitting online documents). This software is available for download with your Office365 account. Please go to the following link to learn more about getting setup with appropriate software.
http://www.unk.edu/offices/its/instructional_technology/office365_unk_email/index.php

ACADEMIC INTEGRITY: UNK's Policy is the maintenance of academic honesty and integrity is a vital concern of the University community. Any student found in violation of the standards of academic honesty shall be subject to both academic and disciplinary sanctions. Academic dishonesty includes, but is not limited to, the following: Cheating, Fabrication and Falsification, Plagiarism, and Other Acts of Academic Dishonesty. You are expected to uphold the UNK standard of Student Conduct relating to Academic Integrity. You assume full responsibility for the content and integrity of the work you submit. Academic integrity will be strongly enforced in this course and plagiarism will not be tolerated. All assignments will be scanned through TurnitIn via Canvas. **Students who plagiarize any part of their writing assignments will fail this course.**

GRADING SYSTEM: Grades will be determined according to the following scheme:

	Assignments	Points
1	Short assignments (13 @ 10pts) [A1-A6, A9-A13, A15, A19]	130
2	Assignments	
	A7: Bibliography	30
	A8: Review Paper	100
	A14: Hypotheses & Design	70
	A16: IRB or IACUC protocol	20
	A17: Presentation-Review Topic	50
	A18: Draft Grant Proposal	50
	A20: Grant Proposal	50
3	Discussion (11 @ 5pts)	55
4	Exam 1	100
5	Final Exam	100
	Total Course Points	**755**

GRADING SCALE:

93 – 100 % = A	78 – 79 % = C+	60 – 62 % = D-
90 – 92 % = A-	73 – 77 % = C	59% or less = F
88 – 89 % = B+	70 – 72 % = C-	
83 – 87 % = B	68 – 69 % = D+	
80 – 82 % = B-	63 – 67 % = D	

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 UNK Disabilities Services Coordinator, David Brandt, in the Disability Services for Students office, 175 Memorial Student Affairs Building, 308-865-8214 or by email unkdso@unk.edu

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 Sue Pedersen in Student Health, 308-865-8218. 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

> If you have an accommodation plan (i.e., for Disabilities or Pregnancy), please discuss with Dr. Reichart as soon as possible, so any necessary arrangements can be made for your learning. **No accommodations can be provided until a Reasonable Accommodation Plan is in place. Please remember, plans are not retroactive and cannot be used for assignments prior to the date of the instructor's signature.** To the greatest extent possible, University Representatives, shall observe confidentiality with respect to any request for accommodation.

VETERANS SERVICES. UNK works diligently to support UNK's military community by providing military and veteran students and families with resources and services to help them succeed. Veterans Services assists with the GI Bill process and acts as a liaison between the student and the Veterans Administration. If you need assistance or would like more information, please contact Lori Weed Skarka at 308-865-8520 or unkveterans@unk.edu.

REPORTING STUDENT SEXUAL HARASSMENT, SEXUAL VIOLENCE OR SEXUAL ASSUALT: 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.

CLASS SCHEDULE & ASSIGNMENTS: The class schedule (Table 1) and weekly reading assignments can be found below. Due dates must be followed and late papers are strongly discouraged. **All assignments are due on the date specified.** For assignments turned in late a **penalty of 5 points per day** will be deducted. A paper will get no credit when taking the 5 points for tardiness equals zero for the assignment or seven days after the due date, whichever comes first. Also, the rough draft of your Grant Proposal will be given to other students in the course to review. If your draft is late you may lose the opportunity for peer review.

NOTE: The sequence of lessons, notes and reading assignments are listed. Sequence, topic, assignments and any dates are tentative and subject to change by the instructor.

Table 1: Class Schedule & Written Assignments

DATE	WEEK	LECTURE/TOPIC	ASSIGNMENT (Due Dates posted on Canvas)	READINGS
1/7 – 1/11 Module 1	1	**Module 1** Introduction & Syllabus Why graduate school? Essential elements of Canvas Etiquette in the digital world (email and discussion boards)	**Module 1** **A1:** Short paragraph on why you are engaged in graduate study **A2:** properly formatted and worded email **Discussion 01**	**Module 1** Syllabus UNK Canvas Website Loper-Mail IT email advice
1/14-1/18 Module 2	2	**Module 2** Online Tools: Accessing the UNK Library Types of research -- lab, field, "blended", theoretical Faculty at UNK Scope of scientific projects at UNK – thesis vs. Biol 831, acceptable projects What area of science appeals most to you?	**Module 2** **A3**: short paragraph on the research area most interesting to the student **Discussion 02**	**Module 2** -Resources posted on Canvas
1/21 – 1/25 Module 3	3	**Module 3** Requirements for graduation What is science? How is science done? Good scientific question and hypothesis development Post scientific question for comment by students	**Module 3** **A4**:hypothetical program of study **A5**: preliminary scientific question, null and alternative hypotheses **Discussion 03**	**Module 3** Department of Biology Graduate Student Handbook Graduate Catalog

1/28 – 2/1 Module 4	4	**Module 4** Getting scientific information, UNK Library. How to access and use resources at the library – online journals, interlibrary loan, etc. Reading papers (couple of example papers – review vs. primary literature) Writing in science Writing research papers Discussion over one of the readings	**Module 4** **A6:** reference list (min. 50) **Discussion 04**	**Module 4** Hofmann Text Chapters 4 & 10 Papers posted on Canvas
2/4 – 2/8 Module 5	5	**Module 5** Writing review papers Proper citation of sources Academic honesty and plagiarism Answering Essay Questions Writing Organization/Outline	**Module 5** **A7:** annotated bibliography (best 15+) **A8**: Review Paper (TurnitIn) **Discussion 05** No credit, extra discussion for peer interaction during prep of A8	**Module 5** Hofmann Text: Chapters 1, 2, 3, 4, 11, & 12 Graduate Handbooks
2/11 – 2/15 **Exam 1**	6	**EXAM 1 – DUE February 19th**	**EXAM 1 (Modules 1-5)**	
2/18 – 2/22 Module 6	7	**Module 6** Fundamentals of good experimental design, qualitative vs. quantitative data, data collection and records, critical evaluation Student's experimental design presented for peers to evaluate and comment. Why consider statistical methods before beginning data collection? What data will you collect?	**Module 6** **A9:** data sheets and data management plan **A10:**critical evaluation of scientific question and hypotheses with preliminary experimental design **Discussion 06**	**Module 6** Hofmann Text: Chapter 5
2/25 – 3/1 Module 7	8	**Module 7** Descriptive statistics. Use of spreadsheets and internet resources for statistical analysis Hypothesis testing, statistical methods for biologists (t-test, ANOVA, Chi-square and linear regression), p-values	**Module 7** **A11:** spreadsheet assignment **Discussion 07**	**Module 7** Hofmann Text: Chapter 5
3/4 – 3/8 Module 8	9	**Module 8** Continuation of hypothesis testing and statistical methods (exercises) Displaying data and statistical information: Tables, Graphs, Body text of manuscript What are appropriate uses for tables and graphs?	**Module 8** **A12:** Internet resources for statistical analysis **A13:** table and graphs of provided data sets **Discussion 08**	**Module 8** Hofmann Text: Chapter 6

3/11 – 3/15 Module 9	10	**Module 9** Critical evaluation of scientific question, hypotheses, experimental design and statistical tests	**Module 9** **A14:** final scientific question with hypotheses, experimental design and proposed statistical tests **Discussion 09**	**Module 9**
3/18 – 3/22	11	**SPRING BREAK**	**SPRING BREAK**	**SPRING BREAK**
3/25 – 3/29 Module 10	12	**Module 10** You must be kidding … the realities of conducting scientific studies! The use of animals in research The use of human subjects in research Legal restrictions What are some challenges associated with your proposed scientific question?	**Module 10** **A15:** enumeration of potential requirements and obstacles to study with a plan for meeting the challenges **A16:** IRB or IACUC as required for your hypothesis or provided option **Discussion 10**	**Module 10** IRB instructions and forms IACUC instructions and forms Federal collection permit forms, Nebraska collection permit forms Protected plants and non-vertebrates
4/1 – 4/5 Module 11	13	**Module 11** Other types of Scientific Writing, posters, presentations Grant Writing: overview of problem, specific aims, experimental plan, budget, justification of research and budget, etc. What are the required resources for your proposed work, and how might those resources be acquired?	**Module 11** **A17:** slide presentation (Powerpoint over the review paper) **Discussion 11**	**Module 11** Student grants posted to file exchange of the discussion groups Hofmann text: Chapters 13, 14, & 15
4/8 – 4/12 Module 12	14	**Module 12** How am I going to pay for all this stuff? Funding a research project UNK sources of funds (RSC) Extramural funding sources (largely limited to professional scientists)	**Module 12** **A18:** Draft Grant Proposal **A19:** Peer Review of Assigned Grant Proposals	**Module 12** Hofmann text: Chapter 8 RSC application (budget example)
4/15 – 4/19 Module 13	15	**Module 13** Peer Reviews of Student Grants (cont.)	**Module 13** **A20:** Revised Grant Proposal	**Module 13** Hofmann text: Chapter 8 RSC application (budget example)
4/22 – 4/26	**16**	**FINAL EXAM – DUE APRIL 30th**	**FINAL EXAM**	
4/29 – 5/2	17	Finals Week		