

## ENTO 315 UNDERGRADUATE RESEARCH SEMINAR (3 Credits)

### SPRING 2023 SYLLABUS

Wednesday 10:00-11:50 AM

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**Instructor:** Dr. Troy Anderson

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**Office:** 109D Entomology Hall

**Phone:** (402) 472-8645

**Office Hours:** 10:00-11:00 AM Daily, In-Person or Zoom

**Office Zoom:** 231 949 9436 (bugphys)

**Prerequisites:** There are no prerequisites for this course.

**About the Course:** The purpose of this course is to provide an understanding of qualitative, quantitative, and mixed methods approaches for research studies. The course will focus on knowing the definition for different research approaches, considering philosophical world views, reviewing the literature, understanding the use of theory, anticipating ethical issues, and developing writing strategies.

**Course Text:** There is no required text for the course. The book “How to Write and Publish a Scientific Paper” by Barbara Gastel and Robert Day will be provided as a reference. There will be additional readings that focus on lecture topics and research activities.

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#### **Grading Policy (475 Total Points):**

A to A- (100 - 90%) = 475-428 points; B+ to B- (89 - 80%) = 427-380 points; C+ to C- (79 - 70%) = 379-333 points; D+ to D- (69 - 60%) = 332-285 points; F (59 - 0%) = < 284 points

**Learning Objectives & Outcomes:** At the completion of this course, the students will gain the knowledge to **(i)** understand and apply qualitative, quantitative, and mixed methods approaches for research; **(ii)** define different research approaches, consider philosophical world views, review the literature, understand the use of theory, anticipate ethical issues, and develop writing strategies; and **(iii)** interpret research applications. This knowledge will be evaluated with the successful performance of **(i)** think and react pieces, **(ii)** capstone research proposal and presentation, **(iii)** research application reports, and **(iv)** research notebooks.

**Course Format:** The course will combine online lectures and assignments and in-person discussion on research applications. The lectures will be delivered, recorded, and shared with students via Canvas. Lectures will focus on the processes of qualitative, quantitative, or mixed methods approaches as they relate to research applications. These processes will include writing an introduction, specifying a purpose statement, and developing research questions and/or hypotheses. To accompany the online lectures, we will have in-person, open discussion on the lecture topics and laboratory research applications.

**Canvas and Zoom:** The course materials, including lecture slides and recordings, articles, and think and react assignments, will be available on Canvas.

**Attendance (75 Points, 5 Each):** There will be mandatory attendance for all in-person sessions. Only excused absences will be allowed. Points (5) will be deducted for each unexcused absence.

**Think & React Pieces (100 Points, 10 Each):** A think and react piece is a writing assignment with thought-provoking questions and hypotheses that consists primarily of background materials and analyses. You will be required to prepare a think and react piece for instructor-selected journal articles and/or entomology seminar presentations. The think and react pieces will focus on your choice of five questions (one or two sentences each) from the following list:

- What is the meaning, question, and challenge of the study?
- What is the main argument of the study?

- What is the “take-away” message of the study (i.e., connection to background information, experience, and solution to the described challenge)?
- What might be a new perspective that you had not thought of before, or new information they provided, or a publication they referred to that you are interested in checking out?
- How is this research study done today and who does it?
- What are the limitations of present approaches?
- How would you conduct the research study differently?
- What is different about your approach and why do you think it can be successful at this time?
- If you succeed, what difference do you think it will make?

**Capstone Research Proposal (100 Points):** A research proposal will be prepared and submitted for a research project relevant to the field of entomology. The proposal will be reviewed and evaluated using the following criteria:

- What is the research topic and short abstract (150 words maximum)? (10 points)
- What is the problem statement and explanation of how the proposed research will address the problem (1 page maximum)? (20 points)
- What is the goal, objective, experimental approach, expected outcome, broader impact, intellectual merit, and references (2 pages maximum)? (30 points)
- A written statement describing career goals (1 page maximum). (20 points)
- A short presentation of the research proposal (10 minutes maximum). (20 points)

**Research Application Reports (100 Points, 10 Each):** A report will be prepared and submitted for each research application. The report will include the objective and key findings with a maximum length of one single-spaced page including a figure and/or table of the data. The reports are due at the beginning of the class period.

**Research Notebooks (100 Points, 10 Each):** A notebook is required for this course and will be reviewed each laboratory session. A notebook is a complete record of procedures, reagents, data, and thoughts to pass on to other researchers. Your laboratory notebook is an explanation of why experiments were initiated, how they were conducted, and the results. This is your scientific legacy in the laboratory.

**Course Schedule:**

<b>Date</b>	<b>Lecture Topics</b>	<b>Research Applications</b>
January 11	Course Introduction & Discussion	
January 18	The Selection of a Research Approach	Laboratory Notebooks & Unit Conversions
January 25	A Review of the Literature 1	Pipetting & Solutions
February 01	A Review of the Literature 2	Experimental Designs
February 08	The Use of Theory 1	Observational Skills 1
February 15	The Use of Theory 2	Observational Skills 2
February 22	Writing Strategies & Ethics	Graphs & Tables
March 01	The Introduction	Behavioral Experimentation 1
March 08	The Purpose Statement	Behavioral Experimentation 2
March 15	Semester Break	

March 22	A Research Question & Hypothesis	Toxicity Experimentation 1
March 29	Quantitative Methods 1	Biochemical Experimentation
April 05	Quantitative Methods 2	Molecular Biology Experimentation
April 12	Qualitative Methods	Neurophysiological Experimentation
April 19	Mixed Methods	Capstone Research Proposal Presentations
April 26	Catch Up or Review	

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## OTHER POLICIES

**Pledge of Instructional Standards.** Entomology instructors will provide our students a complete syllabus meeting UNL standards, our classes will be based on current science and will follow published schedules and descriptions, and our instructors will be timely in returning grades and responding to our students.

**Accommodations for Students with Disabilities Policy.** The University strives to make all learning experiences as accessible as possible. If you anticipate or experience barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can discuss options privately. To establish reasonable accommodations, I may request that you register with Services for Students with Disabilities (SSD). If you are eligible for services and register with their office, make arrangements with me as soon as possible to discuss your accommodations so they can be implemented in a timely manner. SSD contact information: 117 Louise Pound Hall.; 402-472- 3787.

**Mental Heal and Well-Being Resources.** UNL offers a variety of options to students to aid them in dealing with stress and adversity. Counseling and Psychological & Services (CAPS) is a multidisciplinary team of psychologists and counselors that works collaboratively with Nebraska students to help them explore their feelings and thoughts and learn helpful ways to improve their mental, psychological and emotional well- being when issues arise. CAPS can be reached by calling 402-472-7450. Big Red Resilience & Well-Being provides one-on-one well-being coaching to any student who wants to enhance their well-being. Trained well-being coaches help students create and be grateful for positive experiences, practice resilience and self-compassion, and find support as they need it. BRRWB can be reached by calling 402-472-8770.

**Academic Integrity Policy.** Cheating and plagiarism will not be tolerated. The University of Nebraska-Lincoln has a policy about Academic Dishonesty (see section 4.2 Academic Dishonesty of the Student Code of Conduct in the Graduate Studies Bulletin).

As the Student Code of Conduct indicates, academic sanctions for misconduct (subject to appeal) are at the discretion of the instructor and may include giving the student a failing grade for the course. In this course, the least penalty we will impose for misconduct is a one letter grade reduction in the course grade, however, in most instances (particularly for graduate students) the penalty for cheating in this class will be a failing grade in the course. Students are expected to adhere to guidelines concerning academic dishonesty as specified in Entomology policy (<https://entomology.unl.edu>) in accordance with Section 4.2 of the University Student Code of Conduct (<http://stuaafs.unl.edu/ja/code/>).

**Emergency Planning & Preparedness.** Emergency preparedness resources can be found at <https://emergency.unl.edu>.