

SYLLABUS: HONR 497 WVU SURE 2017 Research Experience

Course:

HONR 497-H01 (CRN #: 51935)

HONR 497-H02 (CRN #: 51937)

Title: Undergraduate Research

Credit Hour(s): 1

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Course Objectives: Honors 497 will be taught in collaboration with the SURE experience.

The class will help students reflect on their growth as researchers while also providing them with training to improve their responsible conduct of research, communication, collaboration, and technical presentation skills. Speakers working in both public and private sectors will offer career advice prompting students to consider their academic and professional futures. Participation in this course also provides students with access to the Student Health Center, Student REC Center, campus transportation, and all West Virginia University libraries.

Course Prerequisites: Students enrolled in Honors 497-H01 & H02 must be participants in the WVU SURE program.

Course Requirements: Students must have an active West Virginia University MIX account and access to WVU's eCampus platform (<https://ecampus.wvu.edu/>). Any required readings will be provided electronically. Students are required to complete all assignments by the specified due dates and participate fully in all online or in-person activities. **Attention to e-mail and eCampus is key.**

Mutual Expectations: It is the intent of the instructors of this class to establish and maintain a positive learning environment based upon communication and mutual respect. Any suggestions as to how to further such an environment will be appreciated and given serious consideration. The class will be conducted in accordance with the University's commitment to social justice and academic honesty. Therefore, the policies and procedures outlined in the *WVU Campus Student Code* (<http://eberly.wvu.edu/files/d/6fb93b3a-e81c-4aee-9b56-ab92fc88356f/student-code-of-conduct.pdf>) apply throughout the course.

Grading: Grades will be determined by three factors:

- a. **Attendance:** Student attendance is required for a minimum of seven (7) of the workshops and speakers, combined, and for at least two (2) of the networking social events. Dates or locations for some of these events have yet to be determined, but most are scheduled for after the normal research day. Students are welcome and encouraged to attend more than the minimum number of events. Student attendance is also required at the one-day training (Tuesday May 30) and at the Summer Undergraduate Research Symposium (Thursday July 27). In addition, students must meet weekly with their faculty research advisor and/or laboratory group to discuss their research and assess their performance to date on their research project.

- b. **Participation:** Some assignments will be in-person and some will be electronic and may require student comments, feedback and/or discussion. All students should actively and constructively engage with the required assignments, while adhering to a code of mutual respect.
- c. **Assignments:** Students should complete written/online assignments by their due dates. These assignments should reflect clarity, organization, and mastery of the subject material. Late work will be assessed a 10% per day numerical deduction or deduction of one letter grade per day. Late work will not be accepted 48 hours past the due date.
- d. **Final grades** will be calculated as shown below. Associated letter grades are A = 90-100%; B = 80-89%; C = 70-79%; D = 60-69%; F < 60%.

Calculation of Final Grade	
Training Day	5%
Intellectual Merit and Broader Impacts Discussion	2.5%
Rough Draft of Abstract Discussion	2.5%
Reflection: Planned Use of Enrichment Funds	2.5%
Workshops and Speakers (7 minimum; 5% each)	35%
Networking Social Events (2 minimum; 5% each)	10%
Project Part 1: Final Abstract	10%
Project Part 2: ID of Scientific Journal or Conference	2%
Project Part 3: Query Letter & Resume	8%
Poster Preparation and Poster Presentation	22.5%
Maximum Final Numerical Grade	100%

Poster preparation for and presentation at the culminating undergraduate research symposium are equivalent to the final exam for the HONR 497 course. Any student who does not participate in the poster symposium event will have failed the final exam and will earn a final grade of "F", regardless of his/her other averages.

Assignments & Responsibilities:

Pre- & Post- Surveys on Research Experience: Pre-surveys will be given to students to evaluate their previous research and mentoring experience prior to participation in the SURE experience. Post-surveys will include program evaluations and space for the student to provide analysis of the program.

On-line Discussion: There will be at least two eCampus based on-line discussions. Each student will post to the discussion. Students should read over eight (8) different peer posts and post eight (8) replies that provide specific, constructive feedback for improvement(s).

Reflection: Students will write at least one short academic reflection, including a budget and budget justification, on the topic of planned/hypothetical use of enrichment funds (e.g., conferences, equipment, personnel) and how this funding would be allocated.

Project: The project will help students focus on how to set and achieve research goals. For the first part of the project, students will **(1) complete an abstract assignment** in which they will write an abstract based on their research. This has two parts: the rough draft and the final draft. The rough draft will be submitted for discussion on eCampus for review by peers. Students will revise their abstracts based on peer feedback and submit the final drafts for

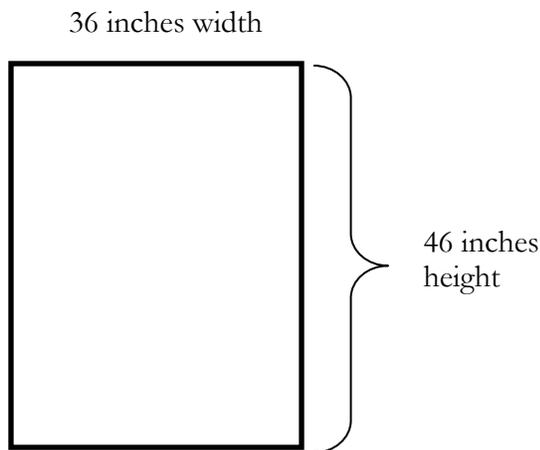
their project grade. The abstract will then be used for the final poster presentation at the undergraduate research symposium. After completing a final draft of their abstract, students will **(2) research and identify a reputable publication or conference** that would align with their research as outlined in their SURE project abstract. Then, students will **(3) draft a query letter to the editor or a conference proposal** for their research to the publication/conference selected in part 2 of the project. An **updated resume** must also be included. The resume should highlight the student's undergraduate research and inherent skills gained by doing research (ability to deal with setbacks, communicate results, and discuss intellectual merit of your research).

Workshops and Speakers: There will be a series of visiting speakers who will be presenting on research and careers in academic, industry, and government sectors. There will also be a series of workshops (e.g., prestigious scholarships, preparing your research poster, communicating your research). Students are required to attend seven (7) of the workshop and speaker events.

Networking Social Events: There will be a series of social events for students to meet one another, graduate students, and faculty in a more informal environment. Students are required to attend two (2) of the social events.

Poster Presentation: Students are required to prepare a poster to display during the Undergraduate Research Symposium on July 27, 2017. Students need to create posters that are three feet wide by 46 inches tall (see below) to effectively display their research findings. The poster will be displayed portrait style! More information on the research posters will be given during the workshop on preparing a research poster. At the symposium, students will be judged on the effectiveness of both their poster and their ability to communicate and explain their research. ***Any poster that does not follow these size requirements may not be displayed or judged.***

Symposium: Students are required to attend the Summer Undergraduate Research Symposium on Thursday, July 27. The Symposium includes a keynote speaker, poster presentation, and judging. More information about the judging criteria will be provided at a later date. Students are encouraged to invite family, friends, and faculty, graduate, and postdoctoral mentors to the symposium.



Portrait Layout of Poster

Instructions for Assignments

Assignments consist of each student's original ideas and work. Students are not allowed to collaborate on assignments (e.g., reflection, abstract, project, or poster), although, students may have others review their writings (e.g., abstract) to check spelling, grammar, and readability.

Instructions for Writing Reflections: Academic reflections should lead learners to a higher level of abstract thinking, greater ability to synthesize ideas, and an increase in comprehension of the material. Academic reflections are not merely descriptive summaries of what you have read or heard. A written reflection should accomplish two goals: 1) demonstrate the writer's understanding of the material, and 2) make direct connections between the content and the writer's personal experiences or research.

Reflection: Planned Use of Hypothetical Enrichment Funds (assume \$2,500 of enrichment is available)

The reflection on planned use of hypothetical enrichment funds is an opportunity for students to think about the complicated world of research funding. The reflection is based upon a hypothetical situation in which each undergraduate researcher has access to additional funds, on a competitive, case-by-case basis. The goal is to prompt students to think about how research can extend beyond the laboratory, and to become active in pursuing both opportunities (conferences, publication, new equipment, workshops, additional trainings, or access to a particular instrument, etc.) and funding. Your reflection should demonstrate that you understand your research and why your research would be of interest to a funding entity (e.g., Why is your research of importance to society in general? Why should the average tax payer care about funding your research? What are the potential long-term benefits of your research to society?). In addition, your reflection should justify why enrichment funding is needed and be very specific about it (e.g., access to specific type of instrumentation available at [NIST](#) is needed in order to move the project forward because....).

Consider the following questions: If you could apply for enrichment funding of \$2,500 to further your SURE research, how would you spend it and how would you justify this expenditure? Would it be for equipment, conference attendance, instrument time, access to shared instrumentation at WVU, access to instrumentation at National facilities, more lab workers, or something else (e.g., salary funding for grant writing) and how much would it cost? How would use of these funds better or further your SURE research? These should shape into a cohesive reflection on a hypothetical plan of action for requesting the additional money. It would be helpful to have a discussion with your SURE research advisor.

Find prices and provide a reasonable, projected budget for your proposed expenditures in tabular form. How would you justify the expenditures in your budget? **Provide a budget justification.** In a budget justification, you need to provide details for the specific costs you propose. For instance, if proposing to attend a conference, you need to find and report valid, non-approximated costs for the conference registration fee, lodging, meals & incidental expenses (i.e., M&IE or per diem), and travel. For lodging and M&IE, go to the U.S. General Services Administration (GSA) website (<http://www.gsa.gov/portal/content/104877>)

to find these rates for your destination city. For M&IE, you can request the full rate for each full day at the conference, but only 75% of the rate for days that you travel to and from the conference. For lodging, take the typical lodging cost from the GSA website and multiply it by the number of nights. Also, look up the typical cost of roundtrip airfare or, if driving, find the roundtrip mileage and multiply by the mileage rate for your institution or that found from the GSA website. The reflection itself should be one page, single-spaced (~300-500 words) with two additional pages, one for your budget and one for your budget justification (i.e., short explanation for each expense and where you obtained the cost and/or why you need the #units of each item requested). Due June 23rd before midnight.

Example Projected Budget - For attendance and oral presentation at the 251st American Chemical Society (ACS) National Meeting in San Diego, CA on March 13-16, 2016 (<http://www.acs.org/content/acs/en/meetings/spring-2016.html>). The budget justification would include more details as to the source of these prices and more description of the costs (i.e., the registration fee is for an undergraduate student/member/affiliate, the lodging & M&IE were obtained from the GSA website for destination city of San Diego, CA, mileage to/from PIT airport was obtained from MapQuest, etc.)

Budget Item	Cost/unit x units	Extended Cost
1: Conference Registration	\$105	\$105.00
2: 3-night stay at hotel: Max lodging (March 13, 14, & 15, 2016)	\$153/night x 3 nights	\$459.00
3: Roundtrip Flight: Pittsburgh, PA-San Diego, CA	\$421	\$421.00
4: M&IE (Meals and Incidental Expenses)	\$64/full day x 2 days	\$128.00
	\$48/travel day x 2 days	\$96.00
5: PIT Airport Parking – Extended Lot	\$8/day x 4 days	\$32.00
6: Mileage to/from airport in personal car from WVU to PIT Airport.	158 miles x \$0.54/mile	\$85.32
Projected Total Cost of Attendance		\$1,326.32

Reflection Grading Rubric:

<u>Letter Grade</u>	<u>Criteria</u>
A (90-100%)	Assignment is complete, well-organized, well-written, and submitted by due date.
B (80-89%)	Assignment is late, partially complete, does not fully address the reflection criteria, and/or does not obey the word limitations.
C (70-79%)	Assignment is late, incomplete, does not fully address the above reflection criteria, and/or does not obey word limitations. Lack of effort is obvious.
D (60-69%)	Assignment is substantially incomplete and constructed with no effort.
F (0-59%)	Assignment is not submitted or is submitted more than 48 hours past the due date.

Project: Parts 1-3

Part 1: The first part, an abstract on your summer research project, must be 150-175 words. Students' first draft must be posted by July 11, 2017 under the Discussions Tab. After the 11th, you must comment and provide constructive criticism on eight (8) of your peers' abstracts (by July 13). Your corrected abstract must be posted by midnight on July 14, 2017. Parts 2 and 3 of your project are due this same day. These should be submitted using the TurnItIn application.

There will be a link for "Completed Abstracts," and a separate one for "Query Letter and Research Publication/Conference Name." The goal is for students to be able to identify a proper and authentic scientific publication and/or conference while gaining experience in writing abstracts. It is very important that the abstract follow the formatting of the example provided below, as it will be published in the brochure for the Summer Undergraduate Research Symposium 2017. Once your abstract has been finalized, your teaching assistant will send you an abstract template form or link for submission of your abstract for inclusion in the poster symposium brochure.

Abstract Preparation¹:

The **abstract title** (4-13 words) should be grammatically correct, accurate, and convey maximum information. Keywords (specific rather than general e.g. "copper-zinc alloy" rather than "alloy") should be used to facilitate an online title search. In addition, since our Undergraduate Research Symposium is open to parents and to members of the general public, you should attempt to use title words that can be comprehended by the general public (maybe, your mom or dad). Use your title to attract people to your poster. Don't have a title that is so technical that it turns people away.

In **author** (first name, middle initial and last name) byline, include ALL authors (including your faculty research advisor) who made substantial contributions to the research. Do not include titles (e.g., Dr., Prof.).

The **author affiliation** is the institution at which the research was conducted (e.g., C. Eugene Bennett Department of Chemistry, West Virginia University, Morgantown, WV 26506-6045). Building name/number and street address are not included.

In your **abstract (150-175 words)**, include the following:

- * problem statement or purpose of research (motivation)
- * theoretical or experimental plan used (approach)
- * safety information (if applicable)
- * summary of principal findings/results (include numbers, e.g., $p=0.02$)
- * major conclusions

¹ Reference: Coghill, A. M.; Garson, L. R., Eds. *ACS Style Guide: Effective Communication of Scientific Information*; Oxford University Press: New York, NY, 2006; p20-23.

Abstract should be self-contained and allow the reader to determine the nature and scope of your research work (i.e. whether the research presented in your poster is of interest). Do NOT include references in your abstract.

Sample Abstract: Follow the formatting of the sample abstract shown below. Title (centered, only first letter capitalized, **Times New Roman 14 point font and bold**), Authors (Times New Roman 12 point font and normal), Author Affiliation (*Times New Roman 12 point font and italic*), and Abstract (Times New Roman 12 point font and normal)

College students' perspectives and reasoning about nanotechnology risks and benefits

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Introduction of novel technologies, such as nanotechnology, has become a topic of interest in scientific literacy and education. Consequently, the perspectives of the public on the risks and benefits associated with nanotechnology are important. In this study, we collected and analyzed pre-service elementary teachers' perceptions on nanotechnology to further inform a larger scale instructional innovation for pre-service science teacher education. We surveyed students in an elective, media-literacy course through measurement instruments such as pretests, worksheets, and posttests to analyze their perspectives and reasoning as related to the use of nanotechnology for everyday problem solving. The results indicated that students had a "cautiously optimistic" perspective on the application of nanotechnology and that this general perspective was stable and unchanging after instructional innovation. However, we found interesting changes in how students reasoned for these opinions. The significance of the study is that it addresses the concerns of improving public literacy about novel technologies by way of elementary teacher training, and thus it establishes a way for public literacy that starts early in K-12 education.

Part 2: Identify a reputable research publication or conference in which you would, hypothetically, like to present your research. This should be a recognized journal or conference that relates to your research field. This is due July 14, 2017. The official name and corresponding address of the publication or conference will be included as the inside address within your query letter.

Part 3: Draft a query letter to the editor or conference organizer of the research publication or conference identified in Project, Part 2 with attached updated resume. The query letter is a brief cover letter (one page maximum and minimum of 3 paragraphs) for your hypothetical journal article or conference, and should contain a summary of the main conclusion (not a word-for-word abstract) of your research, your goal of publication or presentation and justification for publication or presentation (e.g., Why is this journal/conference an appropriate venue for your research?), importance of your work, the

names of any important scholars who worked with you or commented on your paper, and a brief explanation of your laboratory credentials. Please include contact information and follow a standard business letter format. Include:

- 1) Heading: full address of letter writer and date of letter
- 2) Inside address: name and full address of addressee
- 3) Salutation: e.g. Dear Dr. Anthony Smith
- 4) Body of Letter: minimum of three paragraphs, single spaced with double space between paragraphs, use clear and direct style and do not use abbreviations (e.g. use laboratory instead of lab)
- 5) Closing: complimentary closing (e.g. Sincerely or Cordially), place for handwritten signature, typed name of sender, title of sender, contact information of sender (phone number and email address)
- 6) Added notations: e.g. enc. for enclosure or att. for attachments of abstract and/or resume.

The attached resume should highlight your undergraduate research experience and skills gained by doing research (ability to deal with setbacks, communicate results, and discuss intellectual merit of your research).

This is due July 14, 2017.

An example publication or conference is:

Science, a peer reviewed journal published by the American Association for the Advancement of Science (AAAS)

OR

The International Conference on Bioinformatics, Computational Biology, Genomics and Chemoinformatics, to be held in July of 2014 in the United States.

Academic Integrity: The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, I will enforce rigorous standards of academic integrity in all aspects and assignments of this course. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the West Virginia University Academic Catalog at (<http://catalog.wvu.edu/undergraduate/coursecreditstermsclassification/#academicintegritytext>). Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see me before the assignment is due to discuss the matter. [adopted 02-11-2008]

Inclusivity Statement: The West Virginia University community is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion. If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with the [Office of Accessibility Services](#) (304-293-6700). For more information on West Virginia University's Diversity, Equity, and Inclusion initiatives, please see <http://diversity.wvu.edu/>. [adopted 02-11-2013]

Disclaimer: The schedule, policies, and assignments within this syllabus are subject to change in the event of extenuating circumstances.