

Special Problems in Physics
PHYS 459H

Spring 2018

Instructor: Dr. Michael Eads
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Text: none required

Course description: PHYS 459H (Special Problems in Physics) is an independent study research course.

This course involves independent research under the supervision of a faculty member. The research topic/area will be decided upon in consultation with the faculty research supervisor. Possible research areas include experimental particle physics (using research topics related to the muon $g-2$ experiment at Fermilab, the DUNE long baseline neutrino experiment, or particle detector research and development) or Physics Education Research.

Course objectives:

1. Students will gain a basic understanding of scientific research in their chosen research area.
2. Students will plan and perform a research task or study, involving the collection and analysis of data. Depending on the scope of the study/project, this may continue over multiple semesters.
3. Students will document their progress.
4. Students will summarize the status of their project/study at the conclusion of the semester.

Expectations: There will be regular meetings with the research supervisor throughout the semester to detail the expectations, provide basic background information, and to monitor the student's progress. The student will document their progress, either through the use of a paper or electronic logbook, or through update talks at experimental working meetings. A report summarizing the progress throughout the semester is expected during the final week of the semester.

Attendance: There are no formal class meetings. Regular meetings with the instructor will be scheduled. If the research project is part of an experimental collaboration, attendance at other experimental meetings may be required.

Grading: Your grade will be based on the satisfactory completion of (or progress toward the completion of) your research task/project. This will include attendance at and

participation in the regular meetings with your research supervisor, thorough documentation of your progress throughout the semester, and the final summary of your progress at the end of the semester.

The final grade in the course will be calculated based on following categories, with the listed weights:

- Attendance at and participation in regular meetings with the research supervisor, and other meetings (such as experimental collaboration meetings) relevant to the research project – 20%
- Providing regular updates (oral, written, or e-log entries) of research progress – 20%
- Completing (or making appropriate progress towards the completion of) the agreed-upon research task during the semester – 30%
- Providing a final summary (either as a written document or as a semi-formal oral presentation) of the research progress at the end of the semester – 30%

The grading scale for the course will be

- >90% - A
- 80-89% - B
- 70-79% - C
- 60-69% - D
- < 60% - F

Accessibility: If you need an accommodation for this class, please contact the Disability Resource Center as soon as possible. The DRC coordinates accommodations for students with disabilities. It is located on the 4th floor of the Health Services Building, and can be reached at 815-753-1303 (V) or drc@niu.edu.

Also, please contact me privately as soon as possible so we can discuss your accommodations. The sooner you let us know your needs, the sooner we can assist you in achieving your learning goals in this course.

Academic Integrity: As detailed in the current NIU undergraduate catalog: *Good academic work must be based on honesty. The attempt of any student to present as his or her own work that which he or she has not produced is regarded by the faculty and administration as a serious offense. Students are considered to have cheated if they copy the work of another during an examination or turn in a paper or an assignment written, in whole or in part, by someone else. Students are responsible for plagiarism, intentional or not, if they copy material from books, magazines, or other sources without identifying and acknowledging those sources or if they paraphrase ideas from such sources without acknowledging them. Students responsible for, or assisting others in, either cheating or plagiarism on an assignment, quiz, or examination may receive a grade of F for the course involved and may be suspended or dismissed from the university.*

*A faculty member has original jurisdiction over any instances of academic misconduct that occur in a course which the faculty member is teaching. The student shall be given the opportunity to resolve the matter in meetings with the faculty member and the department chair. If the facts of the incident are not disputed by the student, the faculty member may elect to resolve the matter at that level by levying a sanction no greater than an F for that course. The faculty member shall notify the student in writing whenever such action is taken, and the **Office of Community Standards and Student Conduct** shall receive a copy of the Academic Misconduct Incident Report indicating final disposition of the case, which will be placed in the student's judicial file. In all matters where the charge of academic misconduct is disputed by the student or if the faculty member feels a sanction greater than an F in the course is appropriate (such as repeated offenses or flagrant violations), the faculty member shall refer the matter to the Office of Community Standards and Student Conduct making use of the Academic Misconduct Incident Report. Additional sanctions greater than an F in a course can be levied only through the University Judicial System. With regards to finding the student either responsible or not responsible for his or her action, the ruling of the Judicial Hearing Board shall be binding. In cases where there is either a finding of responsibility or an admission of responsibility by the student, any recommendations by the hearing board regarding the course grade are non-binding on the instructor, who remains solely responsible for assigning a course grade, consistent with the policies set forth in the course syllabus.*