

AST 298/299 Syllabus - Example Template

Course Title: Thesis Research in Physics

Course Code: PHYS 299

Units: up to 1-12. *Background: Each unit represents 3 hours or more of academic activities, as per WASCs credit-hour policy.*

Prerequisites: Admission to a graduate program; enrollment in this course requires prior authorization by the instructor

Instructor: [Instructor's Name]

Office: [Instructor's Office Location]

Email: [Instructor's Email]

Method of evaluation: [fill here]

Frequency, duration and types of meetings: [fill in here: typically group meetings, 1:1 meetings, weekly reports, etc.]

Grading Scheme: S/U

Course Description:

Thesis Research in Physics (AST 298 or 299) Graduate Course is designed to provide graduate students with the necessary knowledge and skills to conduct independent research in their respective fields. This course focuses on developing advanced research methods, critical thinking, and effective academic writing. Students will work closely with the instructor to identify research topics, design research plans, collect and analyze data, and produce high-quality research reports, presentations and manuscripts. The course will also emphasize ethical considerations in research and the effective communication of research findings.

Evaluation of the performance in this course is based on the academic progress made towards the Ph.D. degree.

Course Objectives:

Throughout this course, students will obtain the skills and knowledge to:

1. Demonstrate an understanding of research methodologies, including qualitative and quantitative approaches.
2. Develop a research question and design a comprehensive research plan.
3. Conduct a literature review and critically analyze existing research in their field of study.
4. Collect and analyze data using appropriate research methods and statistical techniques.
5. Apply ethical principles and guidelines in conducting research.
6. Write a well-structured research report using academic writing conventions.

7. Effectively communicate research findings to both academic and non-academic audiences.

Course Topics:

1. Research Methods
 - o Overview of research paradigms and approaches
 - o Formulating research questions and objectives
 - o Understanding the research process
2. Literature Review and Conceptual Framework
 - o Conducting a comprehensive literature review
 - o Identifying research gaps and justifying the research study
 - o Developing a conceptual framework
2. Research Design and Data Collection
 - o Experimental and non-experimental research designs
 - o Sampling techniques and sample size determination
 - o Data collection methods
 - o Questionnaire and survey design
2. Data Analysis and Interpretation
 - o Quantitative data analysis
 - o Qualitative data analysis techniques
 - o Interpreting research findings and drawing conclusions
2. Research Ethics and Responsible Conduct
 - o Ethical principles in research
 - o Professional conduct in workplace
 - o Professional and respectful communication skills
 - o Plagiarism and intellectual property rights
2. Writing and Presenting Research Findings
 - o Structuring a research manuscript (introduction, methodology, results, discussion, etc.)
 - o Academic writing conventions and citation styles
 - o Effective data visualization and graphical representation
 - o Oral presentation skills and delivering research presentations

Assessment and Grading: [MODIFY WITH RESEARCH MENTOR]

- Research Proposal and Design: 10%
- Literature Review: 10%
- Data Collection and Analysis: 10%
- Producing a manuscript, Oral presentation: 20%
- Regular Participation (Weekly Updates, as described above): 50%

Note: The grading scale will follow the university's established guidelines.

Academic Integrity:

This course expects that the student will uphold the highest level of academic integrity, and that they are familiar with the UC San Diego policies and rules on this matter. Any form of plagiarism or fabrication of data and results will not be tolerated and will be reported to the Academic Integrity Office.