PHYC 380 Seminar in Modern Physics

Course Description

Students in this course will become familiar with the variety of research tools and skills needed to plan an effective research project and to report the results of that project in a professional format. The course will familiarize students with science resource materials at different levels. Such materials may be found in the library or on the internet. A broad topic in modern physics will be identified. Each student will select a specific related topic or topics and explore the current state of information on that specific topic.

Course Objectives

Explore a variety of specific topics in a general field of study in a student-centered environment.

Select appropriate science research resources typically contained within a library (books, reference works, periodicals, reviews, etc.)

Create annotated bibliographies to plan and document research activities.

Use internet resources (bibliographic services, catalogs, open source data) to collect research related information.

Improve oral and written communication skills.

Course Rationale

Students in physics and astronomy programs have extensive experience in the creation of lab reports in introductory and intermediate level courses. A capstone experience requires students to produce a quality project in the form of a formal written report, research paper or thesis. No current course in our department addresses the development of the skills needed to make the transition between very limited lab reports and research papers. This course fills that need by introducing students to resource materials and research strategies and developing the skills needed to complete professional research activities.

Course Content, Format, and Bibliography

Content

The instructor will determine the general topic for the course. Students will select individual related topics for investigation.

Format

Classes will include brief lectures, demonstrations and discussions of topical resources and techniques. Students will report regularly in class on their progress and their understanding of their specific topic.

This course is taught as a dual undergraduate/graduate course. Students will be required to complete activities appropriate for the level of the course in which they are enrolled. Student performance on

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homework, exams and/or labs will be evaluated using different standards for undergraduate and graduate students.

Course grades will be based on student contributions in class, products created (annotated bibliographies, and brief written background reports with appropriate citation and reference formats), quizzes and exams.

Bibliography

Basic Overview of Library Research

http://www.library.cornell.edu/olinuris/ref/research/tutorial.html

Science Research Web Site

http://www.scienceresearch.com/search/

Reviews:

Annual Reviews of (Astronomy and Astrophysics, Biophysics, Earth and Planetary Science, Nuclear and Particle Science) http://www.annualreviews.org/

On-line Resources:

NASA ADS

http://adswww.harvard.edu/

On-line Journals

https://liblink.bsu.edu/cgi-bin/login.pl

On-line Data Resources and Retrieval

Creating Annotated Bibliographies

http://www.library.cornell.edu/olinuris/ref/research/skill28.htm

Bibliography Builder

http://www.ecf.toronto.edu/~writing/handbook-docum1a.html