

ASTR 598: Special Research Programs
SYLLABUS
January 2016

This letter-graded course provides research skill development for graduate students and will provide opportunity for the student to develop expertise in a specific area of scientific focus.

Course emphasis is placed upon developing:

i) **literature review capabilities** for a specific scientific topic (identified by the student in collaboration with the instructor), identifying the most relevant journals for the selected topic, the seminal papers in that field, the current level of understanding of the topic, and identification of the next investigation steps in the advancement of the topic. The research topic focused upon need not be in the primary field of the Student's interest.

ii) **scientific writing skills**, which will be demonstrated in a research/literature review paper that is a required component of the course; the paper should be formatted to be consistent with the standard template for a primary journal in the field. The Instructor will provide a written assessment of the Student's paper.

iii) **scientific presentation skills**, which will be illustrated by a required 'near the end of the semester' Student oral presentation which will include information the Student has gained and developed during the semester; the Instructor will provide a written assessment of the Student's presentation; this Presentation often occurs as a Pizza Lunch presentation

iv) **experience with one or more research investigation tools** such as a computer model, advanced data analysis technique(s), etc.

The Faculty Instructor and Student will:

i) establish a written schedule of at least weekly meetings between the Student and Instructor

ii) during the initial 2-4 weeks of the semester develop a Schedule of Activities/Tasks for the semester with identified Milestones and their completion dates

iii) prepare a 'Statement of Work' (SoW) that includes the meeting schedule and Milestones and Completion Dates identified above and indicates how evaluation of the Student's accomplishments and progress will be assessed by the instructor for end-of-semester grade assignment. *Both the student and instructor have the right to revise this SoW (provided that both parties agree) in the event of unexpected road blocks in some facet of the research.* The student will inform the Department Head upon completion of the creation of the Statement of Work.

It is strongly encouraged that the Graduate Student and Instructor consider incorporating one or more of the following suggestions regarding conduct of the course:

1) Include a Secondary Instructor, to assess the reasonableness of the designed Schedule and the tasks therein, provide additional feedback to the student, etc.

2) Include in the meeting schedule identified journal papers that will be read in advance and discussed during identified meeting dates

3) The Graduate Student request audience assessment of their end-of-the-semester oral presentation (a standard Rubric is available for this purpose, else the Student and Instructor(s) can develop such a document for their own purpose)

4) The Graduate Student and/or Instructor request evaluation of the written paper from additional members of the Department

5) The Student's course research topic and developed knowledge and products (paper, presentation) serve as the basis for creation and submission of a Fellowship application at the national level (NSF GRP, NESSF, etc.) or local level (NM Spacegrant Graduate Fellowship), and/or a peer-reviewed journal article

A grade of "A" will be an indication that the Student made very Substantial progress on all facets identified in the Statement of Work, including a well prepared written document and a well prepared talk/presentation

A grade of "B" will be an indication that Student made progress on some but not all facets of the tasks identified in the Statement of Work; the student will have produced a satisfactory written document and presentation/talk in order for a "B" grade to be awarded

A student who does not complete a written paper/document and who does not present their work in an appropriate in-department setting will not be able to earn a letter grade higher than a "C", which is unsatisfactory work at the graduate level.