This course is intended to provide research skill development for graduate students in the program and for the student to develop expertise in a specific area of research. Emphasis is placed upon developing skills related to:

i) **literature review capabilities for a specific topic** (identified by the instructor and the student), identifying the most relevant journals for a particular topic, the seminal papers in that field, the current level of understanding, current research being performed in that field and what research problems continue to need tackling, etc.;

ii) **scientific writing skills**, which will be illustrated in a research/literature review paper that is a required component of the course;

iii) **scientific presentation skills**, which will be illustrated by a ‘near the end of the semester’ 15-20 minute student presentation which will include information the student has gained and developed during the duration of the semester

iv) **establishing experience with research investigation tools** such as a computer model, advanced data analysis techniques, etc.

To demonstrate progress towards these goals, students will be required near the end of the semester to submit a written summary of their work as well as make a 15-20 minute oral presentation about it to the department (e.g. as a portion of a pizza lunch). The written summary will be prepared in an appropriate journal style format and will include background material as well as any new work that was accomplished. It will be written with a level and style of a journal article, including references, etc. If this write-up ends up serving as the basis for a Fellowship application or a draft of a journal article or national facility observing proposal, so much the better!

To insure satisfactory completion of the work, students will be required to prepare a Statement of Work by the end of the second full week of the semester. This should be written by the student, but in close consultation with the instructor, and must be agreed upon by both parties. This Statement should include specific completion dates for specific tasks (meetings, progress points for these tasks, draft paper, final paper, presentation, etc.). It is also the responsibility of the student and faculty instructor to insure regular meetings occur, with a minimum frequency of every two weeks (every week, or even more often, is recommended). Any issues with difficulty in agreeing on a statement of work or faculty instructor availability for meetings should be brought to the Department Head.
ASTR 598 is a letter-graded class. Failure to complete either the written document or the oral presentation will result in a C grade (which is unsatisfactory at the graduate level). Otherwise the grade will be based on the completeness and the level of the presentations, and/or the level of the interactions between student and advisor during the semester.

The research topic focused upon need not be in the primary field of the student’s interest. The final decision of topic is the responsibility of the instructor.

Determination of end-of-semester course letter grade:
- A grade of “A” will be an indication that the student made very satisfactory progress on all facets identified in the ‘Statement of Work’, including an appropriately 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 satisfactory end-of-semester document will:
- be written using a journal style file appropriate for the subdiscipline (e.g. using aastex or Icarus LaTeX templates)
- contain all of the typical sections of a journal paper as warranted by the work conducted
- be a minimum length of the equivalent of 7-10 pages single-spaced (equivalent to XX pages in aastex format, YY pages in preprint2 format, etc.) including figures