Syllabus

PHYS 491(2,3)/401/601 - Research Project I(II,III)/Research
Instructor: Bryan Boggs
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- Students will work on physics research projects in groups of 1-2 (2 preferred) and keep a journal of their progress in a lab notebook.

- Each group will (after choosing a project) submit to the instructor (electronically via email) a set of project goals at the beginning of the term.

- Students are expected to attend weekly group meetings and send (by email) weekly project status updates.

- Each group will give a talk/presentation of their project's progress at the last group meeting of the term. (15 minutes, concise and time-efficient with good data graphs and schematic diagrams)

- Each group will deliver an electronic copy of their presentation to the instructor and add-to/update the lab's wiki site with their project materials.

- Each group will (at the term's end) **clean up their lab space** in preparation for the next students.

**Learning Outcomes:** Ability to perform semi-independent research. Knowledge and application of principles and concepts for project-specific subject areas. Ability to appropriately obtain, analyze, interpret and communicate experimental results. Knowledge and demonstration of the methods, procedures and techniques of experimental design, problem-solving, data taking, data analysis and presentation.

**Grading Policy:** In general, students are expected to go into the lab and use the available resources (facilities, equipment, instructor and TAs) to accomplish the goals of the project and demonstrate the learning outcomes. In particular, students are expected to work on their projects the required number of hours (this includes reading, machine/electronics shop work, group meetings and (most importantly) in-lab time) based on their registered credit level (number of registered credits times 3 each week).

Grades will be assigned based on actual results compared to the goal statements, demonstration of the learning outcomes, the presentations, wiki material, and lab cleanup as well as the number of hours worked on the projects.

*Notes: This is a semi-independent research course, not a standard lecture-type course. As such, grades between students cannot be compared on the same scale (students work different projects with different physics and research requirements). Each student/group is graded independently with the learning outcomes and the grading policy in mind. In addition, students who take the course multiple terms are expected to perform with increasing knowledge, capability and sophistication, act as 'lead student' and mentor any 'junior students' on their projects. This 'lead student' status and mentoring may be reflected positively in their grade. Working of projects during non-normal hours (nights and weekends), when the instructor and TAs are not present to help and assist, is highly discouraged. Note: No music in the lab. Keep food and drink away from experiments.*