OPTI 792: Directed Introductory Graduate Research
Effective Fall 2015

Course name: Directed Introductory Graduate Research
Course type: Graduate course
Semester offered: Spring, Fall
Course number: OPTI 792
Section number: a different section number is assigned to each faculty member
Units: 1-3
Distance Course: No

Course Description:

This course is designed to aid PhD students in their search and selection of a research area and research advisor by incorporating research activities into the first year of the Optical Sciences PhD program. In this course, students select a faculty advisor who will supervise a research project and assign a grade at the end of the semester based on student performance in the course. For their research project, students may select from various options, including (but not limited to): assisting with an ongoing research project, creating and working on their own research project under their supervisor's guidance or the guidance of another mentor such as a more senior graduate student, choosing rotations through multiple research groups (in which case multiple single-credit research courses with different supervisors might be taken in a single semester), or theoretical or computational investigation into fundamental aspects of science and engineering that underlie specific research areas or specific projects.

In all cases, the student and supervisor must agree upon the research-related tasks to be accomplished during the semester, the expected time commitment, and the basis for determining the letter grade. The student and advisor must describe these aspects of the course on a Course Description and Grading form that will be turned in to the Optical Sciences Academic Programs office. A course grade may, for example, be based upon oral presentations (such as in group meetings or in a seminar-format course), construction of a laboratory project or device, time and effort expended towards the completion of an extended project, numerical simulations in support of an experiment, or a written document describing a laboratory project or aspects fundamental to a research area. The number of course credits that the student registers for must be commensurate with the expected time commitment to be spent on the project during the semester. University of Arizona policy requires a minimum of 45 hours of student work to be expended during the semester per credit hour. This is roughly equivalent to an average of at least 3 hours of work per week per credit hour.

This course is not a replacement for general independent study projects, which are not graded on a letter-grade scale, nor is this course a replacement for traditional laboratory courses or dissertation credits that are allowed after the first year of the PhD program. Unless special approval is otherwise given, this course is only available to students in their first year of the Optical Sciences PhD program. However, the research supervisor may be a faculty member from a department other than Optical Sciences.
Students may register for up to 3 credits for each of the fall and spring semesters of the first year of their PhD program. For a research rotation option, students would register for a single credit with two or three different supervisors, to be undertaken concurrently throughout the semester or concurrently at different times during the semester. Students who are not enrolled in the PhD program on a full-time basis may submit a request to take this course after their first year of enrollment in the PhD program. Under no conditions will a student be able to receive more than 6 credits in total for this course.

**Pre-requisites:**

None

**Number of Units/ component:**

1-3 units of Research

**Locations and Times:**

TBA

**Instructor Information:**

R. John Koshel  
jkoshel@optics.arizona.edu  
(520) 621-6357

** Expected Learning Outcomes:**

With this course, students will

(1) discover early in their graduate careers which research area, and which research advisors, match well with their individual research interests;
(2) learn how to work effectively at scientific research while simultaneously balancing the academic demands required of PhD students, so that they can incorporate these skills into their entire graduate tenure;
(3) learn skills that are essential for conducting scientific and engineering research at the graduate level, as specifically relevant for their chosen area of research.

**Required Texts:**

None

**Topics and/or general calendar:**

Faculty and student will develop a task list (see attachment “OPTI 792 Task List and Grading Form”
Number of Exams and Papers:

None

Course Policies:

Grading Policy

The entire course grade will be based upon the level of completion of the individual directed research project, determined as follows: When the student and advisor complete the Course Registration form and the Course Description and Grading form, they will explicitly identify and list between 5 and 8 specific research-related tasks, which may include written or oral presentations that are incorporated into the project. For each task, an expected number of hours needed for task completion will be listed, along with a task weight of 10 to 20 percentage points so that the total weight of all tasks is 100 points, and a target date for the completion of each task. During the semester, as each task is completed and/or by the target deadline, the supervisor will evaluate the student’s performance on the task, discuss this evaluation with the student, and describe the evaluation and points awarded on the grading form. The student will initialize the task to indicate having had a discussion of the task evaluation and grade with the supervisor. At the end of the semester, the supervisor will provide the student and the Academic Programs Office the completed grading form containing the assessments of the student’s level of accomplishment for each of the tasks. If research task requirements are modified during the semester, this should be noted on the grading and assessment form. The total level of accomplishment (up to 100 percentage points) will be determined from the degree of completion of all tasks, weighted appropriately.

The grade will be determined according to the cumulative percentage earned such that 90-100% = A, 80-89% = B, 70-79% = C, 60-69% = D, below 60% = E.

Academic Integrity (http://web.arizona.edu/~studpubs/policies/cacaint.htm)

According to the Arizona Code of Academic Integrity, “Integrity is expected of every student in all academic work. The guiding principle of academic integrity is that a student’s submitted work must be the student’s own.” Unless otherwise noted by the instructor, work for all assignments in this course must be conducted independently by each student. Co-authored work of any kind is unacceptable. Misappropriation of exams before or after they are given will be considered academics misconduct. Misconduct of any kind will be prosecuted and may result in any or all of the following:

- Reduction of grade
- Failing grade
- Referral to the Dean of Students for consideration of additional penalty, i.e. notation on a student’s transcript re. academic integrity violation, etc.
Attendance Policy

It is important to attend all classes, as what is discussed in class is pertinent to adequate performance on assignments and exams. If you must be absent, it is your responsibility to obtain and review the information you missed. This is especially important in this course where a substantial amount of course material will emerge through class discussion.

"All holidays or special events observed by organized religions will be honored for those students who show affiliation with that particular religion. Absences pre-approved by the UA Dean of Students (or Dean's designee) will be honored."

Classroom Behavior

The Arizona Board of Regents’ Student Code of Conduct, ABOR Policy 5-308, prohibits threats of physical harm to any member of the University community, including to one’s self.

See: http://policy.web.arizona.edu/threatening-behavior-students.

Students with Disabilities

If a student is registered with the Disability Resource Center, he/she must submit appropriate documentation to the instructor if he/she is requesting reasonable accommodations. (http://drc.arizona.edu/instructor/syllabus-statement.shtml).

The information contained in this syllabus, other than the grade and absence policies, may be subject to change with reasonable advance notice, as deemed appropriate by the instructor.