GEN S 490 UNDERGRADUATE RESEARCH (1 credit)

SYLLABUS – Fall 2016

Catalog data: Research and creative activities to include preparation for qualitative and quantitative empirical research projects. Identify problem, formulate research question, design small-scale investigation, collect and analyze data, present findings, and may include creative and performing arts projects. May be repeated with new content. Maximum credit six units.

Lecture times: Friday, 2:00 – 2:50 pm. (attendance is mandatory)

Lecture venue: GMCS 307

Instructors: Dr. Satchi Venkataraman, Associate Professor of Aerospace Engineering, Room 309 Engineering Building, satchi@mail.sdsu.edu

Office Hours: Tuesday and Wednesdays 9:00-10:00 AM, Wednesday 3:30-5:30 PM.

Textbook: None. Handouts and online sources will be suggested and/or provided.

Objectives: The course objective is to prepare undergraduate students to explore research opportunities that can lead to successfully entering graduate studies and research careers in the future. The goal is to supplement their research experience in labs, with development professional activities that are important for careers in research. In addition to lectures, discussions, this course will also have several guest speakers (faculty, doctoral students and researchers from national labs).

Course Topics: This is a two semester course sequence. A subset of the following topics is chosen for each semester)

i. Research – Purpose and Goals
ii. Types of Research
iii. Formulating a research question
iv. Preparing a research proposal
v. Literature Review – Library resources, written presentation, and formats for citing references *
vi. Ethical and Responsible conduct of research
vii. Writing a scientific communication (conference and journal papers)
viii. Presenting scientific results (PowerPoint and Poster presentations)
ix. Graduate school, selection, application, and acceptance process and planning
x. Funding graduate studies and research – applying to fellowships and scholarships

Course Outcomes: Student completing this course will
1. Demonstrate an understanding of research process
2. Prepare a research proposal
3. Prepare a short literature survey on a topic (using library resources)
4. Find researchers at SDSU and other universities currently active in this area of research – identifying potential graduate schools and labs to join
5. Prepare and present a talk that discusses the research topic and literature review
6. Prepare and submit a professional portfolio template to support your graduate school application
7. Prepare and submit a career plan (2-3 years and 3-5 years) – or complete an IDP portfolio at the AAAS.org site

Grading Rubrics:
1. Class participation 10%
2. Research Project presentations (20%)
3. Literature review (written submission) (10%)
4. Career and/or Graduate School portfolios (Curriculum vita, samples of technical work) (10%)
5. Poster presentation (10%)
6. Completion of professional development activities (career services & assigned activities) (10%)
7. Responsible conduct of research (completion of online workshop and written essay assignment) 10%
8. Written summary & presentation of research topic and literature review(at end of semester) 20%