

**MIAMI UNIVERSITY  
SCHOOL OF APPLIED SCIENCE  
DEPARTMENT OF ENGINEERING TECHNOLOGY**

<b>ENT 497-498</b>	<b>SENIOR DESIGN</b>	<b>2,2</b>
Course Number	Title	Credit Hours

**DESCRIPTION**

Student teams conduct major open-ended research and design projects. Elements of the design process including establishment of objectives, synthesis, analysis, and evaluation are integral parts of the capstone. Real-world constraints such as economical and societal factors, marketability, ergonomics, safety, aesthetics, and ethics are also integral parts of the capstone. 497: feasibility studies performed; 498: implementation, testing, and production of design.

Periods per week: No structured weekly lectures. Instead, there should be continuous interaction with faculty and outside professionals.

Prerequisite: ENT 316 Project Management and senior standing in Engineering Technology or permission of the instructor.

**GENERAL OBJECTIVES**

After completing this course, the student will have:

- The ability to apply concepts of automatic control, including measurement and feedback regulation, to solve technical problems associated with the operation of continuous and discrete systems. (TAC/ABET outcome F).
- The ability to assemble, interpret, and analyze laboratory experiments. (TAC/ABET Outcome C).
- The ability to apply creative technical skills for the design and implementation of modern instrumentation and control applications. (TAC/ABET Outcome A and D).
- The ability to work effectively on teams. (TAC/ABET Outcome E)
- The ability to communicate effectively through writing. (TAC/ABET Outcome G)
- The ability to communicate effectively through speech. (TAC/ABET Outcome G)
- The ability to demonstrate continuous improvement. (TAC/ABET Outcome C and K)
- The ability to pursue lifelong learning. (TAC/ABET Outcome H)
- Knowledge of social, ethical, and safety issues and responsibilities related to engineering projects. (TAC/ABET Outcomes I,J)
- The ability to deal effectively with diverse cultures. (TAC/ABET Outcome J)

The fundamental elements of the design process are considered in this course. This includes the establishment of objectives and criteria, synthesis, analysis, and evaluation. In all designs, students will consider realistic constraints, such as economic factors, marketability, human factors, safety, reliability, aesthetics, ethics, continuous improvements, and social impacts.

The projects offered in this course are chosen from real-world problems. This is intended to enable students to recognize current needs and trends in industry and society.

Students will work in teams for each project. Each team will consist of two or three members. Each student is expected to contribute. Both a reflective essay and a weekly journal will be used to judge the student's effectiveness on the team. **NOTE...** Each group **MUST** give a copy of their weekly journal report to their instructor each week. Failure to do so will mean points taken away.

Oral communication skills developed throughout the B.S. degree will be evaluated by a team presentation at the end of ENT 497 and 498. The judges for the team presentation in ENT 498 will consist of representatives from industry and other universities.

Written communication will be evaluated by mid term and final reports in ENT 497 and ENT 498.

The first part of the project (ENT 497) deals with feasibility studies and proposals. The second part (ENT 498) is the actual implementation, testing, and production or simulation of the prototype. Because design is an iterative process the students may find it necessary to adjust their proposal from that in ENT 497.

At the end of the second part (ENT 498), the students will be required to give a demonstration of their developed design. This can be done by using computer simulation or by physical testing. The format for the final report will be similar to that of ENT 497 but will contain more information about the final design: analysis, mathematical model, cost, and operational procedures.

**GUIDELINES**

The topical outline presented below is intended to serve as a guideline and may be modified to account for student project needs. However, due dates such as midterm presentations, final presentations, minutes, and reports are required to be met.

**GRADING:**

<b>ENT 497:</b>	<b>Percent of Final Grade</b>
Proposal :	25%
Reflective Essay:	15%
Presentation:	25%
Journal:	10%
Final Report	25%

<b>ENT 498:</b>	
Mid Term Report:	25%
Reflective Essay:	15%
Presentation (External Judges)	25%
Journal:	10%
Final Report	25%

D Hergert 8/06