



**COURSE OUTLINE : ENGR 49**

**D Credit – Degree Applicable**

**COURSE ID 008326**

**Cyclical Review: October 2020**

**COURSE DISCIPLINE :** ENGR

**COURSE NUMBER :** 49

**COURSE TITLE (FULL) :** Engineering Independent Study

**COURSE TITLE (SHORT) :** Engineering Independent Study

### **CATALOG DESCRIPTION**

ENGR 49 provides well-qualified students with an opportunity to explore a subject in greater depth than usual, to familiarize students with basic research techniques, to interest students in possible career areas, and to take advantage of special academic interests. Emphasis shall be on individual research projects, library research and preparation of research papers. There is no prescribed course content. Students develop a research project, have it approved by the sponsoring instructor and appropriate division chairperson, then submit the finished project, which may be library research, or perhaps a supervised experimental program related to a specific course of instruction. Registration is open to any student at GCC who is currently registered for 6 or more units and who is admitted to Independent Study by the instructor. A student is limited to one Independent Study per semester and no more than 12 units credit toward the AA Degree or Certificate, and no more than 6 units per division. The units received may be acceptable for college transfer subject to the approval of the individual college.

### **CATALOG NOTES**

Note: Independent Study are arranged by faculty in the Technology and Aviation Division. This course may be taken 3 times; a maximum of 9 units may be earned.

Total Lecture Units: 0.00

Total Laboratory Units: 1.00-3.00

**Total Course Units: 1.00-3.00**

Total Lecture Hours: 0.00

Total Laboratory Hours: 54.00-162.00

Total Laboratory Hours To Be Arranged: 0.00

**Total Contact Hours: 54.00-162.00**

**Total Out-of-Class Hours: 0.00**

Prerequisite: None.



**ENTRY STANDARDS**

	Subject	Number	Title	Description	Include
1				interest in learning about engineering.	Yes

**EXIT STANDARDS**

- 1 demonstrate independent research and design activities;

**STUDENT LEARNING OUTCOMES**

- 1 apply concepts and knowledge of discipline-specific materials to research projects, essays, and other assignments

**COURSE CONTENT WITH INSTRUCTIONAL HOURS**

	Description	Lecture	Lab	Total Hours
1	Independent research and study in various fields of engineering	0	162	162
				<b>162</b>

**OUT OF CLASS ASSIGNMENTS**

- 1 Research paper or poster e.g. power point presentation of work done through Student Independent Research Internship (SIRI) at Jet Propulsion Laboratory (JPL)

**METHODS OF EVALUATION**

- 1 faculty evaluation of research project.

**METHODS OF INSTRUCTION**

- Lecture
- Laboratory
- Studio
- Discussion
- Multimedia
- Tutorial
- Independent Study
- Collaboratory Learning
- Demonstration



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Field Activities (Trips)

Guest Speakers

Presentations

**TEXTBOOKS**

<b>Title</b>	<b>Type</b>	<b>Publisher</b>	<b>Edition</b>	<b>Medium</b>	<b>Author</b>	<b>ISBN</b>	<b>Date</b>
No textbook required. Reading may be assigned by faculty advisor.							