

ESG 312 ENGINEERING LABORATORY (REQUIRED)

Credit: 4

COURSE CATALOG DESCRIPTION

Laboratory exercises and lectures covering the theory, practice, and design of engineering experimentation. The course has three components: error analysis and data massage; electrical circuits and experiment control; and mechanical and optical measurement. Laboratory fee required.

PREREQUISITES: PHY 126 and 127 or PHY 132/134; U2standing

COREQUISITE: ESG 300

TEXT(S) OR OTHER REQUIRED MATERIAL: On-line experimental procedures (<http://www.matscieng.sunysb.edu/esg312> username/password required)

COURSE LEARNING OUTCOMES	SOS	ASSESSMENT TOOLS
How to follow standard procedures to obtain repeatable and reproducible results;	b	Written lab reports
How to acquire, process, and analyze data to express those results;	a,b,d e,f,i,j,k	Written lab reports
Be able to follow, create, and evaluate standard procedures for future experiments and processes	b	Written lab reports

TOPICS COVERED:

Laboratory Safety and Ethics;
Literature and Standards Searching;
Statistical Analysis;
Interference/ Diffraction;
Birefringence/Photoelasticity;
Truss design, construction, and testing;
Optical Light Microscopy;
ASTM E113, grain sizing;
Electron Microscopy;
Oscilloscope;
Thermometry, contact, and noncontact;
Fluids and Flow;

CLASS/ LABORATORY SCHEDULE

ESG	312	Engineering Laboratory	LEC	1	MW	10:40 AM	11:35 AM
			REC	R01	RETH	8:20 AM	9:15 AM
			LAB	L01	TU	2:00 PM	5:00 PM
			REC	R02	RETH	8:20 AM	9:15 AM
			LAB	L02	TU	5:20 PM	8:20 PM
			REC	R03	M	8:20 AM	9:15 AM
			LAB	L03	M	2:20 PM	5:10 PM

CURRICULUM

This course contributes 3 credit hours toward meeting the required 48 hours of engineering topics.

STUDENT Outcomes (Scale 1-3):

A	B	C	D	E	F	G	H	I	J	K
1	3		1	1	1			1	1	1

3 – Strongly supported

2 – Supported

1-Minimally supported

LEAD COORDINATOR(S) WHO PREPARED THIS DESCRIPTION AND DATE OF PREPARATION:

Jim Quinn 05/21/10