ESG 339 THIN FILM PROCESSING OF ADVANCED MATERIALS (ELECTIVE)

Credit: 4

COURSE CATALOGUE DESCRIPTION:
Fundamental aspects of thin film materials design, fabrication, and characterization. Overviews of semiconductor fabrication, surface analysis, and vacuum system design. This course includes a design content of one credit, achieved through a design exercise related to thin film fabrication.

PRE- OR COREQUISITE(S): ESG 332 Materials Science I: Structure And Properties Of Materials

TEXT(S) OR OTHER REQUIRED MATERIAL: Richard C. Jaeger, Introduction To Microelectronic Fabrication: Volume 5 Of Modular Series On Solid State Devices, 2nd Ed., Prentice Hall Inc., 2001, Isbn: 0201444941

COURSE LEARNING OUTCOMES	SOS	ASSESSMENT TOOLS
Knowledge Of The Science And Engineering Of Vacuum Technology For Thin Films And Surface Analysis	a,b,c,d,e,f,g,h,i,j,k	Written Examinations Design Project
Design Of Processing Route For Thin Film Structures	a,b,c,d,e,f,g,h,i,j,k	Written Examinations Design Project
Knowledge Of Semiconductor Processing	a,b,c,d,e,f,g,h,i,j,k	Written Examinations Design Project

TOPICS COVERED:
Week 1: Effusion
Week 2 & 3: Evaporation
Week 4: Sputtering
Week 5: Ion Assisted Deposition
Week 6: Solid State Reactions
Week 7 & 8: Interdiffusion
Week 9: Surface Cleaning Technology
Week 10 - 12: Surface Analysis (Xps, Sam, Sem, Edax)
Week 13 & 14:Vacuum Systems: Their Design And Operation

CLASS/ LABORATORY SCHEDULE:

ESG	339	Thin Film Procssng Adv Materls	LEC	1	TUTH	9:50 AM	11:10 AM
			REC	R01	RECF	9:35 AM	10:30 AM
			REC	R02	RECF	10:40 AM	11:35 AM

CURRICULUM

This course contributes 4 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
3	3	3	3	2	2	2	2	2	1	3

3 – Strongly Supported **2 – Supported** **1-Minimally Supported**

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

Clive Clayton 05/17/10