FLORIDA INTERNATIONAL UNIVERSITY
UNIVERSITY CURRICULUM COMMITTEE
Proposal for a New Course

DO NOT TYPE IN THIS BOX
Bulletin # : _____
Academic Year : _____

1a. **SCHOOL/COLLEGE** Engineering and Computing **DIV./DEPT. IN WHICH TAUGHT** Electrical and Computer Engineering

b. **DIV./DEPT. NO.** EGEL **DEPT. ACCOUNT NO.** 212400101 **(9 digits)**

2.

Alpha Prefix	1st Digit	last 3 Digits	"C"-lec-lab "L"-Lab	Cr. Hrs.	CIP Code (Leave this blank)
EEE	4	XXX	C	4	

3a. **Course Title** Introduction to Nanofabrication

b. **Abbreviated course Title (for computer class schedules, transcripts)** INTRO TO NANOFAB
LIMITED TO 25 Characters (including spaces)

4. **Statewide Course Numbering Subject Matter Area** EEE

5. **Catalog Description/Major Topics (not to exceed 200** characters including spaces)
This course gill give the students an introduction to micro/nanofabrication tools and techniques. It includes lab sessions where the students design, fabricate and test selected micro-scale devices.

6. **ATTACH DETAILED SYLLABUS COURSE OUTLINE AND COURSE JUSTIFICATION ON SEPARATE PAGE(S).**

7. **Prerequisite(s):** EEE 3396 Introduction to solid state devices or with instructor's permission.

8. **Corequisite(s)** _____

9. **Objective(s) of Course:** To give the students an understanding and hands-on trainig of the standard micro and nanofabrication techniques and the issues surrounding them.

10. **Does this course duplicate/overlap other courses at FIU?** ___ **No** ___ **Yes**
If yes, please explain: _____

11. **What other closely related department(s) have been consulted about this course?** _____

PROPOSAL REQUESTED BY:

Faculty Contact Dr. Nezih Pala _____ / _____ / 20_____
(Type name) **(Signature)**
npala@fiu.edu (305)348-3016
(Email address) **(Phone number)**

Chairperson (Dept./Div.) Shekhar Bhansali _____ / _____ / 20_____
(Type name) **(Signature)**

Chairperson (Curr. Comm.) Nagarajan Prabhakharan _____ / _____ / 20_____
(Type name) **(Signature)**

College/School Dean Amir Mirmiran _____ / _____ / 20_____
(Type name) **(Signature)**

APPROVED BY:

University Curriculum Committee _____ / _____ / 20_____

Faculty Senate Chairperson _____ / _____ / 20_____

Academic Affairs V.P. _____ / _____ / 20_____

Submit one original copy of this form. Attach one hard copy and one electronic copy of the course syllabus containing: Objectives, Learning Outcomes, Major Topics and Textbooks.

FLORIDA INTERNATIONAL UNIVERSITY
UNIVERSITY CURRICULUM COMMITTEE
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1a. SCHOOL/COLLEGE Engineering and Computing DIV./DEPT. IN WHICH TAUGHT Electrical & Computer Engineering

b. DIV./DEPT. NO. _____ DEPT. ACCOUNT NO. 212400101 (9 digits)

2. EEE (Alpha Prefix) | 4 (1st Digit) | _____ (last 3 Digits) | C ("C"-lec-lab "L"-Lab) | 4 (Cr. Hrs.) | _____ CIP Code (Leave this blank)

3a. Course Title Introduction to Nanofabrication

b. Abbreviated course Title (for computer class schedules, transcripts) INTRO TO NANOFAB
LIMITED TO 25 Characters (including spaces)

4. Statewide Course Numbering Subject Matter Area EEE

5. Catalog Description/Major Topics (not to exceed 200 characters including spaces)
This course will give the students an introduction to micro/nanofabrication tools and techniques. It includes lab sessions where the students design, fabricate and test selected micro-scale devices.

6. ATTACH DETAILED SYLLABUS COURSE OUTLINE AND COURSE JUSTIFICATION ON SEPARATE PAGE(S).

7. Prerequisite(s): EEE 3396 Introduction to solid state devices or with instructor's permission

8. Corequisite(s) _____

9. Objective(s) of Course: To give the students an understanding and hands-on training of the standard micro and nanofabrication techniques and the issues surrounding them.

10. Does this course duplicate/overlap other courses at FIU? X No ___ Yes
If yes, please explain: _____

11. What other closely related department(s) have been consulted about this course? MME

PROPOSAL REQUESTED BY:

Faculty Contact Dr. Nezih Pala (Type name) _____ (Signature) 3 / 26 / 20 12
npala@fiu.edu (Email address) 305 3483016 (Phone number)

Chairperson (Dept./Div.) Dr. Shekhar Bhansali (Type name) _____ (Signature) 3 / 26 / 20 ____

Chairperson (Curr. Comm.) Dr. Nagarajan Prabakar (Type name) _____ (Signature) ____ / ____ / 20 ____

College/School Dean Dr. Amir Mirmiran (Type name) _____ (Signature) 3 / 28 / 2012

APPROVED BY:

University Curriculum Committee _____ ____ / ____ / 20 ____

Faculty Senate Chairperson _____ ____ / ____ / 20 ____

Academic Affairs V.P. _____ ____ / ____ / 20 ____

Submit one original copy of this form. Attach one hard copy and one electronic copy of the course syllabus containing: Objectives, Learning Outcomes, Major Topics and Textbooks.

Department of Electrical and Computer Engineering

EEE 4XXX – Introduction to Nanofabrication

Catalog Description

This course will give the students an introduction to micro/nanofabrication tools and techniques. It includes lab sessions where the students design, fabricate and test selected micro-scale devices.

Catalog Objectives

- To give the students an understanding of the standard micro and nanofabrication techniques and the issues surrounding them.
- To give the students an overview of the major classes, components and applications of nanosystems and the fundamental principles behind the operation of these systems.
- To apply the knowledge of nanofabrication techniques for designing a microsystem.

Prerequisites

EEE 3396 Introduction to solid state devices or with instructor's permission.

Textbooks

- Introduction to Microfabrication, 2010, Sami Franssila

Topics covered

- Introduction to nanofabrication tools, environment and methods
- Thin film materials and processes
- Layout design and pattern generation
- Optical and advanced lithography techniques
- Wafer cleaning and surface preparation
- Etching
- Oxidation
- Diffusion
- Ion implantation
- CMP: Chemical mechanical polishing
- Micrometrology and characterization

Class schedule
Twice a week 75 minutes class and once a week 3 hour lab

Contribution of course to meeting the professional component
Engineering science – 70% (math/science required for creative applications)
Engineering design – 30% (decision making process of devising a system, component or process to meet a desired need).

Relationship of course to program outcomes:
In the course EEE 4XXX – Introduction to Nanofabrication the student will have to show

(a) an ability to apply knowledge of mathematics, science, and engineering
(b) Ability to design and conduct experiments, as well as to analyze and interpret data
(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
(e) an ability to identify, formulate, and solve engineering problems
(f) an understanding of professional and ethical responsibility
(g) Ability to communicate effectively
(i) Recognition of the need for, and an ability to engage in life-long learning
(j) a knowledge of contemporary issues
(k) an ability to use the techniques, skills and modern engineering tools necessary for engineering practice

Person who prepared this description and date of preparation:
Dr. Nezih Pala

FLORIDA INTERNATIONAL UNIVERSITY
UNIVERSITY CURRICULUM COMMITTEE
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b. **DIV./DEPT. NO.** EGEL **DEPT. ACCOUNT NO.** 212400101 **(9 digits)**

2.

Alpha Prefix	1st Digit	last 3 Digits	"C"-lec-lab "L"-Lab	Cr. Hrs.	CIP Code (Leave this blank)
EEE	4	XXX		3	

3a. **Course Title** Ethical Hacking and Countermeasures

b. **Abbreviated course Title (for computer class schedules, transcripts)** Ethical Hacking
LIMITED TO 25 Characters (including spaces)

4. **Statewide Course Numbering Subject Matter Area** EEE

5. **Catalog Description/Major Topics (not to exceed 200** characters including spaces)
This course will give individuals an exposure to latest hacking tools and techniques to understand the anatomy of computer attacks and teach them the countermeasures to protect their valuable data.

6. **ATTACH DETAILED SYLLABUS COURSE OUTLINE AND COURSE JUSTIFICATION ON SEPARATE PAGE(S).**

7. **Prerequisite(s):** _____

8. **Corequisite(s)** _____

9. **Objective(s) of Course:** To give the individualsa hands-on exposure to the latest tools and techniques that the hackers utilize to attack computing devices in order to steal valuable and private information. By performing ethical hacking on isoleted test systems, individuals learn countermeasures in terms of how to protect these computing devices and the valuable information they contain.

10. **Does this course duplicate/overlap other courses at FIU?** _x_ **No** ___ **Yes**
If yes, please explain: _____

11. **What other closely related department(s) have been consulted about this course?** _____

PROPOSAL REQUESTED BY:

Faculty Contact Faisal Kaleem _____ / _____ / 20_____
(Type name) **(Signature)**
kaleemf@fiu.edu (305)348-7253
(Email address) **(Phone number)**

Chairperson (Dept./Div.) Shekhar Bhansali _____ / _____ / 20_____
(Type name) **(Signature)**

Chairperson (Curr. Comm.) Nagarajan Prabhakharan _____ / _____ / 20_____
(Type name) **(Signature)**

College/School Dean Amir Mirmiran _____ / _____ / 20_____
(Type name) **(Signature)**

APPROVED BY:

University Curriculum Committee _____ / _____ / 20_____

Faculty Senate Chairperson _____ / _____ / 20_____

Academic Affairs V.P. _____ / _____ / 20_____

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b. **DIV./DEPT. NO.** EGEL **DEPT. ACCOUNT NO.** 212400101 **(9 digits)**

2. EEE (Alpha Prefix) 4 (1st Digit) XXX (last 3 Digits) _____ ("C"-lec-lab "L"-Lab) 3 (Cr. Hrs.) _____ **CIP Code (Leave this blank)**

3a. **Course Title** Ethical Hacking and Countermeasures

b. **Abbreviated course Title (for computer class schedules, transcripts)** Ethical Hacking
LIMITED TO 25 Characters (including spaces)

4. **Statewide Course Numbering Subject Matter Area** EEE

5. **Catalog Description/Major Topics (not to exceed 200** characters including spaces)
This course will give individuals an exposure to latest hacking tools and techniques to understand the anatomy of computer attacks and teach them the countermeasures to protect their valuable data.

6. **ATTACH DETAILED SYLLABUS COURSE OUTLINE AND COURSE JUSTIFICATION ON SEPARATE PAGE(S).**

7. **Prerequisite(s):** _____

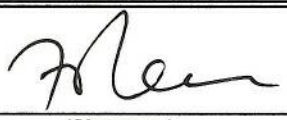
8. **Corequisite(s)** _____

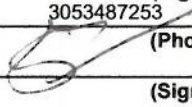
9. **Objective(s) of Course:** To give individuals a hands-on exposure to the latest tools and techniques that the hackers utilize to attack computing devices in order to steal valuable and private information. By performing ethical hacking on isolated test systems, individuals learn countermeasures in terms of how to protect these computing devices and the valuable information they contain.

10. **Does this course duplicate/overlap other courses at FIU?** x **No** ___ **Yes**
If yes, please explain: _____

11. **What other closely related department(s) have been consulted about this course?** _____

PROPOSAL REQUESTED BY:

Faculty Contact Faisal Kaleem (Type name)  (Signature) 03 / 29 / 20 12
kaleemf@fiu.edu (Email address) 3053487253 (Phone number)

Chairperson (Dept./Div.) Dr. Shekhar Bhansali (Type name)  (Signature) ___ / ___ / 20___

Chairperson (Curr. Comm.) Dr. Nagarajan Prabakar (Type name) (Signature) ___ / ___ / 20___

College/School Dean Dr. Amir Mirmiran (Type name)  for Mirmiran (Signature) 04 / 02 / 2012

APPROVED BY:

University Curriculum Committee _____ ___ / ___ / 20___

Faculty Senate Chairperson _____ ___ / ___ / 20___

Academic Affairs V.P. _____ ___ / ___ / 20___

Submit one original copy of this form. Attach one hard copy and one electronic copy of the course syllabus containing: Objectives, Learning Outcomes, Major Topics and Textbooks.

Department of Electrical and Computer Engineering

EEE 4XXX – Ethical Hacking and Countermeasures

Catalog Description

This course will give individuals an exposure to latest hacking tools and techniques to understand the anatomy of computer attacks and teach them the countermeasure to protect their valuable data.

Catalog Objectives

- To give the students an understanding of the various types of attacks on different computing devices.
- To give the students a hands-on exposure to the latest tools and techniques that the hackers utilize to attack computing devices in order to steal valuable and private information.
- By performing ethical hacking on isolated test systems, students learn countermeasures in terms of how to protect the valuable information stored on variety of computing devices.

Prerequisites

Knowledge of windows operating system.

Textbooks

Hands-On Ethical Hacking and Network Defense by Michael T. Simpson, Kent Backman and James Corley (2012)

Topics covered

- Ethical Issues
- Introduction to Ethical Hacking
- Security issues in various computing devices (computers, iPad, and Cellphones, etc.)
- Security issues in Web-browsing
- Security issues in Wired and Wireless networks.
- Countermeasures and how to protect valuable information\

Class schedule

Twice a week 75 minutes class with hands-on lab as part of the lectures

Contribution of course to meeting the professional component
Engineering science – 90% (math/science required for creative applications)
Engineering design – 10% (decision making process of devising a system, component or process to meet a desired need).

Relationship of course to program outcomes:
In the course EEE 4XXX – Ethical Hacking and Countermeasures, the student will have to show

1. An ability to apply knowledge of mathematics, science, and engineering
2. An ability to design and conduct experiments, as well as to analyze and interpret data
3. An ability to identify, formulate, and solve engineering problems
4. An understanding of professional and ethical responsibility
5. Recognition of the need for, and an ability to engage in life-long learning
6. Knowledge of contemporary issues
7. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice

Person who prepared this description and date of preparation:
Dr. Faisal Kaleem

FLORIDA INTERNATIONAL UNIVERSITY
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b. **DIV./DEPT. NO.** EGEL **DEPT. ACCOUNT NO.** 212400101 **(9 digits)**

2.

Alpha Prefix	1st Digit	last 3 Digits	"C"-lec-lab "L"-Lab	Cr. Hrs.	CIP Code (Leave this blank)
EEL	4	XXX		3	

3a. **Course Title** Smart Grid Intelligent Electronic Devices, Sensors & Design

b. **Abbreviated course Title (for computer class schedules, transcripts)**
LIMITED TO 25 Characters (including spaces)

4. **Statewide Course Numbering Subject Matter Area** _____

5. **Catalog Description/Major Topics (not to exceed 200** characters including spaces)
Design on smart devices, with emphasis on the use of integrated circuits, both analog and digital. Topics include smart sensors for smart grid, intelligent electronic devices for smart grid, power sup

6. **ATTACH DETAILED SYLLABUS COURSE OUTLINE AND COURSE JUSTIFICATION ON SEPARATE PAGE(S).**

7. **Prerequisite(s):** EEL 3110 Circuit Analysis & EEL 3110L Circuits Lab

8. **Corequisite(s)** _____

9. **Objective(s) of Course:** To introduce students to modern days "Smart Sensors" and "Inteligent Electronic Devices" for Smart Grid. To introduce students to the principles and concepts employed in design of industrial electronic instruments & sensors. To teach the students "how to learn" to keep abreast of new developments in industry standards and practices through current literature.

10. **Does this course duplicate/overlap other courses at FIU?** ___ **No** ___ **Yes**
If yes, please explain: _____

11. **What other closely related department(s) have been consulted about this course?** _____

PROPOSAL REQUESTED BY:

Faculty Contact Herman Watson _____ / _____ / 20_____
(Type name) **(Signature)**
herman.watson@fiu.edu (305)348-3018
(Email address) **(Phone number)**

Chairperson (Dept./Div.) Shekhar Bhansali _____ / _____ / 20_____
(Type name) **(Signature)**

Chairperson (Curr. Comm.) Nagarajan Prabhakharan _____ / _____ / 20_____
(Type name) **(Signature)**

College/School Dean Amir Mirmiran _____ / _____ / 20_____
(Type name) **(Signature)**

APPROVED BY:

University Curriculum Committee _____ / _____ / 20_____

Faculty Senate Chairperson _____ / _____ / 20_____

Academic Affairs V.P. _____ / _____ / 20_____

Submit one original copy of this form. Attach one hard copy and one electronic copy of the course syllabus containing: Objectives, Learning Outcomes, Major Topics and Textbooks.

Electrical Engineering

Course: ####: Smart Grid Intelligent Electronic Devices, Sensors & Design
Fall 2012

Instructor: Dr. Arif Islam;
Office:
Office Hours:

TA : TBA

Class Timing: TBA

Office Hours: TBA

Pre-requisite: Course on Circuits

Target Audience: Undergraduate & Graduate Students

……

A. Objective

- To introduce students to modern days 'Smart Sensors' and 'Intelligent Electronic Devices' for Smart Grid
- To introduce students to the principles and concepts employed in design of industrial electronic instruments & sensors
- To teach the students "how to learn" to keep abreast of new developments in industry standards and practices through current literature
- To develop skills in students so that they are better equipped in the design of electronic circuits systems through hands-on laboratory and bread boarding experiences

B. Required student activities/Delivery:

- Twenty four class lecture sessions and five laboratory assignments
- One library tutorial with 'hands-on' training for introduction to manual and computer based literature search techniques
- A team of one graduate and two undergraduate students for design project of a sensor system

C. Basis of grading:

- Homework and laboratory assignments……..20%
- Examination I…… 15%
- Examination II…….. 15%
- Design Project & Presentation…….. 50%

D. Summary Description

Design of smart devices, with emphasis on the use of integrated circuits, both analog and digital. Topics include smart sensors for smart grid, intelligent electronic devices for smart grid, power supplies, sensors for smart buildings, smart grid networked sensor standards, signal conditioning and filters, micro-controllers; measurement of temperature, displacement, light and other physical quantities. The design project is demonstrated and report is written.

Text Books:
Class Notes
TBA

	LECTURE TOPICS	DESCRIPTION
1	Design Fundamentals	Course Orientation, Product Design Process, Instrumentation & Sensor Properties, Smart Grid & sensors
2	Smart Grid & Other Industry	Smart Grid, Industry Changes Affecting Measurement and Feedback Techniques
3	Smart/Modern Instruments	Intelligent Electronic Devices, Intelligent Sensors, Design and Use
4	Measurement Fundamentals	Types of Measurements, Product Design Specification Preparation
5	Power Consumption & Correction	Power optimization, heat dissipation, power correction
6	Digital Signal Processors, Signal Communications	Meter Communication, ROM, Wireless Communications
7	**Examination 1**	**TBA**
8	Building Block: Input Type 1	Electro-Mechanical Transducers, Isolated & Non-Isolated Design Techniques
9	Building Block: Input Type 2	A/D Conversion, Sample-Hold Circuits, Signal Multiplexing Techniques
10	Output Interface Design 1	D/A Conversion, LED/LCD Displays
11	Output Interface Design 2	Industry Interface Standards [IEEE, IEC, Modbus, Profibus etc.]
12	Power Supply & Packaging	Power Management, Environment protection
13	**Examination2**	**TBA**
14	Design Review	Design evaluation
15	Design Presentation	Student project presentations

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b. **DIV./DEPT. NO.** EGEL **DEPT. ACCOUNT NO.** 212400101 **(9 digits)**

2.

Alpha Prefix	1st Digit	last 3 Digits	"C"-lec-lab "L"-Lab	Cr. Hrs.	CIP Code (Leave this blank)
EEE	4	XXX		3	

3a. **Course Title** Introduction to Digital Forensics Engineering

b. **Abbreviated course Title (for computer class schedules, transcripts)** Digital Forensics Engi
LIMITED TO 25 Characters (including spaces)

4. **Statewide Course Numbering Subject Matter Area** EEE

5. **Catalog Description/Major Topics (not to exceed 200** characters including spaces)
This course will cover the fundamentals of the computer and network forensics and media exploitation techniques and introduces students to computer forensic software and hardware tools.

6. **ATTACH DETAILED SYLLABUS COURSE OUTLINE AND COURSE JUSTIFICATION ON SEPARATE PAGE(S).**

7. **Prerequisite(s):** _____

8. **Corequisite(s)** _____

9. **Objective(s) of Course:** To give the students an understanding of what Digital Forensics entails
To give the students a hands-on exposure to the latest tools and techniques to prepare an investigative plan.
To understand the common artifacts (from the Windows, Mac, and Linux operating systems) to look for during forensic investigation
To provide exposure to well-known and novel forensic methods using command-line and graphical open-source tools.

10. **Does this course duplicate/overlap other courses at FIU?** _X_ **No** ___ **Yes**
If yes, please explain: _____

11. **What other closely related department(s) have been consulted about this course?** _____

PROPOSAL REQUESTED BY:

Faculty Contact Faisal Kaleem _____ / _____ / 20_____
(Type name) **(Signature)**
kaleemf@fiu.edu (305)348-7253
(Email address) **(Phone number)**

Chairperson (Dept./Div.) Shekhar Bhansali _____ / _____ / 20_____
(Type name) **(Signature)**

Chairperson (Curr. Comm.) Nagarajan Prabhakharan _____ / _____ / 20_____
(Type name) **(Signature)**

College/School Dean Amir Mirmiran _____ / _____ / 20_____
(Type name) **(Signature)**

APPROVED BY:

University Curriculum Committee _____ / _____ / 20_____

Faculty Senate Chairperson _____ / _____ / 20_____

Academic Affairs V.P. _____ / _____ / 20_____

Submit one original copy of this form. Attach one hard copy and one electronic copy of the course syllabus containing: Objectives, Learning Outcomes, Major Topics and Textbooks.

Department of Electrical and Computer Engineering

EEE 4XXX – Introduction to Digital Forensics Engineering

Catalog Description

This course will cover the fundamentals of the computer and network forensics and media exploitation techniques and introduces students to computer forensic software and hardware tools. This course also studies cyber-attack prevention, planning, detection, and response with the goals of counteracting cybercrime, cyberterrorism, and cyberpredators, and making them accountable. Students will examine various log files, port scans, and packet sniffers, etc., from different devices and different operating systems including Windows and Linux.

Catalog Objectives

- To give the students an understanding of what Digital Forensics entails
- To give the students a hands-on exposure to the latest tools and techniques to prepare an investigative plan.
- To understand the common artifacts (from the Windows, Mac, and Linux operating systems) to look for during forensic investigation
- To provide exposure to well-known and novel forensic methods using command-line and graphical open-source computer forensics tools for examining a wide range of target systems and artifacts.

Prerequisites

Knowledge of windows operating system.

Textbooks

- The Basics of Digital Forensics: The Primer for Getting Started in Digital Forensics by John Sammons (Mar 9, 2012)
- Digital Forensics with Open Source Tools by Cory Altheide and Harlan Carvey (Apr 28, 2011)

Topics covered

- Ethical Issues
- Windows System Artifacts
- Linux System Artifacts
- Internet Artifacts
- Disk and File System Analysis
- Mobile Device, Network and Virtual Machines Forensics

Class schedule
Twice a week 75 minutes class with hands-on lab as part of the lectures

Contribution of course to meeting the professional component
Engineering science – 90% (math/science required for creative applications)
Engineering design – 10% (decision making process of devising a system, component or process to meet a desired need).

Relationship of course to program outcomes:
In the course EEE 4XXX – Introduction to Digital Forensics Engineering, the student will have to show

1. An ability to apply knowledge of mathematics, science, and engineering
2. An ability to design and conduct experiments, as well as to analyze and interpret data
3. An ability to identify, formulate, and solve engineering problems
4. An understanding of professional and ethical responsibility
5. Recognition of the need for, and an ability to engage in life-long learning
6. Knowledge of contemporary issues
7. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice

Person who prepared this description and date of preparation:
Dr. Faisal Kaleem

FLORIDA INTERNATIONAL UNIVERSITY
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2.

Alpha Prefix	1st Digit	last 3 Digits	"C"-lec-lab "L"-Lab	Cr. Hrs.	CIP Code (Leave this blank)
EEL	4	514	L	1	

3a. **Course Title** Communication Systems Lab

b. **Abbreviated course Title (for computer class schedules, transcripts)** **LIMITED TO 25 Characters (including spaces)**

4. **Statewide Course Numbering Subject Matter Area** _____

5. **Catalog Description/Major Topics (not to exceed 200** characters including spaces)

This is a web-accessible hardware laboratory on analog and digital comm sys. Students will perform all the experiments remotely through the Internet. Lab reports will be submitted for every remote lab

6. **ATTACH DETAILED SYLLABUS COURSE OUTLINE AND COURSE JUSTIFICATION ON SEPARATE PAGE(S).**

7. **Prerequisite(s):** EEL 3135 Signal and Systems

8. **Corequisite(s)** _____

9. **Objective(s) of Course:** To gain an understanding of technical concepts of analog and digital communications systems.

10. **Does this course duplicate/overlap other courses at FIU?** ___ **No** ___ **Yes**

If yes, please explain: _____

11. **What other closely related department(s) have been consulted about this course?** _____

PROPOSAL REQUESTED BY:

Faculty Contact Herman Watson _____ / _____ / 20_____
(Type name) **(Signature)**
herman.watson@fiu.edu (305)348-3018
(Email address) **(Phone number)**

Chairperson (Dept./Div.) Shekhar Bhansali _____ / _____ / 20_____
(Type name) **(Signature)**

Chairperson (Curr. Comm.) Nagarajan Prabhakharan _____ / _____ / 20_____
(Type name) **(Signature)**

College/School Dean Amir Mirmiran _____ / _____ / 20_____
(Type name) **(Signature)**

APPROVED BY:

University Curriculum Committee _____ / _____ / 20_____

Faculty Senate Chairperson _____ / _____ / 20_____

Academic Affairs V.P. _____ / _____ / 20_____

Submit one original copy of this form. Attach one hard copy and one electronic copy of the course syllabus containing: Objectives, Learning Outcomes, Major Topics and Textbooks.

XXX-xxxx Communication Systems Lab

Fall 2012

Faculty	:	Dr. Stavros Georgakopoulos
Office	:	EC 3173
Office Hours	:	
Phone	:	305-348-1262
Fax	:	305-348-6534
Email	:	georgako@fiu.edu
Class Time	:	
Classroom	:	Web-accessible lab (no class needed)

Prerequisite	:	EEL 3135 Signal and Systems
Corequisite	:	

Text Book

Lab-manuals (downloadable from the course's website)

Description

This is a web-accessible hardware laboratory on analog and digital communication systems. Students will perform all the experiments remotely through the Internet. Lab reports will be submitted for every remote lab.

Reference

1. "MathCAD" and "MATLAB".
2. Digital and Analog Communication Systems
   7th Edition,
   By Couch II, L.W
   Prentice Hall, 2007.
3. Fundamentals of Communication Systems
   By Proakis, J. G. and Salehi, M
   Prentice Hall, 2005

Course Objectives

To gain an understanding of technical concepts of analog and digital communications systems.

Absence

Students are responsible for all lab reports.

Grading Policy

Late lab reports will not be graded. All lab reports submitted must be neat and detailed to obtain partial credit. Points will be taken off for sloppy work. There will be two exams throughout the semester. The course grade will be decided using the following weighing of the data:

Lab Reports	**100%**

Tentative Grading Scale

Total Score	Letter Grade	Total Score	Letter Grade
100 - 95	A	73-75	C
90-94	A-	70-72	C-
86-89	B+	66-69	D+
83-85	B	63-65	D
80-82	B-	60-62	D-
76-79	C+	0-59	F

Policies

1. Any evidence of cheating and plagiarism will result at least a failing grade for the course. Any communication during exam time will not be tolerated and will result in a zero grade for the exam for each person being involved.
2. You are fully responsible for all materials covered in class.
3. Students are expected to read all materials and complete all assignments.
4. Late lab reports will not be accepted and will not be graded.

Topics Covered:

1. Analog modulation techniques for communications systems
2. Digital modulation techniques for communications systems
3. Analog and digital communication systems

Lab Experiments

1. Amplitude Modulation
2. Envelope Detection (Amplitude Demodulation)
3. DSBSC modulation and Demodulation
4. SSB Modulation
5. SSB Demodulation
6. FM modulation
7. FM demodulation using PLL
8. QAM generation
9. QAM detection
10. ASK modulation and demodulation
11. BPSK modulation and demodulation
12. QPSK modulation
13. QPSK demodulation
14. FSK generation
15. Sampling

Learning Outcomes:

1. Understand the fundamental analog and digital modulation schemes.
2. Understand differences between analog and digital communication systems.

Contribution of course to meeting the professional component:

Engineering Science

Relationship of course to program outcomes:

In this course the student will have to show

(a) an ability to apply knowledge of mathematics, science and engineering

(b) an ability to identify, formulate, and solve engineering problems

Department Regulations Concerning Incomplete Grades

A student that applies for an incomplete grade for the semester should comply with **all** of the following:

1. Must be unable to complete the course through documented circumstances beyond his/her control.
2. Must be passing the course prior to that part of the course that is not completed.
3. Must contact the instructor or the secretary immediately before or during the part missed, so the instructor will be aware of the circumstances causing the incomplete.
4. Must make up the incomplete work through the instructor of the course and should not be allowed to sit through another entire course to make up the incomplete.
5. Must make proper arrangements with the instructor to complete the course. These arrangements must be

made in writing. A copy will be placed in the student's file: Do **not** assume that you automatically have two semesters to complete your work!

Academic Misconduct

Florida International University is a community dedicated to generating and imparting knowledge through excellent teaching and research, the rigorous and respectful exchange of ideas, and community service. All students should respect the right of others to have an equitable opportunity to learn and honestly to demonstrate the quality of their learning. Therefore, all students are expected to adhere to a standard of academic conduct, which demonstrates respect for themselves, their fellow students, and the educational mission of the University. All students are deemed by the University to understand that if they are found responsible for academic misconduct, they will be subject to the Academic Misconduct procedures and sanctions, as outlined in the Student Handbook.