EETE 3102	Electronics II	3 Credit Hours
Prerequisites:	EETE 2102	
Goal	To provide students with an understanding of the different electronic circuits used in Electrical Engineering.	

Objectives	Outcomes
The course should enable the student to: 1. Understand the types and characteristics of MOSFET amplifiers. 2. Recognize different types of power amplifiers and understand their characteristics. 3. Know the structure of a differential amplifier and its characteristics. 4. Understand the structure and characteristics of operational amplifiers and its linear and nonlinear applications. 5. Know the feedback and its effects on the characteristics of amplifiers. 6. Understand the analog filters and tuned amplifiers. 7. Know the operation of a sinusoidal oscillator and types of this oscillator.	A student who satisfactorily completes the course should be able to: 1. Fully understand the basic concepts and operation of electronic circuits and small signal amplifiers using MOSFET. 2. Discuss and analyze, the operation of class A, class B, class AB and class C power amplifiers. 3. To describe the operation & design of an operational amplifier, differential amplifier & Integrated circuit amplifiers. 4. Analyze several linear and nonlinear applications of operational amplifiers. 5. To be able to design, setup, and test tuned amplifiers, sinusoidal oscillators & waveform generators. 6. Describe the requirements for the technique used to achieve high frequency response and feedback stability of different amplifiers & be able to solve some mathematical problems.

EETE 3110	SIGNALS AND SYSTEMS	3 Credit Hours
Prerequisite	**EETE 2210**	
Goal	To provide the students with a basic understanding of the fundamentals of signals and systems so as to create a strong foundation in the field of signal processing	

Objectives	**Outcomes**
This course should enable the student to : 1. Know how to deal with continuous time signals and systems. 2. Know how to deal with discrete time signals and systems. 3. Learn Continuous Time Fourier series and Continuous Time Fourier transforms. 4. Learn Discrete Time Fourier series and Discrete Time Fourier transforms. 5. Grasp Laplace Transform and its applications. 6. Grasp Z Transform and its applications. 7. Study the structure and stability of continuous time and discrete time systems.	A student who completes the course should be able to: 1. Classify continuous time and discrete time signals and systems. 2. Represent continuous time and discrete time signals in the frequency domain. 3. Learn Fourier, Laplace and Z transforms and their properties and apply them to practical situations. 4. Understand the concept of representation of Systems using linear constant coefficient difference and differential equations. 5. Study Linear Time Invariant Systems in the time domain using impulse response and convolution concepts. 6. Analyze Continuous time Linear Time invariant systems in the s – domain. 7. Analyze Discrete time Linear Time invariant systems in the z – domain. 8. Understand the concept of Transfer Function and Frequency response of systems. 9. Appreciate the stability of systems.

MATH 3120	Engineering Mathematics	3 Credit Hours
Prerequisites:	MATH 2100	
Goal	To equip the students with a working knowledge of differential equations and the standard techniques of solving them	

Objectives

The course should enable the student to:

1. Perceive the basic concepts and definitions of differential equations
2. Develop the skill of representing a real physical situation by means of differential equations through modeling approach
3. Recognize the various types of differential equations
4. Apprehend the standard techniques for solving differential equations
5. Differentiate between stable and unstable solutions

Outcomes

The students should be able to:

1. Realize the importance of ordinary differential equations and their practical applications
2. Formulate a differential equation to model relationships between variables in a physical phenomena
3. Grasp the theory of standard types of linear and non-linear differential equations
4. Investigate the stability of solutions of differential equations
5. Sketch solutions of differential equations in the phase plane
6. Apply techniques for solving various differential equations including separation of variables, integrating factors and lap lace transforms
7. Use the governing differential equation of a system to predict the behavior of the system under various boundary conditions.
8. Distinguish between the general solutions, particular solutions, complementary solutions, exact solution and approximation solutions and their proper interpretations.
9. Recognize the governing differential equations frequently arise in engineering situations.
10. Deal with partial differential equations and their applications in the engineering context.

EETE 3190	Electromagnetic Field Theory	3 Credit Hours
Prerequisites:	EEPW 2150	
Goal	To provide students with an understanding of Electromagnetic field theory concepts and applications.	

Objectives

This course should enable the students to:

1. Apply Vector Calculus in the analysis of Electromagnetic fields.
2. Understand the use of important theorems and laws for analyzing electrostatic and magnetic fields.
3. Describe Maxwell's equations and their applications.
4. Apply Electromagnetic field theory for some practical applications.

Outcomes

A student who satisfactorily completes the course should be able to:

1. Apply Vector algebra, different coordinate systems.
2. Know Coulomb's law and analyze electric field intensity and flux density.
3. Understand the application of Gauss's law, Divergence theorem.
4. Derive the potential difference and potential of a point charge and continuous charges.
5. Apply the laws and methods for analyzing conductors, dielectrics and capacitance.
6. Discuss about Poisson's and Laplace's equations.
7. Understand the relationship between electrostatic and steady magnetic fields
8. Explain the basics of time varying fields and Maxwell's equations.
9. Describe wave propagation in different media.
10. Understand the practical applications of EM waves.

EECP 3171	**Microprocessor Systems and Interfacing**	**3 Credit Hours**
Prerequisites:	**EETE 2270**	
Goal	To provide students with an understanding of microprocessor-based systems and their use in instrumentation/control/communications/ and computing systems.	

Objectives	Outcomes
The course should enable the student to: 1. Investigate microprocessor-based systems, 2. Produce software for microprocessor-based system, 3. Interface microprocessor-based system.	The students should be able to: 1. Compare types of micro-processor-based systems, 2. Investigate three typical applications of microprocessor-based systems, 3. Design software to a given specification using a structured design techniques, 4. Write programs to implement designs using appropriate computer language, 5. Test software to ensure it meets the given specifications, 6. Interface external devices to a microprocessor-based system using a programmable parallel interface device, 7. Interface external devices to microprocessor-based system using programmable serial interface device, 8. Design and build a simple non-programmable parallel port, 9. Interface external devices to a microprocessor-based system using the parallel port.

EECP 3180	Computer Networks		3 Credit Hours
Prerequisites:	**EECP 3171**	**Co requisites**	**EECP 3281**

Goal

To introduce students to the underlying principles in computer networks and design network architectures with reasonable effort. To prepare students to undertake an in-depth study of local area networks and wide area networks dealing with their access mechanisms, routing algorithms, performance evaluation methodologies, and related issues. To acquaint students the experience in the design and analysis of network protocols through experiments on an Ethernet LAN or through simulation models.

Objectives

This course should enable the student to:

1. Understand the characteristics and applications of various networking technologies.
2. Understand the physical and architectural elements and information layers of a communication network, along with diagnostic, design, operational, and performance measurement tools that are used to implement, operate, and tune such a network
3. Have a working knowledge of at least one protocol at each of the main levels of the OSI seven layer reference model.
4. Understand how features such as flow control and quality of service are achieved.
5. Carry out network designs using appropriate hardware and software components to provide specified services for a given site.
6. Specify the implementation of a simple protocol.

Outcomes

A student who satisfactory complete the course should be able to:

1. Connect two computers together via their serial ports and write a communication (C/UNIX) program to send small messages back and forth between the machines.
2. Configure a network analyzer to properly view frames traversing a Local Area Network (LAN).
3. Document frame interaction between stations for a variety of station activities.
4. Decode some basic frame types.
5. Distinguish network addressing for broadcast, multicast and unicast conversations.
6. Configure a basic bridged network with two network segments separated by a bridge.
7. Utilize network analyzers to observe frames on each side of the bridge.
8. Determine bridge operation by observing network traffic on each side of the bridge (i.e. determine the algorithm used by the bridge from the observation of he incoming and outgoing frames, etc.).
9. Utilize a network management station to monitor and control agents in a test network and Report on results.
10. Detail the design of a thin server, fat client, and client-server system for 1 server and 50 clients. Include considerations such as protocols, encryption, directory services, and recover from failure, and reliability.
11. Carry out a simulation of the designed thin server and comment on its strengths and weaknesses.

	12. Provide a report that support that justifies the choices of the design made.

EETE 3220	DIGITAL SIGNAL PROCESSING	3 Credit Hours
Prerequisites	**EETE 3110**	
Goal	To provide the students with a basic understanding of Digital Signal Processing and apply its concepts to the design and realization of discrete time systems.	

Objectives	**Outcomes**
This course should enable the student to : 1. Understand the concept of IIR and FIR digital filters. 2. To realize IIR and FIR filters using different realization methods. 3. To design IIR and FIR filters using different design methods 4. Grasp the concept of Discrete Fourier Transform and Fast Fourier Transform and its application to digital signal processing. 5. Gain insight into the advantages and applications of Digital Signal Processing.	A student who completes the course should be able to: 1. Handle discrete time processing of continuous time signals. 2. Realize IIR filters using direct form, cascade and parallel realization methods. 3. Realize FIR filters using direct form and cascade realization methods. 4. Design Analog Butterworth and Chebyshev filters. 5. Design IIR digital filters using Bilinear and Impulse invariant methods. 6. Study the different windows used in FIR filter design and design FIR filters using windowing method. 7. Compare IIR and FIR digital filters. 8. Understand the concept of circular convolution. 9. Understand Discrete Fourier Transform (DFT) and its properties. 10. Employ linear convolution using DFT. 11. Get acquainted with Fast Fourier Transforms (FFT) using Decimation-in –time (DIT) and Decimation-in-Frequency (DIF) methods. 12. Identify the applications of Digital Signal Processing and its advantages.

EETE 3211	Telecommunications II	3 Credit Hours
Prerequisites:	EETE 2210	
Goal	To explores analogue and digital systems in more depth, and their analyses along with wireless and video systems.	

Objectives

The course should enable the student to:

1. Analyze different types of analogue communication systems and study ways of measuring a variety of wireless communication performance such as selectivity, sensitivity, spurious emission and harmonics. Study effects of noise on these systems
2. Analyze different types of digital communication systems, their modulation techniques and describe ways of measuring noise and other rate performance on these systems
3. Analyze cellular, mobile and wireless messaging systems which include different types of wireless standards and systems, practical wireless design consideration and a detailed look at existing wireless messaging systems
4. Analyze video signals, systems and standards
5. Understand HDTV and MPEG systems.

Outcomes

The students should be able to:

1. Describe noise sources and different types of noise measurements
2. Perform analogue systems measurements and performance evaluation
3. Describe different types of radio wave propagation methods and perform calculations
4. Demonstrate knowledge of AM and SSB radio systems, and FM systems
5. Recognize Satellite systems and different types of multiple access methods
6. Calculate channel capacity with the constraint of bandwidth, signal-to-noise ratio and M-ary
7. Describe digital modulation techniques including ASK, FSK, and various forms of PSK and QAM
8. Describe various applications of digital modulation techniques
9. Perform noise and error rate performance of digital communication systems
10. Describe cellular structure and network
11. Describe cellular standards and systems – FDMA (AMPS/TACS), TDMA (GSM/IS-54), CDMA (IS-95) and spread spectrum (Direct Sequence and Frequency Hopping)
12. Design practical wireless systems
13. Describe general paging concepts and protocol
14. Describe 1 – way and 2 – way wireless messaging systems
15. Demonstrate knowledge of GPS system
16. Describe traditional TV signals and systems
17. Describe different types of TV test signals
18. Demonstrate knowledge of HDTV and MPEG standard

EECP 3281	Unix System Administration		3 Credit Hours
Prerequisites:	**None**	**Co-requisites**	**EECP 3180**
Goal	To prepare students for an entry-level position as a system administrator of a network utilizing the LINUX network operating system.		

Objectives

The course should enable the student to:

1. Prepare hardware for a LINUX installation
2. Configure a boot manager and system software
3. Recompile a custom kernel
4. Setup and manage print services
5. Configure and troubleshoot a GUI, TCP/IP, mail and web servers and DNS.
6. Understand system security

Outcomes

The students should be able to:

1. Select and configure fundamental system hardware
2. Design and configure hard-disk system
3. Make and install programs from source
4. Manage shared libraries
5. Use Red Hat Package Manager (rpm)
6. Manage kernel modules
7. Reconfigure, build and install a custom kernel and modules
8. Perform basic file editing operations using common editors
9. Install, configure and manage local and remote printers and queues
10. Customize and use the shell environment
11. stomize or write simple scripts
12. Install & Configure Xfree86, setup XDM, identify and terminate runaway X applications
13. Perform TCP/IP Troubleshooting & Configuration
14. Configure and manage inetd and related services
15. Properly manage the NFS, smb, and nmb daemons
16. Setup and configure basic DNS services

ENGL 3100	Public Speaking	3 Credit Hours
Prerequisites:	ENGL 2100	
Goal	To introduce the student to the principles of public speaking to foster critical thinking and to equip him/her with the skills necessary for producing effective and credible presentations that are suitable for their audiences and purposes.	

Objectives

The course should enable the student to:

1. Understand the basic principles of public speaking
2. Acquire the skills for performing different types of presentations suited to different audiences and purposes
3. Understand the principles of informative speaking and persuasive speaking
4. Be acquainted with the analysis of speeches
5. Understand rhetorical sensitivity and critical thinking

Outcomes

The students should be able to:

1. Develop skills in speech development strategies and delivery techniques
2. Develop skills in rhetorical sensitivity and critical thinking
3. Observe, analyze, critique, and provide feedback on developing speech forms
4. Describe the basic principles of public speaking
5. Organize an informative and persuasive speech
6. Analyze audiences for the purpose of preparing speeches
7. Prepare visual aids proper to the purpose of the speech
8. Describe the different methods of persuasion
9. Perform an introductory speech, a demonstration speech, an informative speech, a persuasive speech, and a special occasion speech
10. Identify and define personal speaking styles to business, government, and industry functions

PHIL 3200	التخاطب باللغة العربية	ثلاث ساعات معتمدة
المتطلبات السابقة	لا يوجد	
الهدف العام	تقوية صلة الطالب بلغته العربية والأعتزاز بها وتأكيد دورها في حياته العلمية والعملية لاستيعاب ما يتلقاه من معارف وعلوم.	

النتائج	الأهداف الخاصة
١. قدرة الطالب على الكتابة والحديث بأسلوب علمي تقل فيه الأخطاء الاملائية والاسلوبية. ٢. المام الطالب بمهارات الاختصار والايجاز في رسائل المخاطبات. ٣. احتفاظ الطالب بالكثير من المعلومات التي اكتسبها في ثقافته الادبية واللغوية خلال تعليمه وتثقيفه الذاتي. ٤. زيادة مهارات الطالب في لغته العربية حديثا وكتابة.	١. أن يمتلك الطالب المهارات الاساسية للتخاطب باللغة العربية حديثا وكتابة. ٢. أن يكتسب الطالب وسائل الاقناع لعرض ما يريد من أفكار واراء بأسلوب واضح ومعاني دقيقة. ٣. أن يعمل الطالب على زيادة معرفته واهتمامه بلغته العربية لتنمية ذوقه الجمالي وزيادة مهاراته فيها. ٤. أن يتمكن الطالب من توظيف معلوماته اللغوية لصالح ما اكتسبه من علوم وخبرات.

EETE 3399	Higher Diploma Project	3 Credit Hours
Prerequisites:	**NONE**	
Goal	To expose each student to the situation where he/she works individually or on a team in a project in the field of electronics and communication engineering.	

Objectives	Outcomes
The course should enable the student to: 1. Integrate the various areas of knowledge he/she gained through the program 2. Consolidate personal confidence in working independently or an a team and improve his/her spirit of performance	The students should be able to: 1. Apply the knowledge he/she gained through the program into an integrated project 2. Demonstrate communication effectiveness through oral presentations and written reports 3. Present the results of work in a seminar and submit a properly written and edited final report 4. Manage his/her time to achieve a time-constrained target 5. Solve engineering problems

Introduction

This project is carried out by the student during the summer term of the Higher Diploma program. It involves analyzing and synthesizing problems using engineering principles and techniques. The project may involve some or all of the following features: feasibility study, product design and development, computer simulation and experimental set up. The student is expected to take into account aspects such as professionalism, economy, costing and engineering viability.