2008

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9	107	116	
		167	

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100	3	–	3		101
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101	3	–	3	2	102
102	3	–	3	1	203
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101*	1	3	–	1	105
101	3	–	3	2	102
102*	1	3	–	2	106
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101*	1	3	–		105

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رموز المساقات في الأقسام الأكاديمية لكلية الحجاوي للهندسة التكنولوجية:ـ
هل: هندسة الإلكترونيات .
هت: هندسة الاتصالات .
هج: هندسة الحاسبات .
هق: هندسة القوى الكهربائية .

-	2	6	-		202
102	2	6	-		203
203	3	-	3		205
203	3	-	3		212
101	3	-	3		241
102	3	-	3	1	220
220	3	-	3	2	222
222	1	3	-		223
220	3	-	3		230
230	1	3	-		231
101	4	3	3		250
101	0	3	0		250
220	3	-	3	1	250
250	1	3	-	1	251
205	3	-	3		310
250	2	3	1		310
250	0	3	0		310
220	3	-	3		312
312	3	-	3		314
222	3	-	3		320
212	3	-	3		342
250	3	-	3	2	350
350 +251	1	3	-	2	351
230	3	-	3		344
344	1	3	-		345
342	3	-	3		442
442	3	-	3		446
446	1	3	-		447
251	3	-	3		450
312	3	-	3		450
450	1	3	-		451
450	3	-	3		452
452	1	3	-		453
312	3	-	3		454
454	1	3	-		455
442	3	-	3		460
460	1	3	-		461
452	3	-	3		462
	9				500
462	3	-	3		562
*562	1	3	-		563
452	3	-	3		568
452	2	-	2		574
	3	-	-		598

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222	3	–	3		354
350	3	–	3		440
350	3	–	3		452
452	3	3	2		490
452	0	3	–		491
452	3	–	3		528
442	3	–	3		548
562	3	–	3		564
450	3	–	3		574
452	3	–	3		578
	3	–	3		* 496
	3	–	3		596

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(2008/29)   **(MCSA, MCAD, OCPD, CCNA)**   :

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Course Description

Telecommunications Engineering Department
Curriculum 2008

CME 312: Signals and Linear Systems (3 Cr. Hr.)
Continuous and discrete time signals and systems, continuous and discrete time convolution, continuous and discrete LTI systems, Fourier analysis for continuous-time signals, properties and applications of Fourier transform, Laplace transform and z-transform.
Prerequisite: EPE 220.

CME 314: Probability and Random Processes for Engineers (3 Cr. Hr.)
Probability, random variables, probability distribution and density functions, multiple random variables, random processes, spectral properties of random processes and response of linear systems to random input. Introduction of the linear mean square estimation. Engineering applications (communications in noise, data compression, radar).
Prerequisite: CME 312B.

CME 342: Engineering Electromagnetics (3 Cr. Hr.)
Review of vector calculus, electrostatic fields, capacitance, the method of images, magnetostatic fields, inductance, steady electric current, boundary conditions, magnetic circuits, Faraday's low and electromagnetic induction, Maxwell's equations.
Prerequisite: Math 212

CME 442: Electromagnetic Waves (3 Cr. Hr.)
Review of Maxwell's equations, plane waves in lossless and lossy media, normal and oblique incidence, transmission lines, waveguides and cavity resonators, introduction to radiating systems.
Prerequisite: CME 342.

CME 446: Microwave Systems (3 Cr. Hr.)
Scattering parameter theory and microwave measurements. Planar circuit technology: microstrip, stripline, CWG, and finline. Microwave devices and components: resonators, filters, power dividers, couplers, amplifiers and oscillators. Microwave sources: solid-state sources, microwave tubes.
Prerequisite: CME 442.

CME 447: Microwave Systems Lab (1 Cr. Hr.)
Basic and directive antennas, radiated horn and dish antenna measurements, measurements of microwave power, voltage standing wave ratio and impedance, waveguide attenuators, klystron characteristics, microwave tuners, directional couplers, series and shunt tees, microwave detectors and mixers, solid state characteristics.
Prerequisite: CME 446.

CME 450: Analog Communication Systems (3 Cr. Hr.)
Orthogonal and signal representation, review of Fourier analysis, bandpass signals and systems, Hilbert transform, amplitude modulation and detection, frequency and phase modulation and demodulation, SNR in AM/FM reception, pre emphasis / de-emphasis, pulse code modulation. **Prerequisite: CME 312.**

CME 451: Analog Communications Systems Lab. (1 Cr. Hr.)
Signal source, tuned circuits, AM/FM modulation and detection, AGC, super-heterodyne radio, Fourier series analysis, single side band transmission and detection.
Prerequisite: CME 450.

CME 452: Digital Communications (3 Cr. Hr.)
Introduction, transmission of binary waveforms in AWGN environment, performance analysis and error probability, bandpass modulation binary and multilevel (ASK, PSK and FSK), performance analysis and error probability, channel coding, modulation and coding trade off. **Prerequisite: CME 450, CME 314.**

CME 453: Digital Communications Lab. **(1 Cr. Hr.)**
Sampling technique, time division multiplexing, pulse time and pulse code modulation and demodulation, delta and sigma delta modulation and demodulation, ASK, FSK, PSK and carrier generation, QPSK, coded transmission and reception.
Prerequisite: CME 452.

CME 454: Digital Signal Processing **(3 Cr. Hr.)**
Introduction to DSP, discrete time and LTI systems, Recursive vs. non-recursive, IIR vs. FIR, Decimation vs. interpolation, A/D and D/A conversion, z-domain representations in terms of stability and causality.   FIR and IIR filter design.
Prerequisite: CME 312.

CME 455: Digital Signal Processing Lab **(1 Cr. Hr.)**
Implementation of DSP concepts using tiger 40 DSP card, these concepts include: discrete time convolution, convolution with DFT (linear, circular), inverse DFT, computation of DFT using FFT algorithms, inverse FFT, design of digital filters (infinite impulse response, finite impulse response).
Prerequisite: CME 454.
CME 456: Communications Systems **(3 Cr. Hr.)**
Fourier transform, power spectral density, AM and FM modulation and demodulation, baseband modulation and demodulation, sampling, quantization, PAM and PCM modulation, bandpass modulation: FSK,PSK,ASK.
Prerequisite: CME 312.

CME 457: Communications Systems Lab **(3 Cr. Hr.)**
AM modulation and demodulation, FM modulation and demodulation, sampling technique, PAM modulation ,PCM modulation, FSK and PSK:
Prerequisite **CME 456**.

CME 460: Fiber Optic Communications **(3 Cr. Hr.)**
Introduction, ray optics, step and graded index fibers, multimodes and single mode fibers, fabrication of fibers, transmission characteristics of fibers (attenuation, dispersion, polarization), light sources: LED and lasers, intensity modulation coherent and non coherent detection, heterodyne and homodyne receivers, transmission via optical fibers with budget calculation, optical measurements.
Prerequisite: CME 442.

CME 461: Fiber Optic Communications Lab **(1 Cr. Hr.)**
Measurement of NA, attenuation, dispersion, and insertion loss due to connectors, demonstration on fiber, polishing, and cutting, analog and digital transmission system measurements; bit error rate measurements.
Prerequisite: CME 460.

CME 462: Data Communications **(3 Cr. Hr.)**
Network Basic Concepts, Protocol architecture, OSI model, TCP/IP protocol Architecture, Data transmission, Transmission Media, Signal encoding techniques, Asynchronous and Synchronous transmission, interfaces, error detection , error correction, line configurations, Topology, categories of networks, flow control, error control, HDLC,ISDN, Multiplexing, spread spectrum, X.25, Frame Relay, SONET/SDH, Circuit switching and packet switching,
Prerequisite: CME 452.

CME 490: TV Engineering **(3 Cr. Hr.)**
 TV signal, TV camera, cable TV system, color TV theory, color TV transmission and reception, Satellite TV receiver, digital TV, specifications and standards of DTV.
Prerequisite: CME 452.

CME 491: TV Engineering Lab
 Introduction to color TV, Digital TV, video recorder of Satellite uncover units, Composition and description of the units, circuit description, measurements and analysis of the waveforms in different points of all units, fault diagnosis.
Prerequisite: CME 490.

CME 500: Field Training   **(9 Cr. Hr.)**
A training period of six month (the 2nd, semester and the summer or the summer and 1st semester) is to be spent in the industry (inside or outside Jordan) under the follow up of an academic member from the department, a periodical as well as a final reports and an oral examination are required.
Prerequisite: Directed by the Department.

CME 528: Advance Digital Communications   **(3 Cr. Hr.)**
Channel coding, modulation and coding trade-off, synchronization techniques in digital communication systems, spread spectrum techniques, orthogonal frequency division multiplexing (OFDM).
Prerequisite: CME 452

CME 548: Antennas and Radio Wave Propagation   **(3 Cr. Hr.)**
Types of antennas, fundamental parameters of antennas, radiation integrals and potential functions, wire antennas antenna arrays: analyses and synthesis, horn and dish antennas, overview of microstrip antennas, introduction to the method of moments.
Prerequisite: CME 442.

CME 568: Mobile Communication Systems   **(3 Cr. Hr.)**
Introduction, mobile communication systems and standards, mobile radio propagation, large scale path loss and small scale multi-path fading, Doppler spread, delay spread and coherence bandwidth, coverage techniques and cellular concept, modulation techniques for mobile radio, access techniques spread spectrum and diversity.
Prerequisite: CME 452.

CME 574: Satellite Communications   **(2 Cr. Hr.)**
Color TV theory, Color TV transmission and reception, Fundamentals of orbital mechanics, Satellite Launching systems, satellite space and earth segments, Satellite link power calculations Direct Digital TV Broadcast systems, GPS,VSAT and MSAT.
Prerequisite: CME 452.

CME 578: Radar Systems   **(3 Cr. Hr.)**
The nature of radar equation, CW and frequency, Modulated radar, MTI and pulse Doppler radar, tracking radar, radar transmitters and receivers, radar antennas, detection of radar signals.
Prerequisite: CME 450.
CME 596: Selected Topics in Communications Engineering   **(3 Cr. Hr.)**
A selected topic approved by the department will be offered.
Prerequisite: Department approval.

CME 598:   Final Graduation Project   **(3 Cr. Hr.)**
Theoretical investigation or practical implementation of a selected project under the supervision of an academic member of the faculty. A final report, as well as an oral examination, are required**.**
Prerequisite: Directed by the Department.