Department of Electronics and Telecommunication Engineering

A.Y. 2022-2023

B.E. 7th Sem

Course: Cryptography and Network Security **Course Code: (7ETC01)**

At the end of Cryptography and Network Security course, students will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Illustrate security concepts and techniques.	L3
2	Illustrate the Symmetric key cipher techniques.	L3
3	Illustrate the Asymmetric key cipher techniques.	L3
4	Illustrate cryptographic Hash Function.	L3
5	Analyze web security considerations and transport level security.	L4
6	Illustrate the email security concepts.	L4

Course: Digital Image and Video Processing **Course Code: (7ETC02)**

At the end of Digital Image and Video Processing course, the student will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Illustrate the fundamentals concept of digital image processing.	L3
2	Apply knowledge of spatial domain and frequency domain filtering to digital images.	L3
3	Analysis of image segmentation and morphological techniques.	L4
4	Analyze image compression techniques based on redundancy features, apply image degradation model and its restoration.	L4
5	Apply the Fundamentals steps of digital video processing.	L3
6	Apply motion estimation model for video processing applications.	L3

Course: Project Management & Entrepreneurship **Course Code: (7ETC03)**

At the end of Project Management & Entrepreneurship course, the student will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Illustrate basic concept of Project management.	L3
2	Illustrate the Project Financing.	L3
3	Analyze the Cost Sheets, balance sheets and Cash Flow statements, project report.	L4
4	Illustrate the Entrepreneurial competencies & traits.	L3
5	Analyze the Management skills for Entrepreneurs.	L4
6	Illustrate Social Entrepreneurship.	L3

Course: Mobile Communication And Networks (PE-III) **Course Code: (7ETC04)**

At the end of Mobile Communication and Networks course, the student will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Illustrate the basic concept of Cellular systems and standards.	L3
2	Illustrate knowledge of Signal propagation model.	L3
3	Analyze different multiple access techniques in mobile communication.	L4
4	Evaluate the concept of rake receiver.	L5
5	Evaluate advance knowledge of MIMO.	L5
6	Analyze different Mobile Communication Systems and standards.	L4

Course: Introduction To MEMS **PE-IV Course Code: (7ETC05)**

At the end of Introduction to MEMS course, students will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Illustrate intrinsic characteristics of MEMS.	L3
2	Illustrate the material properties used in MEMS devices.	L3
3	Analyze the mechanics of solids.	L4
4	Illustrate the fabrication process utilized in MEMS.	L3
5	Distinguish sensors used in MEMS.	L4
6	Illustrate the applications of MEMS.	L3

Lab: Cryptography and Network Security **Lab Code: (7ETC06)**

At the end of Cryptography and Network Security Lab, the students will be able to:

LO No.	Lab Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Analyze Cryptographic algorithms for data encryption using various algorithms.	L4
2	Implement Cryptographic algorithms for data decryption using various algorithms.	L3
3	Apply of the C & Java language for the applications of cryptography.	L3

Lab: Digital Image and Video Processing **Lab Code: (7ETC07)**

At the end of Digital Image and Video Processing Lab, the students will be able to:

LO No.	Lab Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Describe digital image representation, manipulation and Illustrate the use of histograms.	L3
2	Apply the various Linear & Nonlinear filtering methods on 2D images.	L3
3	Analyze various Morphological operations on binary images and Generate their transformed images, motion estimation using video processing.	L4

Lab: Project Management and Entrepreneurship **Lab Code: (7ETC08)**
At the end of Project Management and Entrepreneurship Lab, the students will be able to:

LO No.	Lab Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Design a real time project feasibility report containing Technical, Environmental and Market Appraisal.	L6
2	Evaluate a project Cost Estimation Sheet for any Project.	L5
3	Analyze a project financial statement and Project report for any project.	L4

Lab: Project Stage I (Seminar) **Lab Code: (7ETC09)**
At the end of Project Stage I (Seminar), the students will be able to:

LO No.	Lab Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Demonstrate a sound technical knowledge of their selected seminar topic.	L3
2	Analyze problem identification, formulation and solution.	L4
3	Demonstrate the knowledge, skills and attitudes of a professional engineer	L3

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B.E. 8th Sem

Course: Embedded System **Course Code: (8ETC01)**

At the end of Embedded System course, the students will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Illustrate the concept of Embedded Systems and its classification.	L3
2	Analyze the different building block of Embedded System and its attribute.	L4
3	Evaluate the architecture and inbuilt peripherals of AVR Microcontroller.	L5
4	Demonstrate application based on embedded system using C language.	L3
5	Implement the concept RTOS based in embedded system application.	L3
6	Evaluate hardware & software co- design of an Embedded System.	L5

Course: Microwave Theory and Techniques **Course Code: (8ETC02)**

At the end of Microwave Theory and Techniques course, the students will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Analyze the operations of microwave active and passive devices.	L4
2	Illustrate the operations of Semiconductor Microwave Devices.	L3
3	Analyze characteristics of microwave propagation through waveguide and parallel micro strip line.	L4
4	Illustrate operations of microwave resonators.	L3
5	Use S-parameters for characterization of microwave devices.	L3
6	Calculate various parameters of the microwave system.	L3

Course: Bio-Medical Electronics (PE-V) **Course Code: (8ETC03)**

At the end of Bio-Medical Electronics course, the students will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Apply the fundamentals of Medical Instrumentation, Biomedical Signals and Electrode.	L3
2	Identify and classify various Biomedical Transducers.	L4
3	Illustrate the significance of human signals and recording techniques.	L3
4	Analyze with Modern medical imaging systems.	L4
5	Conceptualize requirements and importance of Patient Care and Monitoring and Safety.	L5
6	Analyze the function and necessity of Physiological and electrotherapy equipment.	L4

Course: 5G-6G Mobile Communication (PE-VI) **Course Code: (8ETC04)**

At the end of 5G-6G Mobile Communication course, the students will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Illustrate the evolution of mobile communication leading to the introduction of 5G.	L3
2	Distinguish the key innovations in radio and network.	L4
3	Illustrate the standardization process and timeline for 5G	L3
4	Calculate the spectrum requirements.	L3
5	Illustrate key issues and challenges in 5G deployment.	L3
6	Distinguish the concept of 6G.	L4

Course: Scientific Computing (PE-VI) **Course Code: (8ETC04)**

At the end of Scientific Computing course, the students will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Illustrate the concept of scientific computing.	L3
2	Analyze Systems of Linear Algebraic equations.	L4
3	Apply Nonlinear equations to solve computer models.	L3
4	Apply Numerical differentiation to solve computer models.	L3
5	Illustrate the use of MATLAB.	L3
6	Analyze python language for applications in scientific computing.	L4

Lab: Embedded Systems **Lab Code: (8ETC05)**

At the end of Embedded Systems Lab, the students will be able to:

LO No.	Lab Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Implement embedded C program in AVR microcontroller to perform various tasks.	L3
2	Analyze the peripherals of embedded systems.	L4
3	Implement AVR microcontroller interfacing with peripheral devices.	L3

Lab: Microwave Theory and Techniques **Lab Code: (8ETC06)**

At the end of Microwave Theory and Techniques Lab, the students will be able to:

LO No.	Lab Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Analyze characteristics of Semiconductor Microwave Devices.	L4
2	Demonstrate and analyze Passive Microwave Devices::	L3
3	Analyze microwave Measurements of VSWR, Insertion Loss, Attenuation and Frequency Sensitivity of Attenuator.	L4

Lab: Project stage - II **Lab Code: (8ETC07)**

At the end of Project stage II, the students will be able to:

LO No.	Lab Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Identify problem identification, formulation and solution.	L1
2	Demonstrate the knowledge, skills and attitudes of a professional engineer.	L3
3	Design engineering solutions to complex problems utilizing a systems approach.	L6

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