

Course: ECE

Course code:003

Efective from academic year:2018-2019

Course Outcomes

Fiber Optic Communication (PE-EC801B)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Fiber Optic Communication (PE-EC801B)	Understand the principles fiber-optic communication, the components and the bandwidth advantages.
	Understand the properties of the optical fibers and optical components.
	Understand operation of lasers, LEDs, and detectors
	Analyze system performance of optical communication systems
	Design optical networks and understand non-linear effects in optical fibers

Santosh Samanta



S.S.
H.E.T.C. Deptt.
HETC, Hooghly.

Course Outcomes

Mixed Signal Design (PE-EC802A)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Mixed Signal Design (PE-EC802A)	Understand the practical situations where mixed signal analysis is required
	Analyze and handle the inter-conversions between signals.
	Design systems involving mixed signals

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H.E.T.C., Hooghly.



Course Outcomes

Internet of Things(IoT) (OE-EC803A)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Internet of Things(IoT) (OE-EC803A)	understand the application areas of IOT.
	realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks
	understand building blocks of Internet of Things and characteristics.

Sankhojit Malik

SM
DIC, ECE Deptt.
HETC, Hooghly.



Course Outcomes

Artificial Intelligence (OE-EC804A)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Artificial Intelligence (OE-EC804A)	understand the modern view of AI as the study of agents that receive percepts from the environment and perform actions.
	demonstrate awareness of the major challenges facing AI and the complex of typical problems within the field.
	exhibit strong familiarity with a number of important AI techniques, including in particular search, knowledge representation, planning and constraint management.
	asses critically the techniques presented and to apply them to real world problems.

Shyamal Pal



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Course Outcomes

Project-II(EC-882)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Project-I (EC-782)	Design a system, component, or process to meet desired needs within realistic constraints such as economic, social, ethical, manufacturability, and sustainability
	Design and conduct experiments, as well as to analyse and interpret data
	Use the techniques, skills, and modern engineering tools necessary for engineering practice.
	Engage in research and to identify, formulates, and solves engineering problems to involve in life-long learning.
	Function on team environment and contributing effectively in diverse settings.

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Course Outcomes

Satellite Communication (PE-EC701B)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Satellite Communication (PE-EC701B)	Visualize the architecture of satellite systems as a means of high speed, high range communication system.
	State various aspects related to satellite systems such as orbital equations, sub-systems in a satellite, link budget, modulation and multiple access schemes
	Solve numerical problems related to orbital motion and design of link budget for the given parameters and conditions


Jagdish Bhattacharya




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Course Outcomes

Mobile Communication and Networks (PE-EC701C)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Mobile Communication and Networks (PE-EC701C)	Understand the working principles of the mobile communication systems.
	Understand the relation between the user features and underlying technology.
	Analyze mobile communication systems for improved performance

Sanjay Samanta

Sanjay Samanta
H.O.D., ECE Deptt.
H.E.T.C., Hooghly.



Course Outcomes

Digital Image and Video Processing (PE-EC702B)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Digital Image and Video Processin g (PE- EC702B)	Mathematically represent the various types of images and analyze them.
	Process these images for the enhancement of certain properties or for optimized use of the resources.
	Develop algorithms for image compression and coding

Surbhojit Malik



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Course Outcomes

Wireless Sensor Networks (PE-EC703B)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Wireless sensor network (PE-EC703B)	Design wireless sensor networks for a given application
	Understand emerging research areas in the field of sensor networks
	Understand MAC protocols used for different communication standards used in WSN
	Explore new protocols for WSN




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Course Outcomes
Web Technology (OE-EC704A)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Web Technolog y (OE- EC704A)	design good web pages using different tags, tables, forms, frames and style sheets supported by HTML.
	implement, compile, test and run Java programs, comprising more than one class, to address a particular software problem
	demonstrate the ability to employ various types of selection statements and iteration statements in a Java program.
	be able to leverage the object-oriented features of Java language using abstract class and interface
	be able to handle errors in the program using exception handling techniques of Java
	design applets as per the requirements with event handling facility

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Course Outcomes

Project-I (EC-782)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Project-I (EC-782)	Design a system, component, or process to meet desired needs within realistic constraints such as economic, social, ethical, manufacturability, and sustainability
	Design and conduct experiments, as well as to analyse and interpret data
	Use the techniques, skills, and modern engineering tools necessary for engineering practice.
	Engage in research and to identify, formulates, and solves engineering problems to involve in life-long learning.
	Function on team environment and contributing effectively in diverse settings.



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Course Outcomes

Economics for Engineers(HS-HU 601)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Economics for Engineers (HS-HU 601)	analyze financial statements of the companies and other business entities and to determine their financial situation
	gain competency in preparing Balance Sheet, Income Statements, Cost Sheet, etc. of the business organizations
	gain efficiency in project evaluation after analyzing its underlying benefits and costs
	demonstrate the understanding of contemporary issues and provide engineering solutions for solving social problems

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Course Outcomes

Control System and Instrumentation (EC601)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Control System and Instrumentati on (EC601)	Characterize a system and find its steady state behavior.
	Investigate stability of a system using different tests.
	Design various controllers
	Solve linear, non linear and optimal control problems.
	Study with CRO, Wave analyzer, Spectrum analyzer knowing their functional details.

Serblajet Malik



Dr. J. S. S.
DIG. ECE Deptt.
N.E.T.C., Hooghly.

Course Title: Computer Network

Code: EC602

Department: Electronics and Communications Engineering

Semester: 6th

COURSE OUTCOMES :

On completion of the course students will be able to

CO1: Describe the concepts of Data Communication, Reference models and network technologies.

CO2: Explain how communication works in data networks and the Internet.

CO3: Understand the router architecture, IP and routing algorithms.

CO4: Understand the concepts of Network security and cryptography protocols.

CO5. Understand the multimedia network applications, audio, video streaming and network management.

Dhriti Chakraborty

Signature of Teacher

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Signature of DIC/Coordinator/HOD



Course Outcomes

Information Theory and Coding (PE-EC603D)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Information Theory and Coding (PE-EC603D)	Understand the concept of information and entropy
	Explain the operation of various instruments required in measurements
	Calculation of channel capacity
	Apply coding techniques



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Course Outcomes

Operating System (OE-EC604B)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Operating System (OE-EC604B)	understand the difference between different types of modern operating systems, virtual machines and their structure of implementation and applications.
	understand the difference between process & thread, issues of scheduling of user-level processes / threads and their issues & use of locks, semaphores, monitors for synchronizing multiprogramming with multithreaded systems and implement them in multithreaded programs.
	Apply the measurement techniques for different types of tests
	understand the design and management concepts along with issues and challenges of main memory, virtual memory and file system.



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Course Outcomes

Object Oriented Programming (OE-EC604C)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Object Oriented Programming (OE-EC604C)	differentiate between structures oriented programming and object oriented programming.
	use object oriented programming language like C++ and associated libraries to develop object oriented programs.
	understand and apply various object oriented features like inheritance, data abstraction, encapsulation and polymorphism to solve various computing problems using C++ language.
	apply concepts of operator-overloading, constructors and destructors
	apply exception handling and use built-in classes from STL.

Shyamal Pal



Shyamal Pal
DCC, ECE Deptt.
HETC, Hooghly.

Course Outcomes

Mini Project/ Electronic Design Workshop (EC681)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Mini Project/ Electronic Design Workshop (EC681)	Conceive a problem statement either from rigorous literature survey or from the requirements raised from need analysis.
	Design, implement and test the prototype/algorithm in order to solve the conceived problem.
	Write comprehensive report on mini project work.

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Course Outcomes

Control and Instrumentation Lab (EC691)

Course Title And Course Code	<p style="text-align: center;">Course Outcomes</p> <p style="text-align: center;">At the end of the course the students will be able to.....</p>
Control and Instrumentation Lab (EC691)	familiarize with MATLAB Control System tool box, MATLAB-SIMULINK tool box and representation of pole zero and transfer function of control system.
	determine the transfer function of a given system from its state model and its vice-versa.
	simulate the step response and impulse response for Type-I and Type-II system with unity feedback using MATLAB.
	determine the impulse & step response for 2nd order under damped system on CRO & calculation of control system specifications for variation of system design.
	determine the Root locus, Bode Plot and Nyquist Plot to evaluate system parameters like marginal value of gain, frequency etc. of a given control system.
	design PI, PD and PID controller for specified system requirements.
	study of static (accuracy, precision, repeatability, linearity) and dynamic (fidelity, speed of response) characteristics of a measuring instrument.
	design the PI, PD, PID controller action and Instrumentation Amplifier for specified system requirements.
	study and analysis of electrical signal with CRO.

Subhojit Malik



Subhojit Malik
H.E.T.C. ECE Deptt.
Hooghly.

Course Outcomes
Electromagnetic Waves (EC501)

Course Title And Course Code	Course Outcomes
Electromagnetic Waves (EC501)	At the end of the course the students will be able to.....
	Understand characteristics and wave propagation on high frequency transmission lines
	Carryout impedance transformation on TL
	Use sections of transmission line sections for realizing circuit elements
	Characterize uniform plane wave
	Calculate reflection and transmission of waves at media interface
	Analyze wave propagation on metallic waveguides in modal form
	Understand principle of radiation and radiation characteristics of an antenna

Ankur Bhattacharya.



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Course Outcomes
Computer Architecture (EC502)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Computer Architecture (EC502)	learn how computers work
	know basic principles of computer's working
	analyze the performance of computers
	know how computers are designed and built
	Analyze wave propagation on metallic waveguides in modal form
	Understand principle of radiation and radiation characteristics of an antenna
	Understand issues affecting modern processors (caches, pipelines etc.)



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Course Outcomes

Digital Communication and Stochastic (EC503)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Digital Communication and Stochastic (EC503)	understand the concept of Stochastic Process in Communication System
	represent various signals in different mathematical forms.
	analyze baseband transmission mode of digital data
	analyze different carrier modulation techniques considering noise aspects

Santosh Samanta



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HETC, Hooghly.

Course Outcomes

Digital Signal Processing (EC504)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Digital Signal Processing (EC504)	Represent signals mathematically in continuous and discrete time and frequency domain
	Get the response of an LSI system to different signals
	Design of different types of digital filters for various applications

Surbhojit Malik



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Course Outcomes

Power Electronics(PE-EC505C)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Power Electronics (PE-EC505C)	Build and test circuits using power devices such as SCR
	Analyze and design controlled rectifier, DC to DC converters, DC to AC inverters,
	Learn how to analyze these inverters and some basic applications.
	Design SMPS

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Course Outcomes

Human Resource Management (OE-EC506C)

Course Title And Course Code	Course Outcomes
Human Resource Management (OE-EC506C)	At the end of the course the students will be able to.....
	know the professional and personal qualities of a HR manager.
	learn different methods of selecting human resources through recruitment, training and performance appraisal system.
	know how to develop a favourable working environment in an organisation through participation in management and maintain a good industrial relation for benefit of the society.
	know about consequence of industrial dispute and employee indiscipline of an organization.

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COURSE OUTCOMES

Paper Name: SOFT SKILL & INTERPERSONAL COMMUNICATION

Paper Code: OE-EC 506 A

Department: ECE

Semester: 5th

After completing this course, the students will be able to:

1. Become self-confident individuals by mastering interpersonal skills, team management skills, and leadership skills.
2. Plan self-development and practice self-assessment to function on multi-disciplinary teams.
3. Illustrate and examine the knowledge of ethical aspects of engineering.
4. Demonstrate and explain social and professional etiquette.
5. Develop creative acumen, set practical goals and motivate themselves accordingly.
6. Manage time and stress effectively, resolve conflicts and make the best decisions.

Subham Ganguly
16.11.2020
SIGNATURE OF FACULTY

Mukherjee
16.11.2020
SIGNATURE OF HOD



COURSE OUTCOMES

Paper Name: EFFECTIVE TECHNICAL COMMUNICATION

Paper Code: MC-HU 501

Department: ECE

Semester: 5th

After completing this course, the students will be able to:

1. Build confidence in listening, speaking, reading and writing English professionally.
2. Think and speak effectively on everyday topics, including topics related to technical concepts
3. Master the basics of Academic writing
4. Develop industry-ready attitude towards professional communication.
5. Prepare for competitive exams like TOEFL, IELTS



Subham Ganguly
16.11.2020

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Mukherjee
16.11.2020

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Course Outcomes

Electromagnetic Wave Laboratory (EC591)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Electromagn etic Wave Laboratory (EC591)	Understand various antenna parameters and their definitions.
	Find out VSWR, reflection coefficients and normalized impedance on Smith chart
	Plot of radiation pattern of different antenna.

Arun Bhattacharya.

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HETC, Hooghly.



Course Outcomes

Digital Communication Laboratory (EC592)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Digital Communication Laboratory (EC592)	Study PAM and its demodulation & PCM and its demodulation techniques
	Study line coders: polar / unipolar / bipolar NRZ , RZ and Manchester
	Study BPSK and ASK modulator and demodulator
	Study QPSK modulator and demodulator.
	Study delta and adaptive delta modulator and demodulator
	Effectively communicate and present (verbally and in writing) necessary theoretical concepts, experimental results and their analyses.

Santosh Samanta

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Course Outcomes

Digital Signal Processing Laboratory (EC593)

Course Title And Course Code	Course Outcomes
Digital Signal Processing Lab (EC593)	At the end of the course the students will be able to.....
	create different sampled sinusoidal signal and various sequences and perform different arithmetic operations.
	perform convolution of two sequences using graphical methods and using commands to verify the properties of convolution.
	find out and analyze various sequences after taking z-transform and also verify the properties of z-transform.
	verify the properties of Twiddle factor.
	calculate DFTs / IDFTs using matrix multiplication and also using commands.
	understand the concept and calculation of circular convolution of two sequences using graphical methods and using commands and differentiate between linear and circular convolutions.
	design Butterworth filter with different set of parameters and FIR filter using rectangular, Hamming and Blackman windows
	write and execute small programs related to arithmetic operations and convolution using Assembly Language of TMS320C 5416/6713 Processor
write small programs in VHDL and download onto Xilinx FPGA.	

Subhojit Malik



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Course Outcomes

Analog Communication (EC401)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Analog Communication (EC401)	The learner must be able to appreciate the need for modulation and calculate the antenna size for different carrier frequencies. From the functional representation of the modulated carrier wave, the learner must be able to identify the type of modulation, calculate the side-band frequencies, identify the modulating and carrier frequencies, decide the type of generation method to be adopted. Solve problems.
	Module - 2: After understanding the basic concepts the learner must be able to compare between the different demodulation methods, design an envelope detector, calculate the IF and image frequencies for the superheterdyne receivers given the carrier and modulating frequencies, calculate the oscillator frequency.
	Module - 3: From the functional representation of the modulated carrier wave, the learner must be able to identify the type of modulation, calculate the side-band frequencies, identify the modulating and carrier frequencies, decide the type of generation method to be adopted. Solve problems.
	Module - 3: From the functional representation of the modulated carrier wave, the learner must be able to identify the type of modulation, calculate the side-band frequencies, identify the modulating and carrier frequencies, decide the type of generation method to be adopted. Solve problems.

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Course Outcomes

Analog circuits (EC402)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Analog circuits (EC402)	Understand the characteristics of diodes and transistors
	Design and analyze various rectifier and amplifier circuits
	Design sinusoidal and non-sinusoidal oscillators
	Understand the functioning of OP-AMP and design OP-AMP based circuits




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Course Outcomes

Microprocessor & Microcontroller (EC403)

Course Title And Course Code	Course Outcomes
Microproces sor & Microcontrol ler (EC403)	At the end of the course the students will be able to.....
	Do assembly language programming
	Do interfacing design of peripherals like, I/O, A/D, D/A, timer etc.
	Develop systems using different microcontrollers
	Understand the functioning of OP-AMP and design OP-AMP based circuits
Understand RSIC processors and design ARM microcontroller based systems	


Jagadish
Bhattacharya


D/O, ECE Deptt.
H.E.T.C., Hooghly.



Course Outcomes

Design and Analysis of Algorithm (ES-CS401)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Design and Analysis of Algorithm (ES-CS401)	For a given algorithms analyze worst-case running times of algorithms based on
	Describe the greedy paradigm and explain when an algorithmic design situation calls for it. For a given problem develop the greedy algorithms
	Describe the divide-and-conquer paradigm and explain when an algorithmic design situation calls for it. Synthesize divide-and-conquer algorithms. Derive and solve recurrence relation
	Describe the dynamic-programming paradigm and explain when an algorithmic design situation calls for it. For a given problems of dynamic-programming and develop the dynamic programming algorithms, and analyze it to determine its computational complexity
	For a given model engineering problem model it using graph and write the corresponding algorithm to solve the problems.
	Explain the ways to analyze randomized algorithms (expected running time, probability of error)
	Explain what an approximation algorithm is. Compute the approximation factor of an approximation algorithm (PTAS and FPTAS).

S. Daw



CE Deptt.
H.E.T.C., Hooghly.

COURSE OUTCOME

Paper Name	Paper Code	Course	Course Outcome
Numerical Methods (BS)	BS-M401	ECE (2 nd year, 4 th semester)	<ol style="list-style-type: none"> 1. Ability to tackle problems where analytical methods are difficult or fail. Analyse and evaluate the accuracy to obtain approximate solutions to mathematical problems 2. Demonstrate understanding of common numerical methods and how they are used to obtain approximate solutions to otherwise intractable mathematical problems 3. Efficiency in formulation of numerical algorithms in engineering problems 4. Implement numerical methods in Matlab. Write efficient, well-documented Matlab code and present numerical results in an informative way 5. Excellence use of numerical methods for approximate value of integration and forecasting of data

R. Patra
21/01/2020

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3/2/22

Mukherjee 03/02/2019
H. O. D.
Basic Science & Humanities Department
H. E. T. C., Hooghly.



Course Outcomes
Biology for Engineers
(BS-B401)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Biology for Engineers (BS- B401)	Convey that classification per se is not what biology is all about but highlight the underlying
	criteria, such as morphological, biochemical and ecological Highlight the concepts of recessiveness and dominance during the passage of genetic material
	from parent to offspring Convey that all forms of life have the same building blocks and yet the manifestations are as
	diverse as one can imagine Classify enzymes and distinguish between different mechanisms of enzyme action
	Identify DNA as a genetic material in the molecular basis of information transfer. • Analyse biological processes at the reductionistic level
Apply thermodynamic principles to biological systems. • Identify and classify microorganisms	



Course Outcome (CO) for Electronics and Communications Engineering Department

Physics – II (PH 401)	Apply knowledge of quantum mechanics to analyze and interpret data of nanoscale electronic devices
	Apply knowledge on crystal structure gives enormous information about the active material of different electronic devices
	Apply knowledge of optics which is very useful to characterize the surface, to identify the inner structure of atoms for the fabrication of high-performance devices
	Apply the principles of Acoustics to design a system, component, or process to meet desired needs within realistic constraints

Prakash
27/2/18



H.O.D.
8.1.17.18
Basic Science & Humanities Department
H. E. T. C., Hooghly.

COURSE OUTCOMES

Paper Name: SOFT SKILL DEVELOPMENT LAB

Paper Code: HS-HU 481

Department: ECE

Semester: 4th

After completing this course, the students will be able to:

1. Communicate in English confidently
2. Communicate appropriately in professional and social situations
3. Improve teamwork, leadership, and problem-solving skills through group activities like GD, case studies, Role-play, etc.
4. Organize and write correctly and learn proper business correspondence
5. Do active listening

Subham Ganguly
SIGNATURE OF FACULTY 22.01.2020

Mukherjee 22.01.2020
SIGNATURE OF HOD



COURSE OUTCOMES

Paper Name: TECHNICAL REPORT WRITING & LANGUAGE LABORATORY PRACTICE

Paper Code: HU 481

Department: ECE/CSE/CE

Semester: 4th

After completing this course, the students will be able to:

1. Inculcate a sense of confidence.
2. Grow up as a good communicator, both socially and professionally.
3. Enhance their power of Technical Communication.
4. Confidently pitch proposals and ideas through presentations in the professional domain.

Subham Gauguly 27.07.18
SIGNATURE OF FACULTY

P. Albrath 27.7.18
SIGNATURE OF HOD



Course Outcomes

Analog Communication Lab (EC491)

Course Title And Course Code	Course Outcomes
	At the end of the course the students will be able to.....
Analog Communication Lab (EC491)	Measure modulation index of an AM signal, output power with varying modulation index of an AM signal (for both DSB- & SSB), distortion of the demodulated output with varying modulation index of an AM signal (for both DSB-SC & SSB).
	Measure power of different frequency components of a frequency modulated signal & the measure of the bandwidth and Design a FM demodulator using PLL
	Measure the selectivity, sensitivity, fidelity of a super heterodyne receiver.
	Design a PLL using VCO & to measure the lock frequency
	Study waveforms of various functional points (output of RF,IF & video) of a B/W TV receiver and vertical & horizontal sweep of the time base unit of a B/W TV

Srinivas Samanta

BSG



SAB
DIG, ECE Deptt.
HETC, Hooghly.

Course Outcomes

Analog Electronic Circuits Lab (EC492)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Analog Electronic Circuits Lab (EC492)	Design and test rectifiers, clipping circuits, clamping circuits and voltage regulators
	Compute the parameters from the characteristics of JFET and MOSFET devices.
	Design, test and evaluate BJT amplifiers in CE configuration.
	Design and test JFET/MOSFET amplifiers.
	Design and test a power amplifier.
	Design and test various types of oscillators.

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Course Outcomes

Microprocessor & Microcontroller Lab (EC493)

Course Title And Course Code	Course Outcomes
Microproces sor & Microcontrol ler Lab (EC493)	At the end of the course the students will be able to.....
	familiarization with 8085 and 8051 trainer kit and simulator
	write assemble language programs on 8085 μ p trainer kits using basic instruction set (data transfer, Load/Store, Arithmetic)
	use 8085 μ p trainer kits to write assemble language programs using branch instructions for examples: Look up Table, Copying an Array, Shifting an Array, String Matching, Multiplication using repetitive addition, Division, Largest and Smallest no. from an array, Arrangement array in Ascending and Descending order, Fibonacci series, Factorial of a number.
	write assemble language programs on trainer kits such as: Packing & Unpacking of a numbers, BCD addition & BCD Subtraction, Binary to ASCII conversion.
write assemble language program using subroutine calls and IN/OUT instructions using 8255 PPI on the trainer kit e.g. subroutine for delay, glowing LEDs accordingly.	

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Course Outcomes

Numerical Methods Lab (BS) (BS-M491)

Course Title And Course Code	Course Outcomes
Numerical Methods Lab (BS) (BS-M491)	At the end of the course the students will be able to...:
	solve an algebraic or transcendental equation using Bisection, Regular-falsi and Newton Raphson methods
	Calculate a definite integral using Trapezoidal rule, Simpson's 1/3 rule and Weddle's rule.
	Solve ordinary differential equation using Euler's method and Runga-Kutta method.
	Approximate a function using different Interpolation methods.
	Solve a linear system of equations using using Gauss elimination and Gauss-Seidel iteration methods.
Implement numerical methods in Matlab.	



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Course Outcome (CO) for Electronics and Communications Engineering Department

Physics –II Laboratory (PH 491)	Convert units by using conversion factors, unit analysis and calculate instrumental error analysis.
	Explain the difference between tensile stress and shear stress
	Find the modulus of elasticity of a material
	Apply the basic laws of physics in different aspects of physical world.
	Classify different characteristics of light

Shashi
24/7/18



A. Subramanian
27.7.18

H.O.D.
Basic Science & Humanities Department
H. E. T. C., Hooghly.

Course Outcomes
Electronic Devices (EC301)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to,....
Electronic Devices (EC301)	Differentiate the conduction techniques in semi-conductor materials.
	Analyze characteristics of Semi-conductor diodes and solve problems.
	Analyze characteristics of Bi-polar Transistors and solve problems.
	Analyze characteristics of MOS Transistors and solve problems.
	Differentiate between different Opto-electronic devices.

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Course Outcomes

Digital System Design (EC302)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Digital System Design (EC302)	Design and analyze combinational logic circuits
	Design & analyze modular combinational circuits with MUX/DEMUX, Decoder, Encoder
	Design & analyze synchronous sequential logic circuits




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Course Outcomes
Signals and System (EC303)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Signals and System (EC303)	Analyze different types of signals
	Represent continuous and discrete systems in time and frequency domain using different transforms
	Design & analyze synchronous sequential logic circuits
	Sampling and reconstruction of a signal

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Course Outcomes
Network Theory (EC304)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Network Theory (EC304)	Understand basics electrical circuits with nodal and mesh analysis.
	Appreciate electrical network theorems
	Apply Laplace Transform for steady state and transient analysis.
	Determine different network functions.
	Appreciate the frequency domain techniques.



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COURSE OUTCOME

Paper Name	Paper Code	Course	Course Outcome
Numerical Methods	M(CS) 301	ECE (2 nd year, 3 rd semester)	<ol style="list-style-type: none"> 1. Ability to tackle problems where analytical methods are difficult or fail 2. Competency to use numerical methods where analytical solutions are not amenable to numerical interpretation 3. Efficiency in formulation of numerical algorithms in iteration problems 4. Competency to tackle transcendental equations and boundary value differential equations with variable coefficients 5. Excellence use of numerical methods for approximate value of integration and forecasting of data


A. Debrath
 25.7.18
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 Basic Science & Humanities Department
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R. Patra
 24/07/2018

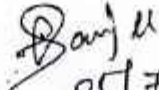


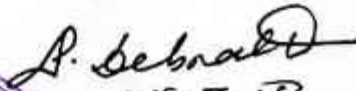
COURSE OUTCOME

Paper Name	Paper Code	Course	Course Outcome
Mathematics	M 302	ECE (2 nd year, 3 rd semester)	<ol style="list-style-type: none"> 1. Understand the use of periodic signals and Fourier series to analyse circuits 2. Ability to apply knowledge of integral transforms in control and signal systems 3. Efficiency to use methods of complex analysis to find poles and zeros in digital signal problems 4. Excellence to apply effectively the methods of probability theories in signal processing and control systems etc 5. Ability to apply knowledge of ODE, PDE, integrals and series expansions to arrive at solutions of many electronic engineering problems


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R. Patra
 25/07/2018


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Course Outcomes

Data Structure & Algorithms (ES-CS301)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Data Structure & Algorithms (ES-CS301)	For a given algorithm student will able to analyze the algorithms to determine the time and computation complexity and justify the correctness.
	For a given Search problem (Linear Search and Binary Search) student will able to implement it.
	For a given problem of Stacks, Queues and linked list student will able to implement it and analyze the same to determine the time and computation complexity.
	Student will able to write an algorithm Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, Merge Sort, Heap Sort and compare their performance in term of Space and Time complexity.
	Student will able to implement Graph search and traversal algorithms and determine the time and computation complexity



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Course Outcomes

Electronics Devices Lab (EC391)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Electronic s Devices Lab (EC391)	An ability to verify the working of different diodes, transistors, CRO probes and measuring instruments. Identifying the procedure of doing the experiment.
	Ability to understand the characteristics of BJT and FET and how to Determine different parameters for designing purpose
	Ability to understand properties of photoelectric devices
	Ability to measure and record the experimental data, analyze the results, and prepare a formal laboratory report.

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Course Outcomes

Data Structure & Algorithm Lab (ES-CS391)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Data Structure & Algorithm Lab (ES-CS391)	understand the basics principle's of Abstract Data Type with their domain, actions and functions
	verify the functionality of different abstract data type by implementing stack, queue, linked list etc using c programming language
	apply skills to think logically a step by step solutions of a real problem and implements it using the concept of procedural programming language like C
	correlate the relationship among the data to give the best solution among the many possible solutions of a given problem in terms of Time and Space complexity.
	grab the concept of liner and non linear data structure and applying the knowledge to give a support to the user specific requirement through the implementation using C programming language




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Course Outcomes

Digital System Design Lab(EC392)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Digital System Design Lab (EC392)	design & realize combinational circuit like Basic gates , simple arithmetic circuit , Four –bit parity generator, Code Conversion circuit, comparator circuits, Decoder & Multiplexer circuit
	design and realize RS, JK and D flip-flops
	design and realize Universal Register
	design and realize Asynchronous Up/Down counter, Synchronous Up/Down counter, Sequential Counter , Ring counter and Johnson's counter


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Course Outcomes

Environmental Science (MC381)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Environmental Science (MC381)	apply causes of land pollution in solid waste management
	apply knowledge of various causes of water pollution in electronic waste management
	apply knowledge of ecosystem in controlling renewable energy (solar energy) and designing eco-friendly electronic gadgets
	apply knowledge of noise pollution in effective communication system.



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COURSE OUTCOME

Paper Name	Paper Code	Course	Course Outcome
Mathematics III (Probability & Statistics)	BS-M301	ECE (2 nd year, 3 rd semester)	<ol style="list-style-type: none"> 1. The students will learn the ideas of probability and random variables and various discrete and continuous probability distributions and their properties 2. The students will learn the basic ideas of statistics including measures of central tendency, regression 3. The students will learn the statistical methods of studying data samples 4. To provide an overview of probability and statistics to engineers

Mukherjee 04/07/2019

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R. Patra
04/07/2019



COURSE OUTCOMES

Paper Name: ENGLISH

Paper Code: HM-HU 201

Department: CSE/ECE/EE/ME/EE

Semester: 2nd

After completing this course, the students will be able to:

1. The student will acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.
2. Strengthen their vocabulary by understanding the concept of word formation, acquaintance with root words from foreign language and their use in English
3. Improve their verbal-aptitude skills
4. Improve their knowledge of English grammar
5. Write Précis, Essays, Business Letters, Cover Letters & CV; E-mail, etc.

Subhan Ganshy
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A. Debnath 27.7.18
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Course Outcomes

Programming for Problem Solving (ES-CS291)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Programm ing for Problem Solving (ES- CS291)	To formulate the algorithms for simple problems
	To be able to correct syntax errors as reported by the compilers
	To be able to identify and correct logical errors encountered at run time
	To be able to write iterative as well as recursive programs
	To be able to represent data in arrays, strings and structures and manipulate them through a program
	To translate given algorithms to a working and correct program
	To be able to declare pointers of different types and use them in defining self-referential structures.
	To be able to create, read and write to and from simple text file.

Shyamal Pal



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Course Outcomes

Programming for Problem Solving (ES-CS201)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Programming for Problem Solving (ES-CS201)	To translate the algorithms to programs (in C language).
	To test and execute the programs and correct syntax and logical errors.
	To implement conditional branching, iteration and recursion.
	To decompose a problem into functions and synthesize a complete program using divide and conquer approach.
	To use arrays, pointers and structures to formulate algorithms and programs.
	To apply programming to solve matrix addition and multiplication problems and searching and sorting problems.
	To apply programming to solve simple numerical method problems, namely root finding of function, differentiation of function and simple integration.

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COURSE OUTCOMES

Paper Name: LANGUAGE LABORATORY

Paper Code: HM-HU 291

Department: CSE/ECE/EE/ME/EE

Semester: 2nd

After completing this course, the students will be able to:

1. Acquire basic proficiency in English
2. Improve their reading and listening skills
3. Develop effective writing and speaking skills
4. Master Linguistic/Paralinguistic features (Pronunciation/Phonetics/Voice modulation/ Stress/ Intonation/ Pitch & Accent) of connected speech
5. Improve teamwork, leadership, and problem-solving skills through group activities like GD, case studies, Role-play, etc.

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Vivekananda Road Pipulpati, Hooghly-712102



COURSE OUTCOME

Paper Name	Paper Code	Course	Course Outcome
Workshop/ Manufacturing Practices	ES ME 292	Electronics & Communication Engineering	<ol style="list-style-type: none">1. Acquire "Hands on" training and practice to students for use of various tools, devices, and machine.2. Acquire thorough knowledge of carrying out various operations in mechanical engineering workshop.3. They will also get practical knowledge of the dimensional accuracies and dimensional tolerances possible with different manufacturing processes.4. By assembling different components, they will be able to produce small devices of their interest.5. Acquire skills in basic engineering practice for creating objects from raw materials

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COURSE OUTCOME

Paper Name	Paper Code	Course	Course Outcome
Mathematics IIB	BS-M202	ECE (1 st year, 2 nd semester)	<ol style="list-style-type: none">1. Learn the methods for evaluating multiple integrals and their applications to different physical problems2. Understand different techniques to solve first and second order ordinary differential equations with its formulation to address the modelling of systems and problems of engineering sciences3. Learn different tools of differentiation and integration of functions of a complex variable that are used with various other techniques for solving engineering problems4. Apply different types of transformations between two 2- dimensional planes for analysis of physical or engineering problems


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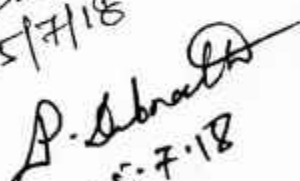
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COURSE OUTCOME

Paper Name	Paper Code	Course	Course Outcome
Mathematics IB	BS-M102	ECE (1 st year, 1 st semester)	<ol style="list-style-type: none"> 1. Apply the concept and techniques of differential and integral calculus to determine curvature and evaluation of different types of improper integrals 2. Understand the domain of applications of mean value theorems to engineering problems 3. Learn the tools of power series and Fourier series to analyse engineering problems and apply the concept of convergence of infinite series in many approximation techniques in engineering disciplines 4. Apply the knowledge for addressing the real-life problems which comprises of several variables or attributes and identify extremum points of different surfaces of higher dimensions. 5. Understand different types of matrices, their Eigen values, Eigen vectors, rank and their orthogonal transformations which are essential for understanding physical and engineering problems


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Course Outcomes

Basic Electrical Engineering (ES-EE101)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Basic Electrical Engineering (ES-EE101)	To understand and analyze basic electric and magnetic circuits
	To study the working principles of electrical machines and power converters
	To introduce the components of low voltage electrical installations



Course Outcomes

Basic Electrical Engineering Laboratory (ES-EE191)

Course Title And Course Code	Course Outcomes At the end of the course the students will be able to.....
Basic Electrical Engineering Laboratory (ES-EE191)	correlate the theoretical knowledge with the practical one and to analyze possible causes of discrepancy in comparison to theory
	assess the characteristics of different lamps (e.g. carbon, tungsten lamp and fluorescent lamp) experimentally for better understanding of energy efficiency
	be competent with the processes of analyzing different (dc and ac) electrical network experimentally for better understanding of electrical network systems
	correlate the theoretical knowledge with the practical one and to analyze possible causes of discrepancy in comparison to theory



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COURSE (SUB) OUTCOME

Course (Sub)Title : Chemistry - I Laboratory	
Course (Sub)Code : BS-CH 191	Stream : ECE Semester: 1st
Course (Sub) Outcomes	
CO No.	CO
1	On completion of this course students will be able to investigate different properties of metals.
2	On completion of this course students will be able to analyze the different components of soil which is require for understanding soil mechanism.
3	On completion of this course students will be able to analyze different parameters of drinking and sewage water.
4	On completion of this course students will be able to handle different types of new gadgets which they normally practice in the laboratory.
5	On completion of this course students will be able to develop efficiency in data analysis which is normally require for getting desirable result in different experiments.

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P. Debnath 25.7.18
Signature of the HOD
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HOOGLHY ENGINEERING & TECHNOLOGY COLLEGE

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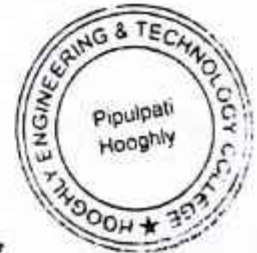
COURSE OUTCOME

Paper Name	Paper Code	Course	Course Outcome
Engineering Graphics & Design	ES ME 191	Electronics & Communication Engineering	<ol style="list-style-type: none">1. Introduction to engineering design and its place in society2. Exposure to the visual aspects of engineering design3. Exposure to engineering graphics standards and orthographic views of engineering components4. understand the logic behind the section of solids and development of surfaces.5. Exposure to solid modelling and its concept in practical applications.

S. Ghosh

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Mechanical Engineering
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COURSE (SUB) OUTCOME

Course (Sub)Title : Chemistry - I		
Course (Sub)Code : BS-CH 101	Stream : ECE	Semester: 1st
Course (Sub) Outcomes		
CO No.	CO	
1	Analyze microscopic chemistry in terms of atomic and molecular orbitals and intermolecular forces.	
2	Rationalize bulk properties and processes using thermodynamic considerations.	
3	Distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques.	
4	Rationalize periodic properties such as ionization potential, electronegativity and oxidation states.	
5	List of major chemical reactions that are used in synthesis of molecules.	

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Signature of the HOD

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Course Outcome (CO) for Electronics and Communications Engineering Department

<p style="text-align: center;">Physics -1 Lab (BS PH191/291)</p>	<p>Observe and read data in slide calliper's, screw gauge. Calculate different modulus of elasticity to apply basic knowledge Physics of Elasticity and apply viscosity principle of streamline motion of water to calculate its viscosity coefficient required in fluid mechanics</p> <p>Arrange sequential connection in electrical experiment to verify principles of Kirchoff's law to verify passive elements of electrical circuit</p> <p>Operate optical instruments to illustrate physical properties of light and to observe spectral lines of light to verify medium specific characteristics. Calculate Rydberg constant by studying Hydrogen spectrum to visualize visible spectra and to assess this empirical fitting parameter as a fundamental physical constant</p> <p>Determine Band Gap and Hall coefficient of a given intrinsic semiconductor and distinguish between different intrinsic semiconductors. Determine the dielectric constant of different capacitors to correlate their usage like insulator and limitation of their usage as a dielectric material.</p> <p>Apply concepts of quantum mechanics to verify Bohr's atomic orbital theory</p> <p>Determine Planck's constant and Stefan's constant applying modern Physics</p>
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J. S. Prasad
27.7.18



A. S. Prasad
27.7.18
H. O. D.
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H. E. T. C. - Hooghly.

Course Outcome (CO) for Electronics and Communications Engineering Department

Physics – I (BS PH 101/201)	Apply basic concepts of mechanics
	Discuss Physical optics and analyze principles of lasers with applications
	Categorize di electric and magnetic properties of materials leading to Electromagnetic laws
	Differentiate between Classical Physics and Quantum Physics by introducing Planck's law
	Apply wave particle duality in real life problems followed by simple quantum mechanics calculations
	Classify ensembles and differentiate between classical and Quantumstatistical mechanics

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