



Arka Educational & Cultural Trust (Regd.)

# Jain Institute of Technology, Davangere

(A Unit of Jain group of Institutions, Bengaluru)

# 323, Near VeereshwaraPunyashrama, Avaragere, Davangere- 577003.

## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Calculus and Linear Algebra</b>	<b>Semester</b>	<b>1</b>
<b>Course code</b>	18MAT11	<b>Scheme</b>	2018 CBCS

### Course Outcomes

<b>C101.1</b>	Apply the knowledge of calculus to solve problems related to polar curves and its applications in determining the bentness of a curve.
<b>C101.2</b>	Learn the notion of partial differentiation to calculate rates of change of multivariate functions and solve problems related to composite functions and jacobians.
<b>C101.3</b>	Apply the concept of change of order of integration and variables to evaluate multiple integrals and their usage in computing the area and volumes.
<b>C101.4</b>	Solve first order linear /nonlinear differential equation analytically using standard methods.
<b>C101.5</b>	Make use of matrix theory for solving system of linear equations and compute eigenvalues and eigenvectors required for matrix diagonalization process.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Engineering Physics</b>	<b>1</b>	<b>2</b>
<b>Course code</b>	18PHY12/22	Scheme	2018 CBCS

### Course Outcomes

<b>C102.1</b>	Understand various types of oscillations and their implications, the role of shock waves in various fields.
<b>C102.2</b>	Recognize the elastic properties of materials for engineering applications.
<b>C102.3</b>	Realize the magnetic interrelation between time varying electric field and field, the transverse nature of electromagnetic waves and their role in optical fibre communication.
<b>C102.4</b>	Compute Eigen values, Eigen functions, and momentum of atomic and subatomic particles using time independent Schrodinger wave one-dimensional applications equation and extended to the design of lasers and its
<b>C102.5</b>	Apprehend and materials such as conductors, semiconductors and dielectrics using different theoretical models.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Engineering Chemistry</b>	<b>Semester</b>	<b>1</b>
<b>Course code</b>	18CHE12/22	<b>Scheme</b>	2018 CBCS

### Course Outcomes

<b>C103.1</b>	Use of free energy in equilibria, rationalize bulk properties and processes using thermodynamic considerations, electrochemical energy systems.
<b>C103.2</b>	Causes & effects of corrosion of metals and control of corrosion. Modification of surface properties of metals to develop resistance to corrosion, wear, tear, impact etc. by electroplating and electroless plating.
<b>C103.3</b>	Production and consumption of energy for industrialization of country and living standards of people. Electrochemical and concentration cells. Classical, modern batteries and fuel cells. Utilization of solar energy for different useful forms of energy.
<b>C103.4</b>	Environmental pollution, waste management and water chemistry.
<b>C103.5</b>	Different techniques of instrumental methods of analysis. Fundamental principles of nano materials.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Basic Electrical Engineering</b>	<b>Semester</b>	<b>1</b>
<b>Course code</b>	18ELE13/23	<b>Scheme</b>	2018 CBCS

### Course Outcomes

<b>C104.1</b>	Analyse D.C and A.C circuits.
<b>C104.2</b>	Explain the principle of operation and construction of single-phase transformers.
<b>C104.3</b>	Explain the principle of operation and construction of DC machines and synchronous machines.
<b>C104.4</b>	Explain the principle of operation and construction of three phase induction motors.
<b>C104.5</b>	Discuss concepts of electrical wiring, circuit protecting devices and earthing.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>C Programming for Problem</b>	<b>Semester</b>	<b>2</b>
<b>Course code</b>	18CPS13/23	Scheme	2018 CBCS

### Course Outcomes

<b>C105.1</b>	Illustrate simple algorithms from the different domains such as mathematics, physics, etc.
<b>C105.2</b>	Construct a programming solution to the given problem using C.
<b>C105.3</b>	Identify and correct the syntax and logical errors in C programs.
<b>C105.4</b>	Modularize the given problem using functions and structures.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Elements of Civil Engineering</b>	<b>Semester</b>	<b>1</b>
<b>Course code</b>	18CIV14/24	Scheme	2018 CBCS

### Course Outcomes

<b>C106.1</b>	Understand the Various Fields of Civil Engineering.
<b>C106.2</b>	Compute the resultant of force system & resolution of forces.
<b>C106.3</b>	Locate the centroid & compute the moment of inertia of regular & built-up sections.
<b>C106.4</b>	Comprehend the action of forces, moments and other types of loads on rigid bodies and compute the reactive forces.
<b>C106.5</b>	Analyse the Bodies In Motion.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Basic Electronics</b>	<b>Semester</b>	<b>1</b>
<b>Course code</b>	18ELN14/24	Scheme	2018 CBCS

### Course Outcomes

<b>C107.1</b>	Understand the characteristics of diode, zener diode, rectifiers, capacitor filter circuits, photo diode, LED, photo coupler.
<b>C107.2</b>	Understand the construction & operation of FETs, CMOS, SCR operation and characteristics.
<b>C107.3</b>	Understand the op-amp operation, input modes, Ideal characteristics, applications and comparator.
<b>C107.4</b>	Understand the BJT operation, feedback amplifiers-principles, gain stability with feedback, oscillators, IC 555 Timer, astable oscillator using IC 555.
<b>C107.5</b>	Understand the basics of digital electronics using logic gates, Boolean algebra and realization of Boolean functions using universal gates, half and full adder designing, MUX, Decoder, shift register, ring counter, communication system, principle of mobile phone.



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<b>Course Name</b>	<b>Engineering Graphics</b>	<b>Semester</b>	<b>1</b>
<b>Course code</b>	18EDGL15/25	<b>Scheme</b>	2018 CBCS

### Course Outcomes

<b>C108.1</b>	To expose the engineering standards and conventions followed in preparation of engineering drawings.
<b>C201.2</b>	To make them understand the concepts of orthographic and isometric projections.
<b>C201.3</b>	Develop the ability of conveying the engineering information through engineering drawings.
<b>C201.4</b>	To make them understand the relevance of engineering drawing to different engineering domains.
<b>C201.5</b>	To develop the ability of producing engineering drawings using drawing instruments.
<b>C201.6</b>	To enable them to use computer aided drafting packages for the generation of drawings.





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<b>Course Name</b>	<b>Elements of Mechanical Engineering</b>	<b>Semester</b>	<b>1</b>
<b>Course code</b>	18ME15/25	Scheme	2018 CBCS

### Course Outcomes

<b>C109.1</b>	Identify different sources of energy and their conversion process.
<b>C201.2</b>	Explain the working principle of hydraulic turbines , pumps, IC engines and refrigeration.
<b>C201.3</b>	Recognize various metal joining processes and power transmission elements.
<b>C201.4</b>	Understand the properties of common engineering materials and their applications in engineering industry.
<b>C201.5</b>	Discuss the working of conventional machine tools, machining processes, tools and accessories.
<b>C201.6</b>	Describe the advanced manufacturing systems.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Engineering Physics Lab</b>	<b>Semester</b>	<b>1</b>
<b>Course code</b>	18PHYL16/26	<b>Scheme</b>	2018 CBCS

### Course Outcomes

<b>C110.1</b>	Apprehend the concepts of interference of light, diffraction of light and total internal reflection of light.
<b>C110.2</b>	Understand the principles of operation of semiconductor devices photodiode and transistor using simple circuits.
<b>C110.3</b>	Determine spring constant, elastic moduli and moment of inertia of rigid bodies with the help of suggested procedure.
<b>C110.4</b>	Recognize the concept of resonance and practical applications.
<b>C110.5</b>	Understand the magnetic effect of electric current, thermal, electrical and dielectric properties of materials.



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<b>Course Name</b>	<b>Engineering Chemistry Lab</b>	<b>Semester</b>	<b>1</b>
<b>Course code</b>	18CHEL16/26	Scheme	2018 CBCS

### Course Outcomes

<b>C111.1</b>	Handling different types of instruments for analysis of materials using small quantities of materials involved for quick and accurate results.
<b>C111.2</b>	Carrying out different types of titrations for estimation of concerned in materials using comparatively more quantities of materials involved for good results.



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<b>Course Name</b>	<b>Basic Electrical Engineering Lab</b>	<b>Semester</b>	<b>1</b>
<b>Course code</b>	18ELEL17/27	Scheme	2018 CBCS

### Course Outcomes

<b>C112.1</b>	Identify the common electrical components and measuring instruments used for conducting experiments in the electrical laboratory.
<b>C112.2</b>	Compare power factor of lamps.
<b>C112.3</b>	Determine impedance of an electrical circuit and power consumed in a 3-phase load.
<b>C112.4</b>	Determine earth resistance and understand two way and three-way control of lamps.



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<b>Course Name</b>	<b>C Programming Lab</b>	<b>Semester</b>	<b>1</b>
<b>Course code</b>	18CPL17/27	Scheme	2018 CBCS

### Course Outcomes

<b>C113.1</b>	Write algorithms, flowcharts and program for simple problems.
<b>C113.2</b>	Correct syntax and logical errors to execute a program.
<b>C113.3</b>	Write iterative and wherever possible recursive programs.
<b>C113.4</b>	Demonstrate use of functions, arrays, strings, structures and pointers in problem solving



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Technical English I</b>	<b>Semester</b>	<b>1</b>
<b>Course code</b>	18EGH18	Scheme	2018 CBCS

### Course Outcomes

<b>C114.1</b>	Use grammatical English and essentials of language skills and identify the nuances of phonetics, intonation and flawless pronunciation.
<b>C114.2</b>	Implement English vocabulary at command and language proficiency.
<b>C114.3</b>	Identify common errors in spoken and written communication.
<b>C114.4</b>	Understand and improve the non-verbal communication and kinesics.
<b>C114.5</b>	Perform well in campus recruitment, engineering and all other general competitive examinations.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Advance Calculus and Numerical Methods</b>	<b>Semester</b>	<b>1</b>
<b>Course code</b>	18MAT21	Scheme	2018 CBCS

### Course Outcomes

<b>C115.1</b>	Illustrate the applications of multivariate calculus to understand the solenoidal and irrotational vectors and also exhibit the inter dependence of line, surface and volume integrals.
<b>C115.2</b>	Demonstrate various physical models through higher order differential equations and solve such linear ordinary differential equations.
<b>C115.3</b>	Construct a variety of partial differential equations and solution by exact methods/method of separation of variables.
<b>C115.4</b>	Explain the applications of infinite series and obtain series solution of ordinary differential equations.
<b>C115.5</b>	Apply the knowledge of numerical methods in the modelling of various physical and engineering phenomena.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Technical English II</b>	<b>Semester</b>	<b>1</b>
<b>Course code</b>	18EGH28	Scheme	2018 CBCS

### Course Outcomes

<b>C116.1</b>	Identify common errors in spoken and written communication.
<b>C116.2</b>	Get familiarized with English vocabulary and language proficiency.
<b>C116.3</b>	Improve nature and style of sensible writing and acquire employment and workplace communication skills.
<b>C116.4</b>	Improve there technical communication skills through technical reading and writing practices.
<b>C116.5</b>	Perform well in campus recruitment, engineering and all other general competitive examinations.





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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Transform Calculus, Fourier series and Numerical T</b>	<b>Semester</b>	<b>3</b>
<b>Course code</b>	18MAT31	Scheme	2018 CBCS

### Course Outcomes

<b>C201.1</b>	Use Laplace transform and inverse Laplace transform in solving differential and integral equation arising in network analysis, control systems and other fields of engineering.
<b>C201.2</b>	Demonstrate fourier series to study the behaviour of periodic functions and their applications in system communications, digital signal processing and field theory.
<b>C201.3</b>	Make use of fourier transform and Z transform to illustrate discrete /continuous function arising in wave and heat propagation, signals and systems.
<b>C201.4</b>	Solve first and second order ordinary differential equations arising in engineering problems using single step and multistep numerical methods.
<b>C201.5</b>	Determine the externals of functions using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Network Theory</b>	<b>Semester</b>	<b>3</b>
<b>Course code</b>	18EC32	Scheme	2018 CBCS

### Course Outcomes

<b>C202.1</b>	Determine currents and voltages using source transformation/source shifting / mesh / nodal analysis and reduce given network using star delta transformation / source transformation / source shifting.
<b>C202.2</b>	Solve network problems by applying Superposition / Thevenin's / Norton's / Maximum Power transfer / Millman's network theorems and electrical laws to reduce circuit complexities and to arrive at feasible solutions.
<b>C202.3</b>	Calculate current and voltages for the given circuit under transient conditions and apply Laplace transform to solve the given network.
<b>C202.4</b>	Solve the given network using specified two port network – Z, Y, T & h.
<b>C202.5</b>	Understand the concept of resonance and determine the parameters that characterize series/parallel resonant circuits.



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<b>Course Name</b>	<b>Electronic Devices</b>	<b>Semester</b>	<b>3</b>
<b>Course code</b>	18EC33	Scheme	2018 CBCS

### Course Outcomes

<b>C203.1</b>	Describe the principles and characteristics of different types of semiconductor devices.
<b>C203.2</b>	Describe the fabrication process of semiconductor devices.
<b>C203.3</b>	Utilize the mathematical models of semiconductor junctions and MOS transistors for circuits and systems.
<b>C203.4</b>	Identify the mathematical models of MOS transistors for circuits and systems.
<b>C203.5</b>	Describe the fabrication process of CMOS Integrated Circuits.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Digital System Design</b>	<b>Semester</b>	<b>3</b>
<b>Course code</b>	18EC34	Scheme	2018 CBCS

### Course Outcomes

<b>C204.1</b>	Thorough understanding of the fundamental concepts and techniques used in digital electronics.
<b>C204.2</b>	Understand the simplification techniques using Karnaugh maps, Quine-McClusky Technique
<b>C204.3</b>	The ability to understand, analyze and design various combinational and sequential circuits.
<b>C204.4</b>	Ability to identify basic requirements for designing applications and propose a cost effective solution.
<b>C204.5</b>	The ability to identify and prevent various hazards and timing problems in a digital design & to develop skill to build and troubleshoot digital circuits, Apply the knowledge gained in the design of Counters and Registers



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<b>Course Name</b>	<b>Computer Organization and Architecture</b>	<b>Semester</b>	<b>3</b>
<b>Course code</b>	18EC35	Scheme	2018 CBCS

### Course Outcomes

<b>C205.1</b>	Explain the basic organization of a computer system.
<b>C205.2</b>	Explain different ways of accessing an input / output device.
<b>C205.3</b>	Explain different ways handling interrupts.
<b>C205.4</b>	Illustrate the organization of different types of semiconductor and other secondary storage memories.
<b>C205.5</b>	Illustrate simple processor organization based on hardwired control and micro programmed control.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Power Electronics and Instrumentation</b>	<b>Semester</b>	<b>3</b>
<b>Course code</b>	18EC36	Scheme	2018 CBCS

### Course Outcomes

<b>C206.1</b>	Build and test circuits using power electronic devices.
<b>C206.2</b>	Analyze and design controlled rectifier, DC to DC converters, DC to AC inverters and SMPS.
<b>C206.3</b>	Define instrument errors. Develop circuits for multi range Ammeters, Voltmeters and Bridges to measure passive component values and frequency.
<b>C206.4</b>	Describe the principle of operation of Digital instruments and PLCs.
<b>C206.5</b>	Use Instrumentation amplifier for measuring physical parameters.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Electronic Devices and Instrumentation lab</b>	<b>Semester</b>	<b>3</b>
<b>Course code</b>	18ECL37	Scheme	2018 CBCS

### Course Outcomes

<b>C207.1</b>	Able to understand the characteristics of various electronic devices and measurement of parameters.
<b>C207.2</b>	Design and test simple electronic circuits.
<b>C207.3</b>	Ability to use of circuit simulation software for the implementation and characterization of electronic circuits and devices.



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<b>Course Name</b>	<b>Digital System Design Lab</b>	<b>Semester</b>	<b>3</b>
<b>Course code</b>	18ECL38	Scheme	2018 CBCS

### Course Outcomes

<b>C208.1</b>	Demonstrate the truth table of various expressions and combinational circuits using logic gates, Design and test various combinational circuits such as adders, subtractors, comparators, multiplexers and demultiplexers.
<b>C208.2</b>	Construct and test flips-flops, counters and shift registers. Simulate full adder and up/down counters.





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<b>Course Name</b>	<b>Complex Analysis, Probability and Statistical Methods</b>	<b>Semester</b>	<b>4</b>
<b>Course code</b>	18MAT41	Scheme	2018 CBCS

### Course Outcomes

<b>C210.1</b>	Use the concept of analytic function and complex potentials to solve the problems arising in electromagnetic field theory.
<b>C210.2</b>	Utilize conformal transformation and complex integral arising in aerofoil theory, fluid flow visualization and image processing.
<b>C210.3</b>	Apply discrete and continuous probability distributions in analysing the probability models arising in engineering field.
<b>C210.4</b>	Make use of the correlation and regression analysis to fit a suitable mathematical model for the statistical data.
<b>C210.5</b>	Construct joint probability distributions and demonstrate the validity of testing the hypothesis.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Analog Circuits</b>	<b>Semester</b>	<b>4</b>
<b>Course code</b>	18EC42	Scheme	2018 CBCS

### Course Outcomes

<b>C211.1</b>	Able to understand the characteristics of BJTs and FETs.
<b>C211.2</b>	Design and analyze BJT and FET amplifier circuits.
<b>C211.3</b>	Design sinusoidal and non-sinusoidal oscillators.
<b>C211.4</b>	Able to understand the functioning of linear ICs.
<b>C211.5</b>	Design of Linear IC based circuits.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Conrol Systems</b>	<b>Semester</b>	<b>4</b>
<b>Course code</b>	18EC43	Scheme	2018 CBCS

### Course Outcomes

<b>C212.1</b>	Develop the mathematical model of mechanical and electrical systems.
<b>C212.2</b>	Develop transfer function for a given control system using block diagram reduction techniques and signal flow graph method.
<b>C212.3</b>	Determine the time domain specifications for first and second order systems and analyse the behaviour of PID controllers.
<b>C212.4</b>	Analyze the stability of a system in the time domain using Routh-Hurwitz criterion and Root-Locus and Bode Plot technique.
<b>C212.5</b>	Analyze the stability of a system in the frequency domain using Nyquist Plot and Electrical system using state variable technique.



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<b>Course Name</b>	<b>Engineering Statistics and Linear Algebra</b>	<b>Semester</b>	<b>4</b>
<b>Course code</b>	18EC44	<b>Scheme</b>	2018 CBCS

### Course Outcomes

<b>C213.1</b>	Identify and associate Random Variables and Random Processes in Communication events.
<b>C213.2</b>	Analyze and model the Random events in typical communication events to extract quantitative statistical parameters.
<b>C213.3</b>	Analyze and model typical signal sets in terms of a basis function set of Amplitude, phase and frequency.
<b>C213.4</b>	Demonstrate by way of simulation or emulation the ease of analysis employing basis functions, statistical representation and Eigen values.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Signals and Systems</b>	<b>Semester</b>	<b>4</b>
<b>Course code</b>	18EC45	Scheme	2018 CBCS

### Course Outcomes

<b>C214.1</b>	Analyze the different types of signals and systems.
<b>C214.2</b>	Determine the Linearity, Causality, Time invariance and stability properties of both continuous and Discrete time signals. Evaluation of convolution sum and integrals.
<b>C214.3</b>	Describes LTI system Properties in terms of impulse response, Fourier Representation of Periodic Signals (CTFS).
<b>C214.4</b>	Describes Fourier Representation of aperiodic Signals, Problems, Properties of Fourier Transform.
<b>C214.5</b>	Analyze Discrete time signals and systems using Z-transform.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Microcontroller</b>	<b>Semester</b>	<b>4</b>
<b>Course code</b>	18EC46	Scheme	2018 CBCS

### Course Outcomes

<b>C215.1</b>	Explain the difference between Microprocessors & Microcontrollers, Architecture of 8051 Microcontroller, Interfacing of 8051 to external memory and Instruction set of 8051.
<b>C215.2</b>	Write 8051 Assembly level programs using 8051 instruction set.
<b>C215.3</b>	Interface simple switches, simple LEDs, ADC 0804, LCD and Stepper Motor to 8051 using 8051 I/O ports.
<b>C215.4</b>	Write 8051 Assembly language program to generate timings and waveforms using 8051 timers, to send & receive serial data using 8051 serial port and to generate an external interrupt using a switch.
<b>C215.5</b>	Explain the Interrupt system, operation of Timers/Counters and Serial port of 8051. Write 8051 Assembly language programs to generate square wave on 8051 I/O port pin using interrupt and C Programme to send & receive serial data using 8051 serial port.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Microcontroller Lab</b>	<b>Semester</b>	<b>4</b>
<b>Course code</b>	18ECL47	Scheme	2018 CBCS

### Course Outcomes

<b>C216.1</b>	Write Assembly language programs in 8051 for solving simple problems that manipulate input data using different instructions of 8051.
<b>C216.2</b>	Interface different input and output devices to 8051 and control them using Assembly language programs.
<b>C216.3</b>	Interface the serial devices to 8051 and do the serial transfer using C programming.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Analog Circuits Lab</b>	<b>Semester</b>	<b>4</b>
<b>Course code</b>	18ECL48	Scheme	2018 CBCS

### Course Outcomes

<b>C217.1</b>	Design the Analog circuits using Op-Amp's for different applications.
<b>C217.2</b>	Apply the knowledge gained in the design of BJT and FET Circuits and Amplifiers.





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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Technological Innovation Management and Entrepreneurship</b>	<b>Semester</b>	<b>5</b>
<b>Course code</b>	18ES51	Scheme	2018 CBCS

### Course Outcomes

<b>C301.1</b>	Understand the fundamental concepts of Management and Entrepreneurship and opportunities in order to setup a business.
<b>C301.2</b>	Describe the functions of Managers, Entrepreneurs, and their social responsibilities.
<b>C301.3</b>	Extend the components in developing a business plan.
<b>C301.4</b>	Utilize about various sources of funding and institutions supporting entrepreneurs.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Digital Signal Processing</b>	<b>Semester</b>	<b>5</b>
<b>Course code</b>	18EC52	Scheme	2018 CBCS

### Course Outcomes

<b>C302.1</b>	Determine response of LTI systems using time domain and DFT techniques.
<b>C302.2</b>	Compute DFT of real and complex discrete time signals.
<b>C302.3</b>	Compute DFT using FFT algorithms and linear filtering approach.
<b>C302.4</b>	Design and realize FIR and IIR digital filters.
<b>C302.5</b>	Understand the DSP processor architecture.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Principles of Communication systems</b>	<b>Semester</b>	<b>5</b>
<b>Course code</b>	18EC53	Scheme	2018 CBCS

### Course Outcomes

<b>C303.1</b>	Design simple systems for generating and demodulating AM, DSB, SSB and VSB signals.
<b>C303.2</b>	Understand the concepts in Angle modulation for the design of communication systems.
<b>C303.3</b>	Design simple systems for generating and demodulating frequency modulated signals.
<b>C303.4</b>	Learn the concepts of random process and various types of noise.
<b>C303.5</b>	Evaluate the performance of the communication system in presence of noise.
<b>C303.6</b>	Analyze pulse modulation and sampling techniques.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Information Theory and Coding</b>	<b>Semester</b>	<b>5</b>
<b>Course code</b>	18EC54	Scheme	2018 CBCS

### Course Outcomes

<b>C304.1</b>	Understand the concept of Entropy, Rate of information and order of the source.
<b>C304.2</b>	Study various source encoding algorithms.
<b>C304.3</b>	Model discrete & continuous communication channels.
<b>C304.4</b>	Study various error control coding algorithms.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Electromagnetic Waves</b>	<b>Semester</b>	<b>5</b>
<b>Course code</b>	18EC55	Scheme	2018 CBCS

### Course Outcomes

<b>C305.1</b>	Study the different coordinate systems, Physical significance of Divergence, Curl and Gradient.
<b>C305.2</b>	Understand the applications of Coulomb's law and Gauss law to different charge distributions and the applications of Laplace's and Poisson's Equations to solve real time problems on capacitance of different charge distributions.
<b>C305.3</b>	Understand the physical significance of Biot-Savart's, Amperes's Law and Stokes' theorem for different current distributions
<b>C305.4</b>	Infer the effects of magnetic forces, materials and inductance.
<b>C305.5</b>	Know the physical interpretation of Maxwell' equations and applications for Plane waves for their behaviour in different media



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<b>Course Name</b>	<b>Verilog HDL</b>	<b>Semester</b>	<b>5</b>
<b>Course code</b>	18EC56	Scheme	2018 CBCS

### Course Outcomes

<b>C306.1</b>	Write Verilog programs in gate, dataflow (RTL), behavioral and switch modeling levels of Abstraction.
<b>C306.2</b>	Write simple programs in VHDL in different styles.
<b>C306.3</b>	Design and verify the functionality of digital circuit/system using test benches.
<b>C306.4</b>	Identify the suitable Abstraction level for a particular digital design.
<b>C306.5</b>	Write the programs more effectively using Verilog tasks and directives, also perform timing and delay simulation.



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<b>Course Name</b>	<b>DSP Lab</b>	<b>Semester</b>	<b>5</b>
<b>Course code</b>	18ECL57	Scheme	2018 CBCS

### Course Outcomes

<b>C307.1</b>	Simulation of discrete signals & Computation in time and frequency domain, verification of its properties and results.
<b>C307.2</b>	Implementation of discrete computations using DSP processor and realization of digital filters using simulation and its analysis.



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<b>Course Name</b>	<b>HDL Lab</b>	<b>Semester</b>	<b>5</b>
<b>Course code</b>	18ECL58	Scheme	2018 CBCS

### Course Outcomes

<b>C308.1</b>	Write the Verilog/VHDL programs to simulate Combinational circuits in Dataflow, Behavioral and Gate level Abstractions and describe sequential circuits like flip flops and counters in Behavioral description and obtain simulation waveforms.
<b>C308.2</b>	Synthesize Combinational and sequential circuits on programmable ICs and test the hardware and interface the hardware to the programmable chips and obtain the required output.





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<b>Course Name</b>	<b>Environmental Studies</b>	<b>Semester</b>	<b>5</b>
<b>Course code</b>	18CIV59	<b>Scheme</b>	2018 CBCS

### Course Outcomes

<b>C309.1</b>	Understand the principles of ecology and environmental issues that apply to air, land and water issues on a global scale.
<b>C309.2</b>	Develop critical thinking and /or observation skills, and apply them to the analysis of a problem or question related to the environment.
<b>C309.3</b>	Demonstrate ecology knowledge of a complex relationship between biotic and biotic components.
<b>C309.4</b>	Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues and Relate to the developments in Environmental Pollution Mitigation Tools.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Digital Communication</b>	<b>Semester</b>	<b>6</b>
<b>Course code</b>	18EC61	Scheme	2018 CBCS

### Course Outcomes

<b>C310.1</b>	Analyze the performance of a baseband and pass band digital communication system in terms of error rate and spectral efficiency.
<b>C310.2</b>	Perform the time and frequency domain analysis of the signals in a digital communication.
<b>C310.3</b>	Select the blocks in a design of digital communication system.
<b>C310.4</b>	Analyze Performance of spread spectrum communication system.
<b>C310.5</b>	Analyze the spectral characteristics of band pass signaling schemes and their noise performance.
<b>C310.6</b>	Apply discrete random variables and probabilities mass function to compute probabilities and expected values in a variety of applications.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Embedded Systems</b>	<b>Semester</b>	<b>6</b>
<b>Course code</b>	18EC62	Scheme	2018 CBCS

### Course Outcomes

<b>C311.1</b>	Describe the architectural features and instructions of 32 bit microcontroller ARM Cortex M3
<b>C311.2</b>	Apply the knowledge gained for Programming ARM Cortex M3 for different applications.
<b>C311.3</b>	Understand the basic hardware components and their selection method based on the characteristics and attributes of an embedded system.
<b>C311.4</b>	Develop the hardware /software co-design and firmware design approaches
<b>C311.5</b>	Explain the need of real time operating system for embedded system applications



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Microwave and Antennas</b>	<b>Semester</b>	<b>6</b>
<b>Course code</b>	18EC63	<b>Scheme</b>	2018 CBCS

### Course Outcomes

<b>C312.1</b>	Describe the microwave properties and its transmission media.
<b>C312.2</b>	Describe microwave devices for several applications.
<b>C312.3</b>	Understand the basics of Antenna theory.
<b>C312.4</b>	Select Antennas for specific applications.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Operating Systems</b>	<b>Semester</b>	<b>6</b>
<b>Course code</b>	18EC641	Scheme	2018 CBCS

### Course Outcomes

<b>C313.1</b>	Explain the goals, structure, operation and types of operating systems.
<b>C313.2</b>	Apply scheduling techniques to find performance factors.
<b>C313.3</b>	Explain organization of file systems and IOCS.
<b>C313.4</b>	Apply suitable techniques for contiguous and non-contiguous memory allocation.
<b>C313.5</b>	Describe message passing, deadlock detection and prevention methods.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Non Conventional energy Sources</b>	<b>Semester</b>	<b>6</b>
<b>Course code</b>	18ME651	Scheme	2018 CBCS

### Course Outcomes

<b>C314.1</b>	Understand energy scenario, energy sources and their utilization.
<b>C314.2</b>	Understand various methods of energy storage, energy management and economic analysis.
<b>C314.3</b>	Analyze the awareness about environment and eco system.
<b>C314.4</b>	Understand the environment pollution along with social issues and acts.



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<b>Course Name</b>	<b>Embedded Systems Lab</b>	<b>Semester</b>	<b>6</b>
<b>Course code</b>	18ECL66	Scheme	2018 CBCS

### Course Outcomes

<b>C315.1</b>	Understand the instruction set of 32 bit microcontroller ARM Cortex M3, and the software tool required for programming in Assembly and C language, Develop assembly language programs using ARM Cortex M3 for different applications.
<b>C315.2</b>	Interface external devices and I/O with ARM Cortex M3. Develop C language programs and library functions for embedded system applications



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<b>Course Name</b>	<b>Communication Lab</b>	<b>Semester</b>	<b>6</b>
<b>Course code</b>	18ECL67	Scheme	2018 CBCS

### Course Outcomes

<b>C316.1</b>	Determine the characteristics and response of microwave and determine the characteristics of microstrip antennas and devices and compute the parameters associated with it.
<b>C316.2</b>	Simulate the digital modulation systems and compare the error performance of basic digital modulation schemes and test the digital and analog modulation circuits and display the waveforms.





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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Mini Project</b>	<b>Semester</b>	<b>6</b>
<b>Course code</b>	18ECMP68	Scheme	2018 CBCS

### Course Outcomes

<b>C317.1</b>	Students will be able to practice acquired knowledge within the chosen area of technology for project development.
<b>C317.2</b>	Identify, discuss and justify the technical aspects of the chosen project with a comprehensive and systematic approach
<b>C317.3</b>	Reproduce, improve and refine technical aspects for engineering projects.
<b>C317.4</b>	Work as an individual or in a team in development of technical projects.
<b>C317.5</b>	Communicate and report effectively project related activities and findings.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Computer Networks</b>	<b>Semester</b>	<b>7</b>
<b>Course code</b>	18EC71	Scheme	2018 CBCS

### Course Outcomes

<b>C401.1</b>	Understand the concepts of networking thoroughly.
<b>C401.2</b>	Identify the protocols and services of different layers.
<b>C401.3</b>	Distinguish the basic network configurations and standards associated with each network.
<b>C401.4</b>	Analyze a simple network and measurement of its parameters.
<b>C401.5</b>	Describe the services of application layer, which is top most of all layers.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>VLSI Design</b>	<b>Semester</b>	<b>7</b>
<b>Course code</b>	18EC72	Scheme	2018 CBCS

### Course Outcomes

<b>C402.1</b>	Able to understanding of MOS transistor theory, CMOS fabrication flow and technology scaling.
<b>C402.2</b>	Draw the basic gates using the stick and layout diagrams with the knowledge of physical design aspects.
<b>C402.3</b>	Ability to design Combinational, sequential and dynamic logic circuits as per the requirements.
<b>C402.4</b>	Interpret Memory elements along with timing considerations & testing and testability issues in VLSI Design.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Real Time Systems</b>	<b>Semester</b>	<b>7</b>
<b>Course code</b>	18EC731	Scheme	2018 CBCS

### Course Outcomes

<b>C403.1</b>	Explain the fundamentals of Real time systems and its classifications
<b>C403.2</b>	Understand the concepts of computer control and the suitable computer hardware requirements for real time applications.
<b>C403.3</b>	Describe the operating system concepts and techniques required for real time systems.
<b>C403.4</b>	Develop the software algorithms using suitable languages to meet Real time applications.
<b>C403.5</b>	Apply suitable methodologies to design and develop Real-Time Systems



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Multimedia Communication</b>	<b>Semester</b>	<b>7</b>
<b>Course code</b>	18EC743	Scheme	2018 CBCS

### Course Outcomes

<b>C404.1</b>	Understand basics of different multimedia networks and applications.
<b>C404.2</b>	Analyse different media types to represent them in digital form.
<b>C404.3</b>	Compress different types of text and images using different compression techniques.
<b>C404.4</b>	Understand different compression techniques to compress audio and video.
<b>C404.5</b>	Describe multimedia Communication across Networks.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Energy and Environment</b>	<b>Semester</b>	<b>7</b>
<b>Course code</b>	18ME751	<b>Scheme</b>	2018 CBCS

### Course Outcomes

<b>C405.1</b>	Understand energy scenario, energy sources and their utilization.
<b>C405.2</b>	Understand various methods of energy storage, energy management and economic analysis.
<b>C405.3</b>	Analyse the awareness about environment and eco system.
<b>C405.4</b>	Understand the environment pollution along with social issues and acts.



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<b>Course Name</b>	<b>Computer Networks Lab</b>	<b>Semester</b>	<b>7</b>
<b>Course code</b>	18ECL76	Scheme	2018 CBCS

### Course Outcomes

<b>C406.1</b>	Choose suitable tools to model a network and understand the protocols at various OSI reference levels. Design a suitable network and simulate using a Network simulator tool.
<b>C406.2</b>	Simulate the networking concepts and protocols using C/C++programming Model the networks for different configurations and analyze the results



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<b>Course Name</b>	<b>VLSI Lab</b>	<b>Semester</b>	<b>7</b>
<b>Course code</b>	<b>18ECL77</b>	<b>Scheme</b>	<b>2018 CBCS</b>

### Course Outcomes

<b>C407.1</b>	Design and Simulate combinational and sequential digital circuits using Verilog HDL.
<b>C407.2</b>	Understand the synthesis process of VLSI circuits using EDA tool and design and simulate CMOS circuits like inverter, common source amplifier and differential amplifier.





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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Project Phase 1</b>	<b>Semester</b>	<b>7</b>
<b>Course code</b>	18ECP78	Scheme	2018 CBCS

### Course Outcomes

<b>C408.1</b>	Synopsis and report preparation.
<b>C408.2</b>	Effective presentation.
<b>C408.3</b>	Question and answer.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Wireless and Cellular Communication</b>	<b>Semester</b>	<b>8</b>
<b>Course code</b>	18Ec81	Scheme	2018 CBCS

### Course Outcomes

<b>C409.1</b>	Explain and analyze the concept of propagation mechanisms like Reflection, Diffraction, Scattering in wireless communication channels including fading parameters and statistical channel models for BWC.
<b>C409.2</b>	Describe the communication theory associated with GSM and TDMA technology.
<b>C409.3</b>	Describe the communication theory associated with CDMA technology.
<b>C409.4</b>	Describe the key enablers and multicarrier modulation techniques for LTE 4G communication.



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<b>Course Name</b>	<b>Network Security</b>	<b>Semester</b>	<b>8</b>
<b>Course code</b>	18EC821	Scheme	2018 CBCS

### Course Outcomes

<b>C410.1</b>	Explain network security services and mechanisms and explain security concepts
<b>C410.2</b>	Understand the concept of Transport Level Security and Secure Socket Layer.
<b>C410.3</b>	Explain Security concerns in Internet Protocol security.
<b>C410.4</b>	Explain Intruders, Intrusion detection and Malicious Software.
<b>C410.5</b>	Describe Firewalls, Firewall Characteristics, Biasing and Configuration.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Project Phase 2</b>	<b>Semester</b>	<b>8</b>
<b>Course code</b>	18ECP83	Scheme	2018 CBCS

### Course Outcomes

<b>C411.1</b>	Project phase-II report and paper publication.
<b>C411.2</b>	Effective presentation.
<b>C411.3</b>	Questions and answers.



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Technical Seminar</b>	<b>Semester</b>	<b>8</b>
<b>Course code</b>	18ECS84	Scheme	2018 CBCS

### Course Outcomes

<b>C412.1</b>	Report writing.
<b>C412.2</b>	Understanding the technology.
<b>C412.3</b>	Presentation skills.
<b>C412.4</b>	Communication, Questions and answers



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## Department of Electronics & Communication Engineering

<b>Course Name</b>	<b>Internship</b>	<b>Semester</b>	<b>8</b>
<b>Course code</b>	18ECI85	Scheme	2018 CBCS

### Course Outcomes

<b>C413.1</b>	Report Preparation.
<b>C413.2</b>	Overall presentation of the Internship, Communication and queries.
<b>C413.3</b>	Relevance of technology learnt.