



BHARATI VIDYAPEETH'S
COLLEGE OF ENGINEERING
LAVALE, PUNE-412115

Department of Electronics and Telecommunication
S.E. (Electronics/Electronics & Telecommunication Engineering)
2012 Course (w.e.f.June 2013)

Course Names Subject Code :Signals and Systems (204181)

Course Outcomes (COs):-

1. Understand the basic signals and their classification, perform operations on signals.
2. Understand and identify the systems based on their properties
3. Understand, identify the system based on their properties in terms impulse response and also solve the convolution integral and sum.
4. Understand, and resolve the signals in frequency domain using Fourier series and Fourier transform. Find the amplitude spectrum, phase spectrum of the various signals and also systems. Analyze the system in frequency domain.
5. Understand, and resolve the signals in complex frequency domain using Laplace Transform. Analyze the system in s – domain. Characterize the system in s - domain. Apply Laplace transforms to analyze electrical circuits.
6. Understand, apply and determine the correlogram, auto correlation, cross correlation, energy spectral density, and power spectral density of discrete and continuous signals. Carry out the system analysis and inter play between frequency and time domain.
7. Understand the basic concept of probability, random variables and random signals. Calculate the CDF, PDF and probability of a given event. Calculate the mean, mean square, variance and standard deviation for given random variables using pdf.

Correlation between course outcomes (COs) and program outcomes (POs)

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	√	√	X	√	√	√	√	X
CO-2	√	√	X	√	√	√	√	X
CO-3	√	√	X	√	√	√	√	X
CO-4	√	√	X	√	√	√	√	X
CO-5	√	√	X	√	√	√	√	X
CO-6	√	√	X	√	√	√	√	X
CO-7	√	√	X	√	√	√	√	X



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2012 Course (w.e.f.June 2013)

Course Names Subject Code :Network Theory (204183)

Course Outcomes (COs):-

1. Understand, Analyze the basic AC and DC circuits using KCL,KVL and network Theorems
2. Determine the voltages, currents, power and impedances at various nodes and loops using all the simplification techniques.
3. Understand and apply graph theory to solve network equations
4. Understand, and calculate the initial conditions of RL, RC circuits
5. Formulate, solve the differential equations for RL, RC, and RLC circuits and carry out the transient analysis.
6. Understand, identify and analyze the series, parallel resonance circuits, calculate the bandwidth, selectivity, Q-factor also.
7. Understand, analyze and design prototype LC filters and Resistive attenuators.
8. Characterize; model the network in terms of all network parameters and analyze.
9. Understand and formulate the network transfer function in s-domain and pole, zero concept.

Correlation between course outcomes (COs) and program outcomes (POs)

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	√	√	√	√	√	√	√	X
CO-2	√	√	√	√	√	√	√	X
CO-3	√	√	X	√	√	√	X	X
CO-4	√	√	√	√	X	√	√	X
CO-5	√	√	√	√	√	√	√	X
CO-6	√	X	X	X	X	X	X	X
CO-7	√	√	√	√	√	√	√	X
CO-8	√	√	√	√	√	√	√	X
CO-9	√	√	X	√	√	√	X	X



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2012 Course (w.e.f.June 2013)

Course Names Subject Code :Data Structures & Algorithms (204184)

Course Outcomes (COs):-

1. Choose the data structures that effectively model the information in a problem.
2. Judge efficiency trade-offs among alternative data structure implementations or combinations.
3. Apply algorithm analysis techniques to evaluate the performance of an algorithm and to compare data structures.
4. Implement and know when to apply standard algorithms for searching and sorting.
5. Design, implement, test, and debug programs using a variety of data structures including lists, stacks, queues, hash tables, binary tree structures, search trees, heaps, graphs.

Correlation between course outcomes (COs) and program outcomes (POs)

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	√	√	X	√	√	√	√	X
CO-2	√	√	X	√	√	√	√	X
CO-3	√	√	X	√	√	√	√	X
CO-4	√	√	X	√	√	√	√	X
CO-5	√	√	X	√	√	√	√	X



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2012 Course (w.e.f.June 2013)

Course Names Subject Code :Digital Electronics (204185)

Course Outcomes (COs):-

1. Understand the basic logic gates and various variable reduction techniques of digital logic Circuit in detail.
2. Understand, identify and design combinational and sequential circuits
3. Design and implement hardware circuit to test performance and application for what it is being designed.
4. Simulate and verify using computer simulation software to obtain desired result.
5. Understand and verify simulated circuit model with hardware implementation.

Correlation between course outcomes (COs) and program outcomes (POs)

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	√	√	√	√	√	√	X	X
CO-2	√	√	√	√	√	√	X	X
CO-3	X	X	X	X	√	√	X	√
CO-4	√	√	√	√	X	X	X	√
CO-5	√	√	√	√	√	√	X	X



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Department of Electronics and Telecommunication
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2012 Course (w.e.f.June 2013)

Course Names Subject Code : Electronic Measuring Instruments and Tools (204186)

Course Outcomes (COs):-

1. Understand fundamental of measurements of various electrical parameters.
2. Aware and identify the control panels of measuring and generating instruments.
3. Understand and describe specifications, features and capabilities of electronic instruments.
4. Select appropriate instrument for the measurement of electrical parameter professionally.
5. Finalize the specifications of instrument and select an appropriate instrument for given Measurement.
6. Make the required measurement using various instruments.

Correlation between course outcomes (COs) and program outcomes (POs)

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	√	√	X	√	√	√	√	X
CO-2	√	√	X	√	√	√	√	X
CO-3	√	√	X	√	√	√	√	X
CO-4	√	√	X	√	√	√	√	X
CO-5	√	√	X	√	√	√	√	X
CO-6	√	√	X	√	√	√	√	X



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2012 Course (w.e.f.June 2013)

Course Names Subject Code : Control Systems (204188)

Course Outcomes (COs):-

1. Model a physical system and express its internal dynamics and input-output relationships by means of block diagrams, mathematical model and transfer functions.
2. Understand and explain the relationships between the parameters of a control system and its stability, accuracy, transient behavior.
3. Identify the parameters that the system is sensitive to. Determine the stability of a system and parameter ranges for a desired degree of stability.
4. Plot the Bode, Nyquist, Root Locus diagrams for a given control system and identify the parameters and carry out the stability analysis.
5. Determine the frequency response of a control system and use it to evaluate or adjust the relative stability,
6. Design a P, PD, PI, or PID controller based on the transient and steady state response criteria.
7. Model and analyze the control systems using state space analysis.

Correlation between course outcomes (COs) and program outcomes (POs)

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	√	√	X	√	√	√	√	X
CO-2	√	√	X	√	√	X	√	X
CO-3	√	√	√	√	√	√	√	X
CO-4	√	√	√	√	√	√	√	X
CO-5	√	√	√	√	X	X	√	X
CO-6	√	√	√	√	√	√	√	X
CO-7	√	√	X	√	√	X	√	X



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2012 Course (w.e.f.June 2013)

Course Names Subject Code :Analog Communication (204189)

Course Outcomes (COs):-

- .1. Understand and identify the fundamental concepts and various components of analog communication systems.
2. Understand, analyze and explain various analog modulation schemes.
3. Understand the performance of analog communications systems under the presence of noise.
4. Understand and apply concepts and techniques from Fourier analysis and circuit analysis to communication systems.
5. Develop the ability to compare and contrast the strengths and weaknesses of various communication systems
6. Analyze Basic communications systems and their performance under the presence of noise
7. Describe various pulse and digital modulation techniques.

Correlation between course outcomes (COs) and program outcomes (POs)

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	√	√	X	√	√	√	√	√
CO-2	√	√	X	√	√	√	√	√
CO-3	√	√	√	√	√	√	√	√
CO-4	√	√	√	√	X	√	√	X
CO-5	√	√	√	√	√	√	√	X
CO-6	√	√	√	√	√	√	√	X
CO-7	√	√	X	√	X	√	√	X



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Course Names Subject Code :Computer Organization (204190)

Course Outcomes (COs):-

1. Understand and describe the basic structure of a computer, machine instruction and their execution.
2. Understand and analyze performance issues in computer system.
3. Understand, apply and carry out binary arithmetic operations such as high speed addition, multiplier including the algorithms
4. Understand, and explain the instruction execution, internal functions of processor and control unit design.
5. Understand and describe the various way of communication with I/O devices and standard I/O interfaces.
6. Understand and describe the memory organization and hierarchical memory system.
7. Understand and explain the various aspects of 8086 .

Correlation between course outcomes (COs) and program outcomes (POs)

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	√	√	X	√	√	√	√	X
CO-2	√	√	X	√	√	√	√	X
CO-3	√	√	X	√	√	√	√	X
CO-4	√	√	X	√	√	√	√	X
CO-5	√	√	X	√	√	√	√	X
CO-6	√	√	X	√	√	√	√	X
CO-7	√	√	X	√	√	√	√	X



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2012 Course (w.e.f.June 2013)

Course Names Subject Code :Object Oriented Programming ((204191)

Course Outcomes (COs):-

1. Justify the philosophy of object-oriented design and the concepts of encapsulation, abstraction, inheritance, and polymorphism;
2. Design, implement, test, and debug simple programs in an object-oriented programming language.
3. Describe how the class mechanism supports encapsulation and information hiding.
4. Design, implement, and test the implementation of “is-a” relationships among objects using a class hierarchy and inheritance.
5. Compare and contrast the notions of overloading and overriding methods in an object-oriented language.

Correlation between course outcomes (COs) and program outcomes (POs)

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	√	√	X	√	√	√	√	X
CO-2	√	√	X	√	√	√	√	X
CO-3	√	√	X	√	√	√	√	X
CO-4	√	√	X	√	√	√	√	X
CO-5	√	√	X	√	√	√	√	X



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2012 Course (w.e.f.June 2013)

Course Names Subject Code :Soft Skills (204192)

Course Outcomes (COs):-

1. Communicate, interact and present his ideas to the other professionals.
2. Understand and aware of importance, role and contents of soft skills through instructions, knowledge acquisition, demonstration and practice.
3. Have right attitudinal and behavioral aspects, and build the same through activities.
4. Possess right professional and social ethical values.

Correlation between course outcomes (COs) and program outcomes (POs)

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	√	√	√	√	√	√	√	√
CO-2	X	X	X	X	X	√	√	√
CO-3	√	√	√	√	√	√	√	√
CO-4	√	√	X	√	√	√	√	√



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Department of Electronics and Telecommunication
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2015 Course

Course Names Subject Code :Signals and Systems(204181)

Course Outcomes (COs):-

1. Understand mathematical description and representation of continuous and discrete time signals and systems.
2. Develop input output relationship for linear shift invariant system and understand the Convolution operator for continuous and discrete time system.
3. Use transform domain technique for analysis of linear shift invariant system.
4. Understand and resolve the signals in frequency domain using Fourier series and Fourier transforms. Distinguish between Fourier series and Fourier transform.
5. Understand the limitations of Fourier transform and need for Laplace transform.
Develop the ability to analyze the system in s- domain.
6. Understand the basic concept of probability, random variables and random signals.
Develop the ability to find correlation and to calculate the CDF, PDF and probability of a given event.

Correlation between course outcomes (COs) and program outcomes (POs)

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	√	√	X	√	√	√	√	X
CO-2	√	√	X	√	√	√	√	X
CO-3	√	√	X	√	√	√	√	X
CO-4	√	√	X	√	√	√	√	X
CO-5	√	√	X	√	√	√	√	X
CO-6	√	√	X	√	√	√	√	X



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2015 Course

Course Names Subject Code :Electrical Circuits and Machines (204183)

Course Outcomes (COs):-

- 1 Analyze basic AC & DC circuit for voltage, current and power by using KVL, KCL, and network theorems.
- 2 Explain the working principle of different electrical machines.
- 3 Select proper electrical motor for given application.
- 4 Design and analyze transformers

Correlation between course outcomes (COs) and program outcomes (POs)

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	√	√	X	√	√	√	√	√
CO-2	√	√	√	√	√	√	√	√
CO-3	√	√	√	X	X	√	√	√
CO-4	√	√	X	√	√	√	√	√



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2015 Course

Course Names Subject Code :Data Structures & Algorithms (204184)

Course Outcomes (COs):-

1. Discuss the computational efficiency of the principal algorithms such as sorting & searching.
2. Write and understand the programs that use arrays& pointers in C
3. Describe how arrays, records, linked structures are represented in memory and use them in algorithms.
4. Implement stacks& queues for various applications.
5. Understand various terminologies and traversals of trees and use them for various applications.
6. Understand various terminologies and traversals of graphs and use them for various applications.

Correlation between course outcomes (COs) and program outcomes (POs)

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	√	√	√	√	√	√	√	X
CO-2	√	X	√	√	√	√	√	X
CO-3	√	√	√	√	√	√	√	X
CO-4	√	√	√	√	X	X	√	X
CO-5	√	√	X	√	X	X	√	X
CO-6	√	√	X	√	√	√	√	X



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Department of Electronics and Telecommunication
S.E. (Electronics/Electronics & Telecommunication Engineering)
2015 Course

Course Names Subject Code :Digital Electronics (204185)

Course Outcomes (COs):-

1. Use the basic logic gates and various reduction techniques of digital logic circuit in detail.
2. Design combinational and sequential circuits.
3. Design and implement hardware circuit to test performance and application.
4. Understand the architecture and use of microcontrollers for basic operations and Simulate using simulation software.

Correlation between course outcomes (COs) and program outcomes (POs)

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	√	√	X	√	√	√	√	√
CO-2	X	X	X	X	X	X	X	X
CO-3	√	√	√	√	√	√	√	√
CO-4	√	√	X	√	√	√	√	√



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Department of Electronics and Telecommunication
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2015 Course

Course Names Subject Code :Electronic Measuring Instruments and Tools (204186)

Course Outcomes (COs):-

1. Understand fundamental of various electrical measurements.
2. Understand and describe specifications, features and capabilities of electronic instruments.
3. Finalize the specifications of instrument and select an appropriate instrument for given measurement.
4. Carry out required measurement using various instruments under different setups.
5. Able to compare measuring instruments for performance parameters
6. Select appropriate instrument for the measurement of electrical parameter professionally.

Correlation between course outcomes (COs) and program outcomes (POs)

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	√	√	X	√	√	√	√	X
CO-2	√	√	X	√	√	√	√	X
CO-3	√	√	X	√	√	√	√	X
CO-4	√	√	X	√	√	√	√	X
CO-5	√	√	X	√	√	√	√	X
CO-6	√	√	X	√	√	√	√	X



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Department of Electronics and Telecommunication
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2015 Course

Course Names Subject Code :Integrated Circuits (204187)

Course Outcomes (COs):-

1. Understand the characteristics of IC and Op-Amp and identify the internal structure.
2. Understand and identify various manufacturing techniques.
3. Derive and determine various performances based parameters and their significance for OpAmp.
4. Comply and verify parameters after exciting IC by any stated method.
5. Analyze and identify the closed loop stability considerations and I/O limitations.
6. Analyze and identify linear and nonlinear applications of Op-Amp.
7. Understand and verify results (levels of V & I) with hardware implementation.
8. Implement hardwired circuit to test performance and application for what it is being designed.
9. Understand and apply the functionalities of PLL to Frequency synthesizer, multiplier, FM, and AM demodulators

Correlation between course outcomes (COs) and program outcomes (POs)

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	√	√	X	√	√	√	√	√
CO-2	√	√	√	√	X	√	√	√
CO-3	√	√	√	√	√	√	√	√
CO-4	√	√	X	√	√	√	√	√
CO-5	√	√	√	√	√	X	√	√
CO-6	√	√	√	X	√	X	√	√
CO-7	√	√	√	√	√	X	√	√
CO-8	√	X	√	√	√	X	√	√
CO-9	√	√	√	√	√	X	√	√



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2015 Course

Course Names Subject Code :Control Systems (204188)

Course Outcomes (COs):-

1. Determine and use models of physical systems in forms suitable for use in the analysis and design of control systems.
 2. Determine the (absolute) stability of a closed-loop control system.
 3. Perform time domain and frequency domain analysis of control systems required for stability analysis.
 4. Perform time domain and frequency domain correlation analysis.
 5. Apply root-locus, Frequency Plots technique to analyze control systems
- Express and solve system equations in state variable form

Correlation between course outcomes (COs) and program outcomes (POs)

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	√	√	X	√	√	√	√	X
CO-2	√	√	X	√	√	√	√	X
CO-3	√	√	X	√	√	√	√	X
CO-4	√	√	X	√	√	√	√	X
CO-5	√	√	X	√	√	√	√	X



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2015 Course

Course Names Subject Code :Object Oriented Programming ((204190)

Course Outcomes (COs):-

1. Describe the principles of object oriented programming.
2. Apply the concepts of data encapsulation, inheritance in C++.
3. Understand basic program constructs in Java
4. Apply the concepts of classes, methods and inheritance to write programs Java.
5. Use arrays, vectors and strings concepts and interfaces to write programs in Java.
6. Describe and use the concepts in Java to develop user friendly program,

Correlation between course outcomes (COs) and program outcomes (POs)

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	√	√	X	√	√	√	√	X
CO-2	√	√	√	√	√	√	√	√
CO-3	√	√	X	√	√	√	√	X
CO-4	√	√	√	√	√	√	√	√
CO-5	√	√	X	√	√	√	√	X
CO-6	√	√	X	√	√	√	√	X



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2015 Course

Course Names Subject Code :Employability Skill Development ((204191)

Course Outcomes (COs):-

1. Be equipped with essential communication skills (writing, verbal and non-verbal)
2. Be able to build team and lead it for problem solving
3. Master the presentation skill and be ready for facing interviews
4. Be able to apply techniques for time and stress management

Correlation between course outcomes (COs) and program outcomes (POs)

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	√	√	√	√	√	√	√	√
CO-2	X	X	X	X	√	√	√	√
CO-3	√	√	√	√	√	√	√	√
CO-4	√	√	X	√	√	√	X	√



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LAVALE, PUNE-412115

Department of Electronics and Telecommunication
S.E. (Electronics/Electronics & Telecommunication Engineering)
2015 Course

Course Names Subject Code : Soft Skills (204192)

Course Outcomes (COs):-

1. Communicate, interact and present his ideas to the other professionals.
2. Understand and aware of importance, role and contents of soft skills through instructions, knowledge acquisition, demonstration and practice.
3. Have right attitudinal and behavioral aspects, and build the same through activities.
4. Possess right professional and social ethical values.

Correlation between course outcomes (COs) and program outcomes (POs)

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	√	√	√	√	√	√	√	X
CO-2	√	√	√	√	√	√	√	√
CO-3	√	√	X	√	X	√	√	√
CO-4	√	√	X	√	√	√	X	X



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Course Names Subject Code : Engineering Mathematics – III (207005)

Course Outcomes (COs):-

1. Solve higher order linear differential equation using appropriate techniques for modeling and analyzing electrical circuits.
2. Solve problems related to Fourier transform, Z -transform and applications to Communication systems and Signal processing.
3. Obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of differential equations using single step and multi-step iterative methods used in modern scientific computing.
4. Perform vector differentiation and integration, analyze the vector fields and apply to Electro - Magnetic fields.
5. Analyze conformal mappings, transformations and perform contour integration of complex functions in the study of electrostatics and signal processing.

Correlation between course outcomes (COs) and program outcomes (POs)

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
CO-1	√	√	X	X	√	X	X	X
CO-2	√	√	X	X	√	X	X	X
CO-3	√	√	X	X	√	X	X	X
CO-4	√	√	X	X	√	X	X	X
CO-5	√	√	X	X	√	X	X	X
CO-6	X	X	X	X	√	X	X	X