

**VASAVI COLLEGE OF ENGINEERING
(AUTONOMOUS)**

Ibrahimbagh, Hyderabad-31
Approved by A.I.C.T.E., New Delhi and
Affiliated to Osmania University, Hyderabad-07

**Sponsored
by
VASAVI ACADEMY OF EDUCATION
Hyderabad**



**SCHEME OF INSTRUCTION AND SYLLABI UNDER CBCS FOR
B.E. (EEE) V and VI Semesters
With effect from 2020-21
(For the batch admitted in 2018-19)
(R-18)**



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
Phones: +91-40-23146030, 23146031
Fax: +91-40-23146090

With effect from the Academic Year 2020-21
 VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS):: IBRAHIMBAGH, HYDERABAD – 500 031.
 DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
 SCHEME OF INSTRUCTION AND EXAMINATION (R-18):: B.E. - EEE : FIFTH SEMESTER(2020 - 21)

B.E (EEE) V Semester									
Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination			Credits	
		Hours per Week			Duration in Hrs	Maximum Marks			
		L	T	P/D		SEE	CIE		
THEORY									
U18HS510EH	Skill Development-III : Soft Skills	1	-	-	2	40	30	1	
U18PC510EE	Power Systems - I	3	-	-	3	60	40	3	
U18PC520EE	Microprocessors & Microcontrollers Applications	3	-	-	3	60	40	3	
U18PC530EE	Linear Integrated Circuits & Applications	3	-	-	3	60	40	3	
U18PC540EE	Electrical Machines - II	3	-	-	3	60	40	3	
U18PE510EE	Skill Development-III : Technical Skills	1	-	-	2	40	30	1	
U18OE5XXXX	Open Elective -III	3	-	-	3	60	40	3	
U18MC010CE	Environmental Science	2	-	-	3	60	40	-	
PRACTICALS									
U18PC521EE	Microprocessors & Microcontrollers Applications Lab	-	-	2	3	50	30	1	
U18PC531EE	Linear Integrated Circuits & Digital Electronics Lab	-	-	2	3	50	30	1	
U18PC541EE	Electrical Machines – II Lab	-	-	2	3	50	30	1	
U18PW519EE	Mini Project	-	-	2	-	-	30	1	
TOTAL		19	0	8		590	420		
GRAND TOTAL		27				1010	21		
Student should acquire one online course certification equivalent to two credits during III Sem to VII sem.									

Note: 1. One hour is allocated for Library/Sports/Proctorial Interaction 2. Two hours are allocated for CCA-III 3. Two hours are allocated for ECA-II

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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES

Skill Development-III : Soft Skills

SYLLABUS FOR B.E. V SEMESTER

L:T: P (Hrs/Week):1:0:0	SEE Marks: 40	Course Code: U18HS510EH
Credits: 1	CIE Marks: 30	Duration of SEE : 2 Hours

COURSE OBJECTIVES The course will enable the students to:	COURSE OUTCOMES On completion of the course, students will be able to

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests : Max. Marks for each Internal Test :
2. No. of Assignments : Max. Marks for each Assignment :
3. No. of Quizzes : Max. Marks for each Quiz Test :

Duration of Internal Test: 90 minutes

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Power Systems - I
 SYLLABUS FOR B.E. V SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18PC510EE
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
<ol style="list-style-type: none"> 1. Have a fair knowledge about the fundamentals of various conventional power plants like Thermal, Hydel, Nuclear and Gas. 2. Acquire the knowledge of different types of Non conventional energy generation methods like Solar, Wind, Ocean Thermal Energy Conversion (OTEC), Tidal and Geo thermal. 3. Understand the Economics of Power Generation, Types of costs, Depreciation, methods of P.f. improvement, Tariffs 4. Have the knowledge of construction of Over head lines, materials, Supports, insulators and Underground cables. 5. General aspects of AC & DC distribution systems. 	<ol style="list-style-type: none"> 1. Identify and select the proper type of Power Plant for the Power Generation. 2. Estimate the Energy generated by Different Non conventional Generating stations. 3. Assess the P.F. improvement methods, Tariffs 4. Test and categorize the insulators and calculate the Sag & Tension in Over head lines. 5. Differentiate AC & DC distribution systems.

UNIT – I

Thermal, Hydel, Nuclear Power Generation Principles, Choice of site, layout and various parts of generating stations. Estimation of power in Hydel, flow duration curve, hydrograph, mass curve etc. Types of Hydel stations. Nuclear Stations, PWR, BWR, FBR. GAS Turbines, GAS power stations, Combined cycle power

stations. MAJOR DISASTERS around the world in power plants-lessons learnt.

UNIT – II

Non-Conventional energy generation methods: Solar, Wind, Ocean Thermal Energy Conversion (OTEC), Tidal, Geo Thermal. Solar cells, Efficiency, Solar collectors, Concentrators. Wind generators, Wind turbine types, rotors construction, Hybrid power generation.

UNIT – III

Economics of Power Generation : Load Curve, load demand and diversity factors, base load and peak load operation, types of costs and depreciation fund calculations. Methods of power factor improvement, economics of p.f. improvements, tariffs.

UNIT- IV

Construction of Overhead lines - Overhead line materials – Supports – types, Vibration Dampers, Arcing Horns, Sag / Tension calculations, Equal / Unequal supports, Effects of Wind, ICE/Erection Conditions Stringing Charts

Insulators-Types –Material for construction – potential distribution over string of insulators, Equalizing of potential-Methods, Insulators testing.

Underground cables –Insulating Materials, Mechanical Protection, EHV / HV / LV cables, grading of cables, capacitance of 3 core cables.

UNIT – V

General aspects of AC and DC distribution systems –DC Systems, ringmain, Radial, Voltage drop calculations, Distributor fed at one end, Distributor fed at both ends.

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Learning Resources

1. C.L. Wadhwa, Electrical Power Systems, Wiley Eastern Ltd. 5th Edition, 2005
2. C.L. Wadhwa, Generation, Distribution and Utilization of Electrical Energy, Wiley Eastern Ltd., 5th Edition, 2005
3. S.N. Singh- Electrical Power Generation, Transmission and Distribution- Prentice Hall pvt. Ltd. New-2003.

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests : Max. Marks for each Internal Test :
2. No. of Assignments : Max. Marks for each Assignment :
3. No. of Quizzes : Max. Marks for each Quiz Test :

Duration of Internal Test: 90 minutes

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
 Microprocessors & Microcontrollers Applications
 SYLLABUS FOR B.E. V SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18PC520EE
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
The objective of this course is become familiar with the architecture and instruction sets of 8086 and 8051 processors and as well as interfacing an external device to these processors	students will be able to 1. Applying the basic concepts of digital fundamentals to Intel 8086 architecture. 2. Apply the knowledge of 8086 instruction set and identify a detail software and hardware structure of the microprocessor. 3. Illustrate the different peripherals (8255, 8257, 8259 etc) interfacing with the microprocessor. 4. Design, Develop and interface microcontroller base systems to peripheral devices and systems at the chip level.

UNIT I

Over view of microcomputer structure and operation- Microprocessor Architecture of 8086- segmented memory, addressing modes, Introduction set, Minimum and Maximum mode operations.

UNIT II

Construction of machine codes for MOVE 8086 instruction- Assembly language programming , Assembler directives, simple programs using Assembler, strings, procedures, macros, timing.

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UNIT III

Memory and I/O interfacing, A/D and D/A interfacing, 8255 (PPI), Keyboard and display interface, interrupts of 8086, seven segment display, 8237 DMA controller, 8251 USART

UNIT IV

Microcontrollers- 8051 microcontroller, architecture, I/O ports, connecting external memory, Instruction set, Assembly language programming.

UNIT V

Interrupts programming concepts with examples, serial communication programming concepts with examples, timers, counters, applications of micro controllers interfacing LEDs, seven segment display, keyboard interfacing, LCD interfacing, stepper motor interfacing.

Learning Resources

1. Douglas.V.Hall-Microprocessors and Interfacing-RaraMcgraw Hill- Revised 2nd edition, 2006.
2. Krishna Kant – Microprocessors and Microcontrollers – Architecture, Programming and System Design 8085, 8086 8051, 80996, Prentice-Hall India-2007.
3. Kenneth.J.Ayala _ “the 8051 , Microprocessors Architecture , Programming and Application, Thomson publishers, 2nd edition.
4. Walter A. TRiebel& Avatar Singh- The 8088 and 8086 Microprocessor – Fourth Edition, pearson

The break-up of CIE: Internal Tests+ Assignments + Quizzes

- | | | | |
|--------------------------|-----|-----------------------------------|------|
| 1. No. of Internal Tests | : 2 | Max. Marks for each Internal Test | : 30 |
| 2. No. of Assignments | : 3 | Max. Marks for each Assignment | : 5 |
| 3. No. of Quizzes | : 3 | Max. Marks for each Quiz Test | : 5 |

Duration of Internal Test: 90 minutes

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
 Linear Integrated Circuits & Applications
 SYLLABUS FOR B.E. V SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18PC530EE
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
To impart fundamental concepts of linear and non linear devices and circuits namely Operational Amplifier, Multivibrator, 555 timer, voltage regulators and provide an overview on design of active filters for linear IC applications.	<ol style="list-style-type: none"> 1. Demonstrate and understand fundamentals of linear integrated circuits. 2. Analyze the non-linear circuit applications based on particular linear integrated circuit. 3. Select and use an appropriate linear integrated circuit to build a given application. 4. Analyze the voltage regulators for a given linear circuit applications. 5. Select and design a second order active filter for IC applications.

UNIT-I:

Operation amplifiers: Internal structure of an operational amplifier, ideal op-amp Characteristics, non-idealities in an op-amp -Output offset voltage, input bias current, input offset current, effect of CMRR, slew rate, gain bandwidth product, Frequency response - Stability, frequency compensation of op-amp.

Linear applications of op-amp: Inverted summer, subtractor, add-subtractor, analog integrator, differentiator, multiplier, analog divider, $V - I$ and $I - V$ converter, voltage follower, AC amplifiers.

UNIT-II:

Instrumentation amplifier circuits using op-amps.

Nonlinear applications of op-amp: Voltage limiter, precision rectifiers, peak detector, clipper and clamper, comparator, zero crossing detector, hysteretic comparator, monostable, astable multi vibrator circuits using op-amps, logarithmic amplifiers.

UNIT-III:

Waveform generation using op-amps: sine, Square, Triangular, phase shift, Wein bridge and quadrature oscillators, voltage controlled oscillator, voltage to frequency converter, 555 timer functional diagram, operation as monostable and astable. phase locked loop- lock in range and captured range frequency.

UNIT-IV:

Voltage regulators using op-amps: Series voltage regulator, shunt regulators, and switching regulators using OP-amp, dual voltage regulator, fixed voltage regulators, dual tracking regulators, current sensing and current feed back protection.

UNIT-V:

RC Active filters using op-amps: Low pass, high pass and band pass, band reject, notch, first order, second order transformation, state variable filter, switched capacitor filter. P, PI and PID controllers and lead/lag compensator using an op-amp.

Learning Resources:

1. D.RoyChoudhury, Linear Integrated Circuits, ShailB.Jain, 4th Edition, New Age International(P) Ltd.,2010.
2. R.A. Gayakwad, Op-Amps and Linear Integrated Circuits, 4th Edition, Prentice Hall of India,2009.
3. Coughlin and Driscoll, Operational Amplifiers and Linear Integrated Circuits, 6th Edition, Prentice hall of India,2003.

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4. Malvino Albert Paul, Electronic Principles, 7th Edition, Tata McGraw Hill, 2006.
5. S. Franco, "Design with Operational Amplifiers and Analog Integrated Circuits", McGraw Hill Inc.,2002

The break-up of CIE: Internal Tests+ Assignments + Quizzes

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2. No. of Assignments : Max. Marks for each Assignment :
3. No. of Quizzes : Max. Marks for each Quiz Test :

Duration of Internal Test: 90 minutes

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
 Electrical Machines - II
SYLLABUS FOR B.E. V SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18PC540EE
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
To study the performances and applications of AC machines like Induction machines and Synchronous machines.	<ol style="list-style-type: none"> 1. Demonstrate basic concepts of AC machines windings. 2. Analyse the concepts of rotating magnetic fields and pulsating fields 3. Analyse speed torque characteristics and control the speed of induction motors 4. Identify and analyse the operation of Single –phase machines. 5. Calculate voltage regulation of salient and Non-salient pole synchronous generator.

UNIT-I:

Fundamentals of AC machine windings:

Physical arrangement of windings in stator and cylindrical rotor; slots for windings; single-turn coil - active portion and overhang; full-pitch coils, concentrated winding, distributed winding, winding axis, Air-gap MMF distribution with fixed current through winding - concentrated and distributed, Sinusoidally distributed winding, winding distribution factor

UNIT-II:

Pulsating and revolving magnetic fields:

Constant magnetic field, pulsating magnetic field - alternating current in windings with spatial displacement, Magnetic field produced by a single winding - fixed current and alternating current

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Pulsating fields produced by spatially displaced windings, Windings spatially shifted by 90 degrees, Addition of pulsating magnetic fields, Three windings spatially shifted by 120 degrees (carrying three-phase balanced currents), revolving magnetic field.

UNIT-III:

Induction Machines:

Construction, Types (squirrel cage and slip-ring), Torque Slip Characteristics, Starting and Maximum Torque. Equivalent circuit. Phasor Diagram, Power Flow diagram, Losses and Efficiency. No load and Blocked rotor test, Starting methods of squirrel cage and wound rotor induction motor, Modes of operation, Speed control methods – Resistance control, Voltage control, Variable frequency control, Generator operation. Self-excitation. Doubly-Fed Induction Machines.

UNIT-IV:

Single-phase induction motors:

Constructional features, working principle, double revolving field theory, equivalent circuit, determination of parameters. Split-phase starting methods and applications

UNIT-V:

Synchronous machines:

Constructional features, cylindrical rotor synchronous machine - generated EMF, equivalent circuit and phasor diagram, armature reaction, synchronous impedance, voltage regulation- Synchronous impedance method, Ampere-turns and Z.P.F Method. Power angle characteristics, Slip test, V-curves. Salient pole machine – two reaction theory, analysis of phasor diagram, power angle characteristics. Parallel operation of alternators - synchronization and load division
Synchronous condenser.

Suggested Books:

1. Nagarath I.J., Kothari D.P., Electrical Machines. 4th Edition 2010, Tata McGraw Hill.
2. Gupta J.B., Theory and Performance of Electrical Machines, 2003, S.K. Kataria.& Sons.
3. A. E. Fitzgerald and C. Kingsley, "Electric Machinery", McGraw Hill Education, 2013.

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4. A. S. Langsdorf, "Alternating current machines", McGraw Hill Education, 1984.
5. P. C. Sen, "Principles of Electric Machines and Power Electronics", John Wiley & Sons, 2007
6. Bhimbra P.S., Generalized Theory of Electrical Machines, Khanna Publications
7. Dr. P. S. Bimbhra, Electrical Machinery, 7th Edition, Khanna Publishers
8. M. G. Say, The Performance and Design of A.C. Machines – Pitman Publications.

Online resources: <http://nptel.ac.in/courses/>; <http://ocw.tufts.edu/>;
<http://ocw.upm.es/>; www.open.edu/openlearn/

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests : Max. Marks for each Internal Test :
2. No. of Assignments : Max. Marks for each Assignment :
3. No. of Quizzes : Max. Marks for each Quiz Test :

Duration of Internal Test: 90 minutes

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 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF CIVIL ENGINEERING

Environmental Science
 SYLLABUS FOR B.E. V SEMESTER

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: U18MC010CE
Credits: -	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
<ol style="list-style-type: none"> 1. Describe various types of natural resources available on the earth surface. 2. Explain the concepts of an ecosystem and the biotic and abiotic components of various aquatic ecosystems. 3. Identify the values, threats of biodiversity, endangered and endemic species of India along with the conservation of biodiversity. 4. Explain the causes, effects and control measures of various types of environmental pollutions. 5. Describe the methods for water conservation, the causes, effects of global warming, climate change, acid rain, ozone layer depletion, population explosion. 	<ol style="list-style-type: none"> 1. Describe the various types of natural resources. 2. Differentiate between various biotic and abiotic components of ecosystem. 3. Examine the values, threats of biodiversity, the methods of conservation, endangered and endemic species of India. 4. Illustrate causes, effects, control measures of various types of environmental pollutions. 5. Explain the methods of water conservation, causes, effects of climate change, global warming, acid rain and ozone layer depletion, population explosion.

UNIT-I: Environmental Studies: Definition, importance of environmental studies. Natural resources: Water resources; floods, drought, conflicts over water, dams-benefits and problems. Food resources; Effects of modern agriculture, fertilizer-pesticide problems, water logging salinity. Energy resources: Renewable and non-renewable energy resources. Land Resources, soil erosion and desertification.

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UNIT-II: Ecosystems: Structure and function of an ecosystem, producers, consumers and decomposers, food chains, food webs, ecological pyramids, aquatic ecosystems (ponds, oceans, estuaries).

UNIT-III: Biodiversity: Genetic, species and ecosystem diversity. Values of biodiversity, threats to biodiversity, endangered and endemic species of India, conservation of biodiversity.

UNIT-IV: Environmental Pollution: Causes, effects and control measures of air pollution, water pollution, soil pollution, noise pollution, thermal pollution and solid waste & e-waste management.

UNIT-V: Social Aspects and the Environment: Water conservation, Climate change, global warming, acid rain, ozone layer depletion. Environmental Impact Assessment, population explosion.

Learning Resources:

1. Deswal S. and Deswal A., A Basic Course on Environmental studies, Dhanpat Rai & Co Pvt. Ltd. 2013.
2. Benny Joseph, Environmental Studies, Tata McGraw-Hill, 2006.
3. Suresh K. Dhameja, Environmental Studies, S.K. Kataria & Sons, 2010.
4. De A.K., Environmental Chemistry, New Age International, 2003.
5. Odum E.P., Fundamentals of Ecology, W.B. Saunders Co., USA, 2004.
6. Sharma V.K., Disaster Management, National Centre for Disaster Management, IPE, Delhi, 2013.
7. Rajagopalan R., Environmental Studies, Second Edition, Oxford University Press, 2013.

The break-up of CIE: Internal Tests+ Assignments + Quizzes

- | | | | |
|--------------------------|-----|-----------------------------------|------|
| 1. No. of Internal Tests | : 2 | Max. Marks for each Internal Test | : 30 |
| 2. No. of Assignments | : 2 | Max. Marks for each Assignment | : 5 |
| 3. No. of Quizzes | : 2 | Max. Marks for each Quiz Test | : 5 |

Duration of Internal Test: 90 minutes

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
Microprocessors & Microcontrollers Applications Lab
SYLLABUS FOR B.E. V SEMESTER

L:T: P (Hrs/Week):0:0:2	SEE Marks: 50	Course Code: U18PC521EE
Credits: 1	CIE Marks: 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
To introduce to students the basics of microprocessor and microcontroller programming and their applications.	1. Apply the fundamentals of assembly level programming of microprocessors and microcontrollers. 2. Design circuits for various applications using microprocessor and microcontrollers. 3. An in-depth knowledge of applying the concepts on real- time applications. 4. Use Real time programming software to interface hardware.

List of Experiments:

I. Microprocessor 8086 : using MASM/TASM

1. Programs for signed/unsigned multiplication and division
2. Program for finding average of N 16 bit
3. Program for finding largest number in an array
4. Program for code conversion like BCD to 7-segment
5. Program for compute factorial of a positive integer number.
6. String Manipulation instructions
7. Use of JUMP and CALL instructions
8. Macro and Procedure instructions

II. Interfacing :using 8086 Kit

1. 8255– PPI : Write an ALP to generate triangular wave, square wave, sawtooth waveform using DAC.
2. LCD interfacing
3. ADC interfacing

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4. Stepper motor interfacing
5. Traffic signal controller

III. Microcontroller 8051 :

1. Data transfer- Block of move, exchange, sorting, finding largest element in an array.
2. Arithmetic instructions: Multi byte operations
3. Boolean & logical instructions(Bit manipulations)
4. Programs to generate delay, programs using serial port and on chip timer/counter.
5. Use of JUMP and CALL instructions

IV .Proteus Software

1. Introduction to Proteus software
2. LED Interfacing
3. LCD Interfacing
4. Keyboard Interfacing
5. Stepper Motor Interfacing
6. DC motor Interfacing

Learning Resources:

From the above experiments, each student should perform at least 10 (Ten) experiments.

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Marks for assessment of each experiment			18
Duration of Internal Test: 3 Hours			

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Linear Integrated Circuits & Digital Electronics Lab

SYLLABUS FOR B.E. V SEMESTER

L:T: P (Hrs/Week):0:0:2	SEE Marks: 50	Course Code: U18PC531EE
Credits: 1	CIE Marks: 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
To acquire skills of designing and testing of digital and analog integrated circuits.	<ol style="list-style-type: none">1. Analyze and design various applications of Op-Amp.2. Construct and troubleshoot circuits containing linear integrated circuits.3. Design combinational and sequential logic circuits using IC's.4. Identify the suitable IC's in the applications of adders, counters, converters and multiplexers.5. Compute the Triangle and square wave using op-amp and IC's.

List of Experiments:

1. Generation of Triangle and square wave using op-amp.
2. PLL (Phase locked loop).
3. Design of astable multi vibrator using 555 timer.
4. Active filters.
5. Design of integrator and differentiator using op-amp.
6. Multiplexer applications for logic Realization of combinational circuits.
7. Synchronous counter.
8. Asynchronous counter.
9. Study of clipping and clamping circuits using op-amps.
10. Design of mono stable multi vibrator using IC's.
11. Boot-strap sweep circuit using op-amp.

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12. Instrumentation amplifier using op-amp.
13. Study of half adder, full adder and subtractor using IC's.
14. D/A converters.
15. A/D converters.

From the above experiments, each student should perform at least 10 (Ten) experiments.

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Marks for assessment of each experiment			18
Duration of Internal Test: 3 Hours			

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Electrical Machines – II Lab
 SYLLABUS FOR B.E. V SEMESTER

L:T: P (Hrs/Week):0:0:2	SEE Marks: 50	Course Code: U18PC541EE
Credits: 1	CIE Marks: 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
To expose the students to practical experiments of AC machines.	1. Test the performance of 3-phase induction motor 2. Predetermine the voltage regulation of Non- salient and Salient Alternators by conducting suitable tests. 3. Test the performance of performance of 3-phase synchronous motor 4. Test the performance of Induction generator 5. Test the performance of 1-phase induction motor

List of Experiments:

1. No-load test, blocked rotor test and load test on 3-phase Induction motor
2. Voltage regulation of Alternator by Synchronous impedance method
3. Voltage regulation of Alternator by Ampere – turn method
4. Voltage regulation of Alternator by Z.P.F. method.
5. Regulation of Alternator by slip test.
6. Determination of V curves and inverted V curves of Synchronous motor.
7. Power angle characteristics of a Synchronous motor.
8. Load characteristics of Induction Generator.

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9. P.F. improvement of Induction motor using capacitors.
10. Synchronization of Alternator using three dark lamp method.
11. Torque –speed characteristics of single phase Induction Motor.
12. Parallel operation of Alternators

From the above experiments, each student should perform at least 10 (Ten) experiments.

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Marks for assessment of each experiment			18
Duration of Internal Test: 3 Hours			

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VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Mini Project

SYLLABUS FOR B.E. V SEMESTER

L:T:P(Hrs./week):0:0:2	SEE Marks:-	Course Code: U18PC519EE
Credits :01	CIE Marks:30	Duration of SEE: 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. Learn contemporary technologies. 2. Design/Develop/Implement/Solve an engineering problem in the relevant areas of Electrical and Electronics Engineering.	On completion of the course, students will be able to 1. Apply the knowledge acquired in the electrical engineering. 2. Demonstrate the ability to locate and use technical information from multiple sources. 3. Demonstrate the ability to communicate effectively through a technical report. 4. Demonstrate independent learning and professional ethics. 5. Demonstrate the project management capabilities.

The students are required to carry out mini projects in relevant areas of Power Systems, Power Electronics, Electrical Machines, Measurements, Control Systems, Circuits, Microprocessors Controller and digital signal processing.

Students are required to submit a report on the mini project.

➤ Batch size shall be 2(or) 3 students per batch.

➤ Allocation by department.

➤ Two reviews—One during 5th week and another during 10th week and final evaluation shall be conducted during 15th to 16th week.

With effect from the Academic Year 2020-21

- Students are required to give Presentations/Demonstration of the work during the reviews.
- Students are required to submit mini project report along with working model if applicable.

From the above experiments, each student should perform at least 12 (Twelve) experiments.

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Marks for assessment of each experiment			18
Duration of Internal Test: 3 Hours			

With effect from the Academic Year 2020-21
**OPEN ELECTIVES OFFERED BY VARIOUS DEPARTMENTS IN
 B.E. V SEMESTER (2020-21)**

Dept	Title	Code	credits
Civil	Spatial Information Technology	U18OE510CE	3
CSE	Fundamentals Of Object Oriented Programming	U18OE510CS	3
CSE	Web Design	U18OE520CS	3
ECE	Sensors For Engineering Applications	U18OE510EC	3
IT	Introduction To Database Management Systems	U18OE510IT	3
IT	Introduction To Statistical Programming	U18OE520IT	3
Mech.	Introduction To Robotics	U18OE510ME	3
Mech.	Introduction To Automobile Engineering	U18OE520ME	3
Mech.	Advanced Course Entrepreneurship	U18OE530EH	3
Maths.	Discrete Mathematics for Engineers	U18OE520MA	3
H&SS	Technical Writing and Professional Presentations	U18OE010EH	3

With effect from the Academic Year 2020-21
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF CIVIL ENGINEERING
 SPATIAL INFORMATION TECHNOLOGY (Open Elective-III)

SYLLABUS FOR B.E.V-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18OE510CE
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The objectives of this course are to:	Upon the completion of the course, students are expected to
1. To provide fundamental knowledge on geo spatial technology such as Remote sensing GPS and GIS.	1. Select the type of remote sensing technique/data, identify and analyze the earth surface features from the satellite images. 2. Identify GPS components, interpret the navigational message and signals received by the GPS satellites, Identify the error sources and apply corrections for accurate positioning. 3. Analyse the basic components of GIS, process spatial and attribute data, identify and rectify mapping inaccuracies and prepare thematic maps.

Unit I:

Introduction and Basic Concepts of Remote Sensing

Introduction, Basic concepts of remote sensing, Airborne and space born sensors, Passive and active remote sensing, EMR Spectrum, Energy sources and radiation principles, Energy interactions in the atmosphere, Energy interactions with earth surface features, Atmospheric windows, Spectral reflectance curves

Unit II:

Remote Sensing Systems

Satellites and orbits, Polar orbiting satellites, Image characteristics and different resolutions in Remote Sensing, Multispectral, thermal and hyper

With effect from the Academic Year 2020-21 spectral remote sensing. Some remote sensing satellites and their features, Map and Image, color composites, introduction to digital data, elements of visual interpretation techniques. Applications of Remote sensing in various fields.

Unit III:

Global positioning Systems (GPS)

Overview of GNSS and Introduction to GPS, GLONASS, GALILEO, COMPASS, IRNSS systems , Applications of GPS.

GPS: Basic concepts, Functional system of GPS – Space segment, control segment and user segment, Working principle of GPS, Signal structure and code modulation, Pseudo-range measurements and navigation message

Unit IV

Errors and Positioning methods of GPS

Errors and biases in GPS measurements, Accuracy of navigation position: UERE and DOP, Intentional degradation of GPS signals: Selective availability (SA) and Anti-spoofing (AS) Differential GPS: Space based augmentation systems (e.g., SBAS, GAGAN) and Ground based augmentation systems (e.g., WASS, EGNOS)

GPS Carrier Phase measurements: Single Differencing, Double Differencing and Triple Differencing in GPS measurements.

Unit V

Basic Concepts: Introduction to GIS, History of GIS, Early development in GIS, Areas of GIS application, Components of GIS, Overview of GIS Software packages, Current issues and Trends in GIS.

Variables-Point, line, polygon, Geographic coordinate system, Map projections, Map Analysis.

GIS Data: Data types – spatial, non-spatial (attribute data) – data structure, data format – point line vector – Raster – Polygon

Data Input : Keyboard entry, Manual Digitizing, Scanner, Remotely sensed data, Existing Digital data Cartographic database, Digital elevation data

Data Editing: Detection and correction of errors, data reduction, edge matching

Learning Resources:

1. James B. Campbell & Randolph H. Wynne., Introduction to Remote Sensing, The Guilford Press, 2011
2. Lillesand, Kiefer, Chipman., Remote Sensing and Image Interpretation, Seventh Edition, 2015
3. Leick, A., GPS Satellite Survey, John Wiley: NJ, 2015
4. Hofmann, B., Lichtenegger H. and Collins J., Global Positioning System: Theory and Practice, Springer: Berlin, 2011.
5. Basudeb Bhatta, Remote Sensing and GIS, Oxford University Press, 2011.
6. Hofmann-Wellenh of, Bernhard, Lichtenegger, Herbert, Wasle, Elmar, GNSS – GPS, GLONASS, Galileo and more, 2013
7. Thanappan Subash., Geographical Information System, Lambert Academic Publishing, 2011.
8. Paul Longley., Geographic Information systems and Science, John Wiley & Sons, 2005
9. John E. Harmon & Steven J. Anderson., The design and implementation of Geographic Information Systems, John Wiley & Sons, 2003
10. ArcGIS 10.1 Manuals, 2013.
11. Kang Tsung Chang., Introduction to Geographic Information Systems, Tata Mc Graw Hill Publishing Company Ltd, New Delhi, 2008.
12. Burrough, P.A., Principles of GIS for Land Resource Assessment, Oxford Publications, 2005.
13. C.P.Lo & Albert K. W.Yeung, Concepts and Techniques of Geographic Information Systems, Prentice Hall India Pvt.Ltd, 2002.

The break-up of CIE: Internal Tests+ Assignments + Quizzes

- | | | | | | |
|--------------------------|---|--------------------------------|-----------------------------------|---|---------------------------------|
| 1. No. of Internal Tests | : | <input type="text" value="2"/> | Max. Marks for each Internal Test | : | <input type="text" value="30"/> |
| 2. No. of Assignments | : | <input type="text" value="3"/> | Max. Marks for each Assignment | : | <input type="text" value="5"/> |
| 3. No. of Quizzes | : | <input type="text" value="3"/> | Max. Marks for each Quiz Test | : | <input type="text" value="5"/> |

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

Department of Computer Science & Engineering
 Fundamentals Of Object Oriented Programming (Open Elective-III)

SYLLABUS FOR B.E.V-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18OE510CS
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
	On completion of the course, students will be able to
1. Apply object oriented principles for developing an application using Java constructs. 2. Design GUI using existing Java classes and interfaces.	1. Adopt the fundamentals of Object oriented system development for developing a application. 2. Apply basic features of OOP to design an application. 3. Employ runtime error handling, concurrent programming practices to develop a parallel processing application. 4. Perform string handling, read and write operations using console and files IO streams. 5. Design GUI for a java application using AWT classes.

UNIT-I: Object Oriented System Development: Understanding Object Oriented Development, Understanding Object Concepts, Benefits of Object Oriented Development.

Java Programming Fundamentals: Introduction, Overview of Java, Data types, Variables and Arrays, Operators, Control Statements.

UNIT-II: Building blocks of OOP: Classes and Methods, Constructor, Parameterized constructor, Garbage Collection, this, static, final

With effect from the Academic Year 2020-21
keywords, Inheritance, types of inheritance, Method Overriding, Abstract class, Nested class, Interface, Package.

UNIT-III: Exception Handling: try, catch, throw, throws, finally, creating user defined exceptions

Multithreaded Programming: Types of Thread creation, multiple threads, isalive, join, thread priority, Thread Synchronization, Inter process communication.

UNIT-IV:String Handling: String constructors, operations, character extraction, comparison, search, modification. StringBuffer, methods, StringBuilder, StringTokenizer

Util: Date, Calendar, Random, Timer, Observable

IO: Files and Directories, I/O Classes and Interfaces, Byte Streams classes and Character Stream classes

UNIT-V: Applet: Applet Class, Applet architecture

Event Handling: The Delegation Event Model, Event Classes, Source of Events, Events Listener Interfaces

GUI Development: AWT: Classes, Working with Graphics, Frames, Menu, Layout Managers.

Learning Resources:

1. Herbert Schildt, The Complete Reference Java, 7th Edition, Tata McGraw Hill 2005.
2. P. Radha Krishna, Object Oriented Programming through Java, Universities Press, 2007.
3. Sachin Malhotra, Saurabh Choudhary, Programming in Java, 2nd Edition, Oxford Press, 2014.
4. <https://docs.oracle.com/javase/tutorial/java>

The break-up of CIE: Internal Tests+ Assignments + Quizzes

- | | | | |
|--------------------------|-----|-----------------------------------|------|
| 1. No. of Internal Tests | : 2 | Max. Marks for each Internal Test | : 30 |
| 2. No. of Assignments | : 3 | Max. Marks for each Assignment | : 5 |
| 3. No. of Quizzes | : 3 | Max. Marks for each Quiz Test | : 5 |

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

Department of Computer Science & Engineering
WEB DESIGN (OPEN ELECTIVE-III)

SYLLABUS FOR B.E.V-SEMESTER
(COMMON FOR CIVIL, ECE, EEE & MECH)

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18OE520CS
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
To Develop web application using HTML, CSS, JavaScript and PHP.	On completion of the course, students will be able to <ol style="list-style-type: none">1. Design static web pages.2. Apply styles to the web pages.3. Create dynamic web pages using JavaScript.4. Design DTD and schema for a given XML file.5. Develop server side components using PHP.

UNIT-I: Web Basics and overview: Introduction to Internet, World Wide Web, Web Browsers, Web Servers, URL, MIME, HTTP, Web Programmers Tool Box, Introduction to HTML Purpose of HTML and XHTML, Text Formatting, Hypertext Links, Images, Lists, Tables, Forms and Frames.

UNIT-II: Cascading Style Sheets- Levels of Stylesheet, Style Specification Formats, Selector Formats, Property Value Forms, Font Properties, List Properties, Alignment of Text, Box Model, Background Images, Borders, div and span tags, Conflict Resolution.

UNIT-III: JavaScript - Object Orientation and JavaScript, Primitives, Operations, Expressions, Control Statements, Object Creation, Arrays, Functions- Introduction, Program Modules in JavaScript, Programmer-Defined Functions, Function Definitions, Random-Number Generation, Scope Rules, JavaScript Global Functions, Recursion, Constructors,

With effect from the Academic Year 2020-21

Regular Expressions, DOM Model, Events, Event Handling in JavaScript, JavaScript objects.

UNIT-IV: Introduction to XML, Syntax of XML, XML Document Structure, Document type Definition, Namespaces and Schemas.

Client-Server Architecture, Multi-tier Architecture, Web server.

UNIT-V: PHP- Overview of PHP, General Syntactic Characteristics, Primitives, Operations, and Expressions, Output, Control Statements, Arrays, Functions, Pattern Matching, Form Handling, Cookies and Session Tracking.

Learning Resources:

1. Robert W. Sebesta, "Programming the World Wide Web", Pearson Education.(3rd)
2. Uttam K.Roy, "Web Technologies", Oxford publishers.
3. <http://www.w3schools.com>
4. <https://www.php.net/manual/en/tutorial.php>

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests : Max. Marks for each Internal Test :
2. No. of Assignments : Max. Marks for each Assignment :
3. No. of Quizzes : Max. Marks for each Quiz Test :

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
SENSORS FOR ENGINEERING APPLICATIONS (OPEN ELECTIVE)

SYLLABUS FOR B.E.V-SEMESTER (for other branches)

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18OE510EC
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
	On completion of the course, students will be able to
<ol style="list-style-type: none">1. The student will come to know the various stimuli that are to be measured in real life instrumentation.2. He will be able to select the right process or phenomena on which the sensor should depend on3. He will be aware of the various sensors available for measurement and control applications.	<ol style="list-style-type: none">1. Appreciate the operation of various measuring and control instruments which they encounter in their respective fields.2. Visualize the sensors and the measuring systems when they have to work in areas of interdisciplinary nature and also think of sensors and sensors systems when for a new situation they encounter in their career3. Identify and select the right process or phenomena on which the sensor should depend on.4. Know various stimuli that are to be measured in real life instrumentation.

UNIT – I

Introduction: What is a sensor and what is a transducer? Electrical sensor – need for sensors in the modern world. Different fields of sensors based on the stimuli - various schematics for active and passive sensors.

With effect from the Academic Year 2020-21

General characteristics and specifications of sensors - Implications of specifications uses of sensors - measurement of stimuli - block diagram of sensor system. Brief description of each block.

UNIT – II

Sensors for mechanical systems or mechanical sensors - Displacement - acceleration and force - flow of fluids - level indicators - pressure in fluids - stress in solids. Typical sensors - wire and film strain gauges, anemometers, piezo electric and magnetostrictive accelerometers, potentiometric sensors, LVDT.

UNIT – III

Thermal sensors – temperature – temperature difference – heat quantity. Thermometers for different situation – thermocouples thermistors – color pyrometry.

Optical sensors: light intensity – wavelength and color – light dependent resistors, photodiode, photo transistor, CCD, CMOS sensors.

Radiation detectors: radiation intensity, particle counter – Gieger Muller counter (gas based), Hallide radiation detectors.

UNIT – IV

Magnetic sensors: magnetic field, magnetic flux density – magneto resistors, Hall sensors, super conduction squids.

Acoustic or sonic sensors: Intensity of sound, frequency of sound in various media, various forms of microphones, piezo electric sensors.

UNIT – V

Electrical sensors: conventional volt and ammeters, high current sensors, (current transformers), high voltage sensors, High power sensors.

High frequency sensors like microwave frequency sensors, wavelength measuring sensors.

MEMs and MEM based sensors.

Learning Resources :

1. Doebelin, "Measurement Systems: Application and Design", McGraw Hill Kogakusha Ltd.
2. Julian W. Gardner, Vijay K. Varadan, Osama O. Awadelkarim "Microsensors, MEMS and Smart Devices", New York: Wiley, 2001.
3. Henry Bolte, "Sensors – A Comprehensive Sensors", John Wiley.

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests : Max. Marks for each Internal Test :
2. No. of Assignments : Max. Marks for each Assignment :
3. No. of Quizzes : Max. Marks for each Quiz Test :

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF INFORMATION TECHNOLOGY
 INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS (Open Elective-III)

SYLLABUS FOR B.E.V-SEMESTER
 (Common for CIVIL, ECE, EEE & MECH)

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18OE510IT
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
Apply the concepts of database management systems and design relational databases.	On completion of the course, students will be able to 1. Understand functional components of the DBMS and develop ER model for a given problem and map ER it to Relational model 2. Understand Relational model and basic relational algebra operations. 3. Devise queries using SQL. 4. Design a normalized database schema using different normal forms. 5. Understand transaction processing and concurrency control techniques.

UNIT – I

Introduction: Database System Applications, Purpose of Database Systems, View of Data, Database Languages, Relational Databases, Database Architecture, Database Users and Administrators.

Database Design and the E-R Model: Overview of the Design Process, The E-R Model, Constraints, E-R Diagrams

With effect from the Academic Year 2020-21

UNIT – II

Relational Model: Structure of Relational Databases, Database Schema, Keys, Schema Diagrams, Relational Query Languages, Fundamental Relational-Algebra Operations.

UNIT – III

Structured Query Language: Introduction, Data Definition, Basic Structure of SQL Queries, Modification of the Database, Additional Basic Operations, Set Operations, Null Values, Aggregate Functions, Nested Subqueries, Join Expressions, Views.

UNIT – IV

Relational Database Design: Features of Good Relational Design, Normalization-Decomposition Using Functional Dependencies, Functional-Dependency Theory.

UNIT – V

Transactions: Transaction Concepts, Transaction State, Concurrent Executions, Serializability

Concurrency Control: Lock-Based Protocols, Timestamp-Based Protocols.

Learning Resources :

1. Abraham Silberschatz, Henry F Korth, S. Sudarshan, Database System Concepts, 6th Edition, McGraw-Hill International Edition, 2011.
2. Raghu Ramakrishnan, Johannes Gehrke, Database Management Systems, Third Edition, McGraw-Hill International Edition, 2003.
3. Elmasri, Navathe, Somayajulu and Gupta, Fundamentals of Database System, 6th Edition, Pearson Education, 2011.
4. Patric O'Neil, Elizabeth O'Neil, Database-principles, programming, and performance, Morgan Kaufmann Publishers, 2001.
5. Peter Rob, Carlos coronel, Database Systems, (2007), Thomoson.
6. <https://nptel.ac.in/courses/106105175/>

With effect from the Academic Year 2020-21

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests : Max. Marks for each Internal Test :
2. No. of Assignments : Max. Marks for each Assignment :
3. No. of Quizzes : Max. Marks for each Quiz Test :

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF INFORMATION TECHNOLOGY
 INTRODUCTION TO STATISTICAL PROGRAMMING (Open Elective-III)

SYLLABUS FOR B.E.V-SEMESTER
 (Common for CIVIL, ECE, EEE & MECH)

L: T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18OE520IT
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The objectives of this course are to:	On completion of the course, students will be able to
The course will enable the students to apply the statistical programming concepts and techniques using Python libraries in the analysis of Statistical data.	<ol style="list-style-type: none"> 1. Understands the basics of statistical concepts and various data types in Numpy, Pandas. 2. Cleans and Analyzes the data with descriptive statistics and EDA. 3. Visualizes the data with matplotlib, seaborn graphic libraries. 4. Analyzes data with various statistical inference techniques using Hypothesis testing. 5. Understands and applies various data distributions, sampling and simulation of random variables. 6. Applies various statistical models like linear regression, ANOVA to the data.

Unit I: Introduction to Statistical computing and Python libraries

Intro to statistics: Samples and Population, Descriptive statistics; intro to Computational statistics, Data analysis, knowledge discovery in Data, Various data types.

Intro to statistical computing software: Python libraries & R.

With effect from the Academic Year 2020-21

Unit II: Data Collection, Cleaning and Exploratory Data Analysis using Pandas.

Data types in Numpy, Pandas: list, vector, matrix, array, tensor, DataFrame. Operations on Data Types.

Data import using Pandas, Data cleaning, imputation, EDA case studies using Pandas.

Unit III: Data Visualization with matplotlib and Seaborn.

Intro to matplotlib and Seaborn graphic libraries, basic visualizations using matplotlib, Advanced visualizations with Seaborn, Data correlation chart. Case studies on visualizations.

Unit IV: Data distributions, Statistical Inference using Hypothesis testing.

Understanding various data distributions: Bernoulli, Binomial, Exponential, Poisson & Gaussian.

Intro to Hypothesis testing: p-value, critical value, interpretation of test results.

Types of Hypothesis testing using Scipy.stats: Normality tests, Correlation tests, Comparing samples.

Unit V: Simulations and Statistical models

Random variables, sampling and simulation of data distributions.

Statistical models: Linear algebra, Optimizations, Linear regression, Intro to Statistical or Machine learning.

Learning Resources:

1. https://machinelearningmastery.com/statistics_for_machine_learning/
2. <https://scipy-lectures.org/packages/statistics/index.html>
3. [Udemy: Python for Statistical Analysis](#)
4. [courseera: Statistics with Python specialization](#)
5. <https://numpy.org/>
6. <https://pandas.pydata.org/>
7. <https://matplotlib.org/>
8. <https://seaborn.pydata.org/>

With effect from the Academic Year 2020-21

9. <https://www.statsmodels.org/stable/index.html>
10. <https://scikit-learn.org/stable/>
11. A first Course in Statistical Programming with R, W. John Braun, Duncan J. Murdoch, Cambridge University Press, 2007.
12. <https://cran.r-project.org/manuals.htm>

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests : Max. Marks for each Internal Test :
2. No. of Assignments : Max. Marks for each Assignment :
3. No. of Quizzes : Max. Marks for each Quiz Test :

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF MECHANICAL ENGINEERING
 INTRODUCTION TO ROBOTICS (Open Elective-III)

SYLLABUS FOR B.E.V-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18OE510ME
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The objectives of this course are to:	On completion of the course, students will be able to
The objectives of this course are to: Identify robots and its peripherals for satisfactory operation and control of robots for industrial and non-industrial applications.	<ol style="list-style-type: none"> 1. understand the anatomy of the robot and various robot configurations for it's selection depending on the task. 2. classify the end effectors , understand different types of joints, various types of mechanical actuation and robot drive systems for carrying out the assigned job effectively. 3. analyze a planar manipulator through forward kinematics and understand the control of robot manipulator for better reliability and efficiency. 4. Classify the various sensors used in robots for proper selection to an application. 5. summarize various industrial and

UNIT-I

ROBOT BASICS

Robot-Basic concepts, Need, Law, History, Anatomy, specifications.
 Robot configurations-cartesian, cylindrical, polar ,articulated and SCARA.
 Robot wrist mechanism, Precision and accuracy of robot.

With effect from the Academic Year 2020-21

UNIT-II

ROBOT ELEMENTS

End effectors-Classification, Types of Mechanical actuation, Gripper design, Robot drive system types: Electrical, pneumatic and hydraulic. Position and velocity feedback devices, Robot joints and links-Types, Motion interpolation.

UNIT-III

ROBOT KINEMATICS AND CONTROL

Robot kinematics – Basics of direct and inverse kinematics, Robot trajectories, 2D and 3D Transformation- Scaling, Rotation and Translation, Homogeneous transformation. D-H matrix. Forward kinematics for a 2-link RR planar manipulator.

Control of robot manipulators – Point to point and Continuous Path Control. Robot programming.

UNIT-IV

ROBOT SENSORS

Sensors in robots – Touch sensors-Tactile sensors – Proximity and range sensors. Force sensors, Light sensors, Pressure sensors.

Introduction to Machine Vision and Artificial Intelligence.

UNIT-V

ROBOT APPLICATIONS

Applications of robots in Industries, Medical, Household, Entertainment, Space, Underwater, Defense, and Disaster management.

Applications of Micro and Nanorobots, Future Applications of robots.

Learning Resources:

1. MikellP. Groover, Mitchell Weiss, Roger N Nagel and Nicholas G Odrey, "Industrial Robotics Technology, Programming and Applications", TataMcGraw-Hill Publishing Company Limited , 2008.
2. Deb.S.R and Sankha Deb, "Robotics Technology and Flexible Automation", Tata McGraw HillPublishing Company Limited, 2010.
3. KlafterR.D, Chmielewski T.A, and Negin. M, "Robotic Engineering: An Integrated Approach", Prentice Hall of India Pvt. Ltd.,1994.

With effect from the Academic Year 2020-21

4. K.S. Fu, R.C. Gonzalez and C.S.G. Lee, "Robotics control, sensing, vision and intelligence", Tata McGraw-Hill Publishing Company Limited, 2008
5. R.K. Mittal and I.J. Nagrath "Robotics and Control", Tata McGraw-Hill Publishing Company Limited, 2003.

The break-up of CIE: Internal Tests + Assignments + Quizzes

1. No. of Internal Tests : Max. Marks for each Internal Test :
2. No. of Assignments : Max. Marks for each Assignment :
3. No. of Quizzes : Max. Marks for each Quiz Test :

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF MECHANICAL ENGINEERING
INTRODUCTION TO AUTOMOBILE ENGINEERING (OE-III)

SYLLABUS FOR B.E.V-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18OE520ME
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The objectives of this course are to:	On completion of the course, students will be able to
<ol style="list-style-type: none"> 1. familiarize the student with the different types of automobiles and engine components. 2. impart adequate knowledge in fuel supply, cooling, lubrication systems of IC engines. 3. understand the steering geometry, steering mechanism and types of suspension systems. 4. gain the knowledge about working of clutch, gear mechanism, brakes 5. make the student conversant with types of wheels, tyres and pollution control techniques. 	<ol style="list-style-type: none"> 1. identify types of Automobiles and engine components. 2. describe the engine fuel system in petrol and Diesel engines, cooling, lubrication systems. 3. describe the steering mechanism, suspension systems 4. analyse the working principle and operation of clutch, gear mechanism and brakes. 5. know the pollutants from automobile and pollution control techniques and identify the types of wheels, tyres.

UNIT-I

Introduction: Types of automobiles: Hybrid Vehicles, Electrical, gas and Fuel cell vehicles. Chassis and body, Lay out of transmission system, Engine components: cylinder block, cylinder head, crankcase, crank shaft and cam shaft. Types of IC Engines: SI and CI engines, two stroke and four stroke engines.

With effect from the Academic Year 2020-21

UNIT-II

Fuel system: Fuel supply system for SI engines and CI engines. Simple carburettor, Introduction to Multipoint fuel injection system (**MPFI**) of petrol engines and Introduction to **CRDI** system for diesel engines.

Cooling system: air cooling, water cooling: Thermo syphon, pump circulation system.

Lubrication system: Petroil System, splash system, pressure lubrication: Wet sump and Dry Sump.

Ignition system: Battery Ignition System, Magneto Ignition System and Electronic Ignition System.

UNIT-III

Suspension system: Rigid axle, Independent suspension system: Double wish bone type, Macpherson strut system, Air suspension system.

Steering system: front axle, wheel alignment, steering geometry: camber, caster, toe-in, toe-out, steering linkage for vehicle with rigid axle front suspension, steering linkage for vehicle with independent front suspension, Ackermann steering mechanism.

UNIT –IV

Power Train: Single plate clutch, Multi plate clutch. Manual Gear Box: sliding mesh gear box, constant mesh gear box, synchromesh gear box and Automatic Gear Box. Working principle of Differential.

Brakes: Types: Drum and Disc brakes, Mechanical and Hydraulic Brakes, **ABS** system.

UNIT –V

Wheels and Tyres: Types of Wheels: wire wheels, disc wheels, alloy wheels. Types of tyres: Tube type, tubeless type. **SRS** Airbag system.

Automobile Emissions and control: Automobile pollutants and sources of pollution. Pollution Control Techniques: Catalytic Converters, EGR and PCV. Bharath emission Norms.

With effect from the Academic Year 2020-21

Learning Resources:

1. Crouse & Anglin, "Automobile Engineering", 10th Edition, Tata McGraw Hill Publishing Co. Ltd., New Delhi,. 2007.
 2. Kirpal Singh, "Automobile Engineering", Vol.I& II, 13th Edition, Standard Publishers, New Delhi 2013.
 3. R.B Gupta, "Automobile Engineering" 7th Edition, Satya Prakashan, New Delhi, 2015.
 4. Joseph Heitner, "Automotive Mechanics", 2nd Edition, Affiliated East West Pvt. Ltd., 2013.
- C.P. Nakra, "Basic Automobile Engineering", 7th Edition, Dhanpat Rai Publishing C (P) Ltd., 2016.

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests : Max. Marks for each Internal Test :
2. No. of Assignments : Max. Marks for each Assignment :
3. No. of Quizzes : Max. Marks for each Quiz Test :

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF MECHANICAL ENGINEERING
ADVANCED COURSE IN ENTREPRENEURSHIP (OE-IV)

SYLLABUS FOR B.E.V-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18OE530EH
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The objectives of this course are to:	On completion of the course, students will be able to
<ol style="list-style-type: none"> 1. Acquire additional knowledge and skills for developing early customer traction into a repeatable business. 2. They will learn the tools and methods for achieving sustainable growth, such as refining the product or service and business models, building brand strategy, making a sales and financial plan etc. 	<ol style="list-style-type: none"> 1. Develop an A-team 2. Refine business models and expand customer segments, brand strategy and create digital presence, channel strategy for customer outreach 3. Develop strategies to grow revenues and markets, understand Advance Concepts of business finance, do Financial Planning, find Funding for growth 4. Leverage technologies and platforms for growth stage companies 5. Develop key metrics to track progress, understand Basics of registering a company.

Unit I: Pivoting and New Business Model

Introduction to Advance Course and Recapping the key concepts; Revisit of idea/ solution, business model and team members, Need for a mentor; Pivoting and its need; Types of Business models; Refining business model; Analyzing the Business Model of Competitors; Adding new

With effect from the Academic Year 2020-21 customer segments to existing business model.

Unit II: Business Planning

Product Management: Need for a product management with examples; Making a sales plan; Building sales organization: Entrepreneur interview, Hiring sales team; Making a people plan for the venture; Introduction and understanding financial planning and forecasting template; Discussing financial planning and revisiting business model; Creating a procurement plan; Negotiation.

Unit III: Customer Life cycle and Building the A-team

Customer life cycle; identifying secondary revenue streams; Funding Landscape: Funding options for an entrepreneur; Investor hunt: Creating funding plan and designing the pitch deck; Attracting right talent – I: Intro to building the A-team; Examples; Setting the team for success.

Unit IV: Branding and Channel Strategy, Leveraging Technologies

Creating brand Strategy: Drawing venture's golden circle; Defining the positioning statement: values; Creating a Public Image and Presence of the Venture; Identifying the right channel; Platforms for Marketing and Promotion; Platforms for Communication and Collaboration; Making the Tech Plan.

Unit V: Measuring Progress, Legal Matters and Role of Mentors & Advisors

Metrics for Customer Acquisition and Retention; Financial Metrics: Finding new revenue streams based on key financial metrics; Re-forecasting financial plan to increase margin; Professional Help and Legal & Compliance Requirements; Selecting IP for organization; Identifying mentors and advisors; Scouting board of directors; Capstone Project.

Learning Resources:

1. <http://www.learnwise.org>
2. Clancy, Ann L. & Binkert, Jacqueline, "Pivoting- A coach's guide to igniting substantial change" Palgrave Macmillan US 2017
3. Porter, Michael, E., "Competitive Advantage: Creating and Sustaining Superior Performance", Free press, 1st edi.
4. Schwetje, Gerald & Vaseghi Sam, "The Business Plan", Springer-Verlag Berlin Heidelberg.
5. LeMay, Matt, "Product Management in Practice", O'Reilly Media Inc.
6. Smart, Geoff & Randy, Street., "Who: The A method of hiring", Ballantine books, 2008.

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7. Blokdyk, Gerardus., "Customer Lifecycle Management - A complete guide", 5starcooks, 2018

The break-up of CIE: Internal Tests+ Assignments + Quizzes

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3. No. of Quizzes : Max. Marks for each Quiz Test :

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF MATHEMATICS
 Discrete Mathematics for Engineers (Open Elective)

SYLLABUS FOR B.E.V-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18OE520MA
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
<ol style="list-style-type: none"> 1. Understand Propositions and their equivalences, predicates and quantifiers and learn various proof strategies. 2. Study the concepts of number theory such Modular Arithmetic, Congruences and basic cryptography etc., 3. Understand the basics of counting, combinatorial, and various methods of solving Recurrence relations. 4. Understand Relations, Equivalence relations, Posets and Hasse diagrams. 5. Analyze the concepts of Graphs. 	<ol style="list-style-type: none"> 1. Use logical notation to define and reason about fundamental mathematical concepts and synthesize induction hypothesis and simple Induction proofs. 2. Prove elementary properties of modular arithmetic and basic cryptography and apply in Computer Science. 3. Calculate number of possible outcomes of elementary combinatorial processes such as permutations and combinations Model and analyze computational processes using analytic and Combinatorial methods. 4. Prove whether a given relation is an equivalence relation/poset and will be able to draw a Hasse diagram. 5. Apply graph theory models of data structures and to solve problems of connectivity.

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UNIT – I (10 Hours)

Logic: Logic- Logical connectives- Propositional equivalences– Predicates and quantifiers – Nested quantifiers.

Mathematical Reasoning, Induction: Proof Strategy- Methods of Proofs- Mathematical Induction- Second Principle of Mathematical Induction.

UNIT – II (8 Hours)

Number Theory: The Integers and Division- Division Algorithm- Fundamental Theorem of Arithmetic –Modular Arithmetic-Integers and Algorithms- Euclidean Algorithm -Linear Congruences- Fermat’s Little Theorem.

UNIT – III (8 Hours)

Counting: Basics of counting- Pigeonholeprinciple- Permutations and combinations – Pascal’s Identity- Vandermonde’s Identity- Generalized Permutations and combinations.

Advanced Counting Techniques: Recurrence relations: Solving Recurrence Relations- Linear Homogeneous and Non-Homogeneous Recurrence relations.

UNIT – IV (8 Hours)

Relations: Relations – Properties -Representing relations - Equivalence Relations - Partial Orderings- Poset.

UNIT –V (8 Hours)

Graph Theory: Introduction- Types of graphs- Graph terminology- Basic theorems- Representing Graphs and Graph Isomorphism - Connectivity- Euler and Hamiltonian paths -

Text Books:

1. Kenneth H.Rosen – Discrete Mathematics and its application – 5th edition, McGraw – Hill, 2003.
2. Joel. Mott. Abraham Kandel, T.P.Baker, Discrete Mathematics for Computer Scientist & Mathematicians, Prentice Hall N.J., 2ndedn, 1986.

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Reference Books:

1. Discrete and Combinatorial Mathematics by Ralph P. Grimaldi , Pearson International
2. J.P.Trembly, R.Manohar, Discrete Mathematical Structure with Application to Computer Science, McGraw- Hill – 1997.
3. R.K. Bisht, H.S.Dhami - Discrete Mathematics, Oxford University Press, 2015.

Online Resources:

1. <http://mathworld.wolfram.com/topics>
2. <http://www.nptel.ac.in/course.php>

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3. No. of Quizzes : Max. Marks for each Quiz Test :

Duration of Internal Test: 90 minutes

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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES
 Technical Writing and Professional Presentations (OE)

SYLLABUS FOR B.E.V-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18OE010EH
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
	On completion of the course, students will be able to
This course introduces the principles and mechanics of technical writing for students of engineering. Students will learn: 1. Specific communications skills associated with reporting technical information and will write a series of papers ranging from process description and feasibility reports to research projects, project proposals, and statement of purpose, which are pre-requisites for start-up companies and getting into foreign universities as well. 2. How to make effective presentations as part of today's workplace demands.	At the end of the course the student will be able to 1. write effective reports 2. research and write project proposals and SoPs 3. make persuasive presentations

UNIT I

A. TECHNICAL REPORTS- INFORMAL

Informal report formats, project and research reports

B. TECHNICAL REPORTS-FORMAL

Formal report components, feasibility reports, evaluation reports, Analytical and informational reports, executive summaries.

UNIT II

TECHNICAL WRITING IN BUSINESS CORRESPONDENCE

With effect from the Academic Year 2020-21
Components of a letter, types of electronic communication, effective emails, instant and text messaging guidelines.

UNIT III

Technical Resume, Curriculum Vitae, Biodata, Cover letter, resume format.

UNIT IV

A. PROFESSIONAL PRESENTATIONS

Paper presentations, Poster presentations, PowerPoint presentations, video demos and tutorials

B. VIDEO DEMOS AND TUTORIALS

Storyboard writing, e-learning methods; video demos, training videos, webinars, conducting surveys, questionnaire, assessments, quiz, introduction to e-learning tools; Adobe Captivate, TechSmith Camtasia.

UNIT-V

HOW TO WRITE PROPOSALS AND STATEMENT OF PURPOSE

Types of proposals, persuasive elements, requests for proposals, stating your objective

METHODOLOGY: -

Case Studies
Demonstration
Presentations
Expert lectures

ASSESSMENT: -

Online assignments
Individual and Group

Writing and Audio-visual lessons

Learning Resources: -

1. Effective Technical Communication, M Ashraf Rizvi, Tata McGraw-Hill Education, 2005
2. Raman, Meenakshi & Sangeeta Sharma. Technical Communication: Principles and Practice. Second Edition. New Delhi: Oxford University. Press, 2011.
3. Hacking Your Statement of Purpose: A Concise Guide to Writing Your SOP, Milena

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Young, 2014.

4. How to prepare a feasibility study: a step-by-step guide including 3 model studies. Front Cover. Robert E. Stevens, Philip K. Sherwood. Prentice-Hall, 1982.

5. Successful Presentations (with DVD): John Hughes & Andrew Mallett. Oxford university Press.

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3. No. of Quizzes : Max. Marks for each Quiz Test :

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21
 VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS) :: IBRAHIMBAGH, HYDERABAD – 500 031.
 DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
 SCHEME OF INSTRUCTION AND EXAMINATION (R-18) :: B.E. - EEE : SIXTH SEMESTER (2020 - 21)

B.E (EEE) VI Semester								
Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination			Credits
		Hours per Week			Duration in Hrs	Maximum Marks		
		L	T	P/D		SEE	CIE	
THEORY								
U18HS610EH	Skill Development-IV : Soft Skills	1	-	-	2	40	30	1
U18HS040EH	Economics and Finance for Engineers	2	-	-	3	60	40	2
U18HS020EH	Human Values and Professional Ethics - II	1	-	-	2	40	30	1
U18PC610EE	Power Systems - II	3	-	-	3	60	40	3
U18PC620EE	Power Electronics	3	-	-	3	60	40	3
U18PC630EE	Linear Control Systems	3	-	-	3	60	40	3
U18PC640EE	Signals & Systems	3	-	-	3	60	40	3
U18PE610EE	Skill Development-IV : Technical Skills	1	-	-	2	40	30	1
U18OE6XXXX	Open Elective –IV	3	-	-	3	60	40	3
PRACTICALS								
U18PC621EE	Power Electronics and Simulation Lab	-	-	2	3	50	30	1
U18PC631EE	Control Systems and Simulation Lab	-	-	2	3	50	30	1
U18PW619EE	Theme Based Project	-	-	2	-	-	30	1
	TOTAL	20	0	6		580	420	23
	GRAND TOTAL	26				1000		

Student should acquire one online course certification equivalent to two credits during III Sem to VII sem.

Note: 1. One hour is allocated for Library/Sports/Proctorial Interaction 2. Four hours are allocated for CCA-IV

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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES

Skill Development-IV : Soft Skills

SYLLABUS FOR B.E. VI SEMESTER

L:T: P (Hrs/Week):1:0:0	SEE Marks: 40	Course Code: U18HS610EH
Credits: 1	CIE Marks: 30	Duration of SEE : 2 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to

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Duration of Internal Test: 90 minutes

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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES

Economics and Finance for Engineers

SYLLABUS FOR B.E. VI SEMESTER

L:T: P (Hrs/Week):2:0:0	SEE Marks: 60	Course Code: U18HS040EH
Credits: 2	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The objective of the Course is to equip the prospective engineers with the concepts and tools of economics, finance, cost and taxes for business decisions.	<ol style="list-style-type: none"> 1. Decide appropriate price for goods and services with the company's given cost structure for an estimated profit of the companies. 2. Identify the suitable sources of finance for the company by considering the functions of major banks such as SBI and RBI 3. Compare the long term financial investment proposals to decide whether a proposal is financially viable or not through capital budgeting techniques. 4. Analyze the given financial statements of a firm to understand its past financial performance in the market. 5. Calculate the impact of the new tax policies on the company's financial structure/ individual incomes.

Unit I: Basics of Economics:

Scarcity Definition of Economics - Macro and Micro Economics - Managerial Economics - Meaning of a Firm - Objectives of a Firm - Profit Maximization - Demand Concept -Price Elasticity of Demand -Meaning of Supply -Equilibrium Price and Quantity -Production -Cobb Douglas Production Function - Economies of Scale.

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Unit II: Cost and Price:

Cost - Meaning -Classification of Costs -Short run and Long run costs - Cost Sheet - Break even Analysis - Methods of Pricing (Problems on Cost Sheet, Breakeven Analysis and Methods of Pricing can be asked).

Unit III: Banking & Finance:

RBI and its role -CommercialBanks - Functions -Capital Budgeting - Discounting and Non discounting Techniques- Working Capital Management - Concepts and Components of Working Capital - Operating Cycle.

UNIT IV: Understanding Financial Statements:

Financial Statements- Meaning - Types -Purpose – Ratios (Liquidity, Solvency & Profitability Ratios)(Problems can be asked on Ratios)

Unit V: Direct & Indirect Taxes:

Heads of Income - Income from Salaries - Income from House Property - Income from Business - Income from Capital Gains -Income from Other Sources - Latest Tax Rates - GST -CGST - SGST - IGST - GST network.

Learning Resources :

1. S.P.Jain and K.LNarang., "Cost Accounting", Kalyani Publishers, Twentieth Edition Revised– 2008.
2. S.P.Jain and K.L Narang., "Financial Accounting", Kalyani Publishers – 2002.
3. Mehta P.L., "Managerial Economics: Analysis, Problems and Cases", Thirteenth Edition, Sultan Chand and Sons, Nineteenth Edition - 2013.
4. M.Y.Khan and P.K. Jain., "Financial Management – Text, Problems and Cases", Mc Graw Hill Education Private Limited, New Delhi.
5. Vinod KSinghania and Kapil Singhania., "Direct Taxes Law and Practice", Taxmann Publications, Sixtieth Edition - 2018.
6. Dr, Vinod K Singhania., "Students' Guide to GST and Customs Law", Taxmann Publications, Edition - 2018.
7. Muralidharan., "Modern Banking", Prentice Hall of India.

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Reference Books:

1. *M. L. Seth., "Micro Economics"*, Lakshmi Narain Agarwal.
2. Dr. R.P. Rustagi., "Fundamentals of Financial Management"Taxmann Publications.
3. Dr. D.M. Mithani, "Money Banking International Trade & Public Finance", Himalaya Publishing House - 2014.
4. Rajesh., "Banking Theory and Practice", Tata Mc Graw Hill Publishing

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Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES

Human Values and Professional Ethics II

SYLLABUS FOR B.E. VI SEMESTER

L:T: P (Hrs/Week):1:0:0	SEE Marks: 40	Course Code: U18HS020EH
Credits: 1	CIE Marks: 30	Duration of SEE : 2 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
1. Get a holistic perspective of value-based education.	1. Gain a world view of the self, the society and the profession.
2. Grasp the meaning of basic human aspirations vis-a-vis the professional aspirations.	2. Start exploring themselves in relation to others and their work – constantly evolving into better human beings and professionals.
3. Understand professionalism in harmony with self and society.	3. Inculcate Human values into their profession.
4. Develop ethical human conduct and professional competence.	4. Obtain a holistic vision about value-based education and professional ethics.
5. Enrich their interactions with the world around, both professional and personal.	

UNIT-1 PERSONAL ETHICS AND PROFESSIONAL ETHICS

a. **PERSONAL ETHICS:** A person 's personal or self-created values and codes of conduct. Civic virtues and Civic sense.

b. NEED FOR ETHICAL CODES

Code of Professional Ethics- Observance of the code, Obligations towards the Features of professional ethics: Openness, Transparency, Privacy, Impartiality, Practicality, Loyalty.

Profession, Ethics and Information Security, Deterring Unethical and Illegal Behaviour, Work ethics.

UNIT-2 GENDER SENSITISATION

- a. Social issues regarding women - Female infanticide and foeticide, dowry & property rights, violence against women.
- b. Impact of globalization on the status of women - Political and legal empowerment
- c. Women at work- Success stories.

{Post independence and current movements in India (Telengana movement 1948-50, Chipko movement 1973, Navnirman movement 1974, question of Representation in Politics)

Change makers - Shashi Deshpande, Taslima Nasreen, Kumkum Sangari, Veena Mazumdar, Neera Desai.

Women's Studies in India--UGC's initiatives -- Centers for Women's Studies- Capacity building for Women leaders in education—Women development cells-- Women's Studies in the XIth Plan.

Women role models -- Case studies– Indira Gandhi, Kiran Mazumdar, Kiran Bedi, Ela Bhatt, Mother Teresa, PT Usha, Rukminidevi Arundale, Annie Beasant, Sarojini Naidu, Medha Padhkar, Kalpana Chawla, etc.}

MODE OF DELIVERY

<ul style="list-style-type: none">• Questionnaires• Quizzes• Case-studies• Observations and practice• Home and classroom assignments	<ul style="list-style-type: none">• Discussions• Skits• Short Movies/documentaries• Team tasks and individual tasks• Research based tasks• Viva
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Relavant Websites,CD's and Documentaries

- Value Education website, <Http://www.universalhumanvalues.info>
- UPTU webiste, <Http://www.uptu.ac.in>
- Story of stuff, <Http://www.storyofstuff.com>
- AIGore, As Inconvenient Truth, Paramount Classics ,USA
- Charlie Chaplin, Modern Times, United Artists, USA

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- IIT Delhi, Modern Technology-The Untold story-Anand Gandhi, Right Here Right Now, Cyclewala production.

Learning Resources:

1. PL Dhar, RR Gaur, 1990, Science and Humanism, Commonwealth Publishers.
2. B.L Bajpai, 2004, Indian Ethos and Modern Management, New Royal Book Co., Lucknow. Reprinted 2008.
3. A.N Tripathy, 2003 Human values, New Age International Publishers.
4. EG Seebauer & Robert L. Berry,2000, Fundamentals of Ethics for Scientists and Engineers, Oxford University Press.

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Duration of Internal Test: 90 minutes

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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Power Systems - II

SYLLABUS FOR B.E. VI SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18PC610EE
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
1.Acquire knowledge of Transmission Lines Performance, Power circle diagrams & Corona.	1.Calculate and compare the performance (Constants A, B, C & D, voltage regulation & efficiency) of different types of Transmission lines.
2.Understand the Per Unit system of Representation, load flow studies and different load flow methods.	2. Apply proper load flow method for the solution of load flow problems of any power system network.
3. Learn about the Symmetrical Fault analysis and S.C capacity of a Bus.	3.Calculate the P.U quantities in power system and analyze symmetrical fault (LLL Fault) and calculate S.C capacity of a Bus.
4. Acquire the knowledge of the fundamentals of Sequence components, Sequence networks of Generator, T/F, T.M.L & Load and Unsymmetrical Fault analysis of power system	4. Draw the diagram of Sequence networks of different components and compute the Unsymmetrical Fault (LG, LL, LLG& LLLG) current value & MVA values.
5. Understand the concept of Travelling Wave theory and Bewley Lattice diagram.	5. Evaluate the value of coefficient of reflection and refraction of voltage or current wave and construct Bewley Lattice diagram.

UNIT I

Transmission Line Theory: Short, medium, long lines – Line calculations, Tuned lines – Power circular diagrams and their applications. Corona: Causes – Disruptive and Visual Critical Voltages, Power loss – minimization of Corona Effects.

UNIT II

Per Unit of Representation: Use of per Unit Quantities in power systems, Advantages of per unit system. Y bus formation, Modeling tap changing and phase shifting of transformers, formation of load flow problem, Gauss and Gauss seidel , Newton Raphson and fast decoupled methods

UNIT III

Symmetrical faults:

Z bus, Symmetrical Three phase Transients in R-L series circuits – short circuit currents – Reactance's of Synchronous Machines – Symmetrical Fault calculations. short circuit capacity of bus.

UNIT IV

Unsymmetrical faults: Symmetrical components of unsymmetrical phasors – Power in terms of symmetrical components - sequence impedance and sequence networks. Sequence networks of unloaded generators – Sequence impedances of circuit elements – Single line to ground, line-to-line and double line to ground faults on unloaded generator – Unsymmetrical faults of power systems.

UNIT V

Transients in power systems : Causes of over voltages : Traveling Wave Theory – Wave equation – Open Circuiting Line – The short circuited line – Junction of lines of different natural impedances – Reflection and refraction – Coefficients – Junction of Cable and overhead lines – Junction of three lines of different natural impedances – Bewley Lattice diagram.

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Learning Resources:

1. C.L. Wadhwa , Electrical Power Systems, Wiley Eastern Ltd., 4th Ed. 2006.
2. John J.Grainger William D. Stevenson Jr. Power System Analysis, Tata MCGraw Hill Edn.2003
3. I.J.Nagrath&D.P.Kothari "Modern Power Systems Analysis" TMH Edition, 2003.
4. A. Chakrabarti, M.L.Soni, P.V.Gupta, U.S.Bhatnagar, A Text book on Power System, DhanpatRai&Co(P) Ltd.

The break-up of CIE: Internal Tests+ Assignments + Quizzes

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2. No. of Assignments : Max. Marks for each Assignment :
3. No. of Quizzes : Max. Marks for each Quiz Test :

Duration of Internal Test: 90 minutes

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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Power Electronics

SYLLABUS FOR B.E. VI SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18PC620EE
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
To provide the fundamentals of power semi – conductor devices and inculcate the knowledge on controlled rectifiers, DC-DC converters and Inverters	<ol style="list-style-type: none">1. Understand the differences between signal level devices and power level devices.2. Analyze controlled rectifier circuits.3. Analyze the operation of DC-DC Converters.4. Analyze the operation of single phase voltage source inverters.5. Analyze the operation of three phase voltage source inverters.

UNIT-I:

Power switching devices

Diode, Thyristor, TRIAC, MOSFET, IGBT: I-V Characteristics; Firing circuit for thyristor; Voltage and current commutation of a thyristor; Gate drive circuits for MOSFET and IGBT.

UNIT-II:

Phase Controlled Rectifiers

Single-phase half-wave and full-wave rectifiers, Single-phase full-bridge thyristor rectifier with R-load and highly inductive load; Three-phase full-bridge thyristor rectifier with R-load and highly inductive load; Input current wave shape and power factor.

With effect from the Academic Year 2020-21

UNIT-III: DC-DC converters

DC-DC buck converter:

Elementary chopper with an active switch and diode, concepts of duty ratio and average voltage, power circuit of a buck converter, analysis and waveforms at steady state, duty ratio control of output voltage.

DC-DC boost converter:

Power circuit of a boost converter, analysis and waveforms at steady state, relation between duty ratio and average output voltage.

DC-DC buck-boost converter:

Power circuit of a buck-boost converter, analysis and waveforms at steady state, relation between duty ratio and average output voltage.

UNIT-IV:

Single-phase voltage source inverter:

Power circuit of single-phase voltage source inverter, switch states and instantaneous output voltage, square wave operation of the inverter, concept of average voltage over a switching cycle, bipolar sinusoidal modulation and unipolar sinusoidal modulation, modulation index and output voltage.

UNIT-V:

Three-phase voltage source inverter:

Power circuit of a three-phase voltage source inverter, switch states, instantaneous output voltages, average output voltages over a sub-cycle, three-phase sinusoidal modulation

AC voltage controller

Operation of single phase ac voltage controller

Learning Resources:

1. M. H. Rashid, "*Power electronics: circuits, devices, and applications*", Pearson Education India, 2009.
2. N. Mohan and T. M. Undeland, "*Power Electronics: Converters, Applications and Design*", John Wiley & Sons, 2007.
3. L.Umanand, "*Power Electronics: Essentials and Applications*", WileyIndia, 2009.
4. Dr. P. S. Bimbhra, "*Power Electronics*", Khanna Publishers, 2009
5. M.D Singh and K.B Khanchandani, " *Power Electronics*", Tata

With effect from the Academic Year 2020-21
McGraw Hill, 2nd Edition, 2006.

6. R. W. Erickson and D. Maksimovic, " Fundamentals of Power Electronics" , Springer Science & Business Media, 2007.

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests : Max. Marks for each Internal Test :
2. No. of Assignments : Max. Marks for each Assignment :
3. No. of Quizzes : Max. Marks for each Quiz Test :

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Linear Control Systems
 SYLLABUS FOR B.E. VI SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18PC630EE
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
	On completion of the course, students will be able to
<p>1. Control system modeling: modeling of electric, mechanical and electro mechanical systems, using differential equations, transfer functions, block diagrams, and state variables;</p> <p>2. Control system analysis: analysis of properties of control systems, such as sensitivity, stability, controllability, tracking, in time and frequency domains; and</p> <p>3. Control system design: design of feedback controllers, such as PID, lead and lag compen-sat or stomeet desired system performance specifications.</p>	<ol style="list-style-type: none"> 1. Model different electrical, mechanical and electromechanical systems using differential equations, transfer functions and block diagrams and also simplify the complex systems using signal Flow graphs 2. obtain the time response of systems and analyze the stability in time domain using Routh Hurwitz criterion and Root locus techniques and also design the feedback controller such as PID controller to meet the desired performance specifications. 3. Obtain the frequency response of systems and analyze the stability in frequency domain and also design the feedback controllers, such as lead and lag compensators to meet the desired performance specifications using bode plots and polar plots 4. Analyze the stability in frequency domain using Nyquist stability criterion 5. Obtain state space Models and response for various electrical and electromechanical systems and also analyze the systems controllability and observability of the systems.

With effect from the Academic Year 2020-21

UNIT – I:

Open and closed loop systems: Continuous time and discrete time control systems, control system components – Error sensing devices – Potentiometers. Synchros, AC – DC servo motors – Block diagram representation, Transfer function and impulse response – signal flow graphs.

UNIT – II:

Time Response: Types of input, Transient response of second order systems for step input. Time domain specifications – Types of system – static error coefficients, Error series – Routh-Hurwitz criterion of stability. Root locus technique – Typical systems analyzed by root locus technique – Effect of location of roots on system response, PID controller

UNIT – III:

Frequency Response – I: Introduction, Frequency domain specifications. MP, wP for a second order system, Frequency response analysis using Bode plots and Nyquist plots, Relative stability analysis, gain margin and phase margin.

UNIT – IV:

Frequency Response – II: Nyquist stability criterion, Principle of argument, Analysis of Typical systems using Nyquist stability criterion. Compensation: Lead, Lag, Lead – Lag Compensation using bode plot.

UNIT – V :

State Space Representation: Concept of state, State Variable, State Models of linear time invariant systems. Derivation of state models from transfer functions and differential equations. State transition matrix – solution of state equations by time domain method. Observability and Controllability.

Learning Resources:

1. I.J. Nagrath, M. Gopal, Control System Engineering, new Age International (P) Limited publishers, 2008.
2. M. Gopal, Control System Principles and Design – Tata McGraw Hill, 2nd edition, 2003.

With effect from the Academic Year 2020-21

3. A.NagoorKani, Control systems Engineering-CBS pub &DistPvt Limited, June-2020
4. K. Ogata, Modern Control Systems, 3rd Edition, PHI.
5. FaridGolnaraghi, Benjamin C.Kuo, Automatic Control Systems, tenth Edition, McGraw-Hill Education, Feb 2017

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests : Max. Marks for each Internal Test :
2. No. of Assignments : Max. Marks for each Assignment :
3. No. of Quizzes : Max. Marks for each Quiz Test :

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Signals & Systems
 SYLLABUS FOR B.E. VI SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18PC640EE
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
<ol style="list-style-type: none"> 1. To define and classify continuous and discrete time signals & systems 2. To determine the frequency domain characteristics of continuous and discrete time signals using transform techniques. 3. To verify the causality and stability of LTI system and find its response using convolution. 	<ol style="list-style-type: none"> 1. Analyze continuous time signals and systems and transform them to frequency domain. 2. Convert continuous time signals to discrete time signals using sampling. 3. Analyze discrete time signals and systems and transform them to frequency domain using ZT. 4. Determine the response of an LTI system using convolution.

UNIT - I

Continuous Time Signals & Systems: Introduction, elementary signals, classification of signals and basic operations on signals. Introduction to systems and its classification.

Fourier Series: Review of Fourier series, existence and convergence, trigonometric and exponential Fourier series representations and their relations, symmetry conditions, properties, complex Fourier spectrum.

UNIT - II

Signal Representation by Continuous Exponentials: Introduction to Fourier Transform, existence, Fourier transform of singularity functions and signals, properties, Fourier transform of a periodic function.

With effect from the Academic Year 2020-21

Introduction to Linear Time Invariant (LTI) system, Unit impulse and step response, Transfer function of an LTI system.

UNIT - III

Sampling: Introduction to sampling, sampling theorem, aliasing, sampling Techniques, reconstruction, quantizing and encoding.

Signal Representation by Generalized Exponentials: Introduction to Laplace transforms, Existence, Region of convergence (ROC) and its properties. Properties of Laplace transform. Inverse Laplace transform, analysis and characterization of continuous LTI systems using Laplace Transform.

UNIT - IV

Discrete Time Signals & Systems: Introduction, elementary signals, classification of signals and basic operations on signals. Introduction to systems and its classification. Linear shift invariant systems, Stability and Causality, Linear constant coefficient systems. Discrete Fourier Series (DFS), Discrete Time Fourier Transform (DTFT).

Z-Transforms: Introduction to Z-Transform, existence, Region of Convergence (ROC) and its properties. S-plane and Z-plane correspondence, properties of Z-Transform, Inverse Z-Transform, analysis and characterization of discrete LTI systems using Z-Transform.

UNIT - V

Convolution & Correlation: Continuous convolution - graphical interpretation and convolution properties. discrete convolution- graphical interpretation and convolution properties. Continuous correlation-cross correlation and auto correlation, their graphical interpretation and properties. Discrete correlation- cross correlation and auto correlation, their graphical interpretation and properties, Power Spectral Density (PSD), Energy Spectral Density (ESD).

Learning Resources:

1. Signals, Systems & Communications - B.P. Lathi, 2013, BSP.
2. Signals and Systems - A.V. Oppenheim, A.S. Willsky and S.H. Nawab, 2 Ed., PHI.
3. Signals & Systems - Simon Haykin and Van Veen, Wiley, 2 Ed.
4. Signals and Systems – A.Rama Krishna Rao – 2008, TMH.

With effect from the Academic Year 2020-21

5. M.J. Robert " Fundamentals of signals and systems", McGraw Hill, 2008.

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests : Max. Marks for each Internal Test :
2. No. of Assignments : Max. Marks for each Assignment :
3. No. of Quizzes : Max. Marks for each Quiz Test :

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Power Electronics and Simulation Lab

SYLLABUS FOR B.E. VI SEMESTER

L:T: P (Hrs/Week):0:0:2	SEE Marks: 50	Course Code: U18PC621EE
Credits: 1	CIE Marks: 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
<p>The objective of the lab is to provide an experience in working with power converters and enhance the analyzing capability by introducing simulation tools for power converters.</p>	<p>On completion of the course, students will be able to</p> <ol style="list-style-type: none"> 1. Examine the characteristics of power electronic devices. 2. Analyze the turn-on and turn-off processes of thyristor. 3. Analyze thyristor controlled rectifiers. 4. Design of DC-DC converters. 5. Design of voltage source inverters.

List of experiments:

1. I-V Characteristics of SCR, MOSFET and IGBT
2. Gate triggering circuits of thyristor: R, R – C and UJT triggering circuits.
3. Study of Voltage and current commutation techniques of thyristor.
4. Operation of 1 – \emptyset bridge rectifiers: Full converter and Semi-converter with R & R – Loads
5. Design and operation of Buck converter.
6. Design and operation of Boost converter.
7. SPICE models of diode, thyristor, BJT, MOSFET and IGBT
8. PSPICE Simulation of single phase full-bridge thyristor rectifier with R-load and highly inductive load.

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9. PSPICE Simulation of three phase full-bridge thyristor rectifier with R-load and highly inductive load.
10. PSPICE Simulation of single phase voltage source inverter with a PWM control.
11. PSPICE Simulation of three phase voltage source inverter.
12. MATLAB Simulation of Buck and Boost Converters.

From the above experiments, each student should perform at least 10 (Ten) experiments.

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Marks for assessment of each experiment			18
Duration of Internal Test: 3 Hours			

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Control Systems and Simulation Lab

SYLLABUS FOR B.E. VI SEMESTER

L:T: P (Hrs/Week):0:0:2	SEE Marks: 50	Course Code: U18PC631EE
Credits: 1	CIE Marks: 30	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
On completion of the lab is to provide an experience in working with various control system components and control systems for understanding analyzing them and also enhance the analyzing capability by introducing simulation tools for control systems.	On completion of the course, students will be able to
	<ol style="list-style-type: none">1. Demonstrate the characteristics of AC, DC servo motors, second order system and synchro pair.2. Infer the effect of P,PI,PD and PID controllers on closed loop control system3. Analyze AC and DC position control systems.4. Design lead and lag compensators and obtain the frequency response characteristics.

LIST OF EXPERIMENTS:

1. Characteristics of DC and AC Servo motors.
2. Characteristics of SynchroPair .
3. Frequency response of compensating networks.
4. Step response of second order system.
5. DC position control system.
6. AC position control system.
7. Closed loop PPI and PDI controller.
8. Step response and frequency response of a given plant.
9. Design of lag and lead compensation for the given plant.
10. ON/ OFF Temperature control system.
11. Temperature control system.

With effect from the Academic Year 2020-21

12. Level Control System.
13. Simulation of Root locus, Nyquist plot, Bode plot using Matlab/Simulink
14. Design of lead and lag compensators using MATLAB
15. Conversion of state to transfer function and transfer function state space using MATLAB
16. Time response of Second order system using MATLAB (Simulink)
17. Design of PID controller
18. Frequency response characteristics and relative stability analysis using MATLAB

From the above experiments, each student should perform at least 10 (Ten) experiments.

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Marks for assessment of each experiment			18
Duration of Internal Test: 3 Hours			

With effect from the Academic Year 2020-21
**OPEN ELECTIVES OFFERED BY VARIOUS DEPARTMENTS IN
 B.E. VI SEMESTER (2020-21)**

Dept	Title	Code	credits
Civil	Project Management	U18OE610CE	3
CSE	Introduction To Databases	U18OE610CS	3
CSE	Introduction To Operating Systems	U18OE620CS	3
ECE	Internet Of Things And Applications	U18OE610EC	3
ECE	Introduction To Mobile Communications	U18OE620EC	3
IT	Introduction To Web Application Development	U18OE610IT	3
IT	Introduction To Machine Learning	U18OE620IT	3
Mech.	Additive Manufacturing And Its Applications	U18OE610ME	3
Mech.	Industrial Administration And Financial Management	U18OE620ME	3
H&SS	English For Competitive Examinations	U18OE610EH	3

With effect from the Academic Year 2020-21
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF CIVIL ENGINEERING
 PROJECT MANAGEMENT (Open Elective-IV)

SYLLABUS FOR B.E.VI-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18OE610CE
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The objectives of this course are to:	On completion of the course, students will be able to
<ol style="list-style-type: none"> 1. Learn the concept of project management along with functions and objectives. 2. Understand the various techniques used for project planning such as bar charts, CPM, PERT and crashing of networks. 3. Acquire knowledge on various types of contracts, tenders. 	<ol style="list-style-type: none"> 1. Understand the objectives, functions and principles of management in projects. 2. Practice the network techniques like CPM and PERT for better planning and scheduling of engineering works. 3. Analyse the importance of cost and time in network analysis and planning the work accordingly. 4. Knowledge on Contracts, Tenders, and Work orders related to the projects. 5. Interpret the concept of Linear Programming and solve problems by Graphical and Simplex methods.

UNIT-I

Significance of Project Management: Objectives and functions of project management, management team, principles of organization and types of organisation.

With effect from the Academic Year 2020-21

UNIT-II

Project Planning: Project Planning, bar charts, network techniques in project management - CPM Expected likely, pessimistic and optimistic time, normal distribution curve and network problems of PERT

UNIT-III

Time Cost Analysis: Cost time analysis in network planning, updating

UNIT-IV

Contracts: Introduction, types of contracts and their advantages and disadvantages, conditions of contracts, Introduction to Indian contract act.

Tender: Tender form, Tender Documents, Tender Notice, Work Order

UNIT-V

Linear programming and optimization Techniques: Introduction to optimization – Linear programming, Importance of optimization, Simple problems on formulation of LP, Graphical method, Simplex method.

Learning Resources:

1. Srinath L.S., PERT and CPM: Principles and Application, East-West Press, 2001.
2. Peret, F, Construction Project Management an Integrated approach, Taylor and Francis, Taylor and Francis Group, London & New York, 2009
3. Punmia B.C., and Khandelwal, PERT and CPM, Laxmi Publications, 2006.
4. <http://nptel.ac.in/courses/>

The break-up of CIE: Internal Tests+ Assignments + Quizzes

- | | | | |
|--------------------------|-----|-----------------------------------|------|
| 1. No. of Internal Tests | : 2 | Max. Marks for each Internal Test | : 30 |
| 2. No. of Assignments | : 3 | Max. Marks for each Assignment | : 5 |
| 3. No. of Quizzes | : 3 | Max. Marks for each Quiz Test | : 5 |

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
INTRODUCTION TO DATABASES (OPEN ELECTIVE-IV)

SYLLABUS FOR B.E. VI-SEMESTER
(COMMON FOR CIVIL, ECE, EEE & MECH)

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18OE610CS
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. Identify different issues involved in the design and implementation of a database system. 2. Understand transaction processing.	On completion of the course, students will be able to 1. Identify the functional components of database management system. Create conceptual data model using Entity Relationship Diagram 2. Transform a conceptual data model into a relational model 3. Design database using normalization techniques 4. Apply indexing and hashing techniques for effective data retrieval 5. Explain transaction processing.

UNIT-I

Introduction: Database System Application, Purpose of Database Systems, View of Data, Database Languages, Relational Database, Database Architecture, Database Users and Administrators.

Database Design and E-R Model: Overview of the Design Process, the E-R Model, Constraints, E-R Diagrams.

UNIT-II

Relational Model: Structure of Relation Database, Relational Algebra Operations, Modification of the Database.

With effect from the Academic Year 2020-21

Structured Query Language: Introduction, Basic Structure of SQL Queries, Set Operations, Aggregate Functions, Null Values, Nested Sub queries, Views, Join Expressions.

UNIT-III

Relational Database Design: Features of Good Relational Designs, Atomic Domains and first Normal form, Decomposition Using Functional Dependencies, functional Dependency Theory.

UNIT-IV

Indexing and Hashing: Basic Concepts, Ordered Indices, B+ Tree Index Files, B-Tree Files, Multiple – Key Access, Static Hashing, Dynamic Hashing, Comparison of Ordered Indexing and Hashing.

UNIT-V

Transaction Management: Transaction concept, Storage Structure, Transaction Atomicity and Durability, Transaction Isolation and Atomicity, Serializability, Recoverability.

Learning Resources:

1. Abraham Silberschatz, Henry F Korth, Sudharshan S, Database System Concepts, 6th Edition(2011), McGraw-Hill International Edition.
2. Date CJ, Kannan A, Swamynathan S, An Introduction to Database System , 8th Edition(2006) Pearson Education.
3. Raghu Ramakrishna, and Johannes Gehrke, Database Management Systems, 3rd Edition(2003), McGraw Hill.
4. RamezElmasri, Durvasul VLN Somyazulu, Shamkant B Navathe, Shyam K Gupta, Fundamentals of Database Systems, 4th Edition(2006), Pearson Education.
5. Peter rob, Carlos coronel, Database Systems, (2007), Thomoson.
6. <http://nptel.ac.in/courses/106106093/>

The break-up of CIE: Internal Tests+ Assignments + Quizzes

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Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

INTRODUCTION TO OPERATING SYSTEMS (OPEN ELECTIVE-IV)

SYLLABUS FOR B.E. VI-SEMESTER
(COMMON FOR CIVIL, ECE, EEE & MECH)

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18OE620CS
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. Understand different Operating system Structures and Services	On completion of the course, students will be able to 1. Compare CPU scheduling algorithms and Operating system structures 2. Apply different techniques for Main memory management. 3. Describe file management techniques. 4. Describe deadlock handling methods 5. Analyze Disk scheduling algorithms and I/O operation implementation techniques

UNIT-I:

Introduction to operating systems: Definition, User view and System view of the Operating system, Operating system structure, Operating system services.

Process: Process concept, Process Control block, Context switching.

CPU Scheduling: Scheduling Criteria, Scheduling Algorithms: FCFS, SJF, Round Robin

UNIT-II:

Memory Management: Swapping, Contiguous memory allocation: Fixed Partitioning, Variable Partitioning. Non-Contiguous memory allocation: Paging.

With effect from the Academic Year 2020-21

Virtual memory: Demand paging, Page replacement Algorithms: FIFO, Optimal, LRU.

UNIT –III:

File System Interface: File Concept, Access Methods: Sequential, Indexed, and Direct

File System Implementation: File-System Structure, Allocation Methods: Contiguous, Linked and Indexed.

UNIT –IV:

Deadlocks: System model, deadlock characterization: Mutual Exclusion, Hold and Wait,

Non pre-emption, Circular wait. Deadlock Prevention, Deadlock Avoidance: Banker's algorithm.

UNIT-V:

Device Management: Disk Scheduling algorithms: FCFS, SSTF, SCAN.

I/O System: I/O hardware, Application I/O Interface.

Learning Resources:

1. Abraham Silberschatz, Peter B. Galvin, Greg Gagne, *Operating System Concepts*, 9th Edition (2016), Wiley India.
2. Andrew S. Tanenbaum, *Modern Operating Systems*, 2nd Edition (2001), Pearson Education, Asia.
3. Dhananjay, Dhamdhere.M, *Operating System-concept based approach*, 3rd edition (2009), Tata McGraw Hill, Asia
4. Robert Love: *Linux Kernel Development*, (2004)Pearson Education
5. Richard Stevens, Stephen Rago, *Advanced Programming in the UNIX Environment*, 3rd Edition(2013), Pearson Education
6. <http://web.stanford.edu/~ouster/cgi-bin/cs140-spring19/index.php>
<https://nptel.ac.in/courses/106106144/>

The break-up of CIE: Internal Tests+ Assignments + Quizzes

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With effect from the Academic Year 2020-21
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
 Internet of Things and Applications (OPEN ELECTIVE – IV)

SYLLABUS FOR B.E.VI-SEMESTER (for other branches)

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18OE610EC
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
	On completion of the course, students will be able to
1. The purpose of this course is to impart knowledge on IoT Architecture, practical constrains. 2. To study various protocols And to study their implementations	1. Understand the Architectural Overview of IoT 2. Enumerate the need and the challenges in Real World Design Constraints 3. Compare various IoT Protocols. 4. Build basic IoT applications using Raspberry Pi. 5. Understand IoT usage in various applications.

UNIT - I : OVERVIEW

Introduction to IoT – Improving Quality of life.

IoT-An Architectural Overview, M2M and IoT Technology Fundamentals- Devices and gateways, Local and wide area networking, Data management, Business processes in IoT.

UNIT - II : Real-World Design Constraints

Real-World Design Constraints- Introduction, Technical Design constraints-hardware is popular again, Data representation and visualization, Interaction and remote control. Power Management in IoT device, Power conditioning using energy harvesting.

With effect from the Academic Year 2020-21

UNIT - III : IOT PROTOCOLS

Introduction to MQTT, Quality of services in MQTT, standards and security in MQTT.

Introduction and implementation of AMQP, Implementation of CoAP and MDNS.

UNIT - IV : Device for IoT

Choice of Microcontroller, Introduction to Raspberry Pi ,Features of Pi, Programming platform, Python programming for Pi. Building basic IoT Applications using Raspberry Pi.

UNIT - V : IoT case studies

Smart Cities and Smart Homes, Connected Vehicles, Agriculture, Healthcare, Activity Monitoring.

Learning Resources:

1. Jan Holler, VlasiosTsiatsis, Catherine Mulligan, Stefan Avesand, StamatisKarnouskos, David Boyle, "From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence", 1 st Edition, Academic Press, 2014.
2. Peter Waher, "Learning Internet of Things", PACKT publishing, BIRMINGHAM – MUMBAI
3. Bernd Scholz-Reiter, Florian Michahelles, "Architecting the Internet of Things", ISBN 978-3-642-19156-5 e-ISBN 978-3-642-19157-2, Springer
4. Daniel Minoli, "Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications", ISBN: 978-1-118- 47347-4, Willy Publications
5. <https://nptel.ac.in/courses/106105166/5>
6. <https://nptel.ac.in/courses/108108098/4>

The break-up of CIE: Internal Tests+ Assignments + Quizzes

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Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Introduction to Mobile Communications (OPEN ELECTIVE - IV)

SYLLABUS FOR B.E. VI - SEMESTER (for other branches)

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18OE620EC
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
	On completion of the course, students will be able to
<ol style="list-style-type: none">1. To understand the technology trends changing from generation to generation.2. To have an insight into the various propagation models and the effects of fading.3. To understand the multiple access techniques and Mobile communication system specifications.	<ol style="list-style-type: none">1. Analyze various methodologies to improve the cellular capacity.2. Identify various Propagation effects.3. Identify the effects of fading and multi path propagation.4. Categorize various multiple access techniques for Mobile Communications.5. Analyze the specifications of GSM based Mobile Communication Systems.

UNIT - I:

Introduction to Wireless Communication Systems: Evolution of Mobile Radio Communications, Examples of Wireless Communications Systems, Trends in Cellular Radio and Personal Communication Systems.

The Cellular Concept – System Design Fundamentals: Introduction, Frequency Reuse, Channel Assignment Strategies, Handoff Strategies, Interference and System Capacity, Improving Coverage and Capacity in Cellular Systems.

UNIT - II:

Mobile Radio Propagation - Large Scale Path Loss: Introduction to Radio wave Propagation, Free Space Propagation Model, Reflection, Ground Reflection (Two-Ray) Model, Diffraction, Scattering.

With effect from the Academic Year 2020-21

UNIT - III:

Mobile Radio Propagation - Small Scale Fading and Multipath:

Small Scale Multipath Propagation, Small – Scale Multipath Measurements, Parameters of Mobile Multipath Channels, Types of Small-Scale Fading, Rayleigh and Ricean Distributions.

UNIT -IV:

Multiple Access Techniques for Wireless Communications:

Introduction, Frequency Division Multiple Access (FDMA), Time Division Multiple Access (TDMA), Code Division Multiple Access (CDMA), Space Division Multiple Access (SDMA).

UNIT -V:

Wireless Systems and Standards: Global System for Mobile (GSM) – Services and features, System architecture, GSM Radio subsystem, channel types, Frame structure for GSM.

Learning Resources:

1. Theodore S. Rappaport, Wireless Communications Principles and Practices, 2nd edition, Pearson Education.
2. David Tse, Pramodh Viswanath, Fundamentals of Wireless Communication, 2005, Cambridge University Press.
3. Name of the course: Introduction to Wireless and Cellular Communications
4. Course url: https://swayam.gov.in/nd1_noc19_ee48/preview

The break-up of CIE: Internal Tests+ Assignments + Quizzes

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Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF INFORMATION TECHNOLOGY
 INTRODUCTION TO WEB APPLICATION DEVELOPMENT (OPEN ELECTIVE-V)

SYLLABUS FOR B.E.VI-SEMESTER (Common for CIVIL, ECE, EEE & MECH)

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18OE610IT
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The objectives of this course are to:	On completion of the course, students will be able to
Acquire basic skills for designing static and dynamic Web Applications using HTML, CSS , Java script and PHP.	<ol style="list-style-type: none"> 1. Design a static web pages using HTML, CSS. 2. Use JavaScript for creating dynamic web pages and client side validation. 3. Use built-in functions of PHP to perform server side validations and sending emails. 4. Use built-in functions of PHP to connect , query and fetch results from a database. 5. Build a PHP application using an MVC Framework.

UNIT-I: Introduction

Introduction: World Wide Web, Web Browsers, Web Servers, URL, HTTP, TCP Port. HTML: Standard HTML document structure, Basic Tags, Images, Hypertext Links, Lists, Tables, Frames. CSS: In-line style sheets, Internal Style sheets and External Style sheets.

UNIT-II: Basics of JavaScript

JavaScript: Introduction, Basics of JavaScript-variables, data types and operators, Control Structures, Arrays, Functions, HTML Forms, Events and event handling.

UNIT-III: Basics of PHP

Basics of PHP: Data Types, Variables and Operators, Control Structures: If else, Switch Case. Loop: For, ForEach, While, Do While. Functions in PHP, PHP Forms, Cookies & Sessions, File Processing.

UNIT-IV: Advanced PHP

Advanced PHP: PHP E-Mail, Filters, Database Access, OOPS in PHP. Application using PHP.

UNIT-V: Introduction to MVC

Introduction to Model View Controller Architecture, Building Application using a PHP Framework, Testing and Deploying a PHP application.

Learning Resources:

1. "Web Technologies", 7th Edition, Uttam K.Roy,2012.
2. "Internet & World Wide Web How to Program", 5/e, Paul J. Deitel, Harvey M. Deitel, Abbey Deitel,2012.

The break-up of CIE: Internal Tests+ Assignments + Quizzes

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|--------------------------|----------------------------------|-----------------------------------|-----------------------------------|
| 1. No. of Internal Tests | : <input type="text" value="2"/> | Max. Marks for each Internal Test | : <input type="text" value="30"/> |
| 2. No. of Assignments | : <input type="text" value="3"/> | Max. Marks for each Assignment | : <input type="text" value="5"/> |
| 3. No. of Quizzes | : <input type="text" value="3"/> | Max. Marks for each Quiz Test | : <input type="text" value="5"/> |

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF INFORMATION TECHNOLOGY

INTRODUCTION TO MACHINE LEARNING (OPEN ELECTIVE-V)

SYLLABUS FOR B.E VI- SEMESTER (Common for CIVIL, ECE, EEE & MECH)

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18OE620IT
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The objectives of this course are to:	On completion of the course, students will be able to
Introduce the fundamental concepts and approaches in Artificial intelligence and Machine Learning field to effectively apply techniques to the real-world problems.	<ol style="list-style-type: none">1. Demonstrate knowledge of the Artificial intelligence and machine learning literature.2. Apply an appropriate algorithm for a given problem.3. Apply machine learning techniques in the design of computer systems.4. Prove basic results in the theory of learning5. Explain the relative strengths and weaknesses of different machine learning methods and approaches.

UNIT-I:

Introduction to AIML: Foundations of AI, Sub areas of AI, Applications. Introduction to learning, Types of Learning: Supervised Learning, Unsupervised Learning, Reinforcement Learning.

Supervised learning: Linear Regression, Logistic Regression.

UNIT-II:

Supervised Non-parametric learning: Introduction to Decision Trees, K-Nearest Neighbor, Feature Selection.

Supervised Parametric learning: Support Vector Machine, Kernel function and Kernel SVM.

With effect from the Academic Year 2020-21

UNIT-III:

Supervised Parametric learning (Neural networks): Perceptron, Multilayer Neural Network, Backpropagation.

UNIT-IV:

Supervised Parametric Bayesian learning: Introduction, Naive Bayes Classification, Bayesian Network.

UNIT-V:

Unsupervised learning: Clustering, K-means Clustering, DBSCAN

Learning Resources:

1. Tom Mitchell, Machine Learning, First Edition, McGraw-Hill, 1997
2. Christopher Bishop. Pattern Recognition and Machine Learning. Second Edition.
3. EthemAlpaydin , Introduction to Machine Learning, Second Edition
4. T. Hastie, R. Tibshirani, J. Friedman. The Elements of Statistical Learning, 2e, 2008.
5. <http://nptel.ac.in/courses/106106139/>

The break-up of CIE: Internal Tests+ Assignments + Quizzes

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|--------------------------|-----|-----------------------------------|------|
| 1. No. of Internal Tests | : 2 | Max. Marks for each Internal Test | : 30 |
| 2. No. of Assignments | : 3 | Max. Marks for each Assignment | : 5 |
| 3. No. of Quizzes | : 3 | Max. Marks for each Quiz Test | : 5 |

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF MECHANICAL ENGINEERING
 Additive Manufacturing and its Applications (Open Elective-IV)

SYLLABUS FOR B.E.VI-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18OE610ME
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The objectives of this course are to:	On completion of the course, students will be able to
understand the fundamentals of various additive manufacturing technologies and their applications in Engineering Industry.	<ol style="list-style-type: none"> 1. understand the fundamentals of prototyping. 2. study the principle, process, advantages and limitations of liquid based AM systems. 3. study the principle, process, advantages and limitations of solid based AM systems. 4. study the principle, process, advantages and limitations of powder based AM systems. 5. study the applications of AMT in various engineering industries.

UNIT-I

Introduction, Prototyping fundamentals, Historical development, Fundamentals of rapid prototyping, Advantages of Rapid prototyping, Commonly used terms, Rapid prototyping process chain, 3D modelling, Data Conversion, and transmission, Checking and preparing, Building, Post processing, AM data formats, Classification of AM process

UNIT-II

Liquid based AM systems: Stereolithography Apparatus(SLA): Models and specifications, Process, Working principle, photopolymers, Photopolymerisation, Layering technology, laser and laser scanning, Applications, Advantages and disadvantages, Case studies

Solid ground curing(SGC): Models and specifications, Process, Working principle, Applications, Advantages and disadvantages, Case studies

UNIT-III

Solid based AM systems: Laminated object manufacturing(LOM): Models and specifications, Process, Working principle, Applications, Advantages and disadvantages, Case studies.

Fused Deposition Modeling (FDM): Models and specifications, Process, Working principle, Applications, Advantages and disadvantages, Case studies.

UNIT-IV

Powder based AM systems: Selective laser sintering(SLS): Models and specifications, Process, Working principle, Applications, Advantages and disadvantages, Case studies.

Three dimensional printing (3DP): Models and specifications, Process, Working principle, Applications, Advantages and disadvantages, Case studies.

UNIT-V

Applications of AM systems: Applications in aerospace industry, automotive industry, jewellery industry, coin industry, GIS Application, arts and architecture.

RP medical and bio engineering Application: planning and simulation of complex surgery, customized implant and prosthesis , design and production of medical devices, forensic science and anthropology, visualization of bio-molecules.

Learning Resources:

1. Chua C.K., Leong K.F. and LIM C.S., "World Rapid prototyping : Principles and Applications", 2nd Edition, Scientific Publications, 2004
2. D.T.Pham and S.S.Dimov, "Rapid Manufacturing", Springer, 2001.
3. AmithabaGhose, "Rapid prototyping", Eastern Law House, 1997.
4. Paul F.Jacobs, "Stereolithography and other RP & M Technologies", ASME Press, 1996.
5. Paul F.Jacobs, "Rapid Prototyping & Manufacturing", ASME Press, 1996.

The break-up of CIE: Internal Tests+ Assignments + Quizzes

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|--------------------------|-----|-----------------------------------|------|
| 1. No. of Internal Tests | : 2 | Max. Marks for each Internal Test | : 30 |
| 2. No. of Assignments | : 3 | Max. Marks for each Assignment | : 5 |
| 3. No. of Quizzes | : 3 | Max. Marks for each Quiz Test | : 5 |

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21
VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
 9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF MECHANICAL ENGINEERING
 Industrial Administration and Financial Management (Open Elective-IV)

SYLLABUS FOR B.E.VI-SEMESTER

L:T: P (Hrs/Week):3:0:0	SEE Marks: 60	Course Code: U18OE620ME
Credits: 3	CIE Marks: 40	Duration of SEE : 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The objectives of this course are to:	On completion of the course, students will be able to
<ol style="list-style-type: none"> 1. aware about types of business forms, organization structures, plant layouts, merits, demerits and applications. 2. understand method study procedure, PME, time study techniques and wage incentives. 3. importance of PPC and improving quality by control charts and sampling plants. 4. optimization of inventory to minimize total cost and other optimization techniques like LPP, project management techniques. 5. estimate selling price of a product, TVM and budgeting techniques, depreciation methods. 	<ol style="list-style-type: none"> 1. understand business forms, organization structures and plant layouts. 2. implementation of method study and estimation of standard time. 3. understand types of production, functions of PPC, quality control by charts and sampling. 4. implement optimization techniques like LPP, assignment and project management techniques. 5. understand BEA, estimation of depreciation, selling price of a product and capital budgeting techniques.

UNIT – I

Industrial Organization : Types of various business organisations. Organisation structures and their relative merits and demerits. Functions of management.

Plant location and layouts: Factors affecting the location of plant and layout. Types of layouts and their merits and demerits.

UNIT – II

Work study: Definitions, Objectives of method study and time study. Steps in conducting method study. Symbols and charts used in method study. Principles of motion economy. Calculation of standard time– by– time study and work sampling. Performance rating factor. Types of ratings. Jobs evaluation and performance appraisal. Wages, incentives, bonus, wage payment plans.

UNIT – III

Inspection and quality control: Types and objectives of inspection S.Q.C., its principles quality control by chart and sampling plans. Quality circles, introduction to ISO.

Production planning and control: Types of manufacture. Types of production. Principles of PPC and its function. Production control charts.

UNIT – IV

Optimisation: Introduction to linear programming and graphical solutions. Assignment problems.

Project Management: Introduction to CPM and PERT. Determination of critical path.

Material Management: Classification of materials. Materials planning. Duties of purchase manager. Determination of economic order quantities. Types of materials purchase.

UNIT – V

Cost accounting: elements of cost. Various costs. Types of overheads. Break even analysis and its applications. Depreciation. Methods of calculating depreciation fund. Nature of financial management. Time value of money. Techniques of capital budgeting and methods. Cost of capital. financial leverage.

Learning Resources:

1. Pandey I.M., "Elements of Financial Management", Vikas Publ. House, New Delhi, 1994
2. Khanna O.P., "Industrial Engineering and Management", Dhanapat Rai & Sons.
3. Everrete E Admaa & Ronald J Ebert , "production and Operations Management", 5th Ed. , PHI , 2005

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4. S N Chary, "Production and Operations Management", 3rd Ed. , Tata McGraw Hill, , 2006
5. Pannerselvam, "production and Operations Management", Pearson Education, 2007

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests : Max. Marks for each Internal Test :
2. No. of Assignments : Max. Marks for each Assignment :
3. No. of Quizzes : Max. Marks for each Quiz Test :

Duration of Internal Test: 90 minutes

With effect from the Academic Year 2020-21
VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES
(OPEN ELECTIVE) - B.E 3/4 -VI SEMESTER

ENGLISH FOR COMPETITIVE EXAMINATIONS
(Common to all branches)

L: T: P (Hrs/Week): 3:0:0	SEE Marks: 60	Course Code: U18OE610EH
Credits: 3	CIE Marks: 40	Duration of SEE: Hours: 3

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to:
➤ To familiarise the students to various types of competitive examinations.	➤ The student will be able to solve various types of questions in competitive English examinations effectively.
➤ To practice questions and prepare for GATE, GRE, CAT, TOEFL.	➤ Provide logical conclusions for the questions on aptitude and reasoning within the stipulated time.

GATE :

- Concentrating on English grammar
- Recognizing suitable option in sentence completion
- Solving verbal analogies
- Categorizing word groups
- Ignoring distractions in critical reasoning questions
- Providing reasoning in verbal deduction

GRE :

VERBAL REASONING:

With effect from the Academic Year 2020-21

- Analysing and drawing add value to incomplete data; identify the perception of the author
- Identifying vital points and differentiating between relevant and irrelevant points
- Understanding and summarising the structure of a text
- Understanding the given words, sentences and entire texts; ability to focus on the meaning of the entire sentence
- Understanding relationships among words and concepts

ANALYTICAL WRITING:

- Articulating complex ideas effectively and with clarity
- Supporting ideas with relevant reasons and examples
- Examining claims and accompanying evidence
- Sustaining a well-focused, coherent discussion

CAT :

VERBAL ABILITY AND READING COMPREHENSION:

- Reading comprehension (antonyms/synonyms)
- Sentence correction
- Fill in the blanks & cloze passage
- Jumbled sentences
- Jumbled paragraph (word meaning based questions)
- Analogies
- Para odd one out
- Summary (facts, assumptions, judgements)
- Verbal reasoning (paragraph formation)

TOEFL:

- Basic understanding, speed and accuracy, learning from reading, pronoun reference, author's point of view.
- Good delivery including clarity of speech, fluidity, natural pacing and correct intonation patterns.

With effect from the Academic Year 2020-21

- Correct use of language showing a good grasp of grammar, vocabulary and speech structures.
- Topic development in which you are able to show a well-structured. organized response that effectively connects ideas with enough support for each point you are making.
- Writing strategy and format execution skills.

The break-up of CIE: Internal Tests+ Assignments + Quizzes

1. No. of Internal Tests : Max. Marks for each Internal Test :
2. No. of Assignments : Max. Marks for each Assignment :
3. No. of Quizzes : Max. Marks for each Quiz Test :

Duration of Internal Test: 90 minutes