IV B.Tech EIE I Semester w.e.f 2016-17

Sub Code	Subject	Hrs/week		Max. Marks		Total Marks	Credits
		Theory	Lab	Internal	External		
BTEIE701	Analytical Instrumentation	4	--	25	75	100	4
BTEIE702	Digital Image Processing	4	--	25	75	100	4
BTEIE703	Virtual Instrumentation	4	--	25	75	100	4
BTEIE704	Elective-II	4	--	25	75	100	4
BTEIE705	Analytical Instrumentation Lab	--	3	50	50	100	2
BTEIE706	Virtual Instrumentation Lab	--	3	50	50	100	2
BTEIE707	Industrial Internship / Technical course (assessment)	--	--	100	--	100	--
	TOTAL	**16**	**6**	**300**	**400**	**700**	**20**

ELECTIVE-II: a) FIBER OPTIC AND LASER INSTRUMENTATION
b) ARTIFICIAL NEURAL NETWORKSAND FUZZY LOGIC
c) RELIABILITY ENGINEERING
d) ROBOTICS AND AUTOMATION

IV B.Tech EIE II Semester w.e.f 2016-17

Sub Code	Subject	Hrs/week		Max. Marks		Total Marks	Credits
		Theory	Lab	Internal	External		
BTEIE801	Embedded Real Time Operating Systems	4	--	25	75	100	4
BTEIE802	Industrial Electronics	4	--	25	75	100	4
BTEIE803	Project	---	---	100	100	200	8
	TOTAL	**8**		**150**	**250**	**400**	**16**

K. Malacandaiah

29/6.

DEAN
Academic Affairs
Adikavi Nannaya University
RAJAHMUNDRY-533 296.

BTEIE 701: ANALYTICAL INSTRUMENTATION

Theory: 4 Hrs/week **Credits: 4**

Int. Marks: 25 **Ext. Marks: 75**

UNIT I

Electrochemical Instruments

Basic concepts of Analytical Instrumentation, Electro chemical instruments- pH meter,Conductivity meter, Dissolved oxygen analyzers, sodium analyzers, silica analyzers

Spectrophotometers-I (Absorption): Concepts of Spectrometry, Beer- Lambert's law-Derivation of Beer Lamberts Law- Problemsassociated with the Law. UV, VIS spectrophotometers – single beam and double beaminstruments – Instrumentation associated with the above spectrophotometers – sources anddetectors.IR Spectrometers – sources and detector, Instrumentation associated with the abovespectrophotometers, FTIR. Interpretation and analysis

Spectrophotometers-II (Emission): Flame emission and Atomic emission spectrophotometers – Sources for Flame Photometers,Online calorific value measurements.

UNIT II

Gas and Liquid Chromatographs: Chromatography – types- Basic principles of gas chromatography, liquid chromatography(HPLC) ---- different types of columns, detectors, recorders and associated equipment forGas and Liquid Chromatographs and their applications,Interpretation and Analysis.

Principles of Nuclear Magnetic Resonance: Instrumentation associated with NMR spectrophotometer – Introduction to massspectrophotometers, Introduction and Working Principle of Electron Spin Resonance(ESR),Interpretation and Analysis.

UNIT III

Gas Analyzers-I: Analysis using Thermal conductivity principle, Katharometer – oxygen analyzers usingparamagnetic principle, H2S analyzer system.

Gas Analyzers-II: CO monitors, NOx analyzers, Industrial analyzer circuits, Pollution Monitoring systems

UNIT IV

Thermal Analyzers: Differential Scanning Calorimetry (DSC), Derivative Thermo Gravimetric Analyzers(DTGA).

Nuclear Radiation Detectors: Gas filled Detectors- GM counters, Scintillation counter, Ionization chamber, Proportionalcounter, solid state detector.

TEXT BOOKS

1. Handbook of Analytical Instrumentation, R.S. Khandpur, TMH.
2. Instrumental Method of Analysis- by Willard.H.H, MerritL.L,Dean,D.VanNostrand, CB Spublishing and Distributors, 6/e, 1995.

REFERENCES

1. Process Measurement and Analysis- by B.G. Liptak, CRC Press
2.Principles of Instrumental Analysis- by Skoog D.A and West D.M, Holt Sounderpublication,Philadelphia,1985
3. Instrument Technology- by Jones B.E, Butterworth Scientific Publications,London, 1987.

K. Malakondaiah

BTEIE 702: DIGITAL IMAGE PROCESSING

Theory: 4 Hrs/week **Credits: 4**
Int. Marks: 25 **Ext. Marks: 75**

UNIT I

Fundamentals of Image Processing: Digital Image Fundamentals, Basic steps of ImageProcessing System, Sampling and Quantization of an image, relationship between pixels,Imaging Geometry.

Image Transforms: 2 D- Discrete Fourier Transform, Discrete Cosine Transform (DCT),Haar Transform, Hadmard Transform, Hotelling Transform and slant transform.

UNIT II

Image Enhancement: Spatial domain methods: Histogram processing, Fundamentals ofSpatial filtering, Smoothing spatial filters, Sharpening spatial filters.

Frequency domain methods: Basics of filtering in frequency domain, image smoothing,image sharpening, Selective filtering.

UNIT III

Image Segmentation: Segmentation concepts, Point, Line and Edge Detection, EdgeLinking using Hough Transform, Thresholding, Region Based segmentation.

Wavelet based Image Processing: Introduction to wavelet Transform, Continuous waveletTransform, Discrete wavelet Transform, Filter banks, Wavelet based image compression

Image Compression: Image compression fundamentals - Coding Redundancy, Spatial andTemporal redundancy, Compression models: Lossy and Lossless, Huffman coding,Arithmetic coding, LZW coding, Run length coding, Bit plane coding, Transform coding,Predictive coding, JPEG 2000 Standards.

UNIT IV

Image Restoration: Image Restoration Degradation model, Algebraic approach torestoration, Inverse Filtering, Least Mean square filters.

Morphological Image Processing: Dilation and Erosion, Opening and closing, the hit ormiss Transformation, Overview of Digital Image Watermarking Methods

TEXT BOOKS

1. Digital Image Processing- Rafael C. Gonzalez and Richard E.Woods, 3rd Edition, Pearson, 2008.
2. Digital Image Processing- S.Jayaraman, S Esakkirajan, T Veerakumar, TMH,2010.

REFERENCES

1. Digital Image Processing-William K.Pratt, 3rd Edition, John Willey, 2004.
2. Fundamentals of Digital Image Processing-A.K.Jain, PHI, 1989.
3. Digital Image Processing using MATLAB - Rafael C. Gonzalez, Richard E.Woodsand Steven L.Edding 2nd, TMH. 2010.
4. Digital Image Processing and Computer Vision – Somka, Hlavac, Boyl,Cengage Learning,2008
5. Introduction to image Processing and Analysis – John C. Russ, J. ChristianRuss,CRCPress, 2010

K. Malarvadivu

BTEIE 703: VIRTUAL INSTRUMENTATION

Theory: 4 Hrs/week **Credits: 4**
Int. Marks: 25 **Ext. Marks: 75**

UNIT I

Introduction to Virtual Instrumentation: Historical perspective, advantages, blocks diagram and architecture of a virtual instrument, data-flow techniques, graphical programming in data flow, comparison with conventional programming..

VI programming techniquesVIs and sub-VIs, loops and charts, arrays, clusters and graphs, case and sequence structures, formula nodes, local and global variables, string and file I/O, Instrument Drivers, mathscript .

UNIT II

VI Interface requirements: Common Instrument Interfaces: Current loop, RS 232C/ RS485, GPIB. Bus Interfaces: USB, PCMCIA, VXI, SCSI, PCI, PXI, Firewire. PXI system controllers, Ethernet control of PXI, VISA and IVI, Data Acquisition Hardware

UNIT III

Application of Virtual Instrumentation

Application of Virtual Instrumentation: Instrument Control using RS-232C and IEEE488, Development of Virtual Instrument using GUI, Real-time systems, Embedded Controller, OPC, Active X programming, Publishing measurement data in the web.

UNIT IV

VI Toolsets: Distributed I/O modules, Control Design and Simulation, Digital Signal processing tool kit, Image acquisition and processing, Motion control

TEXTBOOKS

1. LabVIEW Graphical Programming, Gary Johnson, Second edition, McGraw Hill, Newyork, 1997.
2. LabVIEW for everyone, Lisa K. wells & Jeffrey Travis Prentice Hall, New Jersey, 1997.

REFERENCES

1. Kevin James, PC Interfacing and Data Acquisition: Techniques for Measurement, Instrumentation and Control, Newnes, 2000.
2. Rick Bitter ,LabVIEW advanced programming technique, 2nd Edition, CRCPress,2005
3. Jovitha Jerome, Virtual Instrumentation using LabVIEW, 1st Edition, PHI, 2001.

K. Malarkondaiah

ELECTIVE - II

BTEIE 704(a): FIBER OPTIC AND LASER INSTRUMENTATION

Theory: 4 Hrs/week **Credits: 4**

Int. Marks: 25 **Ext. Marks: 75**

UNIT I

Optical Fibers and Their Properties

Introduction to optical fiber - fiber characteristics - principles of light propagation through a fiber - Different types of fibers and their properties - Losses in the optical fiber - Dispersion - advantages and disadvantages of optical fibers.

UNIT II

Opto-Electronic Components

Optical sources: LED, LD - Optical detectors: PIN, APD - Electro-optic, Magneto optic and Acousto-optic Modulators.

Industrial Applications of Optical Fibers

Interferometer method of measurement of length – Moire fringes – Measurement of pressure, Temperature, Current, Voltage, Liquid level and Strain - fiber optic Gyroscope – Polarization maintainingfibers – Applications, Bio-Medical Applications in Endoscopy.

UNIT III

Laser Fundamentals

Introduction to lasers - Laser characteristics – Laser configuration – Three level and four levellasers – Q-switching – Mode locking – Types of lasers: Solid lasers, Gas lasers, Liquid lasersand Semiconductor lasers

UNIT IV

Laser instrumentation

Industrial applications of lasers – Lasers for measurement of distance, length, velocity, acceleration, current, voltage and atmospheric effect - Bio-medical applications ,Holography: Principle, Methods, Holographic Interferometers and applications.

TEXT BOOKS

1. 'Optical Fiber Communication – Principles and Practice', J.M. Senior, Prentice Hall of India, 1985.
2. Lasers: Theory and Applications – by Thyagarajan K. and Ghatak A.K., Plenum Press

REFERENCES

1. Optical Fibre Communication and Sensors', M. Arumugam, Anuradha Agencies,2002.
2. Understanding Fiber Optics, 4th or 5th edition; Jeff Hecht; Prentice Hall publishers
3. Optical Fibre Communication', G. Keiser, 'McGraw Hill, 1995.
4. Monte Ross, 'Laser Applications', McGraw Hill, 1968
5. 'Introduction to Opto Electronics', J. Wilson and J.F.B. Hawkes, Prentice Hall ofIndia,

ELECTIVE - II

BTEIE 704(b): ARTIFICIAL NEURAL NETWORKS AND FUZZY LOGIC

Theory: 4 Hrs/week **Credits: 4**
Int. Marks: 25 **Ext. Marks: 75**

UNIT I

Introduction to Neural Networks: Introduction, Humans and Computers, Organization of the Brain, Biological Neuron, Biological and Artificial Neuron Models, Hodgkin-Huxley Neuron Model, Integrate-and-Fire Neuron Model, Spiking Neuron Model, Characteristics of ANN, McCulloch-Pitts Model, Historical Developments, Potential Applications of ANN.

UNIT II

Essentials of Artificial Neural Networks: Artificial Neuron Model, Operations of Artificial Neuron, Types of Neuron Activation Function, ANN Architectures, Classification Taxonomy of ANN – Connectivity, Neural Dynamics (Activation and Synaptic), Learning Strategy (Supervised, Unsupervised, Reinforcement), Learning Rules, Types of Application

UNIT III

Single Layer Feed Forward Neural Networks: Introduction, Perceptron Models: Discrete, Continuous and Multi-Category, Training Algorithms: Discrete and Continuous Perceptron Networks, Perceptron Convergence theorem, Limitations of the Perceptron Model, Applications.

UNIT IV

Multilayer Feed forward Neural Networks: Credit Assignment Problem, Generalized Delta Rule, Derivation of Back Propagation (BP) Training, Summary of Back Propagation Algorithm, Kolmogorov Theorem, Learning Difficulties and Improvements.

Classical & Fuzzy Sets: Introduction to classical sets - properties, Operations and relations; Fuzzy sets, Membership, Uncertainty, Operations, properties, fuzzy relations, cardinalities, membership functions.

Fuzzy Logic System Components: Fuzzification, Membership value assignment, development of rule base and decision making system, Defuzzification to crisp sets, Defuzzification methods.Applications of Fuzzy Logic.

TEXT BOOK:

1. Neural Networks, Fuzzy logic, Genetic algorithms: synthesis and applications by Rajasekharan and Rai – PHI Publication.
2. Introduction to Neural Networks using MATLAB 6.0 - S.N.Sivanandam, S.Sumathi, S.N.Deepa, TMH, 2006

REFERENCE BOOKS:

1. Neural Networks – James A Freeman and Davis Skapura, Pearson Education, 2002.
2. Neural Networks – Simon Hakins , Pearson Education
3. Neural Engineering by C.Eliasmith and CH.Anderson, PHI
4. Neural Networks and Fuzzy Logic System by Bart Kosko, PHI Publications.

K. Malavendra

ELECTIVE - II
BTEIE 704(c): RELIABILITY ENGINEERING

Theory: 4 Hrs/week **Credits: 4**
Int. Marks: 25 **Ext. Marks: 75**

UNIT I

Basics Concepts of Reliability: Introduction, Reliability and Quality, Failures and Failure Modes, Causes of failures and reliability, Maintainability and availability, History of reliability, reliability literature

UNIT II

Reliability Mathematics: Introduction, Random Experiment, Probability, Random Variables, Distribution functions, discrete distribution, Continuous distribution, Numerical Characteristics of random Variables, Laplace transform.

Component Reliability and Hazard Models: Introduction, Component reliability from test data, Mean time to failure, Time – dependent hazard models, Stress – Dependent hazard models, Derivation of reliability function using Markov, Treatment of field data.

UNIT III

Maintainability and Availability Concepts: Introduction – Maintainability function – Availability function – Frequency failures – Two unit parallel systems with repair – K – out – of – m systems – Preventive maintenance.

Reliability Improvement: Introduction – Improvement Components – Redundancy – Element Redundancy – Unit Redundancy – Stand by Redundancy – Optimization – Reliability – Cost trade - off

UNIT IV

Economics of Reliability Engineering: Economic Issues – Manufacture's cost – Customer's cost – Reliability achievement cost – models – Reliability utility cost models – Depreciation cost models – Availability – cost – model of Parallel systems

Reliability Management: Reliability programming – Management policies and decision – Reliability management by objectives – Reliability group – Reliability data: Acquisition and analysis – Managing people for Reliability

TEXT BOOKS

1. Reliability Evaluation of Engineering Systems R.Billington, RN Allan, BS Publications 2007
2. Reliability, Maintenance and Safety Engineering – Dr. A.K. Gupta, Laxmi Publications

REFERENCE BOOKS

1. Reliability Engineering – Patrick DTO – Wiley India
2. Reliability Engineering and life testing – Naikan – PHI
3. Engineering Maintenance a Modern Approach, B.S. Dhillon, 2002 CRR Publications
4. Maintenance Engineering and Management – RC Misra, PHI
5. Reliability Engineering – Balaguruswamy - TMH
6. Reliability Engineering – L.S.Srinath

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ELECTIVE - II
BTEIE 704(d): ROBOTICS AND AUTOMATION

Theory: 4 Hrs/week **Credits: 4**
Int. Marks: 25 **Ext. Marks: 75**

UNIT – I

Basic Concepts: Automation and Robotics – An over view of Robotics – present and future applications – classification by coordinate system and control system, Dynamic stabilization of Robotics.

Power Sources And Sensors: Hydraulic, Pneumatic and electric drivers – Determination HP of motor and gearing ratio, variable speedarrangements, Path Determination - Machinery Vision – Ranging – Laser – Acoustic, Magnetic Fiber Opticand Tactile Sensor

UNIT – II

Manupulators: Construction of Manupulators, Manupulator Dynamic and Force Control, Electronic and Pneumaticmanupulators.

Actuators And Grippers: Pneumatic, Hydraulic Actuators, Stepper Motor Control Circuits, End Effecter, Various types of Grippers,Design consideration.

UNIT – III

Differential transformation and manipulators, Jacobians – problems.Dynamics: Lagrange – Euler andNewton – Euler formations – Problems.

Kinematics: Forward and Inverse Kinematic Problems, Solutions of Inverse Kinematic problems, Multiple Solution,Jacobian Work Envelop – Hill Climbing Techniques.

UNIT IV

Path Planning: Trajectory planning and avoidance of obstacles, path planning, Skew motion, joint integrated motion –straight line motion – Robot programming, languages and software packages.

Case Study: Multiple Robots – Machine Interface – Robots in Manufacturing and Non-Manufacturing applications –Robot Cell Design Selection of a Robot.

TEXT BOOKS:

1. Industrial Robotics / Groover M P /Pearson Edu.
2. Robotics / Fu K S/ McGraw Hill.

REFERENCES:

1. Robotics, CSP Rao and V.V. Reddy, Pearson Publications (In press)
2. Robotics and Control / Mittal R K &Nagrath I J / TMH.
3. An Introduction to Robot Technology, / P. Coiffet and M. Chaironze / Kogam Page Ltd 1983 London.
4. Robotic Engineering / Richard D. Klafter, Prentice Hall
5. Robot Analysis and Intelligence / Asada and Slow time / Wiley Inter-Science
6. Introduction to Robotics / John J Craig / Pearson Edu.
7. Robot Dynamics and Control by Mark W. Spong and M. Vidyasagar, John Wiley & Sons

K. Malakondaiah

BTEIE 706: VIRTUAL INSTRUMENTATION LAB

Lab : 3 Hrs/week **Credits: 2**
Int. Marks: 50 **Ext. Marks: 50**

List of Experiments

1. Introduction to LabVIEW through examples-Front Panel, Block Diagram, Creatingsub-VI using Icon and Connector Pane.

2. LabVIEW basic Programming through examples - Loops, Case Structures, FormulaNode, Graphs, charts.

3. LabVIEW basic Programming through examples - Arrays, Clusters, Local & Global variables.

4. LabVIEW basic Programming through examples - File I/O, Strings, EventStructures.

5. Design a Level measurement VI with simulated sensor input (4 mA to 20 mA) thatraise an alarm when the level crosses a fixed (user defined) limit.

6. Data Acquisition in LabVIEW - Acquiring analog signal from a function generator ThroughNI-USB-6210 into LabVIEW using DAQ Assistant Express VI.

7. Plotting Dynamic Characteristics of a Spring-Mass Damper system using controlDesign & simulation module.

8. Design a Velocity controller for a DC Motor using PID toolkit and control design &simulation module.

9. Analysis of Sampling Theorem, Aliasing and Signal Reconstruction using LabVIEWDSP Module.

10. Design and Analysis of IIR and FIR filters using DFD tool kit in LabVIEW.

11. Noise Cancellation using Adaptive Filtering approach in LabVIEW.

12. Implementing a Digital filter system using LabVIEW DSP module and NI SPEEDY

13. Finding the area of circular particles in a metal image using NI Vision assistant.

14. Free space optical communication using NI-ELVIS.

15. Measuring the characteristics of a low pass, high pass, and band pass filter usingNI-ELVIS.

Lab VIEW: Control of real time process

16. LabVIEW based control to Flow process station

17. LabVIEW based control to Level process station

18. LabVIEW based control to Ratio and Cascade Control system process station.

K. Malarchandran

BTEIE 706: VIRTUAL INSTRUMENTATION LAB

Lab : 3 Hrs/week **Credits: 2**
Int. Marks: 50 **Ext. Marks: 50**

List of Experiments

1. Introduction to LabVIEW through examples-Front Panel, Block Diagram, Creatingsub-VI using Icon and Connector Pane.

2. LabVIEW basic Programming through examples - Loops, Case Structures, FormulaNode, Graphs, charts.

3. LabVIEW basic Programming through examples - Arrays, Clusters, Local & Global variables.

4. LabVIEW basic Programming through examples - File I/O, Strings, EventStructures.

5. Design a Level measurement VI with simulated sensor input (4 mA to 20 mA) thatraise an alarm when the level crosses a fixed (user defined) limit.

6. Data Acquisition in LabVIEW - Acquiring analog signal from a function generator ThroughNI-USB-6210 into LabVIEW using DAQ Assistant Express VI.

7. Plotting Dynamic Characteristics of a Spring-Mass Damper system using controlDesign & simulation module.

8. Design a Velocity controller for a DC Motor using PID toolkit and control design &simulation module.

9. Analysis of Sampling Theorem, Aliasing and Signal Reconstruction using LabVIEWDSP Module.

10. Design and Analysis of IIR and FIR fllters using DFD tool kit in LabVIEW.

11. Noise Cancellation using Adaptive Filtering approach in LabVIEW.

12. Implementing a Digital filter system using LabVIEW DSP module and NI SPEEDY

13. Finding the area of circular particles in a metal image using NI Vision assistant.

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15. Measuring the characteristics of a low pass, high pass, and band pass filter usingNI-ELVIS.

Lab VIEW: Control of real time process

16. LabVIEW based control to Flow process station

17. LabVIEW based control to Level process station

18. LabVIEW based control to Ratio and Cascade Control system process station.

K. Malarchandran

BTEIE 707: INDUSTRIAL TRAINING/ TECHNICAL ASSESMENT COURSE

Int. Marks: 100

Every student should submit the Industrial Internship or Technical Course report which is for internal evaluation of 100 marks

Sub Code	Subject	Hrs/week		Max. Marks		Total Marks	Credits
		Theory	Lab	Internal	External		
BTEIE707	INDUSTRIAL INTERNSHIP / TECHNICAL COURSE (ASSESSMENT)	--	--	100	--	100	--

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BTEIE 801: EMBEDDED REAL TIME OPERATING SYSTEMS

Theory: 4 Hrs/week **Credits: 4**

Int. Marks: 25 **Ext. Marks: 75**

UNIT I

Fundamentals of Embedded Systems: Definition – Classification of Embedded Systems - Processors in the system – OtherHardware units. Software components - Examples for embedded systems, Design issues andtrends

Embedded Hardware Development Environment: Processor Architecture- Structured units of a processor - Processor selection factors.Common memory devices - Memory selection - Memory map - Internal devices & I/Odevices, Serial devices - Parallel port devices, Timer and Counting devices - Direct memoryaccess, Communication Interface Standards.

UNIT II

Embedded Software Development Environment: Embedded System Development Process, Embedded Operating systems, Types ofEmbedded Operating systems, Host and Target machines, Linkers/Locators for embeddedsoftware, getting embedded software into the target system, Testing on host machine.

UNIT III

Real Time Operating Systems Concepts –I: Typical OS structure - RTOS structure - The context of its use - Schedule management formultiple tasks - Scheduling in real time - RTOS task scheduling models – Round Robin,Round Robin with Interrupts, Priority driven-Preemptive and Non-preemptive scheduling

UNIT IV

Real Time Operating Systems Concepts –II: Tasks and Task states, Tasks and Data, Semaphores and shared data, Message queues,Mailboxes and Pipes, Timer functions, events, Memory management, Interrupt routines in anRTOS environment.Case study of RTOS using MUCOS. Case study for RTOS based programming - Coding forAutomatic Chocolate vending machine using MUCOS.

TEXT BOOKS

1. An Embedded Software Primer – David E. Simon, Pearson Ed., 2005.
2. Embedded systems - architecture, programming and design - Raj Kamal; TataMcGraw Hill

REFERENCES

1. Real time Systems", J. W. S. Liu, Pearson
2. The 8051 Microcontroller & Embedded Systems using Assembly and C by Ayala& Gadre,Cengage Publications

BTEIE 802: INDUSTRIAL ELECTRONICS

Theory: 4 Hrs/week **Credits: 4**
Int. Marks: 25 **Ext. Marks: 75**

UNIT I

Power Semiconductor Devices: Introduction to power semiconductor devices, Diodes and its type, power transistor and power MOSFET's and IGBT, Characteristics of Thyristors, two transistor model of thyristor, Thyristor ratings and its protection, series and parallel operation of thyristor, Thyristor Triggering Circuits with R, RL, RC

UNIT II

Converters:Concepts of Electric Drives, Selection of Motor & Motor rating, Single phase half controlled rectifiers and single phase fully controlled rectifiers with DC motor load. Three phase- half controlled rectifiers and Three phasefully controlled rectifiers with DC motor load,.Dual converters, Step up Cycloconverter and Step down Cycloconverter.

UNIT III

Inverters andChoppers: Voltage source series inverters, Voltage source parallel inverters, Voltage source bridge inverters-180 mode and 120 modes, PWM inverters, DC chopper - step up chopper and step down chopper. Single and Multi-quadrant Operation with DC Motor load, Voltage commutated chopper, Load commutated chopper, Current commutated chopper.

UNIT – IV

Typical Applications: Control of DC and AC Drives, Uninterrupted Power supply (UPS), Switched mode power supply (SMPS), Active power line Conditioner, Electronic Ballast, Stepper and Switched reluctance motor Drive, AC Voltage Regulators, Induction Heating

TEXT BOOKS:

1. M. H. Rashid, "Power Electronics", Pearson Education.
2. M. D. Singh & K. Khanchandani, "Power Electronicsl, Tata McGraw Hill Publication.

REFERENCE BOOKS:

1. V.R. Moorthy, "Power Electronics: Devices, Circuits and Industrial Applications", Oxford University Press.
2. M.S. Jamil Asghar, "Power Electronicsl, PHI Publication.
3. Chakrabarti & Rai, "Fundamentals of Power Electronics & Drives" Dhanpat Rai & Sons.
4.Ned Mohan, T.M. Undeland and W.P. Robbins, "Power Electronics: Converters, Applicationsand Design", Wiley India Publication.
5. S.N. Singh, "A Text Book of Power Electronics",Dhanpat Rai & Sons.

K. Malakondaiah

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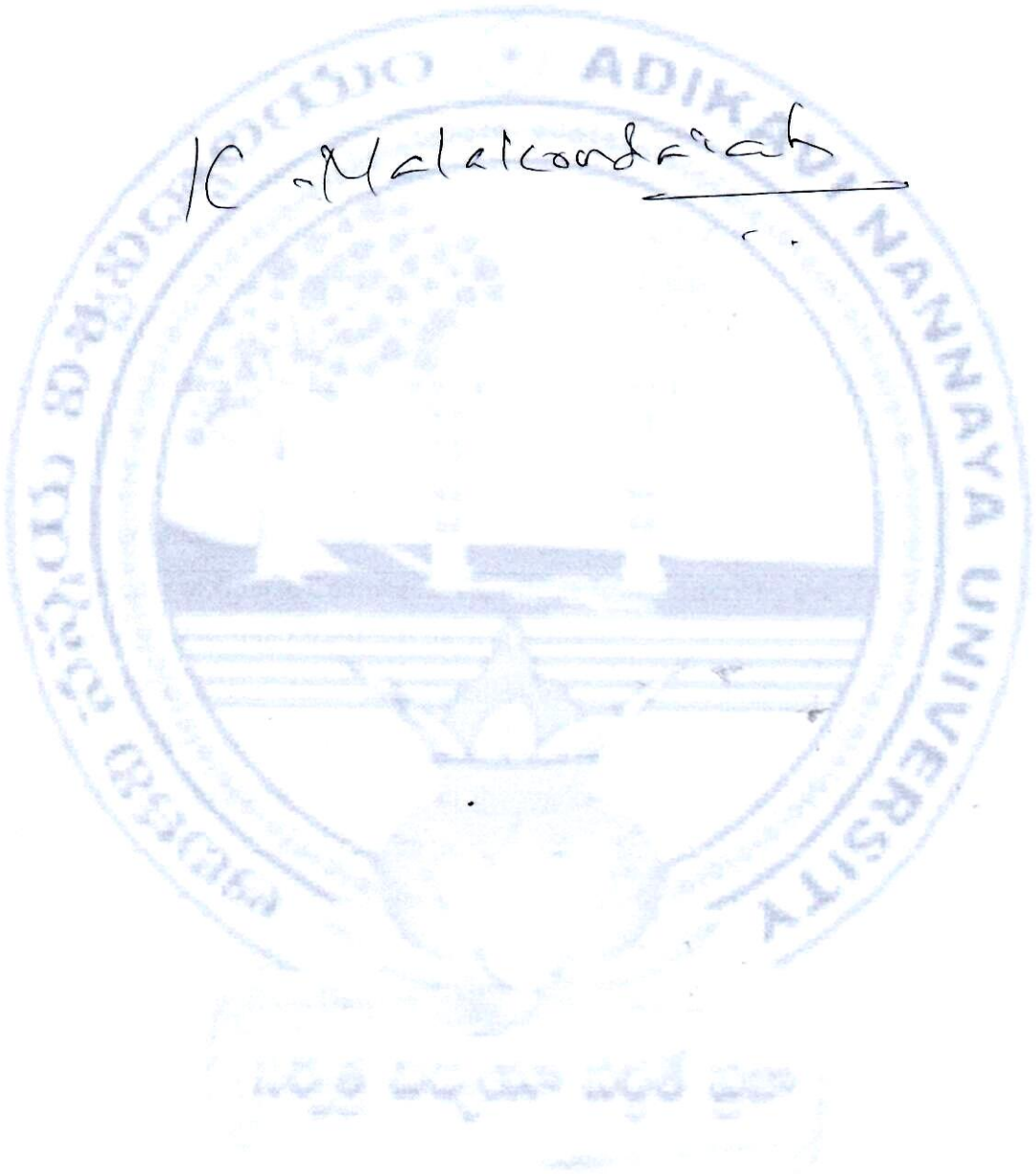
BTEIE 803: PROJECT WORK

Credits: 8

Int. Marks: 100 **Ext. Marks: 100**

Sub Code	Subject	Hrs/week		Max. Marks		Total Marks	Credits
		Theory	Lab	Internal	External		
BTEIE803	PROJECT	---	---	100	100	200	8



MOOCS Guidelines for B.Tech Course

1. A student shall select any one course of his/her choice from the list of courses specified in the course structure as approved of 30 Hrs or 4 weeks duration.
2. A student can complete the course at his/her own place, under the guidance of a faculty member.
3. The assessment of MOOC is through continuous internal assessment for 50 Marks with the breakup as follows.
    e. Assignment - 5M
    f. Online quiz - 10M (Organized by the concerned faculty)
    g. Certification – 10M (NPTEL, Swayam, Edx, Course era, Udemy or any other MOOC Platform) or participation certificate in any workshop/conference in IITs/ NITs/Premier Institute/Industry of not less than 3 days.
    h. Internal Assessment – 25M (Exam to be conducted at the end of the course)
4. Marks acquired by the students will be submitted along with the Internal Marks of Practical Exams duly signed by concerned faculty and Head of the Department.
5. Though 2 credits of 50 marks are allotted for MOOCS Course they are not included in SGPA Calculation
6. Producing of Course Completion Certificate is mandatory by every student by the end of semester where the MOOCS Course is opted
7. As MOOC aligns closer with Practical Exam, Pass or Fail status in the MOOC will be same as those of Practical Exam.
8. It is not mandatory to specify in the marks memo the course in which certification is obtained as the courses change from year to year.
9. The above guidelines are subject to change from time to time to comply with the UGC/AICTE guidelines, any other academic regulatory body at the state/center and academic body of the University.

K. Malakondaiah

Industrial Internship/Technical Course Guidelines for B.Tech

1. After the end semester examination of III-II every student should complete 30 - 45 days Industrial Internship or Technical Course. The documentation work will be submitted at the end of IV-I which is for internal evaluation of 100 marks which are not included in SGPA calculation.

2. A student shall select any one course/industrial internship of his/her choice from reputed Industries/companies like Steel plants, Power plants, other Government Organizations, Infosys, Cognizent, Research institutes (Like DRDO, ISRO, IBM) etc. Wipro, TCS.

3. Student should submit the **Indemnity Bond** from parents in the Department and same Xerox copy should be submitted in industry/company also.

4. The assessment of Industrial Internship/Technical Course for 100 Marks with the following breakup.
   a. Certificate- 25M
   b. Documentation- 50M
   c. PPT Presentation – 25M

5. Marks acquired by the students will be submitted along with the Internal Marks of Practical Exams duly signed by concerned faculty and Head of the Department, at the end IV – I semester

6. Producing of Course/ Industrial Internship Completion Certificate is mandatory by every student by the end of IV-I semester, failing which the student will not be allowed for project work in IV – II

7. As Course/ Industrial Internship aligns closer with Practical Exam, Pass or Fail status in the Course/ Industrial Internship will be same as those of Practical Exam.

8. The above guidelines are subject to change from time to time to comply with the UGC/AICTE guidelines, any other academic regulatory body at the state/centre and academic body of the University.

K. Malakondaiah

Project Guidelines for B.Tech

Project guidelines:

1. All the students should complete the Project Work in IV-II as part of their B.Tech course completion. Students are advised to take individual or team (3-4 Students), if it is team work, minimum 2 modules should be developed by each student.
2. Project work is done throughout the semester with 200 Marks (100 – Internal + 100 – External) with 8 Credits.
3. All the students should follow the Project schedule given by the department at that time
4. All the students are advised to do their Project within the Campus. In case of doing the project outside i.e. in reputed Industries like Steel plants, Power plants, other Government Organizations, Infosys, Cognizant, Research institutes (Like DRDO, ISRO, IBM) etc., student should take prior permission from Principal/HOD by submitting the Internship offer Letter
5. Students with Internship Projects will Work under two Guides, External Guide from the Industry/Company, Internal Guide from the University
6. Every student is required to submit ABSTRACT within the given schedule.
7. The Guide shall monitor the progress of the project work from time to time.
8. The Guide shall evaluate the project based on all the reviews, progress, presentations and quality of work. Internal evaluation is for 100 marks.
9. The student should attend the reviews and final viva voice with project report work and PowerPoint presentation.
10. One Paper should be published in Reputed Journals approved by UGC
11. 75% of attendance compulsory for every student.

Internal evaluation: 100 marks

- Reviews should be done in presence of guide, Head of the Department & all the faculty members of the Department.
- Reviews should be in terms of PowerPoint presentation and updated report sheet should be submitted by the student signed by guide in every review.
- Total numbers of reviews are 3 to 4

External evaluation: 100 marks

- Evaluation is done in the presence of External Examiner, Guide and Head of the department and all faculty members of the department.
- Evaluation is based on nature of work, project report submitted by the student/s, hardware / software implementation and presentation.
- Total four copies of project report with prescribed format should be submitted to the university college of engineering.

NOTE: Every student should complete the project in the said semester without this the Course completion certificate / provisional certificate will not be issued

K. Malakondaiah

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ADIKAVI NANNAYA UNIVERSITY, RAJAMAHENDRAVARAM
B.Tech(CSE,EIE) I Semester
BTFY 101 - ENGLISH - I
MODEL QUESTION PAPER

Time: 3 Hrs. Max Marks: 75

(4×15 =60 M

SECTION –A
Answer ALL Questions with internal choice

1 (a)Define listening, Discuss how listening is an active process
(b) Develop a Paragraph based on the following hints. The hints are from the text in about 150words.

As the 11th president of India _____ the Indian National Congress _____ people's president he was _____ his contribution _____ Bharat Ratna. During _____ in India. He is the _____ India: 2020 and Ignited minds.

(OR)

(c) Conversation
Read the conversation ,Write one word in each gap.

Sonal: Hello!
Rashmi: Hi Sonal, this is Rashmi.
Sonal: Oh, hi. How are you? How did the interviews go?
Rashmi: Oh, I am fine. The interviews were fine too. Have you got 10 minutes or are you busy?
Sonal: I am fine for time. Tell me about the people. Who did you see first?
Rashmi: Well, the first person was a girl called Sudha. She is a young doctor and she is a Punjabi.
Sonal: Oh, that sounds good. What is she like?
Rashmi: Well, I am not sure. At first she was not very friendly and she certainly is not chatty. She works long hours, so she is hard-working, I guess. She seems honest and tidy.
Sonal: I see, so erm … what does she like? What are her interests?
Rashmi: Well, She likes watching movies on TV, but she does not like watching anything Else. Oh! She always watches cricket. Er, what else? She does not go out at night; she has long work hours, and stays' at the hospital 2-3 days at a stretch. So she does not have the time, and I think she does not like nightclubs either. And …she likes to cook, when she's got the time.
Sonal: OK, so perhaps she is a bit quiet. What does she look like? Does she look tidy and smart?
Rashmi: Well, she is a doctor, so she looks professional. She wears nice