UNIVERSITY OF JAMMU

(NAAC ACCREDITED A + GRADE UNIVERSITY)
Baba Sahib Ambedkar Road, Jammu-180006 (J&K)

NOTIFICATION

(21/Oct/Adp/35)

It is hereby notified for the information of all concerned that the Vice-Chancellor, in anticipation of the approval of the Competent Bodies, has been pleased to authorize the adoption of revised Syllabus of **Bachelor of Engineering (Electrical Engineering)** for Semester VII & VIII under the **Credit Based System** as per the model curriculum of the **AICTE (as given in the Annexure I & II)** for the candidates of **all (Govt./Pvt.) Engineering Colleges affiliated with the University of Jammu** for the Examinations to be held in the years indicated against each Semester as under:-

Branch	Semester	For the Examination to be held in the years
Electrical	**Semester-VII**	**December 2021, 2022, 2023 and 2024**
	Semester-VIII	**May 2022, 2023, 2024 and 2025**

The Syllabi of the course is available on the University Website: *www.jammuuniversity.ac.in.*

29/10/21

DEAN ACADEMIC AFFAIRS

No. F.Acd/III/21/ 8840-49
Dated: 29 **/10/2021**

Copy for information & necessary action to:-

1. Dean Faculty of Engineering
2. Principal, GCET/MBSCET/BCET/YCET
3. C.A to the Controller of Examinations
4. Assistant Registrar (Exams/Confidential)
5. Incharge University Website
6. Section Officer (Confiden

UNIVERSITY OF JAMMU **Annexure-1**

COURSE SCHEME

B.E 7TH SEMESTER ELECTRICAL ENGINEERING

For Examination to be held in the Year Dec. 2021, 2022, 2023, 2024

Contact Hours/ Week: 28 Hours

COURSE CODE	COURSE TYPE	COURSE TITLE	LOAD ALLOCATION			MARKS DISTRIBUTION		TOTAL	Credits	% Change
			L	T	P	Internal	External			
PEE-701	Professional Core Course	Power System-III	2	2	0	50	100	150	3	100%
PEE-702	Professional Core Course	Electronics Measurement	2	2	0	50	100	150	3	100%
EEE-701	Professional Elective Course	Elective-I	2	2	0	50	100	150	3	100%
HMC-702	Humanities	Elective-II	2	2	0	50	100	150	4	100%
SIT-702	Summer Industry Internship	Industrial Training	–	–	–	50	_	50	1	100%
SEM-702	Seminar	Seminar	0	0	4	50	-	50	1	100%
PEE-711	Professional Core Course	Power System III Lab.	0	0	2	50	_	50	1	100%
PEE-712	Professional Core Course	Electronics Measurement Lab.	0	0	2	50	_	50	1	100%
ECO-711	Open Elective Course	Matlab Programming	0	0	2	50	-	50	1	100%
CSO-713		Programming Lab								
ITO-714		Linux Shell Programming								
MEO-715		Theory of Machine Lab								
CEO-716		Basic Civil Testing Lab								
NCC-702	Non-Credit Course	Energy Resources	2	0	0	Satisfactory/Unsatisfactory			-	100%
TOTAL			**10**	**8**	**10**	**450**	**400**	**850**	**18**	**100%**

Elective-I	
EEE-701 (A)	Electrical Utilization
EEE-701 (B)	Energy Economics
EEE-701 (C)	Power System operation & control

Humanities (Elective-II)	
HMC-702 (A)	Industrial Engineering & Production Management
HMC-702(B)	Business Environment and Project Management

Note:- The students will have a choice to choose between Elective Courses and open elective courses of their choice.

Examination to be held in the Dec 2021, 2022, 2023, 2024

CREDITS: 3

CLASS: B.E. 7TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE CODE: PEE-701
TITLE: Power System-III
DURATION OF EXAM: 3 HOURS

			MARKS	
L	**T**	**P**	**THEORY**	**SESSIONAL**
2	**2**	**0**	**100**	**50**

Course Outcomes: Student will be able to	
CO1	**Compute Y bus and Z bus matrices for power system networks.**
CO2	**Formulate the power flow problem and solving the same by using different methods.**
CO3	**Acquire the knowledge of transient stability.**
CO4	**Acquire knowledge of optimal power system.**

SECTION-A

Module1: Network Equations: Introduction, Formation of Y bus and Z bus matrices. (6 hrs)

Module2: Load flow studies: Introduction, Gauss- Siedel method, Netwon-Raphson method, Decoupled load flow studies, comparison of load flow methods. (10 hrs)

SECTION-B

Module3: Power System stability: Introduction to stability, Simplified synchronous machine model and system equivalent, Power Angle curve, Swing equation, Equal area criterion, Numerical integration of Swing Equation, Multi Machine Stability, Methods for improving transient stability. (9 hrs)

Module4: Optimum Power System: Introduction, Optimal operation of generators on a bus bar, Optimal unit commitment, Optimal generation scheduling, Surge performance of transmission lines. (9 hrs)

RECOMMENDED BOOKS:

1. Power System Analysis — Stevenson
2. Power System Analysis — Nagrath & Kothari
3. Electrical Power — Bhatnagar/ Soni
4. Electrical power system — C.L Wadhwa
5. Power System Analysis & Design — B.R Gupta

NOTE: There shall be total eight questions, four from each section. Each question carries 20 marks. Five questions will have to be attempted, selecting at least two questions from each section. Use of calculator is allowed

Examination to be held in the Dec 2021, 2022, 2023, 2024

CREDITS: 3

CLASS: B.E. 7TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE CODE: PEE-702

TITLE: ELECTRIONICS MEASUREMENTS & INSTRUMENTATION
DURATION OF EXAM: 3 HOURS

L	T	P	MARKS THEORY	MARKS SESSIONAL
2	2	0	100	50

Course Outcomes: Student will be able to	
CO1	Acquire knowledge about magnetic measurement and signal analysers.
CO2	Acquire knowledge about oscilloscopes
CO3	Know about different types of phase and frequency meters
CO4	Acquire knowledge about Transducers and High voltage Measurement.

SECTION-A

Module 1: Magnetic Measurements: Determination of B-H curve Determination of hysteresis loop, Measurement of Iron losses, Iron loss curves, separation of losses (4 hrs)

Module 2: Signal Analyzers: Introduction, Wave Analyzers:- Frequency selective wave analyzer, Heterodyne wave Analyzer, Harmonic Distortion Analyzers, Total Harmonic distortion, Spectrum Analyzers:- Basic Spectrum analyzer, spectral Displays, Spectra of different signals. (6 hrs)

Module 3: Oscilloscopes: Introduction: CRO, Cathode ray tube, Block diagram of CRO, Electostatic deflection ,Oscilloscope amplifiers, delay line, sweep modes, vertical input and sweep generator signal synchronization, Dual trace Oscilloscopes, , Measurement of frequency & phase. (8 hrs)

SECTION-B

Module 4: Power Factor Meters: Single-phase and three phase Electrodynamometer power factor meter, Moving iron power factor meters. Frequency meters; Mechanical resonance type frequency meter. Weston type frequency meter, Ratiometer type frequency meter, Saturable core type frequency meter. (6 hrs)

Module 5: Transducers: Introduction, Principles of operation, Classification of transducers, Summary of factors influencing the choice of transducers, Strain Gauge theory, LVDT, Thermocouple, photoelectric transducers. (6hrs)

Module 6: High Voltage Measurements: Measurement of direct, alternating and impulse voltages by electrostatic voltmeters, sphere gap, uniform field gap, ammeter in series with high voltage resistors and voltage divider. (5hrs)

Recommended Books:

1. Electrical Measurements — Golding
2. Electronics Measurements — Petit &Terman
3. Electronic Instrumentation — J.A. Alloca
4. Electronic Instrumentation — B.H. Oliver & J.M. Cage
5. Electrical and Electronic Measurement — A.K Sawhney

NOTE: There shall be total eight questions, four from each section. Each question carries 20 marks. Five questions will have to be attempted, selecting at least two questions from each section. Use of calculator is allowed.

Examination to be held in the May 2022, 2023, 2024, 2025

CREDITS: 3

CLASS: B.E. 8TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE CODE: EEE- 701(A)

TITLE: UTILIZATION OF ELECTRICAL ENERGY
DURATION OF EXAM: 3 HOURS

L	T	P	MARKS THEORY	MARKS SESSIONAL
2	2	0	100	50

COURSE OUTCOMES: Student will be able to	
CO.1	Choose a right electric drive for a particular application.
CO.2	Figure-out the different schemes of traction and its main components.
CO.3	Understand various types of Heating and welding systems and maintain various electric heating and welding equipments used in industries.
CO.4	Design Illumination systems for various applications.

SECTION-A

Module 1: Electrical Utilization: (a) Braking of Motors. (b) Choice of Motors (8 hrs)

Module 2: Traction: Various system of electric traction, feeding of distribution systems, traction motors, series parallel control of train movement, mechanical consideration, trolleys and trams. Electrical cranes and passenger lifts. (9hrs)

SECTION-B

Module 3: Heating and welding: Resistance ovens, inductor and dielectric heating, Arc furnaces, Electrical Welding and methods of control. (9 hrs)

Module 4: Illumination: Nature and production of light. Photometric definitions. Incandescent lamps, arc and discharge lamps. Design of illumination schemes for indoor and outdoor uses. Flood lighting. (9 hrs)

RECOMMENDED BOOKS:

1. Utilization of Electrical Energy H. Pratap
2. Utilization of Electrical Energy J.B. Gupta

NOTE: There shall be total eight questions, four from each section. Five questions have to be attempted selecting at least two questions from each section. Use of calculator is allowed

Examination to be held in the Dec 2021, 2022, 2023, 2024

CLASS: B.E. 7TH SEMESTER **CREDITS: 3**
BRANCH: ELECTRICAL ENGINEERING
COURSE CODE: EEE- 701(B) **MARKS**

L	T	P	THEORY	SESSIONAL
2	2	0	100	50

TITLE: ENERGY ECONOMICS
DURATION OF EXAM: 3 HOURS

Course Outcomes: Student will be able to	
CO1	Understanding of economic and ability to apply economic and financial evaluation of energy projects.
CO2	Learn different economic models and statistical approaches can be deliberated
CO3	Familiar with tools of Decision making and uncertainty in the technology implementation
CO4	To provide relevant inputs on energy economy-environment interaction related policy studies.

SECTION-A

Module 1: Introduction: System economics, Reference energy systems, Econometrics, Statistical approach, Langrangian multiplier, Input–output economics, Macroeconomic growth models. (8 hrs)

Module 2:- Economics fundamentals: Simple Payback Period, IRR, NPV, Life Cycle Costing, Cost of Saved Energy, Cost of Energy generated, Examples from energy generation and conservation, Energy Chain, Primary energy analysis and Life Cycle Assessment . (9 hrs)

SECTION B

Module 3:- **Energy and Economics**:- Introduction , sector wise consumption of energy resources: Electricity-Fuel-Transportation, Energy Scenario and supply position of different energy sectors: Indian and International Level – Coal, Oil, Natural Gas, RE, Hydro, Nuclear (9 hrs)

Module 4: Demand Forecasting: Simple and advanced Techniques, Econometric Approach to Energy Demand Forecasting, End-Use Method of Forecasting, Input–Output Model, Scenario based approach, ANN based approach, Hybrid Approach, Energy Demand Analysis. (8 hrs)

RECOMMENDED BOOKS:

1. Bhattacharyya, Subhes C. Energy economics: concepts, issues, markets and governance. Springer Science & Business Media, 2011, ISBN 978-0-85729-268-1.
2. Financial evaluation of renewable energy technologies, a book by TC Kandpal, 1982.
3. Zweifel, Peter, Aaron Praktiknjo, and Georg Erdmann. Energy economics: theory and applications. Springer, 2017
4. Aris Spanos, “Statistical Foundations of Econometric Modelling” Cambridge University Press.

NOTE: There shall be total eight questions, four from each section. Each question carries 20 marks. Five questions will have to be attempted, selecting at least two questions from each section. Use of calculator is allowed.

Examination to be held in the Dec 2021, 2022,2023, 2024

CREDITS:3

CLASS: B.E. 7TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE CODE: EEE-701(C)

TITLE: POWER SYSTEM OPERATION & CONTROL
DURATION OF EXAM: 3 HOURS

			MARKS	
L	**T**	**P**	**THEORY**	**SESSIONAL**
2	**2**	**0**	**100**	**50**

Course Outcomes: Student will be able to	
CO1	**Understand characteristics of power generation units.**
CO2	**Understand solution of unit commitment.**
CO3	**Understand economic dispatch problems.**
CO4	**Understand the power system control and demand side management**

SECTION-A

Module 1: CHARACTERISTICS OF POWER GENERATION UNITS: Characteristics of steam units, Characteristics of hydro-units, Input Output and incremental fuel cost characteristics. (5 hrs)

Module 2: UNIT COMMITMENT: Constraints in unit commitment, solution of the unit commitment Problem by Priority list method and Forward Dynamic Programming Approach. (5 hrs)

Module 3: ECONOMIC DISPATCH: Economic dispatch problem, thermal System dispatching with network losses considered, Base point and participation factors, Line Loss formula (derivation not included). (7 hrs)

SECTION-B

Module 4: POWER SYSTEM CONTROLS: Generator voltage control, Turbine governor control, and load Frequency control, co-ordination of economic dispatching with load frequency control. (9 hrs)

Module5: DEMAND SIDE MANAGEMENT: Introduction, Scope of Demand side management(DSM), DSM Planning and Implementation, Load Management as a DSM Strategy, Application of Load Control, Tariff, Options for DSM, Customer Acceptance, implementation issues, Implementation Strategies, DSM and Environment, International experience with DSM. (9 hrs)

RECOMMENDED BOOKS:

1. Power generation operation and control by A.J.Wood and B.F.Wollenberg, John Wiley & Sons.
2. Power System Engineering by Nagrath& Kothari, TMH.
3. Power System Analysis and Design by B.R.Gupta,
4. Power System Optimization by D.P Kothari, J.S Dhillon

NOTE: There shall be total eight questions, four from each section. Each question carries 20 marks. Five questions will have to be attempted, selecting at least two questions from each section. Use of calculator is allowed.

Examination to be held in the Dec 2021, 2022, 2023, 2024

CREDITS: 4

CLASS: B.E. 7TH SEMESTER
BRANCH: ELECTRICAL/MECHANICAL ENGINEERING
COURSE NO: HMC- 702 (A)

	L	T	P	MARKS THEORY	MARKS SESSIONAL
COURSE TITLE: INDUSTRIAL ENGINEERING AND PRODUCTION MANAGEMENT	**2**	**2**	**0**	**100**	**50**

DURATION OF EXAM: 3 HOURS

	At the end of the course, Students will be able to:
CO1	understand the concept of management and its evolution
CO2	understand authority relationships. & departmentation.
CO3	analyse about the concept of HRM, wage payment, job evaluation & job satisfaction
CO4	manage about production, planning, control & process design
CO5	Suggest appropriate plant locations and manage layouts according to the need of the organizations and shall be able to control inventory properly.

SECTION-A

Module 1: Management: Meaning, Characteristics, Objectives, Functions of management, Classical Theory of Management: Henry Fayol's Administrative Management Theory & Taylor's Scientific Management Theory, Elton Mayo's Neo-Classical Theory of Human Relations Prospective and Modern Management Theory. (6 hrs)

Module 2: MBO – Definition, Features, Process, Advantages & Limitations of MBO, Human Resource Management: Concept, Importance, Difference between personnel management and human resource management, Recruitment-Concept, Sources, Importance; Selection: Selection process. (5hrs)

Module 3: Departmentation & Delegation of Authority: Meaning, Importance, Basis or pattern of Departmentation, Delegation of Authority: Meaning, Characteristics, Importance, Process, Obstacles/ Barriers to effective delegation of authority, Authority Relationships - Line Organization, Line & Staff Organization, Functional Organization. (5hrs)

Module 4: Wage Administration and job analysis: Concept of Wages, Characteristics of good wage, Factors affecting wages, Methods of wage payments. Job Evaluation-Objectives, Principles &Methods of job evaluation. (5hrs)

SECTION- B

Module 5: Production Planning and Control: Meaning, Definition, Objectives, Stages, Functions/ scope and factors affecting Production Planning and Control. Advantages of Production Planning and Control, Production Planning System, Role of production planning and control in manufacturing industry. **Just in Time (JIT**) **Production:** Concept, Characteristics, Goals, Components and Elements of JIT Production. (5hrs)

Module 6: Inventory Control: Meaning, Objectives, Classification, Functions of Inventories. Inventory Costs: Simple Economic Order Quantity (EOQ) Model, Good inventory management practices, Inventory planning, Inventory management techniques. (5hrs)

Module 7: Plant Location and layout: Importance, Nature of Plant location, Choice of Site for Plant Location. Plant Layout: Definition, Objectives, Types of layout, Factors influencing Plant Layout, Steps in Plant Layout.

Quality Control: Objectives, Significance, Methods of Quality Control. (5hrs)

Module 8: Production and Process Design: Product Selection, concept and need of Product Design and development, sources of product innovation, characteristics of a good design, Reverse Engineering, Concurrent Engineering, Process Design- Meaning, needs, factors and types, Process Planning Procedure. (6 hrs)

BOOKS RECOMMENDED:

1. George Terry & Stephen G. Franklin –Principles of Management.
2. Harold Koontz & Heinz –Essentials of Management
3. S. A .Sherlekar –Principles of Business Management
4. M. Mahajan –Industrial Engineering & Production Management
5. Dr. Neeru Vasisth –Principles of Management
6. Dr. B. P. Singh & Dr. T. N. Chhabra –Business Organisation & Management

NOTE: There shall be total eight questions, four from each section. Each question carries 20 marks. Five questions will have to be attempted, selecting at least two questions from each section. Use of calculator is allowed.

Examination to be held in the Dec 2021, 2022, 2023, 2024

CLASS: B.E. 7TH SEMESTER **CREDITS: 4**

BRANCH: ELECTRICAL/MECHANICAL ENGINEERING

COURSE NO: HMC- 702(B) **MARKS**

	L	T	P	THEORY	SESSIONAL
COURSE TITLE: BUSINESS ENVIRONMENT AND PROJECT MANAGEMENT					
DURATION OF EXAM: 3 HOURS	**2**	**2**	**0**	**100**	**50**

	At the end of the course student will be able to:
CO1	**Understand in detail entrepreneurial skills and hence may opt entrepreneurship as a career option.**
CO2	**Understand problems of women/social entrepreneurs & legal forms of industrial ownership.**
CO3	**Apply proper knowledge about lean start ups, business pitching, project initiation, execution and implementation.**
CO4	**Start their own SSI unit with adequate knowledge of schemes and policies for entrepreneurship development.**
CO5	**deal with entrepreneurship management for small businesses & able to know about capital resources for small businesses and new ventures with social responsibilities.**

SECTION-A

Module 1: Entrepreneurship: Definition and Types of entrepreneurs; Qualities of an entrepreneur; factors affecting entrepreneurship; Role of an entrepreneur in economic development; Difference between entrepreneur and manager; Barriers to entrepreneurship. (5 hrs)

Module 2: New Generations of Entrepreneurship: Women Entrepreneur: Classification of Women Entrepreneur in India, Problems of Women Entrepreneur, steps for promoting women entrepreneurship; Social Entrepreneur: Problems and steps for promoting social entrepreneurship.
(6 hrs)

Module 3: Legal Forms of Industrial Ownership: Sole Proprietorship, Partnership, Joint Stock Company (Features, Merits and Demerits); Introduction to business models (4 hrs)

Module 4: Entrepreneurial Behaviour: Entrepreneurial behaviour- Definition, characteristics; Reasons for promoting entrepreneurs; Entrepreneurship and Innovation, Theory of Entrepreneurship: Innovation theory, Psychological theories (Maslow , Mc Clelland and – Achievement motivation); Social change theory; Cultural theory. (5hrs)

SECTION-B

Module 5: Lean Startups: Introduction to lean startups, Business pitching: Definition, types and importance. venture capital financing; angel investors. Securing investors and structuring deals.
(4 hrs)

Module 6: Starting a New project/ Venture: Scanning the environment, product development and selection, project report preparation, project resourcing, project planning and scheduling using networking techniques of PERT/CPM(concepts only). (5 hrs)

Module 7: Small Scale Industries and policies for entrepreneurship development: Definition of small scale industries; objectives. Role of SSI in economic Development of India. SSI registration, NOC from pollution Board; Machinery and equipment selection; Schemes and Policies for entrepreneurship development.
(6 hrs)

Module 8: Entrepreneurial Development Programme : Definition and objective of EDPs, features and functions of a sound EDP**,** Role of support institutions in fostering entrepreneurial development-DIC; SIDO; SIDBI & NSIC (5hrs)

RECOMMENDED BOOKS:

1. Fundamentals of Entrepreneurship, H. Nandan.
2. Alexander Osterwalder& Yves Pigneur, Business model generation
3. Small scale industries and Entrepreneurship, Vasant Desai.
4. Management of small scale Industries; Vasant Desai.
5. Entrepreneurial Development, S S Khanka
6. Entrepreneur Revolution: How to Develop your Entrepreneurial Mindset and Start a Business that works, Daniel Priestley

NOTE: There shall be total eight questions, four from each section. Each question carries 20 marks. Five questions will have to be attempted, selecting at least two questions from each section. Use of calculator is allowed.

Examination to be held in the Dec 2021, 2022, 2023, 2024

NON- CREDIT

CLASS: B.E. 7TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE CODE: NCC-702
TITLE: ENERGY RESOURCES

L	T	P	MARKS: THEORY	SESSIONAL
2	0	0		SATISFACTORY/ UNSATISFACTORY

Course Outcomes: Student will be able to	
CO1	Understand the global energy scenario and role of energy in economic development
CO2	Understand about different energy resources available and their consumption and economics
CO3	Working of different energy sources to convert it in other energy and various mechanism used like electricity etc.
CO4	Understand about the cogeneration, Tri-generation and waste heat recovery system

SECTION-A

Module 1: Classification of Energy Sources: Principle fuels for energy conversion: Fossil fuels, Nuclear fuels. Conventional & Renewable Energy (4 hrs)

Module 2: Electricity generation using Renewable Energy Sources: Basic Principles and Applications. Conversion of Electromagnetic energy and natural energy sources like solar radiation, Wind, Ocean waves etc. to electricity. Conversion of chemical energy into electrical energy (fuel cell). (6 hrs)

Module 3: Energy Crisis: Electricity Act-2003 & its features. Framework of Central Electricity Authority (CEA), Central & States Electricity Regulatory Commissions (CERC & ERCs) (6 hrs)

SECTION-B

Module 4: Turbines: Steam turbines, Hydraulic turbines, Wind Turbines. (3 hrs)

Module 5: Co-generation & Tri-generation: Definition, need, application, advantages, classification, saving Potential. (8 hrs)

Module 6: Waste Heat Recovery: Concept of conversion efficiency, energy waste, waste heat recovery classification, advantages and applications, commercially viable waste heat recovery devices. (8 hrs)

Recommended Books:

1. Non Conventional Energy Sources: G.D Rai
2. Direct Energy Conversion : W.R.Corliss
3. Electrical power Generation: J.B Gupta
4. Practical Heat Recovery : Boyen J.L, John Wiley,

NOTE:- There will be internal evaluation based on the two sessional tests each of 30 marks. The out come of the sessional test will be in the satisfactory/unsatisfactory form.

Examination to be held in the Dec 2021, 2022, 2023, 2024

CLASS: B.E. 7TH SEMESTER **CREDITS: 1**
BRANCH: ELECTRICAL ENGINEERING
COURSE CODE: SIT-702
TITLE: INDUSTRIAL TRAININGING **MARKS**

L	T	P	INTERNAL
0	0	0	50

COURSE OUTCOMES: Students will be able to	
CO.1	**Interact and study with a range of students and to practice multiple management skills, including communication, independent action and teamwork.**
CO.2	**Understand the engineering code of ethics and be able to apply them as necessary.**
CO.3	**Demonstrate knowledge of practical application of training.**
CO.4	**Submit a training report along with the certificate issued by the concerned department.**

The students are required to take practical training during summer vacations for about 4 to 6 weeks duration in PSUs/Private Industries/DRDO/ISRO/BARC/Power Grid Corporation /Power Stations/Electric sub-stations/ Practical Training Centre etc. After completion of the training, the students should submit a training report along with the certificate issued by the Concerned Department for evaluation purpose.

Guidelines for evaluation of Practical Training:

The evaluation shall be done by the departmental committee by the end of 7th semester. The committee shall have a convener and at least two members.

Distribution of Marks as per the University statues:

1. Report = 20 40%
2. Viva-Voce = 15 30%
3. Miscellaneous Marks = 15 30%

Due weight-age will be given to those who have undertaken outside the state &based on the profile of the Industry.

Award of the Marks:

Marks (1), (2) & (3) will be awarded by the committee constituted for the purpose

Examination to be held in the Dec 2021, 2022, 2023, 2024

CLASS: B.E. 7TH SEMESTER **CREDITS: 1**
BRANCH: ELECTRICAL ENGINEERING
COURSE CODE: SEM-702
TITLE: SEMINAR

			MARKS
L	T	P	INTERNAL
0	0	4	100

COURSE OUTCOMES: Students will be able to	
CO.1	**Select a topic relevant to the field of electrical engineering system.**
CO.2	**Undertake a review of the literature on the chosen topic.**
CO.3	**Prepare and present a technical report.**

This will involve a detailed study of a topic of interest reproduced in the candidate's own style. For this, a student has to prepare a seminar by doing proper survey of literature, compilation of information so gathered and then presentation of the same followed by question-answer session. The report of which has to be submitted by the student well before the conduct of seminar. The handout submitted by the student will be in accordance with the standards of technical papers.

Guidelines and evaluation of Seminar in 7th semester:

The topic of the Seminar is to be finalized and approved by the departmental committee at the starting of 7th Semester. The committee shall have a convener and at least two members.

Distribution of Marks:

Total Marks for Seminar Evaluation = 100 marks

1. Project Report = 30 marks
2. Presentation = 50 marks
3. Attendance = 20 marks.

Award of Marks:

- Marks Under (1) will be awarded by the Seminar Incharge.
- Marks Under (2) and (3) will be awarded by the Departmental committee constituted for the purpose.

Examination to be held in the Dec 2021, 2022, 2023, 2024

CLASS: B.E. 7TH SEMESTER **CREDITS: 1**
BRANCH: ELECTRICAL ENGINEERING
COURSE CODE: PEE-711 **MARKS**

L	T	P	PRACTICAL
0	0	2	50

TITLE: POWER SYSTEM LAB-III

Course Outcomes: Student will be able to	
CO1	**Formulate Y bus and Z bus.**
CO2	**Understand the load flow analysis by GS and NR technique.**
CO3	**Understand transient stability analysis.**
CO4	**Apply equal area criteria for any power system network.**

LIST OF PRACTICALS:

1) To formulate Y bus using appropriate algorithm for at least 4 bus system
2) To develop a program for the formation of Z bus
3) Load flow analysis of a given power system by GS technique
4) Load flow analysis of a given power system by NR technique
5) To study transient stability analysis.
6) To find the critical clearing angle by applying equal area criteria for any power system network

NOTE:

1. At least four practicals should be performed.
2. Additional labs/ experiment will be performed based on course content requirements.
3. Simulation/ virtual labs are used to enhance the practical ability of students.

Examination to be held in the Dec 2021, 2022, 2023, 2024

CLASS: B.E. 7TH SEMESTER **CREDITS: 1**

BRANCH: ELECTRICAL ENGINEERING **MARKS**

COURSE CODE: PEE-712

L	T	P	PRACTICAL
0	0	2	50

TITLE: ELECTRONIC MEASUREMENT & INSTRUMENTATION LAB

Course Outcomes: Student will be able to	
CO1	**Measure phase and frequency using CRO**
CO2	**Measure displacement using LVDT**
CO3	**Employ strain gauge for measuring pressure**
CO4	**Determine the temperature using thermocouple**

LIST OF PRACTICALS:

1) To observe waveform of a signal on CRO and measure its amplitude and frequency.

2) To measure frequency of an unknown signal using Lissajous patterns on CRO.

3) To study LVDT and plot its response to an application.

4) To study Strain Gauge and plot its response to an application.

5) To plot the characteristics of a Thermistor and calibrate it for temperature measurement.

6) To plot the characteristics of a Thermocouple and calibrate it for temperature measurement.

7) To study the working of a Digital Multimeter.

NOTE:

4. At least five practicals should be performed.
5. Additional labs/ experiment will be performed based on course content requirements.
6. Simulation/ virtual labs are used to enhance the practical ability of students.

Examination to be held in the Dec 2021, 2022, 2023, 2024

CLASS: B.E. 7th SEMESTER **CREDIT: 1**
BRANCH: ELECTRICAL/MECHANICAL/COMPUTER SCIENCE/CIVIL/IT ENGINEERING
COURSE NO.: ECO-711
COURSE TITLE: MATLAB PROGRAMMING

Hours/ Week			MARKS
L	T	P	PRACTICAL
0	0	2	50

COURSE OUTCOMES

At the end of the course the student will be able to: -	
CO1	Perform various arithmetic calculations.
CO2	Find importance of this software for generating equations of vectors and other mathematical expressions.
CO3	Articulate importance of software's in creating and printing simple,2D &3D plots and execution functions
CO4	Do various library blocks and their interconnections

LIST OF EXPERIMENTS:

1. Study of arithmetic, exponential, Logarithmic, Trigonometric, complex number calculation.

2. To generate equation of straight line, Geometric series, points on circle, multiply, divide and exponential vectors.

3. To create and print simple plots and execution of functions.

4. To generate matrices and vectors, array operations, inline functions anonymous functions etc.

5. To generate functions like execution a function, global variable, structures.

6. To generate 2D, 3D plots.

7. Study of various library blocks and their interconnections.

NOTE:

1. At least five practicals should be performed.
2. Additional labs/ experiment will be performed based on course content requirements.
3. Simulation/ virtual labs are used to enhance the practical ability of students.

Examination to be held in the Dec 2021, 2022, 2023, 2024

CLASS: B.E. 7th SEMESTER **CREDIT: 1**
BRANCH: ELECTRICAL/MECHANICAL/E&C/CIVIL/IT ENGINEERING **MARKS**
COURSE NO.: CSO-713
COURSE TITLE: PROGRAMMING LAB

L	T	P	PRACTICAL
0	0	2	50

Course Outcomes: After Completion of this course the student will be able to: -	
CO1	**Remember the role of languages like C++/ Java/Python/HTML & DHTML/Android**
CO2	**Understand the syntax and Develop the programs on specific language.**
CO3	**Implement various programs using C++/Java/Python/HTML.**

Lab Experiments:

Experiment 1	WAP To use different arithmetic operation in java/C++/Python or use different tags in HTML.
Experiment 2	WAP to perform manipulation on strings in java / C++ / Python.
Experiment 3	WAP to demonstrate Exception handling in java / C++.
Experiment 4	Program to create frame and table using HTML
Experiment 5	Design a website on your own using HTML and CSS
Experiment 6	Develop an application representing a simple calculator
Experiment 7	Develop an application for working with notification
Experiment 8	Develop an application for connecting to internet and sending e-mail.
Experiment 9	Develop an application for working with device camera

NOTE:

1. At least seven practicals should be performed.
2. Additional labs/ experiment will be performed based on course content requirements.
3. Simulation/ virtual labs are used to enhance the practical ability of students.

Examination to be held in the Dec 2021, 2022, 2023, 2024

CREDIT:1

CLASS: B.E. 7th SEMESTER

BRANCH: EE/ECE/CSE/ME/CIVIL ENGINEERING

COURSE NO.: ITO-714

COURSE TITLE: LINUX SHELL PROGRAMMING

			Marks
L	**T**	**P**	**Practical**
0	**0**	**2**	**50**

COURSE OUTCOMES

At the end of the course the student will be able to: -	
CO1	Understand Linux commands to manage files and file systems
CO2	Write a shell programs to solve a given problems
CO3	Write Regular expressions for pattern matching and apply them to various filters for a specific task
CO4	Analyze a given problem and apply requisite facets of SHELL programming in order to devise a SHELL script to solve the problem

LIST OF EXPERIMENTS:

1. Implement the Linux Shell Commands: ls, mkdir, rmdir, cd, cat, banner, touch, file, wc, sort, cut, grep, dd, dfspace, du, ulimit , Commands related to inode, I/O redirection, piping, process control commands, mails, manage the password, Vi editors, wild card characters used in Linux.
2. Write a shell programs to perform operations using case statement such as
    a. 1)Addition 2)subtraction 3)multiplication 4)Division
3. Write a shell scripts to see current date, time username and directory
4. Write a shell programs to find maximum of three numbers
5. Write a script to check whether the given no. is even/odd
6. Write a script to calculate the average of n numbers
7. Write a script to check whether the given number is prime or not
8. Write a script to calculate the factorial of a given number
9. Write a script to calculate the sum of digits of the given number
10. Write a shell script to print file names in directory showing date of creation & serial no. of file.

NOTE:

1. At least seven practicals should be performed.
2. Additional labs/ experiment will be performed based on course content requirements.
3. Simulation/ virtual labs are used to enhance the practical ability of students.

Examination to be held in the Dec 2021, 2022, 2023, 2024

CLASS: B.E. 7th SEMESTER **CREDIT:1**

BRANCH: ELECTRICAL/E&C/COMPUTER SCIENCE/CIVIL/IT ENGINEERING

COURSE TITLE: THEORY OF MACHINE LAB

COURSE NO.: MEO-715

DURATION OF EXAMINATION: 3 HOURS.

			MARKS
L	T	P	PRACTICAL
0	0	2	50

COURSE OUTCOMES At the end of the course student will be able to:	
CO 1:	**Understand the kinematics of Quick Return Motion.**
CO 2:	**Know about gyroscopic effect.**
CO 3:	**Familiar with various cases of vibrating motion.**
CO 4:	**Describe the mechanics behind the Governors**

LIST OF EXPERIMENTS:

1. Find displacement, velocity and acceleration of slider of the Quick-return motion mechanism.
2. To analyze the motorized gyroscope.
3. To analyze static and dynamic balancing apparatus.
4. To analyze the torsional vibration (undamped) of single rotor shaft system.
5. To analyze various types of cams and followers.
6. To analyze various types of gear trains.
7. To analyze various types of Governors with the help of stroboscope and to determine sleeve displacement, speed of Governor and corresponding radius of Governor in case of:
   i) Watt Governor ii) Porter Governor iii) Proell Governor
8. To analyze Gearbox.
9. To analyze various types of brake systems.
10. To study the phenomenon of whirling of shafts.
11. To study the Coriolis components of acceleration.

NOTE:

1. At least seven practicals should be performed.
2. Additional labs/ experiment will be performed based on course content requirements.
3. Simulation/ virtual labs are used to enhance the practical ability of students.

Examination to be held in the Dec 2021, 2022, 2023, 2024

CLASS: B.E. 7th SEMESTER **CREDIT:1**

BRANCH: ELECTRICAL/MECHANICAL/E&C/COMPUTER SCIENCE/IT ENGINEERING

COURSE TITLE: BASIC CIVIL TESTING LAB

COURSE NO.: CE0- 716

DURATION OF EXAMINATION: 3 HOURS.

	L	T	P	MARKS PRACTICAL
	0	0	2	50

COURSE OUTCOMES: On completion of the course the students will be able to:	
CO1	Perform tests on bricks and aggregates
CO2	Determine the physical properties of cement.
CO3	Determine the Workability and Compressive strength of concrete.
CO4	Determine the Specific gravity, Atterberg limits, Compaction characteristics of Soil

LIST OF EXPERIMENTS:

1. To determine water absorption and compressive strength of bricks

2. To determine the consistency and initial and final setting time of a given sample of cement using Vicat's apparatus.

3. To determine the Soundness and Compressive strength of cement.

4. To determine the fineness modulus and bulk density of fine and coarse aggregates.

5. To determine flakiness index and Impact value of coarse aggregates.

6. To determine Workability and Compressive strength of concrete

7. To determine the tensile strength of the steel.

8. To determine the Specific gravity and Atterberg limits of Soil.

9. To determine the compaction characteristics of soil by proctor's test.

10. To determine C_d for Venturimeter

11. To determine C_d for Orificemeter

12. To determine C_d for a Notch.

NOTE:

1. At least Eight practicals should be performed.
2. Additional labs/ experiment will be performed based on course content requirements.
3. Simulation/ virtual labs are used to enhance the practical ability of students.

Annexure-11

UNIVERSITY OF JAMMU

COURSE SCHEME

B.E 8TH SEMESTER ELECTRICAL ENGINEEGING

Examination to be held in the Year May 2022, 2023, 2024, 2025

B.E Electrical Engineering 8TH SEMESTER Scheme- I Contact Hours/ Week: 20 Hours

COURSE CODE	COURSE TYPE	COURSE TITLE	LOAD ALLOCATION			MARKS DISTRIBUTION		TOTAL	Credits	% Change
			L	T	P	Internal	External			
EEE-801	Professional Elective Course	Elective-I	2	1	0	50	100	150	3	100%
MOC-802	Massive Open Online Course	SWAYAM/NPTEL/Any Other MOOC Platform	2	0	0	50	_	50	2	100%
ECO-801 CSO-803 ITO-804 MEO-805 CEO-806 HEO-806	Open Elective	Embeded System Web Technology Python Programming Advanced Manufacturing Processes Essential of Civil Engineering International Economics	2	1	0	50	100	150	3	100%
NCC-802/NCC-806	Non-Credit	Electrical & Hybrid Vehicles/ Disaster Management	2	0	0	Satisfactory/ Unsatisfactory Non- Credit				100%
PRJ-802	Project	Project	0	0	6	150	100	250	6	100%
TOTAL			**8**	**2**	**6**	**300**	**300**	**600**	**14**	**100%**

**** NOTE:-The department shall offer the Swayam / NPTEL course out of the list of courses offered by Swayam around the time of commencement of the semester. However, the selected NPTEL course should not be similar to the regular courses offered as a part of the department curriculum.***

Elective-I	
EEE-801 (A)	Electrical Drives
EEE-801 (B)	High Voltage Engineering
EEE-801 (C)	EHV AC/DC

Note:- The students will have a choice to choose between Elective Courses and open elective courses of their choice.

OR

B.E Electrical Engineering 8th Semester Scheme-II

COURSE CODE	COURSE TYPE	COURSE TITLE	LOAD ALLOCATION			MARKS DISTRIBUTION		TOTAL	Credits	% Change
			L	T	P	Internal	External			
MOC-802	Massive Open Online Course	SWAYAM/ NPTEL/Any Other MOOC Platform	2	0	0	50	_	50	2	100%
PII-802	Professional Industry Internship	Industry Internship	0	0	2	300	250	550	12	100%
		TOTAL	**2**	**0**	**2**	**350**	**250**	**600**	**14**	**100%**

The students are required to take practical training during 8th semester about 4- 6 months duration in PSUs/Private Industries /Power Grid Corporation /Power Stations/Electric sub-stations/ Practical Training Centre etc. After completion of the training, the students should submit a training report along with the certificate issued by the Concerned Department for evaluation purpose.

Examination to be held in the May 2022,2023, 2024, 2025

CLASS: B.E. 8TH SEMESTER **CREDITS: 3**
BRANCH: ELECTRICAL ENGINEERING **MARKS**
COURSE CODE: EEE-801(A)
TITLE: ELECTRICAL DRIVES
DURATION OF EXAM: 3 HOURS

L	T	P	THEORY	SESSIONAL
2	1	0	100	50

Course Outcomes: Student will be able to	
CO1	Understand the electric drive system.
CO2	Understand the electric drive control and motor rating and duty.
CO3	Understand the principles of speed-control of dc motors and induction motors.
CO4	Understand the power electronic converters and special purpose drives

SECTION-A

Module 1: **Introduction to an electric drive system**: Dynamic equation of an electric drive, torque equation, multi quadrant operation, types of loads, energy loss during transient and load equalization (8 hrs)

Module 2: **Control of Electric Drives:** Speed control, closed loop position and speed control. Selection of motor rating thermal model of motor, classes of duty and determination of motor rating for different classes duty. (9 hrs)

SECTION-B

Module 3: **DC Motor Drives:** Starting, braking, transient analysis, speed control, controlled rectifier converters for DC drives and chopper fed DC drives. (8 hrs)

Module 4:**Induction Motor Drives:** Starting, braking, transient analysis, speed control, ac controller fed induction motor, voltage source inverter, current source inverter and cylco-converter fed induction motor drive. (9 hrs)

RECOMMENDED BOOKS:

1. G. K. Dubey, “Power Semiconductor Controlled Drives”, Prentice Hall, 1989.
2. R. Krishnan, “Electric Motor Drives: Modeling, Analysis and Control”, Prentice Hall, 2001.G. K. Dubey, “Fundamentals of Electrical Drives”, CRC Press, 2002
3. Electrical Drives by S.K Pillai
4.

NOTE: There shall be total eight questions, four from each section. Each question carries 20 marks. Five questions will have to be attempted, selecting at least two questions from each section. Use of calculator is allowed.

Examination to be held in the May 2022,2023, 2024, 2025

CREDITS: 3

CLASS: B.E. 8TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE CODE: EEE-801(B)
TITLE: HIGH VOLTAGE ENGINEERING
DURATION OF EXAM: 3 HOURS

MARKS				
L	**T**	**P**	**THEORY**	**SESSIONAL**
2	**1**	**0**	**100**	**50**

Course Outcomes: Student will be able to	
CO1	**Understand discharge in gases**
CO2	**Understand breakdown of solids and liquids.**
CO3	**Understand lightning phenomenon.**
CO4	**Understand impulse generator**

SECTION-A

Module 1:DISCHARGES IN GASES: General characteristics of gaseous insulation, basic processes of ionization in a gas, discharges in uniform and non-uniform fields, Paschen's law, commonly used gases for insulation and their properties. (8 hrs)

Module 2: BREAKDOWN OF SOLIDS AND LIQUIDS: Different mechanisms of breakdown of solids, Intrinsic breakdown, theories of intrinsic breakdown, different theories of breakdown in liquids, commonly used solid and liquid insulating materials and their properties. (9 hrs)

SECTION-B

Module 3:LIGHTNING PHENOMENON: Charge accumulation in clouds – formation of lightning stroke, characteristics of lightning stroke, current and voltage magnitudes, protection of transmission lines and substations against lightning, lightning arrestors, switching surges, Insulation co-ordination. (9 hrs)

Module 4: IMPULSE GENERATOR: Definition of impulse wave, single stage and multistage impulse generators and equivalent circuits, determination of front and tail resistance to produce a given wave shapes. (8 hrs)

RECOMMENDED BOOKS:

1. High Voltage Engineering byM.S.Naidu&V.Kamaraju.
2. Power System Transients and High Voltage Principles –by B.Thapar, B.R.Gupta&L.K.Khera.
3. High Voltage Engineering – by C.L.Wadhwa.
4. A course in Electrical power by Soni, Gupta, Bhatnagar.
5. D.C.transmission by E.W.Kimbark, Wiley Publication

NOTE: There shall be total eight questions, four from each section. Each question carries 20 marks. Five questions will have to be attempted, selecting at least two questions from each section. Use of calculator is allowed.

Examination to be held in the May 2022,2023, 2024, 2025

CREDIT:3

CLASS: B.E. 8TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE CODE: EEE-801(C)

TITLE: EHV AC/DC TRANSMISSION
DURATION OF EXAM: 3 HOURS

			MARKS	
L	**T**	**P**	**THEORY**	**SESSIONAL**
2	**1**	**0**	**100**	**50**

Course Outcomes: Student will be able to	
CO1	**Understand the concept of EHV AC Transmission and voltage onconductors**
CO2	**Understand the concept of radio interference and audible noise**
CO3	**Understand the concept of HVDC system**
CO4	**Understand different types of Converters**

SECTION-A

Module 1: Introduction to EHVAC Transmission- Role of EHVAC transmission and Indian Scenario, standard transmission voltages, average values of line parameters, power handling capacity and line loss. (4 hrs)

Module 2 : Voltage Gradients of Conductors- Electrostatics, surface voltage gradient on conductors, Corona (5 hrs)

Module3: Radio Interference and Audible Noise- Nature of RI and its unit of measurement, generation of RI, propagation of RI waves, Audible noise: Generation and characteristics, limit for audible noise. (6 hrs)

SECTION-B

Module4:HVDC System Control- Introduction to HVDC and Indian Scenario, Principles of DC Link control, Converter control characteristics, Firing angle control, Current and Extinction angle control, Starting and stopping of dc link (9 hrs)

Module5: Line commutated and Voltage Source Converters-Introduction, Line commutated converter: Analysis of graetz bridge neglecting overlap, Voltage Source Converters : Basic two level (Graetz Bridge) Converter Corona , Radio interference and audible noise. (9 hrs)

RECOMMENDED BOOKS:

1. EHV-AC Transmission — Beghamudrae
2. EHV-AC, HVDC Transmission & Distribution Engineering — S.Rao
3. HVDC Power Transmission Systems — K.R. Padiyar

NOTE: There shall be total eight questions, four from each section. Each question carries 20 marks. Five questions will have to be attempted, selecting at least two questions from each section. Use of calculator is allowed.

Examination to be held in the May 2022,2023, 2024, 2025

CREDITS:2

CLASS: B.E. 8TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE CODE: MOOC-802

L	T	P	MARKS
2	0	0	50

TITLE: SWAYAM/NPTEL

The student shall select a MOOC of duration 4-6 weeks available at the time on any reputed platform and shall pursue the same after due approval of the same from the departmental committee. However, the selected MOOC course should not be similar to the regular courses offered as a part of the department curriculum.

The overall monitoring of the MOOC course will be under the supervision of the teacher In charge of the department. The departmental Academic Committee shall assess the student work based on a presentation of the course undertaken/project completed along with a relevant course completion certificate.

Examination to be held in the May 2022,2023, 2024, 2025

CREDITS: 3

CLASS: B.E. 8th SEMESTER

BRANCH: CSE/EE /ME/CIVIL/IT ENGINEERING

	L	T	P	Marks Theory	Marks Sessional
COURSE TITLE: EMBEDED SYSTEM	**2**	**1**	**0**	**100**	**50**

COURSE NO.: ECO-801

DURATION OF EXAMINATION: 3 HOURS.

COURSE OUTCOMES: On completion of the course the students will be able to:	
CO1	**Understand the concept of Microcontroller 8051, learn to write simple programs.**
CO2	**Understand the concept and applications of DC motor and indicators and use in project work.**
CO3	**Understand the concept of hardware details of ARM7.**
CO4	**Write the algorithm and design a system based on 8051.**

SECTION–A

Module 1: Definition of Embedded system, macro and micro embedded systems: Architecture of 8031/8051/8751. Comparison of Microprocessors and Microcontroller Data types and Directives. Pin description 0f 8051, I/O port functions, Time Delay Generation and calculation. Addressing modes, Logic instructions and programs, single bit instructions and programs, (11 hrs)

Module 2: Programming using 8051 timers, counter programming, simplex, half duplex, full duplex transmission, synchronous and asynchronous communication. (6hrs)

SECTION–B

Module 3: Architecture: Block Diagram and Pin Diagram of ARM7, Instruction Set, Addressing Modes ARM Processor. System Design based on 8051/ARM Processor. (7hrs)

Module 4: Peripheral Interfaces: LCD, Seven Segment Display, Sensor: IR, temperature. Relays, analog to digital converter, digital to analog converter interfaces with 8051 and ARM7. (8hrs)

RECOMMENDED BOOKS:

1. The 8051 Microcontroller (architecture, Programming and Applications) Kenneth J. Ayala -----Penram International
2. The 8051 Microcontroller and Embedded Systems Muhammed Ali Mazidi& Janice GillispieMazdi
3. ARM system development guide Andrew-n-sloss & Dominic Symes Publisher –Morgan Aausamann

NOTE: There shall be total eight questions, four from each section. Each question carries 20 marks. Five questions will have to be attempted, selecting at least two questions from each section. Use of calculator is allowed.

Examination to be held in the May 2022,2023, 2024, 2025

CLASS: B.E. 8th SEMESTER **CREDITS: 3**

BRANCH: ECE/EE /ME/ CIVIL/IT ENGINEERING

COURSE CODE: CSO-803

COURSE TITLE: WEB TECHNOLOGY

DURATION OF EXAM: 3 HOURS

Hours/ Week			Marks	
L	T	P	Theory	Sessional
2	1	0	100	50

Course Outcomes: Student will be able to	
CO 1	Remember the role of languages like HTML, DHTML, CSS and android
CO2	Analyze a web page and identify its elements and attributes.
CO3	Implement web pages using HTML, DHTML and Cascading Style Sheets.
CO4	Develop Web applications using HTML/CSS/Javascript.

SECTION-A

Module 1: Introduction to WWW: Protocols and programs, Secure connections, Application and development tools, The web browser, What is server, Choices, Dynamic IP. Web Design: Web site design principles, Planning the site and navigation. **(6 Hours)**

Module 2: Introduction to HTML: The development process, HTML tags and simple HTML forms, Web site structure. Introduction to XHTML: XML, Move to XHTML, Meta tags, Character entities, Frames and frame sets, Inside browser. **(7 Hours)**

Module 3: Style Sheets: Need for CSS, Introduction to CSS, Basic syntax and structure, Using CSS, Background images, Colors and properties, Manipulating texts, Using fonts, Borders and boxes, Margins, Padding lists, Positioning using CSS, CSS2. **(7 Hours)**

Javascript:- Client side scripting, What is Javascript, How to develop Javascript, Simple Javascript, variables, Functions, Conditions, Loops and repetition. **(3 Hours)**

SECTION-B

Module 4: Advance script: Javascript and objects, Javascript own objects, The DOM and web browser environments, forms and validations.

Module 5: DHTML: Combining HTML, CSS and Javascript, events and buttons, controlling your browser, Ajax: Introduction, advantages & disadvantages ,Purpose of it ,ajax based web application, alternatives of ajax. **XML:** Introduction to XML, uses of XML, simple XML, XML key components, DTD and schemas, Well formed, using XML with application XML, XSL and XSLT, Introduction to XSL, XML transformed simple example, XSL elements, Transforming with XSLT. **(7 Hours)**

PHP: Starting to script on server side, Arrays, Function and forms, Advance PHP.

Module 6: Databases: Basic command with PHP examples, Connection to server, Creating database, Selecting a database, Listing database, Listing table names, Creating a table, Inserting data, Altering tables, Queries, Deleting database, Deleting data and tables, PHP myadmin and database bugs. **(10 Hours)**

BOOKS RECOMMENDED:

1. "HTML Black Book" Steven Holzner, Dremtech press.
2. Web Technologies, Black Book. Dreamtech Press
3. Web Applications: Concepts and Real-World Design Knuckles, Wiley-India
4. Internet and World Wide Web How to program P.J. Deitel & H.M. Deitel Pearson.

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting at least two questions from each section. Use of Calculator is allowed.

Examination to be held in the May 2022,2023, 2024, 2025

CLASS: B.E. 8th SEMESTER **CREDITS: 3**

BRANCH: ECE/EE/ CSE/ME/CIVIL ENGINEERING

COURSE CODE: ITO-804

COURSE TITLE: PYTHON PROGRAMMING

DURATION OF EXAM: 3 HOURS

Hours/ Week			Marks	
L	**T**	**P**	**Theory**	**Sessional**
2	**1**	**0**	**100**	**50**

COURSE OUTCOMES **At the end of the course the student will be able to: -**	
CO1	To Understand basics of python.
CO2	To develop console application in python
CO3	To develop database application in python
CO4	Apply the concept of file handling in python and basic machine learning application

SECTION–A

Introduction to Python Programming Language: -Introduction to Python Language, Strengths and Weaknesses, IDLE, Dynamic Types, Naming Conventions, String Values, string Operations, String Slices, String Operators, Numeric Data Types, Built In Functions.**(10 hours)**

Data Collections and Language Component: -Introduction, Control Flow and Syntax, Indenting, The if Statement, Relational Operators, Logical, Operators, True or False, Bit Wise Operators, The while Loop, break and continue, The for Loop, Lists, Tuples, Sets, Dictionaries, Sorting Dictionaries, Copying Collections. **(5 hours)**

Functions and Modules :- Introduction Defining Your Own Functions Parameters Function Documentation Keyword and Optional Parameters Passing Collections to a Function Variable Number of Arguments Scope Functions - "First Class Citizens" Passing Functions to a Function Mapping Functions in a Dictionary Lambda Modules Standard Modules – sys Standard Modules – math Standard Modules – time The dir Function **(6 hours)**

SECTION- B

Object and Classes: -Classes in Python, Principles of Object Orientation, Creating Classes, Instance Methods Special Methods Class Variables, Inheritance, Polymorphism.**(6 hours)**

I/O and Error Handling InPython: Introduction, Data Streams, Creating Your Own Data Streams, Access Modes, Writing Data to a File, Reading Data From a File, Additional File Methods, Handling IO Exceptions, Working with Directories, Errors, Run Time Errors, The Exception Model, Exception Hierarchy, Handling Multiple Exceptions. **(10 hours)**

Text Book:

1. Think Python, by Allen B. Downey ,second edition ,O'Reilly, Sebastopol, California.
2. Online Version www.greenteapress.com/thinkpython2.pdf.
3. How to think like a computer Scientist, by Brad Miller and David Ranum.
4. Python Programming: An Introduction to Computer Science, by John Zelle.

Online Version:www.interactivepython.org/runstone/static/thinkscpy/index.html.

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting at least two questions from each section. **Use of Calculator is allowed.**

Examination to be held in the May 2022,2023, 2024, 2025

CREDITS: 3

CLASS: B.E. 8th SEMESTER

BRANCH: CSE/ECE/EE/CIVIL/IT ENGINEERING

	L	T	P	Marks: Theory	Marks: Sessional
COURSE TITLE: ADVANCED MANUFACTURING PROCESSES	**2**	**1**	**0**	**100**	**50**

COURSE CODE: MEO-805
DURATION OF EXAMINATION: 3 HOURS.

Course Outcomes: At the end of the course student will be able to:	
CO 1:	**Understand the fundamentals of non - conventional machining processes.**
CO 2:	**Understand the working and uses of various mechanical machining processes such as AJM, USM etc.**
CO 3:	**Understand the purpose of chemical and electrochemical machining.**
CO 4:	**Understand the purpose of electric discharge machining.**
CO 5:	**Understand the fundamentals of electron beam and laser beam machining.**

SECTION – A

Module 1: Introduction to Advanced Manufacturing Processes: Mechanical Processes, Abrasive Jet Technology, Ultrasonic Machining, Water Jet Machining. Fundamental principles, processes parameters, characteristics, Tool design, Metal removal rate-analysis, Part design, Analysis of the processes. (9 hrs)

Module 2: Chemical and Electro-chemical machining: Introduction, Principles & Scheme, Process parameters, Material removal rate, dynamic and hydro-dynamic & hydro-optimization, electrolytes. (8 hrs)

SECTION - B

Module 3: EDM: Introduction, basic principles & scheme, circuitry controls, material removal rate, machining accuracy, optimization, selection of tool material and tool design, Di-electric, analysis. Laser Beam Machining & Electron beam machining background, production of laser, machining by Laser and other applications, Electron beam action, Dimensionless analysis to establish correlation behavior EBM parameters. (10 hrs)

Module 4: High Velocity forming of metals, explosive forming principles and applications, Electro-hydraulic and other applications, Analysis of the process. (8 hrs)

RECOMMENDED BOOKS:

1. Non-traditional machining methods: ASME.
2. New Technology by Bhattayacharya; I.E. (India)
3. Ultrasonic cutting by Rozenberg; Consultants Bureau; N.Y.

NOTE: There shall be total eight questions, four from each section. Each question carries 20 marks. Five questions will have to be attempted, selecting at least two questions from each section. Use of calculator is allowed.

Examination to be held in the May 2022,2023, 2024, 2025

CREDITS: 3

CLASS: B.E. 8th SEMESTER

BRANCH: CSE/ECE/EE/ME/IT. ENGINEERING

	L	T	P	Marks: Theory	Marks: Sessional
COURSE TITLE: ESSENTIAL OF CIVIL ENGINEERING	**2**	**1**	**0**	**100**	**50**

COURSE CODE: CEO-806

DURATION OF EXAMINATION: 3 HOURS.

COURSE OUTCOMES: On completion of the course the students will be able to:	
CO1	**Able to identify the properties of building materials.**
CO2	**Acquaint with the masonry construction and finishes**
CO3	**Carry out surveying in the field for engineering projects.**
CO4	**Plan and schedule the Project by various network techniques of construction planning**

SECTION – A

Module:1 Brick: Classification of bricks, constituents of good brick earth, harmful ingredients, manufacturing of bricks, testing of bricks.

Timber: Classification of timber, structure of timber, seasoning of timber, defects in timber and prevention of timber.

Aggregates: Classification of aggregates and various tests conducted on aggregates (9 Hours)

Module: 2 Masonry Construction Introduction: various terms used, stone masonry-Dressing of stones, Classifications of stone masonry, safe permissible loads, Brick masonry-bonds in brick work, laying brick work, Defects in brick masonry, composite stone and brick masonry.

Foundations: Purpose, site exploration, Methods of Testing Bearing Capacity of Soils, Types of Foundations, Combined Footing and Raft Foundation. Pile Foundation and its types, Pile Driving, Cofferdams. (9 Hours)

SECTION – B

Module: 3 Introduction to surveying, Principles of surveying, Measurement of distance. Chain Surveying, Field Equipment, Methods of Chain Surveying, Plotting from the Field Books and Degree of Accuracy, Tape corrections.

Levelling: Instruments used and field book recording, Methods of Levelling, height of Instrument method and Rise and Fall method, Temporary and permanent adjustments in levels. (9 Hours)

Module:4 Network techniques in construction management Bar Charts and Mile stone charts, Elements of network, Development of network, Network rules, Network techniques CPM and PERT, Network analysis, Time estimates, Time computations, classification of activities, Determination of Slack and float, Critical Path. (9 Hours)

BOOKS RECOMMENDED:

1. BUILDING MATERIAL & CONSTRUCTION BY SUSHIL KUMAR
2. BUILDING MATERIAL BY PRABIN SINGH
3. SURVEYING VOL.- I BY B.C PUNMIA.
4. PERT & CPM - Principles & Applications BY L SRINATH

NOTE: There shall be total eight questions, four from each section. Each question carries 20 marks. Five questions will have to be attempted, selecting at least two questions from each section. Use of calculator is allowed.

Examination to be held in the May 2022,2023, 2024, 2025

CREDITS: 3

CLASS: B.E. 8th SEMESTER

BRANCH: CSE/ECE/EE/CIVIL/ME/IT. Engineering
COURSE INTERNATIONAL ECONOMICS
COURSE CODE: HEO-806
DURATION OF EXAMINATION: 3 HOURS.

			Marks	
L	**T**	**P**	**Theory**	**Sessional**
2	**1**	**0**	**100**	**50**

CO1	**Understand the concept of international trade in general as well as with the classical and modern theories.**
CO2	**Analyze the concept of foreign exchange and foreign trade multiplier in detail and hence shall be able to understand the international market conditions.**
CO3	**Compete in international corporate world by understanding the various concepts of terms of trade like tariffs, quotas, balance of payment and international organisations, etc.**

SECTION-A

Module 1: Concept of International Trade Meaning, Significance and scope of International Economics, concepts of internal, interregional and international trade and their comparison, Theories of international trade: Absolute Cost Advantage, Comparative Cost Advantage, Opportunity cost theory (features, assumptions and limitations) (6 hrs)

Module 2: Theories of International Trade: Modern Theories of International Trade: General equilibrium theory, Heckscher- Ohilin Theory, Rybznski Theorem, The Stopler – Samuelson Theorem, Factor Price-Equalization Theorem.

Module 3: Foreign Exchange and Foreign Trade Multiplier: Foreign Exchange: Meaning and problems of foreign exchange, Methods of foreign payment, Demand and Supply of foreign currency, Foreign Trade-Multiplier, Exchange control (concept, features, objectives, and methods). (6 hrs)

SECTION-B

Module 4: Terms of trade: Meaning, Different Terms of Trade Indexes (Net Barter, Gross Barter, Income, Single and Double Factoral), Factors influencing Terms of Trade; Prebisch-Singer Thesis; Doctrine of reciprocal demand-importance and limitations . (7 hrs)

Module 5: Trade barriers: Tariffs and Quotas (Meaning, classifications and their impact), theory of optimum tariff, devaluation (concept, merits, demerit and limitations) (5 hrs)

Module 6: Balance of payment and International organisations: Concept and components of balance of trade and balance of payment, equilibrium and disequilibrium in BOP, consequences of disequilibrium in BOP, Various measures to correct deficit in BOP. International organisations: IMF, World bank, World Trade organisations- objectives, functions. (6 hrs)

International Economics -H.G Mannur

1. International Economics -Paul R. Krugman and Maurice Obstfeld
2. International Economics - Dominick Salvatore
3. International Economics - Sodersten Bo
4. International Economics - Os Shrivastva

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting at least two questions from each section. Use of calculator is allowed.

Examination to be held in the May 2022,2023, 2024, 2025

NON-CREDIT

CLASS: B.E. 8TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE CODE: NCC-802

MARKS

TITLE: ELECTRIC & HYBRID VEHICLES

L	T	P	Satisfactory/ unsatisfactory
2	0	0	

Course Outcomes: Student will be able to	
CO1	Understand the fundamental concepts, principles, analysis and design of hybrid and electric vehicle
CO2	Understand the concepts of hybrid electric drive trains
CO3	Understand the different possible ways of energy storage.
CO4	Understand the different energy management strategies

SECTION-A

Module 1: Introduction to Hybrid Electric Vehicles: History of hybrid and electric vehicles, social and environmental importance of hybrid and electric vehicles. (6 hrs)

Module 2: Conventional Vehicles: Basics of vehicle performance, vehicle power source characterization, transmission characteristics, mathematical models to describe vehicle performance. (6 hrs)

Module 3: **Hybrid Electric Drive-trains:** Basic concept of hybrid traction, introduction to various hybrid drive-train topologies, power flow control in hybrid drive-train topologies, fuel efficiency analysis. (6 hrs)

SECTION-B

Module 4: Energy Storage: Introduction to Energy Storage Requirements in Hybrid and Electric Vehicles, Battery based energy storage and its analysis, Fuel Cell based energy storage and its analysis, Super Capacitor based energy storage and its analysis. (8hrs)

Module 5: Energy Management Strategies: Introduction to energy management strategies used in hybrid and electric vehicles, classification of different energy management strategies, comparison of different energy management strategies, implementation issues of energy management strategies. (9 hrs)

RECOMMENDED BOOKS:

1. C. Mi, M. A. Masrur and D. W. Gao, “Hybrid Electric Vehicles: Principles and Applications with Practical Perspectives”, John Wiley & Sons, 2011.
2. S. Onori, L. Serrao and G. Rizzoni, “Hybrid Electric Vehicles: Energy Management Strategies”, Springer, 2015.
3. M. Ehsani, Y. Gao, S. E. Gay and A. Emadi, “Modern Electric, Hybrid Electric, and Fuel Cell Vehicles: Fundamentals, Theory, and Design”, CRC Press, 2004.
4. T. Denton, “Electric and Hybrid Vehicles”, Routledge, 2016

NOTE:- There will be internal evaluation based on the two sessional tests, each of 30 marks . The out come of the sessional test will be in the satisfactory/unsatisfactory form.

Examination to be held in the May 2022,2023, 2024, 2025

NON-CREDIT

CLASS: B.E. 8TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE CODE: NCC-806

MARKS

TITLE: DISASTER MANAGEMENT

L	T	P	Satisfactory/ unsatisfactory
2	0	0	

COURSE OUTCOMES : On completion of the course the students will be able to:	
CO1	Identify various types of disasters, their causes and Impacts
CO2	To understand the disaster management principles, objectives and approaches
CO3	To understand various elements of disaster management.
CO4	To study the modern techniques used in disaster mitigation and management.

Module 1: Introduction to Disaster Management: Define and describe disaster, hazard, emergency, vulnerability, risk and disaster dimensions. Important phases of Disaster Management Cycle.

Module 2: Disaster classification- Natural disaster (floods, draught, cyclones, volcanoes, earthquakes, tsunami, landslides, coastal erosion, soil erosion, forest fires etc.); manmade disasters (industrial pollution, artificial flooding in urban areas, nuclear radiation, chemical spills, transportation accidents, terrorist strikes, etc.)

Module 3: Disaster Management: principles, objectives, and approaches. Element of disaster management; role of NGOs, community – based organizations and media; central, and state.

Module 4: Disaster Mitigation: Hazard assessment, Vulnerability assessment, and Risk assessment. Emergency Management Systems (EMS): Emergency medical and essential public health services, response and recovery operations, reconstruction and rehabilitation.

BOOKS RECOMMENDED:

Disaster Management BY Harsh K Gupta

Disaster Management Techniques and Guidelines BY B K Singh

Disaster Risk Reduction in South Asia BY PradeepSahni

Disaster management, A P H Publishers BY Sharma.S.R

NOTE:- There will be internal evaluation based on the two sessional tests, each of 30 markswza` . The out come of the sessional test will be in the satisfactory/unsatisfactory form.

Examination to be held in the May 2022,2023, 2024, 2025

CREDITS: 6

CLASS: B.E. 8TH SEMESTER MARKS

BRANCH: ELECTRICAL ENGINEERING
COURSECODE: PRJ-802
TITLE: PROJECT WORK& DISSERTATION

			MARKS	
L	**T**	**P**	**INTERNAL**	**EXTERNAL**
0	**0**	**4**	**150**	**100**

The students will complete their assigned project work initiated during the beginning of 8th semester and submit a detailed project report in the department at the end of semester.

The project load shall be of 6 hrs/Group/week.

Guidelines for evaluation of Project work in 8thsemester:

Sub-distribution of marks:

- For Internal Examiner : 150
- For External Examiner : 100

Sub distribution of internal Marks:

- ***Mark distribution of internal Project work as per the University statues shall be based on:***

1.	Viva-Voce	=	45	30%
2.	Presentation	=	45	30%
3.	Report	=	60	40%
	Total	=	150	

OR

SCHEME -II

Examination to be held in the May 2022,2023, 2024, 2025

CREDITS:2

CLASS: B.E. 8TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE CODE: MOOC-802

TITLE: SWAYAM/NPTEL

	L	T	P	MARKS
	2	0	0	50

The student shall select a MOOC of duration 4-6 weeks available at the time on any reputed platform and shall pursue the same after due approval of the same from the departmental committee. However, the selected MOOC course should not be similar to the regular courses offered as a part of the department curriculum.

The overall monitoring of the MOOC course will be under the supervision of the teacher In charge of the department. The departmental Academic Committee shall assess the student work based on a presentation of the course undertaken/project completed along with a relevant course completion certificate.

Examination to be held in the May 2022,2023, 2024, 2025

CREDITS: 12

CLASS: B.E. 8TH SEMESTER MARKS

BRANCH: ELECTRICAL ENGINEERING
COURSECODE: PII-802
TITLE: INDUSTRY INTERNSHIP
DURATION OF EXAM: 3 HOURS

			MARKS	
L	**T**	**P**	**INTERNAL**	**EXTERNAL**
0	**0**	**2**	**300**	**250**

The student will complete their industry internship initiated in the beginning of 8th semester and submit a detailed report regarding their Work/Project individually to the department for the evaluation of same.

The department shall appoint the mentor to each student for monitoring his industry internship progress. The load of mentor shall be of 2 hrs per student per week.

Guidelines for evaluation of Project work in 8th semester:

Sub-distribution of marks:

- For Internal Examiner : 300
- For External Examiner : 250

Sub distribution of internal Marks:

- ***Mark distribution of internal Project work as per the University statues shall be based on :***

1. Viva-Voce = 90 30%
2. Presentation = 90 30%
3. Report = 120 40%

Total = 300

Annexure- III

B. E 5th Semester Examination to be held in the year December 2021, 2022, 2023

Class : B.E. 5th Sem.
Credits: 3
Branch : Electrical Engineering
Course No.: MOC-503
Course Title : SWAYAM / NPTEL

Modifications to be done in the existing Syllabus

Existing	Revised
Note : - *In case the student does not pass the certification exam or remains absent in the proctor examination, no certificate will be given to the candidate by the NPTEL and the student will be deemed to have failed in the course. The examination of the said NPTEL course will be taken by the department concerned in the next semester under the supervision of Examination Cell of GCET Jammu. The paper will be of 75 marks and assignment marks will be carried forward from the previous semester*	**Note :-** *The course is declared pass in the semester only after production of NPTEL/SWAYAM certificate by the student.* *In case the student does not pass the certification exam or remains absent in the proctored examination, no certificate will be given to the candidate by the NPTEL/SWAYAM and the student will be deemed to have failed in the course.* *The student has to appear again in the NPTEL/SWAYAM examination conducted for the same course or any other course as per the next semester schedule of NPTEL/SWAYAM and pass the examination.*

B. E 6th Semester Examination to be held in the year May 2022, 2023, 2024

Class : B.E. 6th Sem.
Credits : 3
Branch : Electrical Engineering
Course No.: MOC-603
Course Title : SWAYAM / NPTEL

Modifications to be done in the existing Syllabus

Existing	Revised
Note : - *In case the student does not pass the certification exam or remains absent in the proctor examination, no certificate will be given to the candidate by the NPTEL and the student will be deemed to have failed in the course. The examination of the said NPTEL course will be taken by the department concerned in the next semester under the supervision of Examination Cell of GCET Jammu. The paper will be of 75 marks and assignment marks will be carried forward from the previous semester*	**Note :-** *The course is declared pass in the semester only after production of NPTEL/SWAYAM certificate by the student.* *In case the student does not pass the certification exam or remains absent in the proctored examination, no certificate will be given to the candidate by the NPTEL/SWAYAM and the student will be deemed to have failed in the course.* *The student has to appear again in the NPTEL/SWAYAM examination conducted for the same course or any other course as per the next semester schedule of NPTEL/SWAYAM and pass the examination.*