RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

OUTCOME BASED CURRICULUM

NAME OF THE PROGRAMME: ELECTRICAL ENGG,,ELECTRONICS & TELE COMM., ELECTRICAL & ELECTRONICS,ELECTRONICS&INSTRUMENTATION,OPTOELECTRONICS

Name of Scheme : OCBC-2019 **PAPER CODE :6812**

COURSE TITLE : BASICS OF ELECTRICAL ENGINEERING

1. COURSE OUTCOMES

COURSE OUTCOMES		Mapping with PO
CO204.1	Understand basic concepts and apply laws of DC circuits.	
CO204.2	Understand basic concepts of AC circuits.	
CO204.3	Understand basic concepts and applylaws of magnetic circuits.	
CO204.4	Identity and apply engineering materials in various engineering applications.	
CO204.5	Explain construction, operating principle and applications of electrical machine.	
CO204.6(P)	Maintain electrical systems applying AC & DC fundamentals.	

2. CO-PO Mapping

Course Outcomes	**Program Outcomes**						
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
CO204.1	3	1	-	1	2	1	3
CO204.2	3	1	-	1	2	1	3
CO204.3	3	1	-	1	2	1	3
CO204.4	3	1	-	1	2	1	3
CO204.5	2	1	2	2	2	1	3
CO204.6(P)	**3**	**1**	**1**	**3**	**2**	**3**	**3**

3. COURSE CONTENT

Unit	Topic	Contents	CO	Hrs.	Marks
1	**Fundamentals of D.C. circuits**	Concept of charge, current, voltage, EMF, resistance, resistivity, conductance,conductivity,Power & Energy. Ohm's law, KCL & KVL, Series & Parallel combination of resistances,star-delta connection, star to delta and delta to star transformation, Simple numerical problems.Working principle and application of primary and secondary cell.	1	20	20
2	**Fundamentals of A.C. circuits**	Generation of Sinusoidal AC Voltage, Concept of waveform,Frequency,time period, Instantaneous Value, Maximum Value, Average Value, RMS Value,Form Factor & Peak Factor of AC quantity. Concept of Inductance, Capacitance, Reactance, Impedance, Admittance, Active Power, Reactive Power, Apparent power, Power Factor & Phasor diagram. Simple numerical Problems.	2	20	20
3	**Fundamentals of Magnetic circuits**	Concept of lines of force, flux, MMF, reluctance, permeability, magnetic flux density, magnetic field intensity. Analogy of electric and magnetic circuit. Magnetic field produced by current carrying conductor,Force on a current carrying conductor. Faraday's laws of electromagnetic induction, self and mutual induction. Lenz's laws, Fleming's left and right hand rule.	3	10	20
4	**Electrical Engineering Materials**	Difference between conductors, insulators and semiconductors on the basis of energy band diagram. Properties and applications of conducting, semi-conducting, insulating& magnetic materials.	4	05	20
5	**Electrical Machines**	Construction, Classification & Working Principle of DC machine, Transformer,Induction machine &Synchronous machine. Types of losses occurring in electrical machines. Applications of DC machine, Transformer, Induction machine &Synchronous machine.Working principle & application of Stepper motor, permanent magnet motor, universal motor& servomotors.	5	20	20

4. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN:

Unit No.	Unit Title	Teaching Hours	Tentative Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
1	**Fundamentals of D.C. circuits**	20	05	07	08	20
2	**Fundamentals of A.C. circuits**	20	05	10	05	20
3	**Fundamentals of Magnetic circuits**	10	05	10	05	20
4	**Electrical Engineering Materials**	05	05	07	08	20

5	**Electrical Machines**	20	05	10	05	20
Total		**75**	**25**	**44**	**31**	**100**

Legends: R=Remember, U=Understand, A=Apply and above (Bloom's Revised taxonomy)

5. SUGGESTED LIST OF EXPERIMENT

S.N.	Experiment	CO
1.	To verify Ohm's law.	6
2.	To verify Kirchhoff's current & voltage law.	
3.	To verify series & parallel law of resistances.	
4.	To measure current & voltage in three phase system.	
5.	To measure the active & reactive power in single phase AC circuit.	
6.	To measure the voltage & current of primary & secondary cell.	
7.	Identify & apply different types of materials used in industrial applications.	
8.	To obtain B-H curve on a CRO of a sample coil.	
9.	Identify different parts of DC machine.	
10.	To perform ratio & polarity test on a single phase transformer.	
11.	Identify the different parts of Induction & Synchronous machine.	

6. REFERENCE BOOKS:

S.N.	Title	Author
1	Electronic Technology	B.L.Thereja
2	Electrical Engineering basic technology	Hubscher, Klauepfloger,Appelt, Willey Eastern Ltd, New Delhi
3	Electrical Engineering	J.B. Gupta
4	Experiments in basic electrical Engineering	S.K. Bhattacharya, S.K. Rastogi, K.M., New Age International , New Delhi
5	Problems in Electrical Engineering	Smith P., 1st ,1996,
6	A Text book of Applied Electronics	R.S. Sedha, S. Chand &Co.NewDelh
7	Principals of Electronics	Latest ,V.K.Mehta , S.Chand Publication
8	Electronics Principles	Malvino TMH
9	Electrical Machines	V.N. Mittle
10	An Introduction to Electrical Engineering Materials	C. S. Indulkar
11	Basic electrical engineering and materials	Suresh kumar soni and Umesh kumar soni, Satya Prakashan, new Delhi

7. TENTATIVE LIST OF LABORATORY EQUIPMENT

S.No. Name of Item

1. Ammeter (Moving Iron and Moving Coil)
2. Voltmeter
3. Multimeter(Analogue)
4. Multimeter(digital)
5. CRO
6. Wattmeter
7. Energymeter (static)
8. Power supply

COMPONENTS

1. Diodes
2. Transistors
3. Resisters
4. Inductor
5. Capacitor
6. Regulator ICs
7. Connecting wires

• Ammeter
• Ampere hour meter
• Frequency meter
• Hand tachometer
• Megger
• D.C generator
• Three phase slip ring induction motor
• Three phase squirrel cage induction motor
• DC shunt motor
• Star delta starter
• DC compound motor
• Three phase synchronous motor
• Phase sequence indicator
• Power factor meter
• Resistance box
• Transformer
• single phase variac
• Three phase variac
• Tongtester
• Voltmeter

• Permanent magnet moving coil instrument
• Wattmeter
• DC motor generator set
• Synchronous motor generator set
• Autotransformer
• Digital Multimeter, phase sequence meter
• DOL Starter
• Regulated power supply
• Oscilloscope
• DC multi output power supply
• Function generator counter
• Trainer kit for basic theorem

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OUTCOME BASED CURRICULUM

Name of Scheme : OCBC-2019 **COURSE CODE :6811**
COURSE TITLE : Basic Electronics SEMESTER -II

1. Course Outcomes

Course Outcome		CL	Linked POs	Linked PSOs	Teaching Hours
CO201.1	Explain the fundamental of semiconductor physics.	***R/U***	1,2,3,7	1,2,3	10
CO201.2	Verify the V-I characteristics of diodes.	***R/U/A***	1,2,3,4,7	1,2,3	15
CO201.3	Construct simple circuits of diodes.	***R/U/A***	1,2,3,4,7	1,2,3	10
CO201.4	Compare different transistors.	***R/U/A***	1,2,3,4,7	1,2,3	25
Total					**60**

Legends: PO-Program Outcome, CO-Course Outcome, CL-Cognitive Level, R-Remember, U-Understand, A-Apply

2. CO-PO/PSO Attainment Matrix

Course	Programme Outcomes							PSOs		
	1	2	3	4	5	6	7	1	2	3
CO201.1	**3**	**2**	**3**	**-**	**-**	**-**	**2**	**2**	**3**	**1**
CO201.2	**3**	**2**	**3**	**3**	**-**	**-**	**2**	**2**	**3**	**1**
CO201.3	**3**	**2**	**3**	**3**	**-**	**-**	**2**	**2**	**3**	**1**
CO201.4	**3**	**2**	**3**	**3**	**-**	**-**	**2**	**2**	**3**	**1**

Course	Programme Outcomes							PSOs		
	1	2	3	4	5	6	7	1	2	3
Basic Electronics	**3**	**2**	**3**	**3**	-	-	**2**	**2**	**3**	**1**

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Name of Scheme : OCBC-2019 **COURSE CODE :6811**
COURSE TITLE : Basic Electronics SEMESTER -II

3. Course Contents

Unit	Topic	Contents	CO	Hrs.	Marks
1	**Fundamentals of Semiconductor**	Energy bands (conduction & valence), Effect of temperature on conductivity, Intrinsic & Extrinsic semiconductor, Doping, P-type and N-type semiconductor, Concept of majority and minority carriers. Concept of P-N junction, Diffusion & Drift, Barrier potential, Depletion region.	CO201.1	10	20
2	**PN Junction Diodes**	Basic Structure and symbol - Forward & Reverse Biasing - V-I Characteristic, Special purpose Diodes - Constructional features, characteristics, symbol and applications of – Zener Diode, Tunnel Diode, Schottky Diode, Varactor Diode, Photo Diode, LED.	CO201.2	15	20
3	**Diode Circuits and Filters**	Need of rectification, Types of rectifier-Half Wave, Full Wave and Bridge rectifier, Comparison, Average, Peak and RMS Values, Need of Filter Circuits, Types of filter circuits-capacitor, L- type and pie type, comparison of filters, Ripple factor, PIV of diode used in rectifier circuits, Rectifier efficiency, Basics of Voltage multiplier - Doubler and Tripler, Clipper- Series and Shunt, Clamper- Positive and Negative.	CO201.3	10	20
4	**Bipolar Junction Transistor (BJT)**	Basic Structure, Types: PNP & NPN transistors , Transistor action, Check and identify the transistor leads, Transistor Configurations - CE, CC and CB mode, V -I characteristics- Input and Output Characteristics, Comparison between three configurations, Regions of Transistor operation - active, saturation & cutoff, DC current gains- Alpha (α) and Beta (β), relation between alpha & beta, Transistor as a Switch.	CO201.4	15	20
5	**FET, MOSFET and UJT**	Types of FET, Compare FET with BJT, FET operation , V -I characteristic, Pinch-off voltage, MOSFET- Depletion and Enhancement type, Introduction to CMOS and MESFET. UJT (Unijunction Transistor) - Structural diagram of UJT, working of UJT, UJT as relaxation oscillator.	CO201.4	10	20

Name of Scheme : OCBC-2019 **COURSE CODE :6811**
COURSE TITLE : Basic Electronics SEMESTER -II

4. Suggested List of Experiment

S.N.	Experiment	CO
1.	To plot the V-I characteristics of a Silicon Diode	CO201.2
2.	To plot the V-I characteristics of a Germanium Diode	CO201.2
3.	To verify the V-I characteristics of Zener Diode.	CO201.2
4.	To setup the circuit and verify the waveforms of Half Wave rectifier	CO201.3
5.	To setup the circuit and verify the waveforms of Full Wave (centre tapped) rectifier	CO201.3
6.	To setup the circuit and verify the waveforms of Bridge rectifier	CO201.3
7.	To obtain the input and output Transistor Characteristics for CE configuration.	CO201.4
8.	To verify the V-I Characteristics of FET.	CO201.4
9.	To verify the V-I Characteristics of UJT.	CO201.4
10.	To verify the V-I Characteristics of MOSFET.	CO201.4

5. Reference Books

S.N.	Title	Author
1	Electronic Devices & CKTs	Mottershead
2	Electronic Devices & Circuits	Robert Boylestad
3	Electronic Devices and Circuits	Millman & Halkias
4	A Text book of Applied Electronics	R.S. Sedha, S. Chand & Co.New Delh
5	Principals of Electronics	Latest ,V.K.Mehta , S.Chand Publication
6	Electronics Principles	Malvino TMH
7	Basic Electronics	B. L. Thareja

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Name of Scheme : OCBC-2019
COURSE TITLE : ELECTRICAL &ELECTRONIC WORKSHOP SEMESTER –II
COURSE CODE : 205

1. COURSE OUTCOMES

COURSE OUTCOMES		Mapping with PO
CO205.1	Identify and utilize the various types of tools, accessories and electronics components.	PO1, PO4, PO5, PO6
CO205.2	Compare different types of cables, connectors and displays.	PO1, PO4, PO5, PO6
CO205.3	Explain the need of protective devices in a circuit.	PO1, PO4, PO5, PO6
CO205.4	Measure various parameter of signal using appropriate measuring instruments.	PO1, PO4, PO5, PO6
CO205.5	Prepare network cable and circuit on PCB.	PO1, PO2, PO3, PO4, PO5, PO6

2. CO-PO Mapping

Course Outcomes	**Program Outcomes**						
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
CO205.1	1	-	-	2	1	2	-
CO205.2	1	-	-	2	1	2	-
CO205.3	1	-	-	2	1	2	-
CO205.4	1	-	-	2	1	2	-
CO205.5	1	1	1	2	1	2	-
CO205	**1**	**1**	**1**	**2**	**1**	**2**	**-**

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OUTCOME BASED CURRICULUM

Name of Scheme : OCBC-2019
COURSE TITLE : ELECTRICAL &ELECTRONIC WORKSHOP SEMESTER –II
COURSE CODE : 205

3.COURSE CONTENT

Unit	Topic	Contents	CO	Hrs.
1	Basic Electronic Tools, Accessories, Components and Introduction to workshop	Workshop: General safety rules for workshop, general safety measures to be observed in workshop, general housekeeping activities, preparing list of general safety rules SMT & SMD: Soldering and Desoldering technique, Different types of Cutters, Nose pliers, Wire strippers, Screw drivers, Lead straighteners, Extractors, Soldering Iron, Desoldering Pump, Crimping tool. Breadboard wiring, general purpose PCB soldering/wiring. Resistors: Classification of resistors, Materials used for resistors, Maximum power rating, tolerance, temperature co-efficient, Carbon film resistors, Standard wire wound resistors, Colour Coding, LDR. Capacitors: Materials used for capacitors, Working voltage, Capacitive reactance. Coding of capacitors. Types of Capacitor: Fixed Capacitor types (Disc, Ceramic capacitor, Aluminium electrolytic capacitor), Variable capacitor types (Air Gang, PVC gang capacitor, Trimmer mica capacitor). Inductors: Air core, iron core, ferrite core inductor, frequency range Inductors: - A.F., R.F., I.F., Toroidal Inductor. ICs: Monolithic IC, thick & thin film IC, Hybrid IC, Linear IC, Digital IC, IC packages- SIP, TO5, Flat, DIP, Pin Identification. Identification of components i.e. Diodes, Transistors, FET, UJT, SCR, Transformers.	CO205.1	12
2	Cables, Connectors and Display Devices	CABLES General specifications of cables- characteristic impedance, current carrying capacity, flexibility. Types of cables – SWG Single core, Multi core, Single strand, Multi strand and their types, Armoued cable, Shielded wires, Coaxial cables, Twisted pair, Flat ribbon cable' Teflon coated wires, Fiber cables , optical Fiber Cable	CO205.2	12

		CONNECTORS General specifications of connectors- contact resistance, breakdown voltage, insulation resistance ,Constructional diagram, applications of BNC, D series, Audio, Video, printer, edge, FRC, RJ 45 connectors. Constructional diagram and applications of Phone Plug & Jacks DISPLAYS: Seven segment,LED &LCD		
3	Switches and Protective Devices	Switches: Toggle switches-SPST, SPDT, DPST, DPDT, Thumb-wheel switches- BCD, Decimal, Rotary switches, Push button switches, Keyboard switches-mechanical, Capacitive, membrane, DIP switches, Membrane switch. Fuses: Glass, fuse, Resettable fuse, Shunt fuse- MOV, HRC fuse. Relay**:** Working, construction and application of General purpose relay, NO, NC contact, Difference between switch & relay. MCB: Working principle, construction and applications.	CO205.3	12
4	Source of measuring instruments	Analog & Digital multimeter: Study and use analog & digital multimeter to measure- AC and DC voltage, AC and DC current, Different resistor, Continuity testing. Signal generator,Function generator: Front panel controls and its function as wave form generator & different amplitude and frequency. CRO: Front panel controls, measurement of different parameters. DSO: Different shaped wave form. Testing of various electrical &electronic components	CO205.4	12
5	Preparing cables, boards & wiring	Prepare computer network cable using different type of cable and connectors. Study and use of bread boards & PCBs for implementation of simple electronic circuits using resistors / capacitors / diodes / transistors / switches / display devices. Prepare two simple electronic circuits using general purpose PCBs & Breadboards. Identification of Home appliances, wiring of single switch board and tube-light	CO205.5	12

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Name of Scheme : OCBC-2019
COURSE TITLE : ELECTRICAL &ELECTRONIC WORKSHOP SEMESTER –II
COURSE CODE : 205

4. SUGGESTED LIST OF EXPERIMENTS

S.N.	Experiment	CO
1.	Identify the various types of resistors and find out the values from color bands /written values on them and measure with multimeter.	CO205.1 & CO205.4
2.	Identification and use of different electrical cables	CO205.2
3.	Identify the (i) Terminals of a diode and its polarity, (ii) Zener, LED, Photodiode, IR diode (iii) Terminals of a Transistor and its Type (n-p-n or p-n-p).	CO205.1
4.	Identify and use different tools and accessories used in manufacturing of electronic circuits. • Different types of cutters. • Nose pliers • Wire strippers • Screw drivers • Lead strengtheners • Extractors • Soldering iron • Desoldering pump • Crimping tool	CO205.1
5.	Identify the type of components(L,C,R) and find out the values using LCR-Meter	CO205.1 & CO205.4
6.	Identify the various waveforms of Function Generator using CRO. Measure Amplitude & Frequency for various waveforms using CRO.	CO205.4
7.	Use regulated power supply and identify front panel controls and their functions.	CO205.4
8.	Use DC and AC voltmeter and ammeter to measure DC and AC voltage current.	CO205.4
9.	Use analog multi-meter to measure. • AC and DC voltage • AC and DC current • Resistance of Different resistors • Continuity testing.	CO205.4
10.	Use digital multi meter to measure: • AC and DC voltage • AC and DC current	CO205.4

	• Different resistor • Continuity testing.	
11.	Identify various kinds of electronic components	CO205.1
12.	Use different switches • Toggle switches – SPST, SPDT, DPST, DPDT • Thumb-wheel switches • Rotary switches • Push on/Push off switches • Keyboard switches – mechanical, capacitive, membrane • DIP switches	CO205.3
13.	Use of different display devices • LED display • Seven segment display • LCD display	CO205.2
14.	Solder the joint connection of wires and components on a PCB and check it. De-solder it and Re-solder	CO205.1 & CO205.5
15.	Prepare computer network cable (use different type of cable sand connectors)	CO205.2 & CO205.5
16.	Use of breadboards to implement simple electronic circuits using resistors/ capacitors/diodes/transistors/switches/display devices.	CO205.1 & CO205.5
17.	Prepare two simple electronic circuits using general purpose PCBs.	CO205.5
18.	Prepare two PCBs for simple electronic circuits.	CO205.5
19.	Assemble circuit on breadboards and PCBs (e.g rectifiers, oscillators, amplifiers).	CO205.5
20.	Prepare a switch board for a fan & lamp	CO205.5
21.	Connection of a single phase florescent tubelight	CO205.5

5.REFERENCE BOOKS

S.N.	Title	Author
1	Electronic Component and Materials	S.M. Dhir, Tata McGraw Hills publishing company Ltd., New Delhi
2	Printed circuit boards design and technology	W.C. Bosshart, Tata McGraw Hills publishing company Ltd., New Delhi
3	Electronics Project for Biginners	A.K. Maini, Pustak Mahal, Dariya Ganj, Delhi
4	Electrical Drawing	Surjeet Singh

5	Electrical Drawing	J.B.Gupta

6.TENTATIVE LIST OF LABORATORY EQUIPMENT:

S.No. Name of Equipment

1. Digital LCR Meter
2. Electronic Energy Meter
3. Analog Multimeter
4. Digital Multimeter
5. D.C. Ammeters
6. D.C. Voltmeter
7. A.C. Ammeter
8. A.C. Voltmeter
9. CRO
10. Function Generator
11. Coil Winding Machine (Motorised)
12. Coil Winding Machine (Hand Operated)
13. Bench Drilling Machine
14. Portable Drilling Machine
15. Screw Driver Set
16. Different types of Pliers
17. Various tools (wire cutter, wire stripper, wire lead bender, various pliers, screw drivers tongs & tweezers, IC extractor)
18. Soldering Gun Set
19. Screw Extractor Set
20. Soldering Iron
21. Desoldering pump
22. Soldering station
23. Dual-In-Line IC Extraction System
24. Different types of Cables
25. Different types of Connectors
26. Breadboards
27. Printed Circuit Board
28. Different types of discrete electronic components
29. Different types of Integrated Circuits
30. Different types of switches
31. Different types of relays
32. Different types of MCB
33. Different types of display devices

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OUTCOME BASED CURRICULUM

NAME OF THE PROGRAMME: COMMON TO ALL BRANCHES

Name of Scheme :OCBC -19 **COURSE CODE : 6806**

COURSE TITLE : ENVIRONMENTAL ENGG AND SAFETY SEMESTER-II

COURSE OUTCOMES (COs)

C102.1 Explore the components of biosphere and impact of human activity on environment.

C102.2 Summarize the causes and sources of pollutants, and their impact on global environment.

C102.3 Develop ethics and scientific awareness about waste generation and treatment.

C102.4 Identify sources and types of wastes and its management.

C102.5 Understand noise , noise pollution and control.

CO-PO MAPPING

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
C102.1	3	1	1	1	3	2	3
C102.2	3	2	2	2	3	1	3
C102.3	2	2	1	1	2	1	2
C102.4	2	2	1	2	2	1	2
C102.5	1	1	1	2	2	1	2

CONTENTS

Unit	topic	contents	
1	Introduction to environment	Definition, scope and importance of environmental studies. Ecosystem, types, structure and function of ecosystem. Energy flow in ecosystem. Biodiversity and its importance, threats to biodiversity and conservation of biodiversity. Natural resources and associated problems. Renewable and non renewable resources, forest resources- Description, benefits, Effects due to deforestation, Water resources –Use and conservation. Mineral resources–mining activity. Role and responsibility of engineer in environmental protection, health and safety. Fire hazards, prevention and precautions. Industrial hazards prevention and protection. Protection from air and noise pollution. Environment protection act Wild life protection act. Forest conservation act. Population growth aspects and importance and effects on environment. Human health and Human rights. Concept of carbon credits	

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NAME OF THE PROGRAMME: COMMON TO ALL BRANCHES

Name of Scheme :OCBC -19 **COURSE CODE : 6806**

COURSE TITLE : ENVIRONMENTAL ENGG AND SAFETY SEMESTER-II

2	Air Pollution	Standard definition of air pollution ,Composition of natural air, Names of air pollutants, Classification of air pollutants, primary and secondary pollutants, Classification of source of air pollutants on different bases, Definition of different types of aerosols. Effect of air pollution on: human health, material properties, vegetation. Major toxic metals and their effects., Air (prevention and control of pollution)act. Major environmental phenomenon e.g., acid rain, global warming, green house effect, ozone layer depletion. Air quality standards, Brief description of air pollution laws. Meteorological parameters influencing air pollution Environmental lapse rate, temperature inversion. Role of national green tribunal in India, Function of Regulatory boards like CPCB and State Pollution Control Boards	
3	WATER POLLUTION and WASTE WATER TREATMENT METHOD	Water resources, Classification of water, Origin, composition and characteristics of domestic waste water as well as industrial waste water, Biochemical oxygen demand, Water pollution laws and standards. Water conservation ,watershed management, Rain water harvesting : Definition, methods and benefits. Water (prevention and control of pollution)act, Waste water, Classification of waste water, Chemical oxygen demand. basic processes of water treatment. Meaning of primary, secondary and tertiary treatment. Flow chart of a simple effluent treatment plant, Theory of industrial waste treatment, Volume reduction, neutralization and precipitation methods.	
4	Energy Environment Climate Change	An overview of Bureau of Energy Efficiency (bee), The National Action Plan on Climate Change (NAPCC), Schemes under The National Mission for Enhanced Energy Efficiency (**NMEEE**), Energy Conservation Building Code (ECBC), Bio diversity and its conservation, Sustainable development, Kyoto Protocol, Conference of Parties (CoP), Clean Development Mechanism (CDM).	

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NAME OF THE PROGRAMME: COMMON TO ALL BRANCHES

Name of Scheme :OCBC -19 **COURSE CODE : 6806**

COURSE TITLE : ENVIRONMENTAL ENGG AND SAFETY SEMESTER-II

5	SOLID WASTE MANAGEMENT& NOISE POLLUTION	Sources and classification of solid waste, Public health aspects, Disposal methods – open dumping , sanitary , land fill, Incineration , compositing, Potential methods of disposal ,Recovery and recycling of paper, glass, metal and plastic Sources of noise pollution ,Units of Noise pollution measurement, Allowable limits for different areas, Problems of noise pollution and measures to control it, Noise pollution control devices brief discussion	

LIST OF EXPERIMENTS

S.NO.	NAME OF THE EXPERIMENTS	HRS OF PRACTICAL
	NOISE POLLUTION 1 Determination of sound pollution in (a) Auditorium (b) Factories (c) Busy roads (d) Theatre (e) TV rooms (select any three situations) **INDUSTRIAL WASTE WATER** (Any Two experiment may be selected from this group) 2 Determination of pH and alkalinity/ acidity in industrial waste water. 3 Determination of solids in industrial waste water. 4 Determination of turbidity, colour and temperature of industrial waste water. 5 Determine the dissolved oxygen by DO Meter. **POLLUTION STANDARDS** 6 Study of drinking water standards. 7 Study of effluent standards for water disposal. 8 Study of air pollution standards.	**30**

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NAME OF THE PROGRAMME: COMMON TO ALL BRANCHES

Name of Scheme :OCBC -19 **COURSE CODE : 6806**

COURSE TITLE : ENVIRONMENTAL ENGG AND SAFETY SEMESTER-II

LIST OF ASSIGNMENTS

1. Study of a simple ecosystem like pond, rivers, hill slopes etc
2. Visit a local area and document the environmental assets like rivers, forest, hills, grasslands etc.
3. Prepare a list of plastic articles used daily in our life. Estimate the amount of raw materials used and how does where does come from? What are the disposal methods and predict the impact on environment
4. Estimate water is needed for a person daily and estimate for your town and find the sources that cater the supply and how can we regulate the excess usage of water by changing our habits
5. List out the article that are renewable and non renewable and their impact on environment
6. List out energy sources that we use daily. How can we decrease their use and dependence on them
7. Write an essay on how carbon credit is helping in minimising the pollution
8. Write a note on rain water harvesting
9. Carbon credits and sustainable development
10. Compare the use of renewable and non renewable sources of energy
11. List out some novel methods t reduce solid waste
12. List out the advantages of biodiversity.

SUGGESTED SPECEFICATION FOR QUESTION PAPER DESIGN

UNIT NO	TITLE	TEACHING HRS	TENTATIVE DISTRIBUTION OF MARKS			
			R LEVEL	U LEVEL	A LEVEL	TOTAL
1	INTRODUCTION TO ENVIRONMENT	18	04	08	02	14
2	AIR POLLUTION	18	02	08	04	14
3	WATER POLLUTION and WASTE WATER TREATMENT METHOD	18	04	06	04	14
4	ENERGY ENVIRONMENT CLIMATE CHANGE	18	04	06	04	14
5	SOLID WASTE MANAGEMENT& NOISE POLLUTION	18	04	04	06	14

REFERENCES

1. Enviornmental pollution control Engineering by C.S. Rao
2. Air pollution and control by Seth
3. Air pollution by M.N Rao
4. Industrial waste and its treatment by Seth
5. Paryavaran Yantriki Hindi granth akadami
6. Sites to visit: Bureau of Energy Efficiency,Ministry of New and Renewable Energy Sources

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

OUTCOME BASED CURRICULUM

NAME OF THE PROGRAMME: COMMON TO ALL BRANCHES

Name of Scheme :OCBC -2019 COURSE CODE: 6807

COURSE TITLE : INTRODUCTION TO COMPUTERS SEMESTER-II

COURSE OUTCOMES

Course Outcomes		Mapping with POs
CO104.1	Explain computer system with its components, generations and i/o devices.	PO1,PO4,PO5,PO7
CO104.2	Describe storage devices with types of memory and data storage units.	PO1,PO4,PO7
CO104.3	Classify softwares, programming languages, language processors and number system.	PO1,PO2,PO3,PO7
CO104.4	Outline concept of operating system and office software.	PO1,PO2,PO3,PO4, PO5,PO6,PO7
CO104.5	Outline concept of system security and internet applications.	PO1,PO2,PO3,PO4, PO5,PO6,PO7

CO PO MAPPING

Course Outcomes	Program Outcomes						
	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO104.1	3	-	-	1	1	-	2
CO104.2	3	-	-	1		-	2
CO104.3	2	1	1	-	-	-	2
CO104.4	3	2	3	3	2	2	3
CO104.5	3	2	1	1	3	2	3
CO104	3	2	2	2	2	2	2

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COURSE CONTENTS

Unit	Topic	Contents	CO	Hrs
I	Basics of Computer System	Block Diagram of Computer System. Major Components of Computer System: Central Processing Unit, Memory Unit, ALU, Control Unit, Input Unit and Output Unit. Computer Generations and Classification of Computers, Applications of Computer System Computer System Characteristics and Capabilities: Speed, Accuracy, Reliability, Memory Capabilities, Repeatability Input Devices: Keyboard, mouse, joystick, scanner, OCR, OMR and webcam Output Device: Monitors, printers(dot matrix inkjet laser), Projectors	CO104.1	12
II	Storage Devices	Storage device fundamentals, Primary & Secondary Storage. Volatile and non volatile memory. Primary Memory - RAM, ROM and types of RAM and ROM. Difference between RAM and ROM. Secondary storage - Floppy Disk, CD-ROM, DVD, Hard Disk, Flash(Pen) Drive Data Storage unit - Bit, Byte, KiloByte, MegaByte, GigaByte, TeraByte, PetaByte.	CO104.2	14
III	Computer Software and languages	Classification of programming Languages - High Level Language and low level language. Language processor and its types- compiler, interpreter, assembler Software and its types - System software, application software and utility software. Number System - binary, octal, decimal, hexadecimal and their conversion	CO104.3	10
IV	Operating System and Office Software	Concept of BIOS, Booting process, POST, boot loader. Operating system and its features. Types of operating system - batch, time sharing, Real time, network, distributed Office management utilities - Word processing, presentations, spreadsheets. Features of Word processing. Uses of word processing. Description of various menu and sub menu items of word processing software example - file, edit, view etc.. Features of spreadsheet(ppt). Description of various menu and sub menu items of spreadsheet software example - file, edit, view etc..Writing conditional expressions using IF and logical operators(AND, OR, NOT). Features of presentation(ppt). Description of various menu and sub menu items of presentation software example -file, edit, view etc..	CO104.4	14
V	**Computer Networks and System security**	Introduction to computer networks and internet. Applications of internet. Concept of physical and IP-address. E-Mail and its utilities. Web-Browser and search engines. Malware and its types - viruses, worms, Trojans and anti malware software.	CO104.5	10

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		Basics of bluetooth and wifi.		

SUGGESTED SPECEFICATION FOR QUESTION PAPER DESIGN

UNIT NO.	UNIT TITLE	DISTRIBUTION OF THEORY MARKS			
		R-LEVEL	U-LEVEL	A-LEVEL	TOTAL MARKS
1	Basic of computer system	5	6	3	14
2	Storage Devices	6	6	2	14
3	Computer Software and Languages	6	6	2	14
4	Operating System and Office Software	5	5	4	14
5	Computer Networks and System Security	5	5	4	14

SNo	Name of experiment	CO
1	Perform basic operating system operations - start, shutdown, restart etc.	CO104.1
2	Identify system properties such as RAM, processor, harddisk size, system type, computer name, work group information.	CO104.1

3	Uses of following devices a. Input-output devices. b. Storage devices. c. Central processing unit.	CO104.1 CO104.2
4	Exploring the desktop. a. Start button and start menu b. File explorer - minimize, maximize, move, resize. c. Desktop icons handling.	CO104.1
5	Recognize file system. a. Storage and partitions. b. Folder and file - creating, deletion, renaming, moving, copy. c. Deletion process - temporary deletion and recovering those files, permanent deletion. d. File permission and attributes.	CO104.2 CO104.3
6	Use a file editor to edit a file.	CO104.4 CO104.3
7	Working with documents on office software. a. Creating, editing, formatting, saving a document. b. Cut, copy and paste text. c. Find and replace text inside a document. d. Insert, modify table. e. Formatting document - changing font color, type, size, bold, italics. f. Ways to indent a paragraph - Left, right, center indentation. g. Working with tables - Creating, adding row/columns, removing row/column.	CO104.4
8	Working with worksheets on office software. a. Creat, edit, format, save, preview and move worksheets. b. using formulas and functions. c. Sorting and filtering data d. Use of freeze pan.	CO104.4
9	Working with powerpoint slides on office software. a. Create, edit, insert and move slides. b. Insert picture, tables to the slide. c. Changing background.	CO104.4
10	Using internet. a. Using web browser for internet surfing. b. Using search engine to search contents on the internet. c. Basic email operations - creating, sending, receiving emails, saving to drafts. d. Sending an attachment with email.	CO104.5

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To perform above practicals various free/paid operating systems and office management softwares are available which can be used. List of various open source softwares are available at aicte's website : http://www.old.aicte-india.org/downloads/Commercial%20Software.pdf

Above list of practical is tentative. Teachers are free to design new and innovative practical and give more opportunities for the students to learn practical skills