SHRI VILE PARLE KELAVANI MANDAL'S

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC

COMPUTER ENGINEERING DEPARTMENT

SEMESTER-II

SHRI VILE PARLE KELAVANI MANDAL'S

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC

COMPUTER ENGINEERING DEPARTMENT

Shri Vile Parle Kelavani Mandal's
SHRI BHAGUBHAI MAFATLAL POLYTECHNIC

Learning and Assessment Scheme for Post S.S.C Diploma Programs

Program Name	: Diploma In Computer Engineering		
Programme Code	: CSE	**With Effect From Academic Year**	: 2023-24
Duration Of Programme	: 6 Semester	**Duration**	: 16 WEEKS
Semester	: II	**Scheme**	: 2023

Sr No	Course Title & Code	Course Category	IKS (Hrs)	Learning Scheme					Credits	Assessment Scheme								
				Actual Contact Hrs./Week			Self-Learning (SL^) (Term Work + Assignment) (Hrs)	Notional Learning Hrs /Week		Paper Duration (Hrs.)	Theory (Marks)			Based on LL & TL Practical (Marks)			Based on Self Learning	Total Marks
				CL	TL	LL					FA-TH	SA-TH	Total	FA-PR	SA-PR	SA-OR	SLA (Marks)	
1	Applied Mathematics (AMT238908)	AEC	02	3	2	-	1	6	3	3	30	70	100	-	-	-	25	125
2	Environmental Studies (EVS238909)	VEC	00	2	-	-	-	2	1	-	-	-	-	25	-	-	-	25
3	Workshop & Practices (CWP230801)	SEC	01	-	-	2	-	2	1	-	-	-	-	25	-	-	-	25
4	Basic Electronics (BEX238911)	DSC	01	3	-	2	1	6	3	3	30	70	100	25	25	-	25	175
5	Programming in C (PRC238912)	SEC	02	2	-	4	2	8	4	3	30	70	100	25	25	-	25	175
6	Fundamentals of Computer Network (FCN230802)	DSC	01	4	-	2	2	8	4	3	30	70	100	25	-	25	25	175
7	Fundamentals of Scripting Language (FSL230803)	SEC	00	2	-	4	2	8	4	3	30	70	100	25	25	-	25	175
		Total	**07**	**16**	**02**	**14**	**08**	**40**	**20**	No. of Papers=05	**150**	**350**	**500**	**150**	**75**	**25**	**125**	**875**

Abbreviations : IKS - Indian Knowledge System ,CL- Classroom Learning , TL- Tutorial Learning, LL-Laboratory Learning, FA - Formative Assessment, SA -Summative Assessment, SLA - Self Learning Assessment, TH-Theory, PR-Practical, OR-Oral **Legends :** @ Online Examination-

Note :

1. FA-TH represents average of two class tests of 30 marks each conducted during the semester.
2. If candidate is not securing minimum passing marks in FA-PR of any course then the candidate shall be declared as "Detained" in that semester.
3. If candidate is not securing minimum passing marks in SLA of any course then the candidate shall be declared as fail and will have to repeat and resubmit SLA work.
4. Notional Learning hours for the semester are (CL+TL+LL+SL)Hrs. x 15 Weeks
5. 1 credit is equivalent to 30 Notional Hrs.
6. ^ Self learning hours shall not be reflected in the Time Table.
7. SA-PR,SA-OR: Assessed by Internal and External Examiners Jointly FA-PR, SLA: Assessed by Internal Examiner Only

Course Category : Discipline Specific Course Core (DSC) : 2, Discipline Specific Elective (DSE) : 0, Value Education Course (VEC) : 1, Intern./Apprenti./Project/ Community (INP) : 0, Ability Enhancement Course (AEC) : 1, Skill Enhancement Course (SEC) : 3, Generic Elective (GE) : 0

Head of Department | Controller of Examination | Secretary CDC | Principal

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COMPUTER ENGINEERING DEPARTMENT

1. COURSE DETAILS

Programme: Computer Engineering / Information Technology	**Semester:II**
Course: Applied Mathematics	**Course Category: AEC**
Course Code: AMT238908	**Duration:16 Weeks**

2. LEARNING AND ASSESSMENT SCHEME

Learning Scheme				Credits	Assessment Scheme								
Actual Contact Hrs./Week			Self-Learning (SL^) (Term Work + Assignment) (Hrs)		Paper Duration (Hrs.)	Theory (Marks)			Based on LL & TL			Based on Self Learning	Total Marks
									Practical (Marks)				
CL	TL	LL				FA-TH	SA-TH	Total	FA-PR	SA-PR	SA-OR	SLA (Marks)	
3	2	-	1	3	3	30	70	100	-	-	-	25	125

Total IKS Hrs for the course :02

3. COURSE OBJECTIVE

This course intends to teach student basic facts, concepts, principle and procedure of Mathematics as a tool analyses Engineering problem and as such down foundation for the understanding engineering and core technology subject and Understand basic facts of mathematics in the field of analysis – Derivatives, Statistics, Integration, Complex number and Vector.

4. SKILL COMPETENCY

- **Solve broad-based Engineering problems using the Basic Knowledge of mathematics.**

5. COURSE OUTCOMES (COs): At the end of the semester student will be able to:

CO No.	COURSE OUTCOME
CO1	Analyze suitable methods to solve derivatives and its application in the field of engineering.
CO2	Use Basic concepts of Statistics and probability to solve engineering related problems.
CO3	Integrate various expressions using concepts of inverse differentiation, partial function, method of substitution
CO4	Apply the concept of vector to solve problems of work done and force and various operation on Complex numbers.

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6. CO-PO, CO- PSO MAPPING TABLE – COMPUTER ENGINEERING

Course and Code	Course Outcomes	Programme Outcomes							Programme Specific Outcomes	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
Applied Mathematics (AMT238908)	CO1	3	3	2	2	1	1	2	1	1
	CO2	3	3	2	2	2	2	2	1	1
	CO3	2	2	2	2	1	1	1	1	1
	CO4	2	2	1	1	-	1	1	1	1
	CO Avg.	2.5	2.5	1.75	1.75	1.33	1.25	1.5	1	1

CO-PO, CO- PSO MAPPING TABLE – INFORMATION TECHNOLOGY

Course and Code	Course Outcomes	Programme Outcomes							Programme Specific Outcomes	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
Applied Mathematics (AMT238908)	CO1	3	3	2	2	1	1	2	1	1
	CO2	3	3	2	2	2	2	2	1	1
	CO3	2	2	2	2	1	1	1	1	1
	CO4	2	2	1	1	-	1	1	1	1
	CO Avg.	2.5	2.5	1.75	1.75	1.33	1.25	1.5	1	1

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7. COURSE CONTENTS

UNIT NO.	TOPIC/Sub-topic
I	**Derivatives and its Application** 1.1. Derivatives – basic formulas, rules 1.2. Derivatives for exponential, logarithmic, inverse, parametric, composite functions. 1.3. Derivative of one function with respect to other 1.4. Double derivative 1.5. Maxima & minima 1.6. Radius of Curvature
II	**Probability Distribution** 2.1 Definition of probability, addition and multiplication theory of probability 2.2 Probability Distribution: - Binomial Distribution, Poisson Distribution & Normal Distribution. 2.3 Probability in Indian Knowledge System: Probability in Ancient Time.
III	**Statistics** 3.1 Statistic: Measure of central tendency (mean, medium and mode) for un -grouped and grouped frequency distribution. 3.2 Measures of dispersion such as range, mean deviation, standard deviation, variance and coefficient of variance.
IV	**Integration** 4.1. Basic formulas 4.2. trigonometric, substitution method and Finding last term and solve 4.3. Using LIATE rule 4.4. Partial fraction 4.5. Definite Integrals 4.6. Properties of definite integrals
V	**Complex number** 5.1. Definition 5.2. Simple rules: addition, subtraction, multiplication, division 5.3. De-Moivre's theorem (without proof)
VI	**Vector** 6.1. Definition: Algebra of vectors 6.2. Vector product 6.3. Scalar product 6.4. Work done and moment of force

8. LIST OF TUTORIALS

Term Work Consists of Journal containing minimum no of –10 Tutorials

Sr. No.	Title of Experiment/Assignment/Exercise/Tutorial/Drawings	Approx.Hrs required	CO
1	Tutorials on rules of derivatives	2	CO1
2	Tutorials on derivatives of composite functions	2	CO1
3	Tutorials on derivative of exponential function	2	CO1
4	Tutorials on derivative of logarithmic, inverse and trigonometric function	4	CO1
5	Tutorials on derivative of function with wrt function and derivative of parametric function	3	CO1
6	Tutorials on application of derivatives	3	CO1
7	Tutorials on probability & probability distribution	3	CO2
8	Tutorials on statistics.	3	CO2
9	Tutorials on basic formulas of integration and LIATE rules	2	CO3
10	Tutorials on definite integrals	2	CO3
11	Tutorials on complex numbers & De Movires theorem	2	CO4
12	Tutorials on vectors and its application	2	CO4
	TOTAL	30	

9. SUGGESTED MICRO PROJECT/ASSIGNMENT/ACTIVITES FOR SPECIFIC LEARNING / SKILL DEVELOPMENT (SELF LEARNING)

Assessment to be based on one of the following tools and rubrics for evaluation of SLA to be well defined by course teacher.

1. Assignment
   - Problems on Radius of Curvature
   - Problems on finding mode
   - Normal Distribution
2. Solving Mathematical problems using Sci-Lab programming.
   - Problem based on Derivatives.
   - Problem based on Integration.
   - Problem based on Numerical Methods.

10. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan
2. Minimum no of practical/assignments.
3. Industry visit
4. Guest/Expert lectures
5. Self-Learning Online Resources

11. SUGGESTED LEARNING RESOURCES

Sr.No.	Title of Book	Author	Publication
1	Mathematics for polytechnic Student II	Shri. S.P.Deshpande	Pune Vidyarthi Graha Prakashan Pune-30
2	G.V. Kumbhojkar	Engineering Mathematics	Phadke Prakasan, Kolhapur
3	Higher Engineering Mathematics	Dr. B.S. Grewal	Khanna Publishers 2/B, Delhi-6

12 LEARNING WEBSITE & PORTALS

1. http://tutorial.math.lamar.edu/Classes/Alg/ComplexNumbers.aspx
2. http://www.academia.edu/2391781/Numerical_Methods_Solved_Examples
3. www.derivative-calculator.net
4. www.stattrek.com/statistics/problems.aspx
5. https://www.integral-calculator.com

13. ASSESMENT METHODOLOGIES/TOOLS

Formative Assessment (Assessment for Learning)

1. Test
2. Rubrics for COs Assignment
3. Self-Learning

Summative Assessment (Assessment of Learning)

1. End Term Exam

14. SUGGESTED WEIGHTAGE FOR LEARNING EFFORTS & ASSESMENT PURPOSE (Specification Table)

Unit No.	Unit Title	Aligned COs	Learning Hours	Distribution of Theory Marks			
				R Level	U Level	A Level	Total Marks
I	Derivatives and its Application	CO1	12	2	8	6	16
II	Probability Distribution	CO1	05	-	4	4	8
III	Statistics	CO2	06	-	4	7	11
IV	Integration	CO3	12	2	8	6	16
V	Complex Number	CO4	06	2	3	6	11
VI	Vector	CO4	04	2	2	4	8
GRAND TOTAL			**45**	**8**	**29**	**33**	**70**

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R Remember, U Understand, A Apply and above, (Bloom's revised taxonomy levels)
NOTE: This specification table provides general guidelines to assist students for their learning and to teachers to teach and assess students with respect to attainment of COs. The actual distribution of marks at different taxonomy levels (R, U, A) in the question paper may vary from above table.

15. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		**NAME**
1	Internal	Dr. Kavita Dange
2	Internal	Mr. Akhileshwar Singh
3	External	Prof. Taqdis Pawale
		Organization: Mithibai Degree College, Vile Parle,Mumbai

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COMPUTER ENGINEERING DEPARTMENT

1. COURSE DETAILS

Programme: Computer Engineering / Information Technology	**Semester: II/II**
Course: Environmental Studies	**Course Category: VEC**
Course Code: EVS238909	**Duration:16 Weeks**

2.. LEARNING AND ASSESSMENT SCHEME

Learning Scheme				Credits	Assessment Scheme									
Actual Contact Hrs./Week			Self-Learning (SL^) (Term Work + Assignment) (Hrs)		Paper Duration (Hrs.)	Theory (Marks)			Based on LL & TL			Based on Self Learning	Total Marks
									Practical (Marks)				
CL	TL	LL				FA-TH	SA-TH	Total	FA-PR	SA-PR	SA-OR	SLA (Marks)	
2	-	-	_	1		-	-	-	25	-	-	-	25

Total IKS Hrs. for the course :00

3. COURSE OBJECTIVE

Environmental Sciences is a multidisciplinary course aimed to impart knowledge about the current situation and future prospects of nature and natural resources. It is designed to create awareness of ecosystems of the world, earth's resources –renewable and non-renewable, health benefits of nature and adverse effects with depletion of environment. Such a knowledge can encourage today's generation to switch to safer and better choices.

Environmental education makes people understand the importance of renewable energy. Nonrenewable sources of energy like petrol, diesel etc. are the major sources of the world's pollution. Using renewable sources like solar energy, wind energy etc. is encouraged by Environment Education, and is imperative in our fight against global warming

.

4. SKILL COMPETENCY/INDUSTRY/EMPLOYER EXPECTED OUTCOME

- **Sense of social responsibility.**
- **Communication and analytical skills.**
- **Ability to apply knowledge and skills in real-world settings.**
- **Competence in developing arguments from scientific, ethical and philosophical perspective.**

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5. COURSE OUTCOMES (COs): At the end of the semester student will be able to**: -**

CO No.	COURSE OUTCOME
CO1	Identify and classify different natural resources and use them prudently.
CO2	Recognize, categorize the different ecosystems and understand the importance of a balanced ecosystem.
CO3	Estimate the importance of biodiversity and its conservation.
CO4	Judge the type of pollution, identify the pollutants, causes, effects and develop methods to reduce the same.
CO5	Use the information regarding environmental legislation to improve upon their surroundings for the betterment of the community.

6. CO-PO, CO- PSO MAPPING TABLE

COMPUTER ENGINEERING

Course and Code	Course Outcomes	Programme Outcomes							Programme Specific Outcomes	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
Environmental Studies (EVS238909)	CO1	2	-	1	-	3	-	1	1	-
	CO2	-	-	-	-	2	-	-	-	-
	CO3	-	-	3	-	2	-	1	1	-
	CO4	2	-	2	-	2	1	1	1	1
	CO5	-	1	2	-	2	1	-	-	1
	CO Avg.	2	1	2	-	2.2	1	1	1	1

INFORMATION TECHNOLOGY

Course and Code	Course Outcomes	Programme Outcomes							Programme Specific Outcomes	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
Environmental Studies (EVS238909)	CO1	2	-	1	-	3	-	-	1	-
	CO2	-	-	-	-	2	-	-	-	-
	CO3	-	-	3	-	2	-	-	1	-
	CO4	-	1	2	-	2	1	-	1	-
	CO5	2	-	2	-	2	1	1	-	-
	CO Avg.	2	1	2	-	2.2	1	1	1	-

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7. COURSE CONTENTS

UNIT NO.	TOPIC/Sub-topic	CO	Hours
I	**The Multidisciplinary nature of environmental studies:** **1.1** Definition, scope and importance Need for public awareness **1.2 Natural Resources: Renewable and non-renewable resources:** Natural resources and associated problems **1.21 Forest resources:** Use and over-exploitation, deforestation. Timber extraction, mining, dams and their effects on forest and tribal people. **1.22 Water resources:** Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams' benefits and problems. **1.23 Mineral resources:** Use and exploitation, environmental effects of extracting and using mineral resources. **1.24 Food resources:** World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity. **1.25 Land resources:** Land as a resource, land degradation, man induced landslides, soil erosion and desertification. **1.3 Energy resources:** **1.3.1 Renewable Energy Resources** – Biogas, Solar energy, Wind energy, Energy from falling water, Energy from wastes and tidal energy. **1.3.2 Non-Renewable Energy Resources** – Coal, Oil, Natural gas Issue of economic viability and ability to meet demands. Inequitable use of energy in urban and rural areas	CO 1	6
II	**Eco Systems:** **2.1** Concept of ecosystem **2.2** Major ecosystems in the world. **2.3** IKS-Traditional Knowledge Systems, Culture and Environmental Sustainability: Concepts of India.	CO 2	4
III	**Biodiversity and Its Conservation** **3.1** Concepts **3.2** Threats to biodiversity **3.3** Value and conservation of biodiversity **3.4 IKS**-Indian agricultural tradition living in harmony with nature its flora and fauna.	CO 3	4
IV	**Environmental Pollution** **4.1** Definition Causes, effects and control measures of **4.2** Air pollution **4.3** Water pollution **4.4** Soil pollution **4.5** Noise pollution	CO 4	6

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V	**Social issues and the Environment** **5.1** Types of wastes – generation, characteristics, treatment and disposal of: **5.2** Solid waste **5.3** e- waste **5.4** Biomedical waste **5.5** From Unsustainable to Sustainable development **5.6** Water conservation, rain water harvesting, watershed management **5.7** Environmental ethics: Issues and possible solutions like Carbon Credit. **5.8** Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. **5.9 IKS**-Ancient Indian civilization- use of natural material and its easy disposal.	CO 4	6
VI	**Environmental Protection** **6.1** Environment legislations- **6.2** Legal aspects related to environment **6.3** Brief description of various acts involving air, water and forests. **6.4** ISO-14000 **6.5** Issues involved in enforcement of environmental legislation	CO 5	4
	Total Hours		30

8. LIST OF PRACTICALS/ASSIGNMENTS/ TUTORIALS/DRAWINGS

Term Work consists of Journal containing minimum no of 05 Assignments

Sr. No.	Title of Assignment	Approx. Hrs required	CO
1	Write a note on different renewable sources of energy.	-	CO1
2	List any two man-made disasters. Analyze its causes and effects on environment.	-	CO2, CO4
3	Enlist the different causes and effects of global warming and ozone depletion.	-	CO2, CO4
4	Explain in detail about biomedical waste its sources, storage and disposal.	-	CO4, CO5
5	List any five Environmental Protection Acts.	-	CO 5
6	Suggest the different ways in which a citizen can contribute in maintaining ecological balance.	-	CO1, CO3

9. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan
2. Minimum no of assignments.
3. Slides

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10. SUGGESTED LEARNING RESOURCES

Sr.No.	Title of Book	Author	Publication
1.	Text book of Environmental studies	Erach Bharucha	UGC Press
2.	Environmental studies	Rajagopalan	Oxford University Press
3.	Environmental studies	Anandita Basak	Drling Kindersley (India)Pvt. Ltd Pearson
4	Fundamental concepts in Environmental studies	D.D. Mishra	S. Chand & Co. Ltd.
5	Role of Tech. in Environment and Health	Jain and Jain	Dhanpat Rai Publishing Co. New Delhi

11. LEARNING WEBSITE & PORTALS

1. https://study.com/academy/.../what-are-natural-resources-definition-lesson-
2. www.yourarticlelibrary.com/biodiversity/biodiversity...ecological-diversity/4474
3. https://www.britannica.com/science/pollution-environment
4. https://businessworld.in/article/Major-Environmental-Laws-Of-India/09-09-2017-125737
5. https://sdgs.un.org/events/launch-e-learning-course-harnessing-climate-and-sdgs-synergies-33337

12. ASSESMENT METHODOLOGIES/TOOLS

Formative Assessment (Assessment for Learning)

1. Seminar and Presentation
2. Term Work

13. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME
1	Internal	Mrs. Radhika Patwardhan
2	Internal	Ms. Sharyu Kadam
3	External	Mrs Nidhi Dikshit
		Assistant Proffessor, BMC college,Mumbai

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COMPUTER ENGINEERING DEPARTMENT

1. COURSE DETAILS

Programme: Computer Engineering	**Semester: II**
Course: Workshop & Practices	**Course Category: SEC**
Course Code: CWP230801	**Duration:16 Weeks**

2. LEARNING AND ASSESSMENT SCHEME

Learning Scheme				Credits	Assessment Scheme								
Actual Contact Hrs./Week			Self-Learning (SL^) (Term Work + Assignment) (Hrs)		Paper Duration (Hrs.)	Theory (Marks)			Based on LL & TL			Based on Self Learning	Total Marks
									Practical (Marks)				
CL	TL	LL				FA-TH	SA-TH	Total	FA-PR	SA-PR	SA-OR	SLA (Marks)	
-	-	2	-	1	-	-	-	-	25	-	-	-	25

Total IKS Hrs for the course :01

3. COURSE OBJECTIVE

This course imparts the knowledge of Electronic Components. It provides hands on experience on soldering/ disordering, identifying and assembling the hardware components.

4. SKILL COMPETENCY/INDUSTRY/EMPLOYER EXPECTED OUTCOME

- **Setup and maintain computing systems.**

5. COURSE OUTCOMES (COs): At the end of the semester student will be able to**: -**

CO No.	COURSE OUTCOME
1	Familiarize the electronic components and testing tools.
2	Solder and Desolder electronic components.
3	Identify the hardware components on system board, cables and connectors.
4	Assemble and disassemble a PC/Computing Device

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6. CO-PO, CO- PSO MAPPING TABLE

Course Name and Code	Course Outcomes	Programme Outcomes							Programme Specific Outcomes	
		PO 1	PO2	PO3	PO 4	PO5	PO 6	PO7	PSO1	PSO2
Workshop & Practices (CWP230801)	CO1	3	-	-	2	-	1	2	2	1
	CO2	3	-	2	2	1	1	2	2	1
	CO3	3	1	2	2	1	1	2	2	1
	CO4	3	1	2	2	1	-	2	2	1
	CO Avg	3	1	2	2	1	1	2	2	1

7. LIST OF PRACTICALS/ASSIGNMENTS/ TUTORIALS/DRAWINGS

Term Work consists of Journal containing minimum no of 10 practical /assignments

Sr. No.	Title of Experiment/Assignment/Exercise/Tutorial/Drawings	Approx.Hrs required	CO
1	To Draw and Identify various parts on a typical motherboard	2	CO1
2	To perform serial connection on bread board	2	CO1
3	To perform parallel connection on bread board	2	CO1
4	To solder and desolder electronic components on a PCB	2	CO2
5	To Draw and identify various daughterboard cards	2	CO3
6	To study and draw cables and connectors	2	CO3
7	To demonstrate the internal parts and working of a keyboard	2	CO3
8	To demonstrate the internal parts and working of a mouse	2	CO3
9	To Install Operating System.	2	CO4
10	To demonstrate the internal parts and working of a Hard disk	2	CO4
11	To study various motherboards used in Computing devices	2	CO3
12	To disassemble and assemble a desktops	2	CO4
13	To install various Input Output Devices in computer System.	2	CO3
14	To prepare A survey report on technical specification of Desktop/ Laptop/mobile	2	CO4
15	To interface various I/O devices, digital camera, DSL router, Switches and wifi to the desktop	2	CO4
	Total	**30**	

8. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan/Tutorials
2. Minimum no of practical/assignments.
3. Guest/Expert Lectures
4. Self-learning Online Resources

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9. SUGGESTED LEARNING RESOURCES

Sr. No.	Title Of Book	Author	Publication
1.	Computer Hardware and Networking	Vishnu Singh	Computech Publishers
2.	Production Technology of Electronic Equipment Vol.-I and Vol.-II	NEC , Bengaluru	------
3	Comptia A+ Study Guide	Quentin Docter, Jon Buhagiar	Wiley Publication

10 LEARNING WEBSITE & PORTALS

1. http://nearsys.com/dissertation/notes.pdf
2. http://www.elecraft.com/TechNotes/N0SS_SolderNotes/N0SS_SolderNotesV6.pdf
3. http://farside.ph.utexas.edu/teaching/302l/lectures/node106.html
4. http://vlab.ee.nus.edu.sg/~bmchen/courses/EG1108_Transformers.pdf
5. https://www.electronics-tutorials.ws/dccircuits/dcp_3.html
6. https://www.makerspaces.com/how-to-solder/
7. https://opensource.com/article/18/5/dual-boot-linux

11. ASSESMENT METHODOLOGIES/TOOLS

Formative Assessment (Assessment for Learning)

1. Seminar and Presentation
2. Term Work

12. COURSE EXPERT COMMITTEE MEMBERS

Sr.		NAME
1	Internal	Mr Janardan Kulkarni
2	Internal	Mrs. Prachi S. Arora
3	External	Mr Devendra Parekh Organization: Chief Operating Officer and Technical Presales Shree Maat Computers

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COMPUTER ENGINEERING DEPARTMENT

1. COURSE DETAILS

Programme: Information Technology/Computer Engineering	**Semester: I/II**
Course: Basic Electronics	**Course Category: DSC**
Course Code: BEX238911	**Duration:16 Weeks**

2. LEARNING AND ASSESSMENT SCHEME

Learning Scheme				Credits	Assessment Scheme								
Actual Contact Hrs./Week			Self-Learning (SL^) (Term Work + Assignment) (Hrs)		Paper Duration (Hrs.)	Theory (Marks)			Based on LL & TL			Based on Self Learning	Total Marks
									Practical (Marks)				
CL	TL	LL				FA-TH	SA-TH	Total	FA-PR	SA-PR	SA-OR	SLA (Marks)	
3	-	2	1	3	3	30	70	100	25	25	-	25	175

Total IKS Hrs. for the course :01

3. COURSE OBJECTIVE

This Course provides essential competency in understanding the electronics circuits. This course introduces various electronic devices & their applications.

4. SKILL COMPETENCY

- **Logical thinking to draw, understand and demonstrate working of electronic circuit.**
- **Apply logic techniques to solve basic digital electronics problem.**

5. COURSE OUTCOMES (COs): At the end of the semester student will be able to: -

CO No.	COURSE OUTCOME
CO1	Interpret basic knowledge semi-conductor
CO2	Use semiconductor devices as rectifier and photoelectric devices
CO3	Illustrate Transistor fundamentals.
CO4	Apply Number system and codes for interpreting digital system
CO5	Use Boolean Algebra to realize simple combinational circuits
CO6	Realize simple sequential circuits.

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6. CO-PO, CO- PSO MAPPING TABLE: Information Technology

Course and Code	Course Outcomes	Programme Outcomes							Programme Specific Outcomes	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
Basic Electronics (BEX238911)	CO1	3	2	2	3	-	-	2	2	
	CO2	2	2	2	2	-	-	2	2	-
	CO3	3	2	2	3	-	-	2	3	-
	CO4	3	2	-	2	-	-	3	2	2
	CO5	3	2	2	2	-	-	2	2	-
	CO6	3	3	2	2	-	-	3	3	-
	CO Avg.	**2.83**	**2.17**	**2.00**	**2.33**	-	-	**2.33**	**1**	**2**

CO-PO, CO- PSO MAPPING TABLE: Computer Engineering

Course and Code	Course Outcomes	Programme Outcomes							Programme Specific Outcomes	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
Basic Electronics (BEX238911)	CO1	3	2	2	3	-	-	2	-	2
	CO2	2	2	2	2	-	-	2	-	2
	CO3	3	2	2	3	-	-	2	-	3
	CO4	3	2	-	2	-	-	3	2	2
	CO5	3	2	2	2	-	-	2	-	2
	CO6	3	3	2	2	-	-	3	-	3
	CO Avg.	**2.83**	**2.17**	**2.00**	**2.33**	-	-	**2.33**	**2**	**2.3**

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7. COURSE CONTENTS

UNIT NO.	TOPIC/Sub-topic
I	**Semi-Conductors** 1.1 Conductor, Insulator, Semiconductor, 1.2 Intrinsic (Si, Ge) and Extrinsic semiconductors (P type. N type), 1.3 Doping, Energy level diagram, Energy Band diagram 1.4 PN junction formation 1.5 Diffusion, depletion, effect of temperature on intrinsic and extrinsic Semiconductors. 1.6. P.N. junction as a diode, 1.7 P-N junction biasing, forward and reverse bias, 1.8 V.I. characteristics of PN junction 1.9 Zener diode, V-I characteristics, Zener diode as a voltage regulator
II	**Application of Semiconductors** **Rectifier** 2.1. Need of Rectification, 2.2. Types of rectifiers: Half Wave Rectifier, Full Wave Rectifier (Centre Tap and Bridge) with waveforms, 2.3. Comparison of Rectifiers (efficiency, ripple factor, T.U.F. Ratio of rectification, PIV) 2.4. Filters: L filter, C filter and π. Filter. **Photoelectric Devices** 2.5. Photoelectric effects, construction and char. of Photodiode, Phototransistor, LED, LCD, Optocoupler 2.6. Photovoltaic cell.
III	**Bipolar junction Transistor** 3.1. The junction transistor, 3.2 Types of transistor: NPN, PNP junction transistors, Symbols, 3.3. Operating principle, transistors current components, 3.4. Transistor configurations Common Emitter (CE), Common Base (CB), Common Collector (CC) , 3.5. Input and output characteristics, Graphical analysis of the C.E. configuration, Analysis of Active, cut-off and saturation regions, 3.6. current gain α & β, and relation between α and β, 3.7. operating point (Q point), DC-load line, Need of biasing, voltage divider biasing 3.8. transistor as switch and Amplifier.
IV	**Number systems and codes** 4.1. Introduction to number systems: 4.1.1 Base or radix of number systems, 4.1.2 Types of number system and conversions: Binary, Octal, Decimal, Hexadecimal 4.2. Binary arithmetic operations :(addition, subtraction, multiplication, division) 4.2.1 1's complement & 2's complement 4.2.2 Addition and subtractions using 1's and 2's complement 4.3. Codes:

	4.3.1 Excess – 3 4.3.2 Conversion of binary to Gray and Gray to binary 4.3.3 ASCII code, 4.3.4 BCD arithmetic – 9's and 10's complement IKS :4.4 Vedic mathematics in Digital System
V	**Logic gates and Combinational circuit** 5.1 Logic gates: symbol, logical expression, truth table of logic gates (AND, OR, NOT, NAND, NOR, EX-OR and EX-NOR gates), 5.1.1 Universal gates: NAND and NOR as universal gates. 5.2 Boolean algebra: Boolean laws, Duality theorem, De Morgan's theorems. 5.2.1 Simplification of Boolean expression 5.3 Compare combinational and sequential circuit. 5.4 Construction of logical circuits from Boolean expressions 5.5 Boolean expressions using SOP and POS 5.3.1 Min-term, Max-term representation of logical functions 5.3.2 K-map representations of logical functions 5.3.3 Minimization using K-map for 2, 3, 4 variables. 5.4 Design of arithmetic circuits 5.4.1 Half & full adder 5.4.2 Half & full subtractor
V1	**Sequential circuits** 6.1 Basics of sequential circuits 6.1.1 Clock Signal 6.1.2 Triggering Methods 6.1.3 Basic memory cell 6.2 Flip flop 6.2.1 SR, D, JK, T, MSJK Flip Flop: Block Diagram, Truth table, Logic diagram 6.2.2 Race around condition in JK Flip-flop 6.3 Registers: 6.3.1 Shift register Classification 6.3.2 Logic diagram of 4-bit shift register: — Serial Input Serial Output, Serial Input Parallel Output. Parallel Input Serial Output, Parallel Input 6.4 Counters: 6.4.1 Asynchronous and Synchronous counters 6.4.2 Logic diagram of 3/4 bit up/down ripple counter

8. LIST OF PRACTICALS/ASSIGNMENTS/ TUTORIALS/DRAWINGS

Term Work consists of Journal containing minimum no of –10 Experiments/assignments/drawings

Sr. No.	Title of Experiment/Assignment/Exercise/Tutorial/Drawings	Approx. Hrs required	CO
1	Measuring voltages and frequency of different waveforms using CRO.	2	CO1
2	Graph the V-I Characteristics of Diode	2	CO1
3	Graph the V-I Characteristics of Zener diode.	2	CO1
4	Plot the H.W.R. waveforms with/without filter.	2	CO2
5	Plot the F.W.R. waveforms with/without filter.	2	CO2
6	Graph the Input and Output characteristics of C.E. Transistor configurations.	2	CO3
7	Verify the truth table of logic gates using ICs	2	CO5
8	Perform Demorgan's theorems using ICs	2	CO5
9	Realize all the logic gates using NAND as Universal Gate	2	CO5
10	Realize all the logic gates using NOR as Universal Gate	2	CO5
11	Design Half Adder and Full Adder using logic gates	2	CO5
12	Design Half Subtractor and full Subtractor using logic gates	2	CO5
13	Design a Combinational circuit	2	CO5
14	Verify the Truth table of D Flip Flop	2	CO6
15	Assignment/ Worksheet on Number System	2	CO4
	TOTAL	**30**	

9. SUGGESTED MICRO PROJECT/ASSIGNMENT/ACTIVITES FOR SPECIFIC LEARNING / SKILL DEVELOPMENT (SELF LEARNING)

Assessment to be based on one of the following tools and rubrics for evaluation of SLA to be well defined by course teacher.

1. **Micro-Project**
   a. Build the circuit on half wave and full wave rectifier
   b. Buid the circuit on Transistor as switch
   c. Simulate the parity generator and parity checker circuit.
   d. Simulate the circuit to implement 2-bit adder and subtractor
   e. Simulate the circuit to test 7 segment display.
2. **Seminar/ Presentation**
   a. Prepare PPTs on any topic of their interest from the Syllabus
3. **Assignment**
   a. Prepare the survey report on the applications of different types of number system and code converters used in the design of digital system.
   b. Compare technical specifications and applications of various Multivibrators
   c. Draw neatly the circuit diagram of transistor configuration, biasing and Transistor as an Amplifier
   d. Compare various Flip Flops on technical specifications, working, advantage, disadvantage and application

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10. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan
2. Minimum 10 no of practical/assignments.
3. Demonstrations and simulations
4. Slides
5. Self-Learning Online Resources

11. SUGGESTED LEARNING RESOURCES

Sr.No.	Title of Book	Author	Publication
1	Principles of electronics	V. K. Mehta	S. Chand
2	Electronics devices and circuits theory	Robert Boylestad	Pearson
3	Electronic devices and circuits	Allen Mottershed	PHI
4	Modern Digital Electronics	R. P Jain	Tata McGraw Hills
5	Digital Electronics	G. K Kharate	OXFORD

12. LEARNING WEBSITE & PORTALS

1. www.hep.fsu.edu
2. www.falstad.com\circuits
3. www.acsu.buualo.edu
4. https://www.electronics-tutorials.ws
5. http://www.learnabout-electronics.org/index.php

13. ASSESMENT METHODOLOGIES/TOOLS

Formative Assessment (Assessment for Learning)

1. Test
2. Rubrics for COs Assignment
3. Self-Learning
4. Term Work
5. Seminar/Presentation

Summative Assessment (Assessment of Learning)

1. End Term Exam
2. Micro-project
3. Tutorial Performance

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14. SUGGESTED WEIGHTAGE FOR LEARNING EFFORTS & ASSESMENT PURPOSE (Specification Table)

Unit No.	Unit Title	Aligned COs	Learning Hours	Distribution of Theory Marks			
				R Level	U Level	A Level	Total Marks
I	Semi-conductors	CO1	7	6	4	-	10
II	Application of Semiconductors	CO2	8	6	4	4	14
III	Bipolar junction Transistor	CO3	8	4	6	4	14
IV	Number systems and Codes	CO4	7	4	4	-	08
V	Logic gates and Combinational circuit	CO5	8	4	4	6	14
VI	Sequential circuits	CO6	7	2	4	4	10
GRAND TOTAL			**45**	**26**	**26**	**18**	**70**

R Remember, U Understand, A Apply and above, (Bloom's revised taxonomy levels)

NOTE: This specification table provides general guidelines to assist students for their learning and to teachers to teach and assess students with respect to attainment of COs. The actual distribution of marks at different taxonomy levels (R, U, A) in the question paper may vary from above table.

15. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME
1	Internal	Mr. Abhijit Dongaonkar
2	Internal	Mrs. Prachi Arora
3	External	Mr. Anil Gurav
		Organization: St. Xaviers Institute of Technology, Mumbai

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COMPUTER ENGINEERING DEPARTMENT

1. COURSE DETAILS

Programme: Information Technology/Computer Engineering	**Semester: I/II**
Course: Programming in C	**Course Category: SEC**
Course Code: PRC238912	**Duration:16 Weeks**

2. LEARNING AND ASSESSMENT SCHEME

Learning Scheme				Credits	Assessment Scheme								
Actual Contact Hrs./Week			Self-Learning (SL^) (Term Work + Assignment) (Hrs)		Paper Duration (Hrs.)	Theory (Marks)			Based on LL & TL			Based on Self Learning	Total Marks
									Practical (Marks)				
CL	TL	LL				FA-TH	SA-TH	Total	FA-PR	SA-PR	SA-OR	SLA (Marks)	
2	-	4	2	4	3	30	70	100	25	25	-	25	175

Total IKS Hrs for the course :02

3. COURSE OBJECTIVE

The goal of this course is to build the logic and introduce the programming fundamentals to the students as C is the basic language of all advanced computer languages.

4. SKILL COMPETENCY/INDUSTRY/EMPLOYER EXPECTED OUTCOME

- **Develop programs of Structured Programming Language**
- **Debugging and testing of programs**
- **Use of pointers and structures**

5. COURSE OUTCOMES (COs): At the end of the semester student will be able to**: -**

CO No.	COURSE OUTCOME
CO1	Instill programming logic skills using basic C constructs
CO2	Use operators in expressions
CO3	Conceptualize loops and control structure
CO4	Implement modular approach in programming
CO5	Implement operations related to arrays and strings
CO6	Write application programs using structures and pointer

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6. CO-PO, CO- PSO MAPPING TABLE - Information Technology

Course and Code	Course Outcomes	Programme Outcomes							Programme Specific Outcomes	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
Programming in C (PRC238912)	CO1	3	2	2	2	-	2	2	3	-
	CO2	3	2	2	2	-	3	2	3	-
	CO3	3	3	3	2	-	3	2	3	-
	CO4	3	2	3	2	-	3	2	3	-
	CO5	3	2	2	2	-	3	2	3	-
	CO6	3	2	3	2	-	3	2	3	-
	CO Avg.	3.00	2.17	2.50	2.00	-	2.83	2.00	3.00	-

CO-PO, CO- PSO MAPPING TABLE - Computer Engineering

Course and Code	Course Outcomes	Programme Outcomes							Programme Specific Outcomes	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
Programming in C (PRC238912)	CO1	3	2	2	2	-	2	3	3	-
	CO2	3	2	2	2	-	3	3	3	-
	CO3	3	3	3	2	-	3	3	3	-
	CO4	3	2	2	2	-	3	3	3	-
	CO5	3	2	2	2	-	3	2	3	-
	CO6	3	2	3	2	-	3	2	3	-
	CO Avg.	3.00	2.17	2.50	2.00	-	2.83	2.00	3.00	-

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7. COURSE CONTENTS

UNIT NO.	TOPIC/Sub-topic
I	**Introduction to Programming and C fundamentals** 1.1 Algorithms, Flowchart, 1.2 Programming Languages, Types of Languages 1.3 Basic Structure of C programming 1.4 Process of Executing C program 1.5 Character Sets, Keywords 1.6 Data types: int, char, float 1.7 Library I/O Functions 1.8 Identifiers, Constants, Declaration, Storage classes 1.9 Data input and output formatting
II	**Operators & Expressions** 2.1 Arithmetic and Relational operators 2.2 Assignment and Conditional operators 2.3 logical and shift operator 2.4 Bitwise operator
III	**Control Structure** 3.1. Branching statement: if, nested if, if-else, else-if ladder, switch-case 3.2. Looping constructs: for, while, do-while 3.3 break and continue statement
IV	**Function** 4.1. Defining and Accessing a function 4.2 Function Prototypes 4.3 Categories of function 4.4 Passing Arguments to a function 4.5 call by value and call by reference 4.6 Recursion
V	**Arrays and string** 5.1 Defining an array 5.2 Processing an array 5.3 One dimensional and two dimensional arrays 5.4 passing arrays to function 5.5 Introduction to character arrays 5.6 reading and writing string 5.7 Character arithmetic 5.8 String handling functions
VI	**Pointers and Structure** 6.1 Pointer Declarations, 6.2 Arithmetic operations on pointers. 6.3 passing pointer to function 6.4 Double pointer and arrays of pointer 6.5 Defining a structure, Accessing a structure variable 6.6 Nested Structure, Arrays of Structure 6.7 Passing structure to function 6.8 Overview of Union

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	Indian knowledge system (IKS): In the context of programming in C, while there may not be specific "Indian knowledge system" but there are several ways in which the principles and philosophies from India's traditional knowledge systems can be applied to programming and computer science in general including mathematics, logical reasoning, meditation & concentration, problem solving, ethics, interdisciplinary thinking, astronomy, linguistics, philosophy, and more.

8. LIST OF PRACTICALS/ASSIGNMENTS/ TUTORIALS/DRAWINGS

Term Work consists of Journal containing minimum no of –10 Experiments/assignments/drawings.

Sr. No.	Title of Experiment/Assignment/Exercise/Tutorial/Drawings	Approx.Hrs required	CO
1	To implement the working of library functions. a. Identifier b. Constant c. Variables	 2 2 2	CO1
2	To implement the working of operators a. Arithmetic, Relational, Logical b. Conditional, Assignment, Bitwise c. Shift, size of	 2 2 2	CO2
3	To implement Implicit & Explicit type casting	2	CO1
4	To implement the concept of conditional statements (two problems each) a. if, if... else, b. nested if, & c. else if... ladder	 2 2 2	CO3
5	To implement the concept of Loops (two problems each) a. while b. do-while c. for	 2 2 2	CO3
6	To implement the concept of a. switch case, go to b. break & continue statement.	 2 2	CO3
7	To implement the concept of user defined functions: a. Categories of function b. Recursion	 4 2	CO4
8	To implement the concept of arrays (two problems each) a. one dimensional array b. two dimensional array	 2 2	CO5
9	To implement the concept of string & it's various operations (strcat, strcmp, strcpy and strlen)	4	CO5
10	To implement the concept of a. structure b. nested structure c. arrays of structure d. passing structure to function	 2 2 2 2	CO6
11	To implement the concept of pointers. a. Arithmetic operation b. Pointer to function c. Double pointer d. Arrays of pointer	 2 2 2 2	CO6
	TOTAL	60	

9. SUGGESTED MICRO PROJECT/ASSIGNMENT/ACTIVITES FOR SPECIFIC LEARNING / SKILL DEVELOPMENT (SELF LEARNING)

Assessment to be based on one of the following tools and rubrics for evaluation of SLA to be well defined by course teacher.

1. **Micro project**
   a. Student Information system – Prepare sample mark sheet for 5 students
   b. Employee payroll system – Generate salary slip of employees in organization
   c. Library management – Develop book issue system of library
   d. Banking System – Display debit/ credit information of customers
   e. Consumer Electricity Billing – Prepare electricity bill for customer

   (Use Structure and other features of 'C' to develop above listed applications)
2. **Assignment**
   Practice problems on complex mathematical expressions, graphical pattern printing, matrix multiplication, searching and sorting, average rainfall/temperature calculation, unit / currency conversion

10. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan
2. Minimum no of practical/assignments
3. Guest/Expert lectures
4. Slides
5. Self-Learning Online Resources

11. SUGGESTED LEARNING RESOURCES (minimum 3 to 5)

Sr.No.	Title of Book	Author	Publication
1	Programming with C	Byron Gottfried	McGraw Hill Education
2	ANSI C Programming	BalaGuruSamy	Mc Grow Hill publication.
3	Let us C	Yashwant Kanetkar	BPB Publication.
4	C Programming	Dr. Rajendra Kawale	Devraj Publications, Dist Solapur, Maharashtra

12. LEARNING WEBSITE & PORTALS (minimum 5)

1. https://www.tutorialspoint.com/cprogramming/index.htm
2. https://www.w3schools.com/c/
3. https://www.javatpoint.com/c-programming-language-tutorial
4. https://www.programiz.com/c-programming
5. https://www.cprogramming.com/tutorial/c-tutorial.html

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13. ASSESMENT METHODOLOGIES/TOOLS

Formative Assessment (Assessment for Learning)

1. Test
2. Rubrics for COs Assignment
3. Self-Learning
4. Term Work
5. Seminar/Presentation

Summative Assessment (Assessment of Learning)

1. End Term Exam
2. Micro-project
3. Tutorial Performance

14. SUGGESTED WEIGHTAGE FOR LEARNING EFFORTS & ASSESMENT PURPOSE (Specification Table)

Unit No.	Unit Title	Aligned COs	Learning Hours	Distribution of Theory Marks			
				R Level	U Level	A Level	Total Marks
I	Introduction to Programming and C fundamentals	CO1	04	05	03	--	08
II	Operators & Expressions	CO2	04	03	03	02	08
III	Control Structure	CO3	04	--	06	06	12
IV	Function	CO4	04	02	06	04	12
V	Arrays and strings	CO5	06	02	04	08	14
VI	Pointers and Structures	CO6	08	02	06	08	16
GRAND TOTAL			**30**	**14**	**28**	**28**	**70**

R Remember, U Understand, A Apply and above, (Bloom's revised taxonomy levels)

NOTE: This specification table provides general guidelines to assist students for their learning and to teachers to teach and assess students with respect to attainment of COs. The actual distribution of marks at different taxonomy levels (R, U, A) in the question paper may vary from above table.

15. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		NAME
1	Internal	Mrs. Krishna Bhatt
2	Internal	Mr. Pratik Shah
3	External	Mrs. Lakshmi kurup
		Organization: D. J. Sanghvi college of Engineering, Mumbai

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COMPUTER ENGINEERING DEPARTMENT

1. COURSE DETAILS

Programme: Computer Engineering	**Semester: II**
Course: Fundamentals of computer Network	**Course Category: DSC**
Course Code: FCN230802	**Duration:16 Weeks**

2. LEARNING AND ASSESSMENT SCHEME

Learning Scheme				Credits	Assessment Scheme								
Actual Contact Hrs./Week			Self-Learning (SL^) (Term Work + Assignment) (Hrs)		Paper Duration (Hrs.)	Theory (Marks)			Based on LL & TL			Based on Self Learning	Total Marks
									Practical (Marks)				
CL	TL	LL				FA-TH	SA-TH	Total	FA-PR	SA-PR	SA-OR	SLA (Marks)	
4	-	2	2	4	3	30	70	100	25	-	25	25	175

Total IKS Hrs for the course: 1

3. COURSE OBJECTIVE

This course will enable students to learn computer networks and concentrates on building a firm foundation for understanding Data Communications and Computer Networks. It is based around the OSI Reference Model that deals with the major issues in the bottom three (Physical, Data Link and Network) layers of the model. This course provides the student with fundamental knowledge of the various aspects of computer networking and enables students to appreciate recent developments in the area.

4. SKILL COMPETENCY/INDUSTRY/EMPLOYER EXPECTED OUTCOME

- **Identify the components required to build different types of networks.**
- **Trace the flow of information from one node to another node in the network.**
- **Identify the addressing schemes of IPv4 and IPV6 from the given IP address.**

5. COURSE OUTCOMES (COs): At the end of the semester student will be able to**: -**

CO No.	COURSE OUTCOME
CO1	Describe basic concepts of computer networking.
CO2	Analyze various networking topologies and devices.
CO3	Describe various transmission media.
CO4	Analyze various flow, error and access control mechanism..
CO5	Implement subnetting for improved address management.
CO6	Compare various protocols in Network model.

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6. CO-PO, CO- PSO MAPPING TABLE

Course and Code	Course Outcomes	Programme Outcomes							Programme Specific Outcomes	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
Fundamentals of computer Network (FCN230802)	CO1	3	1	2	1	-	-	2	1	3
	CO2	3	2	2	2	-	-	2	1	3
	CO3	3	2	2	2	-	-	2	1	3
	CO4	3	3	2	2	-	1	2	1	3
	CO5	3	3	2	2	-	1	2	1	3
	CO6	3	2	1	1	-	1	2	1	3
	CO Avg.	3	2.16	1.83	1.67	-	1	2	1	3

7. COURSE CONTENTS

UNIT NO.	TOPIC/Sub-topic
I	**Basic Network Concepts** 1.1. Fundamentals of Computer Network- Definition Need of Computer Network, Applications, Component of Computer Network. 1.2. Network Benefits- Sharing Information (File Sharing, E-mail) - Sharing Resources (Printer Sharing, Application Services) - Facilitating Centralized Management-Managing Software, Maintaining the Network, Backing up data. 1.3. Data communication 1.3.1. Components, Modes of communication (Simplex, Half duplex, Full Duplex) 1.3.2. Network criteria 1.3.3. Analog Signal and Digital Signal 1.4. Computer Network Classification 1.4.1. LAN, WAN, MAN 1.4.2. The Internet 1.5. Classification of Network by their Component Role--Peer-to-Peer Network, Server-Based Network, Types of server 1.6. Network Model 1.6.1. Protocol and Standards 1.6.2. OSI and TCP/IP Model 1.6.3. Types of Addresses: Physical, Logical, Port, Socket.

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II	**Network Topologies and Networking Devices** 2.1. Network Topologies - Introduction, Definition, Selection Criteria, Types of Topology- i) Bus ii) Ring iii) Star iv) Mesh v) Tree vi) Hybrid. 2.2. Network Control / Connecting Devices - Need of Network Control devices, Role of Network Control devices in a Network, Connectors, Hub, Repeater, Bridges, Switches, Router, Gateway, Modem. 2.3. Network software: NIC Device Driver, client-server software e.g. telnet, ftp 2.4. Transmission Impairments 2.5. Data Rate Limits 2.6. Performance
III	**Transmission Media** 3.1. Introduction - Need of Transmission Media, Selection Criteria. 3.2. Types of Transmission Media- 3.2.1. Guided Media: Cable Characteristics, Types of Cable-Twisted Pair Cable, Co-axial Cable, Fiber Optic Cable. 3.2.2. Unguided media: Types of Communication Band-Microwave Communication, Radio wave Communication, Satellite Communication, Infrared Communication. 3.3. Latest Technologies in Wireless Network- 3.3.1. Bluetooth Architecture, Scatternet, Piconet, 3.3.2. Wi-Fi 3.4. Concept of Switching – Circuit Switched Network 3.5. Multiplexing – FDM, TDM, WDM
IV	**Error Correction and Detection Techniques** 4.1. Types of Error : Single Bit error and Burst Error 4.2. Redundancy 4.3. Bit stuffing, Byte stuffing 4.3. Parity code, Hamming code 4.4. Cyclic redundancy Code, Checksum 4.5. IEEE standards 4.6. Standard Ethernet Frame Format 4.7. Flow Control and Access Control 4.8. Sliding Window Protocols 4.8.1 Stop n wait Protocol 4.8.2. Go back N Protocol 4.8.3. Selective Repeat Protocol
V	**IP Addressing Mechanism** 5.1. Network Layer Design Issues 5.1.1 Network Layer Services 5.1.2 Performance 5.1.3 IPv4 Addresses header format 5.1.4 IP Addressing classes, Subnet Mask, Host id, Net id

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	5.1.5. Subnetting, Supernetting 5.2. Routing Algorithms 5.2.1 Forwarding of IP Packets, Delivery 5.2.2 Address mapping and reverse address mapping 5.3. Congestion Control - ICMPv4 5.4. Quality of Service : Flow characteristic, Flow classes
VI	**Network Models** 6.1 OSI Layer Introduction 6.1.1. Layered Architecture 6.1.2. Peer-to- Peer Processes 6.1.3. Interfaces between Layer, 6.1.4 Protocols at each layers 6.1.5. Encapsulation 6.2 TCP/IP Protocol Suits 6.2.1 Layered Structure of the TCP / IP Model – Host-to-Network, Internet, Transport, Application 6.2.2 Host-to-Network-SLIP and PPP 6.2.3 Internet Layer-ARP, RARP and IP, Difference between IPv4 & IPv6. 6.2.4 Transport Layer- TCP and UDP (Frame Format, port addresses) 6.2.5. Application Layer- FTP, SMTP, DNS.

8. LIST OF PRACTICALS/ASSIGNMENTS/ TUTORIALS/DRAWINGS

Term Work consists of Journal containing minimum no of –10 Experiments.

Sr. No.	Title of Experiment/Assignment/Exercise/Tutorial/Drawings	Approx.Hrs required	CO
1	To design a network according to given case study. 1) college 2) company	04	CO1
2	To perform various networking commands in windows.	02	CO1
3	To add computer to LAN and share files and folders to the existing network.	02	CO2
4	To perform sharing of printer to an existing network.	02	CO2
5	To configure a network topology (via switch) using network simulator software.	02	CO2
6	To Perform an Initial Switch Configuration.	02	CO3
7	To Perform an Initial Router Configuration.	02	CO3
8	To troubleshoot small network in network simulator.	02	CO4
9	To design a network with concept of IP addressing, subnet and super netting.	02	CO5
10	To configure TCP/IP Protocols in Windows and Linux.	04	CO6
11	To capture a packet and header analysis by Wireshark (TCP,UDP,IP)	04	CO6
12	To Installation of ftp server and client.	02	CO6
	TOTAL	**30**	

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9. SUGGESTED MICRO PROJECT/ASSIGNMENT/ACTIVITES FOR SPECIFIC LEARNING / SKILL DEVELOPMENT (SELF LEARNING)

Assessment to be based on one of the following tools and rubrics for evaluation of SLA to be well defined by course teacher.

Following are some suggestive self-learning topics:

1. Use subnetting to divide the network in subnets.
2. Join multiple subnets using super netting.
3. Use CIDR to determine network details.
4. Retrieve the password from http protocol using wireshark.

10. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan
2. Minimum no of practical/assignments.
3. Practical/assignments
4. Guest/Expert lectures
5. Demonstrations
6. Slides
7. Self-Learning Online Resources

11. SUGGESTED LEARNING RESOURCES

Sr.No.	Title of Book	Author	Publication
1	Data Communication and Networking, 5th Edition,	Behrouz A. Forouzan,	McGrawHill
2	Data and Computer Communication, 8th Edition	William Stallings	Pearson Prentice Hall India.
3	Computer Networks, 8th Edition	Andrew S. Tanenbaum	Pearson New International Edition
4	Internetworking with TCP/IP, Volume 1, 6th Edition	Douglas Comer,	Prentice Hall of India.
5	Data Communications and Networks	Achyut S. Godbole	Tata McGraw Hill

12 LEARNING WEBSITE & PORTALS

1. http://brweb.haltonrc.edu.on.ca/202204/ICE4/Networks/NetworkingConcepts.pdf
2. http://www.techiwarehouse.com/cms/engine.php?page_id=d9e99072
3. https://www.computernetworkingnotes.com/
4. http://intronetworks.cs.luc.e
5. du/current/ComputerNetworks.pdf

13. ASSESMENT METHODOLOGIES/TOOLS

Formative Assessment (Assessment for Learning)

1. Test
2. Rubrics for COs Assignment
3. Self-Learning
4. Term Work
5. Seminar/Presentation

Summative Assessment (Assessment of Learning)

1. End Term Exam
2. Micro-project
3. Tutorial Performance

14. SUGGESTED WEIGHTAGE FOR LEARNING EFFORTS & ASSESMENT PURPOSE (Specification Table)

Unit No.	Unit Title	Aligned COs	Learning Hours	Distribution of Theory Marks			
				R Level	U Level	A Level	Total Marks
I	Basic Network Concepts	CO1	08	06	04	-	10
II	Network Topologies and Networking Devices	CO2	10	04	04	-	08
III	Transmission Media	CO3	12	04	06	04	14
IV	Error Correction and Detection Techniques	CO4	12	06	04	06	16
V	IP Addressing Mechanism	CO5	10	04	04	02	10
VI	Network Models	CO6	08	06	06	-	12
GRAND TOTAL			**60**	**30**	**28**	**12**	**70**

R Remember, U Understand, A Apply and above, (Bloom's revised taxonomy levels)

NOTE: This specification table provides general guidelines to assist students for their learning and to teachers to teach and assess students with respect to attainment of COs. The actual distribution of marks at different taxonomy levels (R, U, A) in the question paper may vary from above table.

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15. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		**NAME**
1	Internal	Mr. Akhilesh R Gupta
2	Internal	Mr.Siddhesh Masurkar
3	External	Mr. Bhavesh Panchal
		Organiazation:- Rajiv Gandhi Institute of Technology

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SHRI VILE PARLE KELAVANI MANDAL'S

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COMPUTER ENGINEERING DEPARTMENT

1. COURSE DETAILS

Programme: Computer Engineering	**Semester: II**
Course: Fundamentals of Scripting Language	**Course Category: SEC**
Course Code: FSL230803	**Duration:16 Weeks**

2. LEARNING AND ASSESSMENT SCHEME

Learning Scheme				Credits	Assessment Scheme								
Actual Contact Hrs./Week			Self-Learning (SL^) (Term Work + Assignment) (Hrs)		Paper Duration (Hrs.)	Theory (Marks)			Based on LL & TL Practical (Marks)			Based on Self Learning	Total Marks
CL	TL	LL				FA-TH	SA-TH	Total	FA-PR	SA-PR	SA-OR	SLA (Marks)	
02	--	04	02	04	03	30	70	100	25	25	--	25	175

Total IKS Hrs for the course :00

3. COURSE OBJECTIVE

This course will introduce students to the realm of web design and build dynamic web pages, respond to events, create interactive forms, handle cookies and validate data.

4. SKILL COMPETENCY/INDUSTRY/EMPLOYER EXPECTED OUTCOME

- **Design dynamic web pages**

5. COURSE OUTCOMES (COs): At the end of the semester student will be able to: -

CO No.	COURSE OUTCOME
CO1	Build interactive web pages using program flow control structure.
CO2	Implement Arrays , functions and create event based web forms using JavaScript.
CO3	Use JavaScript for browser data persistence.
CO4	Create interactive webpage using regular expression and rollover effects in JavaScript

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6. CO-PO, CO- PSO MAPPING TABLE

Course and Code	Course Outcomes	Programme Outcomes							Programme Specific Outcomes	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
Fundamentals of Scripting Language (FSL230803)	CO1	3	1	3	1	-	-	1	3	-
	CO2	3	1	3	1	-	-	1	3	-
	CO3	3	2	3	2	-	-	1	3	-
	CO4	3	2	3	2	-	-	1	3	-
	CO Avg.	3	1.5	3	1.5	-	-	1	3	-

7. COURSE CONTENTS

UNIT NO.	TOPIC/Sub-topic
I	**Basics of JavaScript** 1.1 Features of JavaScript 1.2 Object Name, Property, method, Dot Syntax, main event 1.3 Values and Variables 1.4 Operators and Expressions-Primary Expressions, Object and Array initializers, function definition expression, property access expressions, and invocation expressions. 1.5 If statements, if. Else, if.else if, nested if statement 1.6 Switch. Case statement 1.7 Loop statement –for loop, for.in loop, while loop, do…while loop, continue statement
II	**Array, Function and String** 2.1 Array-declaring an Array, initializing an Array, defining an Array elements, looping an Array, adding an Array element, sorting an Array element, sorting an Array element, combining an Array element into a String, changing elements of an Array, Object as associative Arrays 2.2 Function –defining a function, writing a function, adding an argument, scope of variable and arguments 2.3 Calling a function –calling a function with or without an argument, calling functions from HTML, function calling another function. Returning a value from a function. 2.4 String-manipulate a string, joining a string, retrieving a character

	from given position, retrieving a position of character in a string, converting a string to number and number to string, changing the case of string, finding a Unicode of a character-charCodeAt(), fromCharCode()
III	**Form and Event Handling** 3.1 Building blocks of a Form, properties and methods of form, button text, text area, checkbox, radio button, select element 3.2 Form events –mouse event, key events 3.3 Form objects and elements 3.4 Changing attribute and value dynamically 3.5 Changing option list dynamically 3.6 Evaluating checkbox selection 3.7 Changing a label dynamically 3.8 Manipulating form elements 3.9 Intrinsic JavaScript functions, disabling elements, read only elements
IV	**Cookies and Browser Data** 4.1 Cookies-basic of cookies, reading a cookie value, writing a cookie value, creating a cookie, deleting a cookie, setting the expiration date of cookie 4.2 Browser-opening a window, giving the new window focus, window position, changing the content of window, closing a window, scrolling a web page, multiple windows at once, creating a web page in new window, JavaScript in URLs,Timers, Browser location and history.
V	**Regular Expression and Rollover effects** 5.1 Regular Expression- language of regular expression, finding non matching characters, entering a range of characters, matching digits and non-digits, matching punctuations and symbols, matching words, replacing the text using regular expressions, returning the matched characters, regular expression object properties. 5.2 Rollover-creating rollover, text rollover, Multiple actions for rollover, more efficient rollover.
VI	**Navigation and javascript framework** 6.1 Status bar-builds a static message, changing the message using rollover, moving the message along the status bar 6.2 Banner-loading and displaying banner advertisement. Linking a banner advertisement to url. 6.3 Slide show-creating a slide show 6.4 Frameworks of JavaScript and its application.

8. LIST OF PRACTICALS/ASSIGNMENTS/ TUTORIALS/DRAWINGS

Term Work consists of Journal containing minimum no of –10 Experiments/assignments

Sr. No.	Title of Experiment/Assignment/Exercise/Tutorial/Drawings	Approx. Hrs required	CO
1	Write simple JavaScript with HTML for arithmetic expression evaluation and message printing.	04	CO1
2	Develop JavaScript to use decision making and looping statements.	06	CO1
3	Develop JavaScript to implement Array functionalities	06	CO2
4	Develop JavaScript to implement functions.	06	CO2
5	Develop JavaScript to implement strings.	04	CO2
6	Create a webpage using Form Elements.	04	CO2
7	Create a webpage to implement Form Events.	06	CO2
8	Develop a webpage for creating persistent cookies. Observe the effects with Browser cookies settings.	04	CO3
9	Develop a webpage for validation of form fields using regular expressions.	06	CO4
10	Create a webpage with rollovers effect.	04	CO4
11	Develop a webpage for implementing Status bars and Banners.	06	CO4
12	Develop a webpage for implementing slide show.	04	CO4
	TOTAL	**60**	

9. SUGGESTED MICRO PROJECT/ASSIGNMENT/ACTIVITES FOR SPECIFIC LEARNING / SKILL DEVELOPMENT (SELF LEARNING)

Assessment to be based on one of the following tools and rubrics for evaluation of SLA to be well defined by course teacher.

1. Micro-Project with Presentation
2. Quiz

10. IMPLEMENTATION STRATEGY (PLANNING)

1. Teaching Plan
2. Minimum no of practical/assignments.
3. Guest/Expert lectures
4. Demonstrations
5. Slides
6. Self-Learning Online Resources

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11. SUGGESTED LEARNING RESOURCES

Sr.No.	Title of Book	Author	Publication
1	JavaScript Demystified	Keogh, Jim	McGraw-hill,2015,New Delhi
2	Beginning JavaScript	Wilton, Paul	Wily India ,2015,New Delhi
3	Beginning JavaScript	McPaek, Jeremy and Wilton, Paul	Wily India ,2015,New Delhi
4	JavaScript in 24 hours	Moncur, Michael	TechMedia, 2015,New Delhi

12 LEARNING WEBSITE & PORTALS (minimum 5)

1. http://www.nptelvideos.com
2. http://www.w3schools.com
3. http://www.tutorialspoint.com
4. http://javapoint.com
5. https://www.guru99.com/interactive-javascript-tutorials.html

13. ASSESMENT METHODOLOGIES/TOOLS

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1. Test
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3. Self-Learning
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Summative Assessment (Assessment of Learning)

1. End Term Exam
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				R Level	U Level	A Level	Total Marks
I	Basics of JavaScript	CO1	4	4	4	4	12
II	Array, Function and String	CO2	4	4	4	6	14
III	Form and Event Handling	CO2	6	4	4	4	12
IV	Cookies and Browser Data	CO3	4	2	2	4	08
V	Regular Expression and Rollover effects	CO4	6	4	4	4	12
VI	Navigation and web page protection	CO4	6	4	4	4	12
GRAND TOTAL			**30**	**22**	**22**	**26**	**70**

R Remember, U Understand, A Apply and above, (Bloom's revised taxonomy levels)
NOTE: This specification table provides general guidelines to assist students for their learning and to teachers to teach and assess students with respect to attainment of COs. The actual distribution of marks at different taxonomy levels (R, U, A) in the question paper may vary from above table.

15. COURSE EXPERT COMMITTEE MEMBERS

Sr. No.		**NAME**
1	Internal	Ms. Neha More
2	Internal	Mrs. Geetha S
3	External	Mr. Nikul Chheda
		Organization: Founder, RAA Tech

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