SCHEME OF
STUDIES AND SYLLABUS
OF
FIRST SEMESTER
DIPLOMA IN
COMPUTER SCIENCE
& ENGINEERING
(C-21)(34)

JSS MAHAVIDYAPEETHA

JSS POLYTECHNIC FOR THE DIFFERENTLY ABLED, MYSURU-06

CURRICULUM STRUCTURE

I Semester Scheme of Studies-Diploma in Computer Science and Engineering (C-21)

Sl. No.	Course Category / Teaching Department	Course Code	Course Title	Hours per Week			Total contact hours per week	Credits	CIE Marks		SEE Marks		Total Marks	Min Marks for Passing (including CIE)
				L	T	P			Max	Min	Max	Min		
THEORY COURSES														
1	BS/SC	**3411**	Engineering Mathematics	4	0	0	4	4	50	20	50	20	100	40
2	ES/CS	**3412**	Fundamentals of Computers	4	0	0	4	4	50	20	50	20	100	40
3	EG/CS	**3413**	Basic English	4	0	0	4	4	50	20	50	20	100	40
PRACTICAL COURSES														
4	ES/EE/EC	**3414**	Fundamentals of Electrical & Electronics Engineering	2	0	4	6	4	60	24	40	16	100	40
5	ES/CS	**3415**	IT Skills	2	0	4	6	4	60	24	40	16	100	40
AUDIT COURSES														
6	AU/SC	**3416**	Environment Sustainability	2	0	0	2	2	50	20	--	--	50	20
7	SL	---	Sign Language-I	2	0	0	2	--	NOT FOR EXAM					
8	Psy	---	Psychology & Counseling-I	2	0	0	2	--	NOT FOR EXAM					
9	AU Physical Activity	---	Sports/NCC/NSS/Youth Red Cross/Yoga/ Technical Club.	Student shall enroll in any one of these activities in first semesters and shall participate actively. The student shall obtain"Participation Certificate" in the activity to get eligible for the award of Diploma.										
			Total	**22**	**0**	**8**	**30**	**22**	**320**	**128**	**230**	**92**	**550**	**220**

T-Theory P-Practical D-Drawing E-Elective BS—Basic Science ES-Engineering Science HS-Humanities & Social Science AU-Audit Course EG-English SC-Science

Note:

1. Assigned Grade, Grade Point, SGPA and CGPA to be recorded in the Grade / Marks Card.
2. AU-Physical Activity-Students participation in the selected physical activity shall be monitored and the participation record shall be maintained by the respective Programme Coordinator (Head of Section)
3. Theory Course Semester End Examination(SEE) is conducted for 100 marks(3Hours Duration)
4. Practical course CIE and SEE is conducted for the 100 marks (3 Hours Duration)
5. Code 3411 Indicates(From Left): 1st Digit ->Serial No. of Department, 2nd Digit -> No. of Syllabus Revisions, 3rd Digit->Semester, 4th Digit->Course Serial Number

Programme Coordinator **Principal**

Government of Karnataka

DEPARTMENT OF COLLEGIATE AND TECHNICAL EDUCATION

JSS POLYTECHNIC FOR THE DIFFERENTLY ABLED(AUTONOMOUS)

PROGRAM: COMPUTER SCIENCE AND ENGINEERING

Course Code	**3411**	Semester	**I / II**
Course Name	**ENGINEERING MATHEMATICS**	Course Group	**SC/CS/EC/AR**
Number of Credits	**4**	Type of Course	**Lecture**
Course Category	**AR/CS/EC**	Total Contact Hours	**4 Hrs. / Week** **64 Hrs. / Semester**
Prerequisites	**SSLC Mathematics**	Teaching Scheme	**[L : T : P] = 4 : 0 : 0**
CIE Marks	**50**	SEE Marks	**50**

RATIONALE:

Engineering Mathematics provides students a strong foundation to develop their skills in the areas of analytical, problem solving, real time applications and to understand the world better. This course enable students to develop mathematical conceptualization, inquiry, reasoning and communication skills and the ability to use mathematics to formulate and solve problems in all areas of engineering and technology. This course provides opportunities for students to remember understand and apply the knowledge studied in engineering problems through the three major areas of learning: Algebra, Trigonometry and Calculus. Most of the differently Abled students are having learning difficulties due to their disabilities, specifically lack of analytical and reasoning skills, this course provides a strong foundation to bridge their level of understanding through mathematics.

1. COURSE SKILL SET

At the end of the course, the students will be able to acquire the following skills:

1. Solve system of linear equations arise in different engineering fields.
2. Incorporate the knowledge of calculus to support their concurrent and subsequent engineering studies.
3. Adopt quantitative problem solving skills.
4. Ability to understand both concrete and abstract problems.
5. Apply mathematical abilities in real time situation.
6. Improve the analytical and communication skills.

2. COURSE OUTCOMES

At the end of the course, students will be able to

CO-1	Apply the concepts of matrices and determinants to solve the system of linear equations and find Eigen values of square matrices of order 2.
CO-2	Find the equation of straight lines of different forms and to determine the parallelism and perpendicularity of straight lines.
CO-3	Calculate trigonometric ratios of allied and compound angles and also transformation of sum into product and vice versa.
CO-4	Differentiate various functions and apply the concept of real time problems.
CO-5	Integrate various functions and apply the concept of evaluating the area and volume through definite integrals.

3. COURSE CONTENT OUTLINE WITH TEACHING HOURS AND MARKS

UNIT NO.	UNIT TITLE	TEACHING HOURS	DISTRIBUTION LEVELS (Marks)			
			R	U	A	TOTAL
1	Matrices and Determinants	12	8	20	12	40
2	Straight Lines	12	8	20	12	40
3	Trigonometry	12	8	20	12	40
4	Differential Calculus and Applications	14	8	20	12	40
5	Integral Calculus andApplications	14	8	20	12	40
Total		**64**	**40**	**100**	**60**	**200**

(R = Remember, U = Understand, A = Apply and above levels (Bloom's Revised Taxonomy)

4. DETAILS OF COURSE CONTENT

The following topics / subtopics is to be taught and accessed in order to develop UnitSkill Sets for achieving CO to attain identified skill sets:

UNITNO. AND NAME	UNIT SKILL SET	TOPICS / SUBTOPICS	HOURS L-T-P
UNIT-1 MATRICES AND DETERMINANTS	Use algebraic skills which are essential for the study of systems of linear equations, matrix algebra and Eigen values.	1.1 Matrix and types 1.2 Algebra of Matrices (addition, subtraction, scalar multiplicationand multiplication) 1.3 Evaluation of determinants of a square matrix of order 2 and 3.Singular matrices 1.4 Cramer's rule for solving system of linear equations involving 2 and3 variables 1.5 Ad joint and Inverse of matrices oforder 2 and 3 1.6 Characteristic equation and Eigenvalues of a square matrix of order 2	12-0-0
UNIT – 2 STRAIGHT LINES	❖ Able to find the equation of a straight line in different forms ❖ Determine whether the lines are parallel or perpendicular	2.1 Slope of a straight line 2.2 Intercepts of a straight line 2.3 Intercept form of a straight line 2.4 Slope-intercept form of a straight line 2.5 Slope-point form of a straight line 2.6 Two-point form of a straight line 2.7 General form of a straight line 2.8 Angle between two lines and conditions for lines to be paralleland perpendicular 2.9 Equation of a straight line parallelto the given line 2.10 Equation of a straight line perpendicular to the given line	12-0-0
UNIT–3 TRIGONOMETRY	❖ Use basic trigonometric skills in finding the trigonometric ratios of allied and compound angles ❖ Able to find all the measurable dimensions of a triangle	3.1 Concept of angles, their measurement, Radian measureand related conversions. 3.2 Signs of trigonometric ratios in different quadrants (ASTC rule) 3.3 Trigonometric ratios of allied angles (definition and the table oftrigonometric ratios of standard allied angles say 900±Θ, 1800±Θ, 2700±Θ and 3600±Θ) 3.4 Trigonometric ratios of compoundangles (without proof) 3.5 Trigonometric ratios of multipleangles 3.6 Transformation formulae	12-0-0

UNIT – 4 DIFFERENTIAL CALCULUS AND APPLICATIONS	❖ Able to differentiate algebraic, exponential, trigonometric, logarithmic and composite functions ❖ Able to find higher order derivatives ❖ Understand and work with derivatives as rates of change in mathematical models ❖ Find local maxima and minima of a function	4.1Derivatives of continuous 4.2 functions in an interval (List of formulae) 4.3Rules of differentiation 4.4Successive differentiation (up to second order) 4.5Applications of differentiation	14-0-0
UNIT – 5 INTEGRAL CALCULUS AND APPLICATIONS	❖ Understand thebasic rules of integration and ❖ Evaluate integralswith basic integrands. ❖ Identify the methodsto evaluate integrands ❖ Apply the skills to evaluate integrals representing areasand volumes	5.1 List of standard integrals and Basic rules of integration 5.2 Evaluation of integrals of simple function and their combination 5.3 Methods of integration 5.4 Concept of definite integrals 5.5 Applications of definite integrals	14-0-0

5. MAPPING OF CO WITH PO

CO	Course Outcome	PO Mapped	Unit Linked	CL R/U/A	Theory in Hrs.	Total Marks
1	Determine the inverse of a square matrixusing matrix algebra. Apply the concepts of matrices and determinants to solve system of linear equations and find Eigen values associated with the square matrix.	1, 7	1	R/U/A	12	40
2	Find the equation of straight line in Different forms. Determine the parallelismand perpendicularity of lines.	1, 7	2	R/U/A	12	40
3	Calculate trigonometric ratios of allied angles and compound angles. Transformsum (difference) of trigonometric ratios Into product and vice versa.	1, 7	3	R/U/A	12	40

4	Differentiate various continuous functions And apply the concept in real lifesituations.	1, 3,7	4	R/U/A	14	40
5	Integrate various continuous functions and apply the concept in evaluating the areaand volume through definite integrals.	1, 3,7	5	R/U/A	14	40
Total					**64**	**200**

6. LEVELS OF CO AND PO MAPPING

Course	CO's	Programme Outcomes (POs)							Programme Specific Outcomes (POs)	
		1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**
ENGINEERING MATHEMATICS	**CO-1**	3	1	-	-	-	-	3	-	-
	CO-2	3	1	-	-	-	-	3	-	-
	CO-3	3	1	-	-	-	-	3	-	-
	CO-4	3	1	3	-	-	-	3	-	-
	CO-5	3	1	3	-	-	-	3	-	-
AAVERAGE VALUE		**3**	**1**	**3**	**-**	**-**	**-**	**3**	**-**	**-**
Levels: 3 – Highly Mapped, 2 – Moderately Mapped, 1- Low Mapped and 0 – Not Mapped										

7. INSTRUCTIONAL STRATEGY

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes

1. Explicit instruction will be provided in intervention classes or by using different differentiation strategies in the main classroom.
2. Lecturer method (L) does not mean only traditional lecture method, but different type of teaching method and media that are employed to develop the outcomes.
3. Observing the way their more proficient peers use prior knowledge to solve current challenges and persevere in problem solving will help struggling students to improve their approach to engaging with rich contextual problems.
4. Ten minutes a day in homeroom, at the end of class, or as a station in a series of math activities will help students build speed and confidence.
5. Topics will be introduced in a multiple representation.
6. The teacher is able to show different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
7. In a perfect world, teacher would always be able to demonstrate how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding. When a concept cannot be applied in that manner, we can still share how it might be applied within mathematics.
8. Use oral and Sign language in the class room as many of the students are hearing impaired.

9. Use of Audio and Visual techniques like E-Books, PPT, Videos ete.
10. Teaching through group discussion, Guest lecture ete.
11. Providing course materials.
12. Providing extra inputs through industrial visits, employability skills and career awareness programs
13. Additional inputs' through MOOCs and NPTEL courses.
14. Hands on training through demonstration to tutorial classes in laboratories.

8. SUGGESTED LEARNING RESOURCES:

Sl. No.	Author	Title of Books	Publication / Year
1.	B.S. Grewal	Higher Engineering Mathematics	Khanna Publishers, New Delhi, 40th Edition,2007
2.	G. B. Thomas, R. L. Finney	Calculus and Analytic Geometry	Addison Wesley, 9th Edition, 1995
3.	S.S. Sabharwal, Sunita Jain, Eagle Parkashan	Applied Mathematics, Vol. I & II	Jalandhar.
4.	Comprehensive Mathematics	Comprehensive Mathematics Vol. I & II	Laxmi Publications, Delhi
5.	Reena Garg & Chandrika Prasad	Advanced Engineering Mathematics	Khanna Publishing House, New Delhi

9. a. COURSE ASSESSMENT AND EVALUATION CHART

<table>
<tr><th>Assessment Methods</th><th colspan="2">Types of Assessment</th><th>Target</th><th>Assessment Methods</th><th>Max Marks</th><th>Types of Record</th><th>Course Outcomes for Assessment</th></tr>
<tr><td rowspan="4">DIRECT ASSESSMENT</td><td rowspan="3">CIE CONTINUOUS INTERNAL EVALUA-TION</td><td>IA Test</td><td rowspan="4">STUDENTS</td><td>Three tests (Average of Three tests will be Computed)</td><td>30</td><td>Blue Books</td><td>All Co's</td></tr>
<tr><td rowspan="2">Assignment & Student activity</td><td>Average of MCQ/Quiz +Open book +Assignment</td><td>20</td><td rowspan="2">Activity Book</td><td rowspan="2">Specified CO by the Course Coordinator</td></tr>
<tr><td>Total CIE Marks</td><td>50</td></tr>
<tr><td>SEE SEMESTER END EXAMINA-TION</td><td>Semester End Exam</td><td>End of the Course</td><td>50</td><td rowspan="2">Answer Scripts</td><td rowspan="2">All Co's</td></tr>
<tr><td colspan="2">INDIRECT ASSESSMENT</td><td>Student Feedback</td><td>STUDENTS</td><td>Total</td><td>100</td></tr>
<tr><td colspan="3"></td><td>Middle of the Course</td><td colspan="3">End of the Course</td></tr>
</table>

b. COURSE ASSESSMENT SUMMARY

SL. NO.	Assessment	Duration	Max Marks	Conversion
1.	CIE Assessment – 1 (Written Test -1At the end of 6th Week	80 Minutes	30	Average of three written tests 30 Marks
2.	CIE Assessment – 2 (Written Test – 2) At the end of 10th Week	80 Minutes	30	
3.	CIE Assessment – 3 (Written Test-3) At the end of 15th Week	80 Minutes	30	
4.	CIE Assessment 4 (MCQ / Quiz) At the end of 8th Week	60 Minutes	20	Average of three 20
5.	CIE Assessment 5 (Open book Test) At the end of 13th Week	60 Minutes	20	
6.	CIE Assessment (Student Activity / Assignment) At the beginning of 16th Week		20	
Total Continuous Internal Evaluation (CIE) Assessment				**50**
7.	Semester End Examination (SEE) Assessment (Written Test)	3 Hours	100	50
Total Marks				**100**

Note:

1. SEE (Semester End Examination) is conducted for 100 Marks theory courses for time duration of 3 Hours.
2. Three CIE (written test), each of 30 marks for a time duration of 80 minutes shall be conducted. Also, three CIE (MCQ or Quiz/Open book test/student activity or assignment) each of 20 marks for the time duration of 60 minutes shall be conducted. Any fraction at any stage during evaluation will be rounded off to the next higher digit
3. Assessment of assignment and student activity is evaluated through appropriate rubrics by the respective course coordinator. The secured mark in each case is rounded off to the next higher digit.

10. DETAILED COURSE CONTENTS

UNIT NO. AND NAME	DETAILED COURSE CONTENT	CO	PO	CONTAC THRS.	TOTAL
UNIT-1 MATRICES AND DETERMINANTS	Definition and types of matrices	1	1, 7	1	12
	Algebra of Matrices (addition, subtraction and scalar multiplication) problems	1	1, 7	1	
	Multiplication of Matrices(problems)	1	1, 7	1	
	Evaluation of 2x2 ,3x3 determinants and Singular matrices and problems in finding unknown variable	1	1, 7	2	
	Cramer's rule to solve system of linear equation with 2 variables	1	1, 7	2	
	Minors, Cofactors of elements of square matrices of order 2 and 3 and problems	1	1, 7	1	
	Adjoint and Inverse of a square matrix of order 2 and problems	1	1, 7	2	
	Characteristic equation and Eigen values of a2x2 matrix and problems	1	1, 7	2	
UNIT-2 STRAIGHTLINES	Slope of the straight line(provided with inclination and two points on the line as well) and problems	2	1, 7	1	12
	Intercepts of a straight line and problems	2	1, 7	1	
	Intercept form of a straight line and Problems	2	1, 7	1	
	Slope-intercept form of a straight line and Problems	2	1, 7	1	
	Slope-point form of the straight line andproblems	2	1, 7	1	
	Two-point form of a straight line and Problems	2	1, 7	1	
	General form of a straight line and problems on finding slope and intercepts.	2	1, 7	1	
	Angle between two straight lines and conditions for the lines to be parallel and perpendicular and related problems	2	1, 7	2	
	Equation of a line parallel to the given line and problems	2	1, 7	1	
	Equation of a line perpendicular to the given Line and problems	2	1, 7	2	

UNIT – 3 TRIGONOMERY	Concept of angles and their measurement. Radian measures and related conversions (degree to radian and vice-versa) and problems	3	1, 7	2	12
	Signs of trigonometric ratios in different quadrants (ASTC rule)	3	1, 7	2	
	Trigonometric ratios of allied angles (definition and the table of trigonometric ratios of standard allied angles say 900±Ɵ, 1800±Ɵ, 2700±Ɵ and 3600±Ɵ) and related problems	3	1, 7	2	
	Trigonometric ratios of compound angles (without proof)	3	1, 7	2	
	Trigonometric ratios of multiple angles (sin2A, cos2A, tan2A, sin3A, cos3A andtan3A) and related problems	3	1, 7	2	
	Transformation formulae (without proof) as sum to product. (Simple problems)	3	1, 7	1	
	Transformation formulae (without proof) as product to sum. (Simple problems)	3	1, 7	1	
UNIT – 4 DIFFERENTIAL CALCULUS AND APPLICATIONS	Definition of a derivative of a function. Listing the derivatives of standard functions. (Algebraic, trigonometric, exponential, logarithmic & inverse trigonometric functions)	4	1, 3, 7	1	14
	Addition and subtraction rule of differentiation and problems	4	1, 3, 7	2	
	Product rule and quotient rule of differentiation and problems	4	1, 3, 7	2	
	Composite functions and their derivatives. (CHAIN RULE)	4	1, 3, 7	2	
	Successive differentiation up to second order	4	1, 3, 7	2	
	Slope of the tangent and normal to the given curve and their equations and problems	4	1, 3, 7	2	
	Rate measure: velocity and acceleration at a point of time and problems	4	1, 3, 7	2	
	Maxima and Minima of a function and problems	4	1, 3, 7	1	

UNIT – 5 INTEGRAL CALCULUS AND APPLICATIONS	Definition of an indefinite integral. Listingthe Integrals of standard functions. (Algebraic, trigonometric, exponential, logarithmic and inverse trigonometric functions)	5	1, 3, 7	2	14
	Rules of Integration. Evaluation of integrals with simple integrands and their combinations and related problems	5	1, 3, 7	2	
	Evaluation of integrals by Substitution method	5	1, 3, 7	2	
	Evaluation of integrals by Integration by parts	5	1, 3, 7	2	
	Definition of definite integrals and theirevaluation and related problems	5	1, 3, 7	2	
	Area enclosed by the curves by integralmethod	5	1, 3, 7	2	
	Volume generated by the curve rotated about an axis by integral method	5	1, 3, 7	2	

First Semester Examination, Model Question Paper

ENGINEERING MATHEMATICS

Duration: 3 Hours] **Subject Code: 3411** **[Max. Marks: 100**

Instruction: Answer all the questions considering the internal choice in each section.Each section carries 20 marks.

SECTION – 1

1. a i) If $\begin{vmatrix} x & 5 \\ 0 & 3 \end{vmatrix}$ = 0 Then the value of 'x' is _____ **4**

a) 0 b)3 c)5 d)2

ii) The order of matrix A=$\begin{bmatrix} 2 & 3 & 1 \\ 5 & 6 & 7 \end{bmatrix}$ is _____

a)2x1 b)2x3 c)3x2 d)3x3

iii) If A=$\begin{bmatrix} 5 & 0 \\ 0 & x \end{bmatrix}$ is a scalar matrix, then the value of x is _____

a)5 b)1 c)-5 d)0

iv) The value of a determinant $\begin{vmatrix} 2 & 3 \\ 6 & 4 \end{vmatrix}$ is _____

a) 10 b)-10 c)4 d)2

b. If A=$\begin{bmatrix} 2 & 1 \\ 4 & 5 \end{bmatrix}$ and B=$\begin{bmatrix} 5 & -1 \\ 4 & 1 \end{bmatrix}$, find AB.

or 5

If A=$\begin{bmatrix} -1 & 0 \\ 5 & 3 \end{bmatrix}$ and B=$\begin{bmatrix} 3 & 5 \\ 2 & 4 \end{bmatrix}$, prove that adj(AB)=[adj(B)adj(A)|

c. Solve the equations $x + y = 0, y + z = 1 \; and \; x + z = 3$ for y by Cramer's rule

or 5

Verify whether AB=BA for the matrices.

A=$\begin{bmatrix} 1 & 0 & 5 \\ -1 & 2 & 1 \\ 5 & 4 & 3 \end{bmatrix}$ and B=$\begin{bmatrix} 3 & -1 & 4 \\ 0 & -1 & 1 \\ 2 & 4 & -2 \end{bmatrix}$

d) If A= $\begin{bmatrix} 3 & 1 & 2 \\ -2 & 1 & 1 \\ 3 & 0 & 2 \end{bmatrix}$ find A^{-1}

or 6

Find the characteristics equation and Eigen values for the matrix $\begin{bmatrix} 2 & -1 \\ -3 & 1 \end{bmatrix}$

SECTION – 2

2. a i) The slope of x - axis is _____ 4

a) 0 b)-1 c)∞ d)1

ii) The x intercept of a line $2x - 3y + 5 = 0$ is _____

a) 1/3 b)-5/2 c) 5/2 d) 2/5

iii) The slope of a line which is Inclined 45° to the $x$axis is _____

a)-1 b)1 c)0 d)5

iv)The condition if the two lines are parallel is _____

a)m_1=-m_2 b)m_1=m_2 c)m_1xm_2=1 d) m_1xm_2=-1

b. Write the standard point- slope form of a straight line. Find the equation.
of the straight line passing through the point (5, 6) and slope 3 units.

Or 5

Find the equation of the straight line which has an angle of inclination is 45^0 with x axis and y intercept of 2 units by writing its standard form.

c. Find the equation of the straight line whose x intercept and y intercept are 3 and 4 respectively by writing the standard form of it.

Or 5

Write the standard form of a straight line. Find the equation of the straight line passing Through the point (2, -3) and(5,4).

d. Find the acute angle between the lines x+3y+1=0 and 2x- y +4=0.

Or 6

Find the equation of the straight line passing through the points (-3, 2) and perpendicular to the line 4x-y+7=0 6

SECTION – 3

3. a i) The value of 30^0 in radian is _____ 4

a) $\frac{\pi}{6}$ b) $\frac{\pi}{3}$ c)$\frac{\pi}{4}$ d) $\frac{\pi}{2}$

ii) The value of sin (-θ) is _____

a) - sin θ b) $cos\theta$ c) tan θ d) cot θ

iii) The value of cos (180+ θ) is _____

a) - sin θ b) sin θ c)$-\ cos\theta$ d)cos θ

iv) If $\theta = 75$ then the value of sin 2 θ is _____

a) $\frac{1}{2}$ b) $\frac{\sqrt{3}}{2}$ c)$\frac{-1}{2}$ d) $\frac{-\sqrt{3}}{2}$

b . Prove that $\frac{\sin(A+B)+Sin(A-B)}{Cos(A+B)+Cos(A-B)} = \tan A$

or 5

Simplify $\frac{\sin(-\theta)}{\sin(\pi-\theta)} - \frac{\tan\frac{\pi}{2}-\theta}{\cot(\pi-\theta)} + \frac{\cos\left(\frac{\pi}{2}+\theta\right)}{\cos\left(\frac{3\pi}{2}-\theta\right)}$

c. prove that : $\sin 3\theta = 3\sin\theta - 4\sin^3\theta$

or 5

If $\tan A = \frac{1}{3}$; $\tan B = \frac{1}{2}$, find $\tan(A+B)$

d. prove that : $\cos 20 \cos 40 \cos 60 \cos 80 = \frac{1}{16}$

or 6

Without using calculator and table find the value of $\sin 600^0 \cos 330^0 + \cos 120^0 \sin 150^0$

SECTION – 4

4. a i) $\frac{d}{dx}(\sqrt{x})$ is _____ 4

a) $\frac{1}{2\sqrt{x}}$ b) $\sqrt{x}$) c) $2\sqrt{x}$) d) 0

ii) $\frac{d}{dx}(x^5)$ is _____

a) $5x^5$ b) $5x^6$ c) $5x^6$ d) 0

iii) The distance travelled by a body is 's' in time 't' seconds then its velocity at 't' is _____

a) $\frac{ds}{dt}$ b) $\frac{dt}{ds}$ c) d^2s/dt^2 d) dt^2/ds^2

iv) If 'm' is the slope of a Tangent then slope of a normal is _____

a) 0 b) -m c) $\frac{1}{m}$ d) $-\frac{1}{m}$

b. If $y = \frac{1-\tan x}{1+\tan x}$ find $\frac{dy}{dx}$

or 5

If $y = x^2 \log(e^x)$ find $\frac{dy}{dx}$

c. If $y = (e^x - \sin^{-1}x + 4\log x)^{10}$ find $\frac{dy}{dx}$

Or 5

If $y = \tan^{-1} x$ show that $(1+x^2)y_2 + 2xy_1$

d. If $S = t^3 - t^2 + 9t + 8$ where S is the distance travelled by particle in t seconds. Find the velocity and acceleration at t=2 seconds.

Or 6

find the equation of the tangent to the curve $y = 2x^3 - 5x^2 + 8x - 6$ at the point (1,-1).

SECTION – 5

5. a i) The value of $\int cosx\ dx$ is _____ 4

a) sin$x$ +c b)cos$x$+c c) tan$x$+c d)$\frac{1}{x}$

ii) the value of $\int_0^1 x\ dx$ is _____

a)1/2 b)-1/2 c)3/2 d)-3/2

iii) Thr area under a curve y=f (x) between the ordinate x=a and x=b is _____

a) $\int_a^b f^1(x)dx$ b) $\int_a^b y\ dx$ c) $\int_a^b y^2\,dx$ d)$\int_a^b y\,3\ dx$

iv) The value of $\int_0^2 1.x\ dx$ is _____

a)2 b)4 c) 0 d) -2

b) Evaluate $\int_0^{\frac{\pi}{2}} \sin^2 x\ dx$

Or 5

Evaluate $\int \mathrm{Sin}^6 x \cos x\ dx$

c) Evaluate $\int x \log x\ dx$

Or 5

Evaluate $\int x\ e^x\ dx$

d. Find the area bounded by the curve $y=x^2+1$, x –axis and the coordinates at x=1; x=2

or 6

Find the volume generated by rotating the curve $y=\sqrt{x+2}$about x axis between x=0and x=2.

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Government of Karnataka

DEPARTMENT OF COLLEGIATE AND TECHNICAL EDUCATION

JSS POLYTECHNIC FOR THE DIFFERENTLY ABLED(AUTONOMOUS)

PROGRAM: COMPUTER SCIENCE AND ENGINEERING

Course Code	**3412**	**Semester**	I
Course Title	**FUNDAMENTALS OF COMPUTERS**	**Course Group**	Core
No. of Credits	4	**Type of Course**	Lecture
Course Category	PC	**Total Contact Hours**	4Hrs Per Week
			64 Hrs Per Semester
Prerequisites	Nil	**Teaching Scheme**	(L: T:P) = 4:0:0
CIE Marks	50	**SEE Marks**	50

1. COURSE RATIONALE

A fundamental of Computers is the foundational course that sets the base for computer science engineering. Core knowledge of number system, conversion, Boolean algebra, logic circuits are fundamental and even set the basis for further study of computer organization & architecture, system software and computer network. Understanding the functional units, peripherals and components of a computer are vital.

2. COURSE SKILL SET

The aim of the course is to help the student to attain the following industry identified competencythrough various teaching –learning experiences

1. Identify computer hardware and software
2. Understand the data representation in computers
3. Basic knowledge of computer system and its working
4. Basic knowledge of logical thinking and problem solving

3. COURSE OBJECTIVES

1. Introduction to number system, conversion and data representation
2. Introduction to logic design
3. Understand functional units and components of computer
4. Develop logical thinking and problem-solving skills

4. JOB ROLE

SL.NO	LEVEL	JOB ROLES
1	3	Computer Operator & Program Assistant
2	3	Front Des k Operator
3	3	Office Assistant

5. PREREQUISITES

STUDENT	**NIL**
TEACHER	**Various pedagogical techniques**

6. COURSE OUTCOMES

On successful completion of the course, the students will be able to demonstrate industry-oriented COs associated with the above-mentioned competency:

COURSE OUTCOME		CL	LINKED PO	TEACHING HOURS
CO1	Apply the knowledge of number system and Boolean algebra in computer system	U,A	1,4,7	15
CO2	Apply the knowledge of logic circuits for practical application	U,A	1,4,7	17
CO3	Recognize the various hardware and software associated with computer	U	1,7	10
CO4	Comprehend the functional units of a computer	U	1,7	12
CO5	Rep resent simple problems in terms of algorithm and flowchart	U,A	1,7	10

7. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (THEORY)

COURSE OUTCOMEs		UNIT LINKED	LINKED PO	TEACHING HOURS	DISTIBUTION OF THEORY MARKS			
					R	U	A	TOTAL
CO1	Apply the knowledge of number system and Boolean algebra in computer system	**1**	**1,4,7**	15	**10**	**30**	**10**	**50**
CO2	Apply the knowledge of logic circuits for practical application	**2**	**1,4,7**	17	**10**	**30**	**10**	**50**
CO3	Recognize the various hardware and software associated with computer	**3**	**1,7**	10	**5**	**20**	**5**	**30**
CO4	Comprehend the functional units of a computer	**4**	**1,7**	12	**10**	**20**	**10**	**40**
CO5	Represent simple problems in terms of algorithm and flowchart	**5**	**1,7**	10	**5**	**20**	**5**	**30**
				64	**40**	**120**	**40**	**200**

Legends: R = Remember; U = Understand;

A = Apply and above levels (Bloom's revisedtaxonomy)

8. INSTRUCTIONAL STRATEGY

These are sample strategies, which teacher can use to accelerate the attainment of thevarious course outcomes

1. Massive Open online courses (MOOCS) can be used to teach various topics/subtopics.
2. Lecture method (L) does not mean only traditional lecture method, but different type ofteaching methods and media can be employed to develop the outcomes.
3. About 15 to 20% of the topics/subtopics which are relatively simpler or descriptive innature are to be given to the students for self-directed learning.
4. Arrange visits to nearby Offices/Industries/ Academic institution having network facilityto understand types of network and types of computers being used.
5. Use different instructional strategies in classroom teaching
6. Use of virtual labs wherever mentioned
7. Use oral and Sign language in the class room as many of the students are hearing impaired.

8. Use of Audio and Visual techniques like E-Books, PPT, Videos ete.
9. Teaching through group discussion, Guest lecture ete.
10. Providing course materials.
11. Providing extra inputs through industrial visits, employability skills and career awareness programs.
12. Additional inputs' through MOOCs and NPTEL courses.
13. Hands on training through demonstration to tutorial classes in laboratories.

9. DETAILS OF COURSE CONTENT

The following topics/subtopics is to be taught and assessed in order to develop Unit Skillsets for achieving CO to attain identified skill sets

UNIT NO	TOPICS/SUBTOPICS	LEARNING OUTCOME (IN COGNITIVE DOMAIN)	HOURS L-T-P
1	**BASICS OF LOGIC DESIGN**		**15**
	1.1 Introduction to Number System. • Binary • Octal • Decimal • Hexadecimal (characteristics of each number system) 1.2 Conversion from one number systemto other 1.3 Complements of number systems andarithmetic operations 1.4 Computer codes (BCD, EBCDIC, ASCII Code, Gray code, Excess-3 code and Unicode) 1.5 Logic gates 1.6 Boolean algebra (rules, laws, De-Morgan Theorem, Boolean expressions and simplifications)	1. Understand various number representation 2. Perform conversion and arithmetic operations using different number system 3. Apply the knowledge of codes to represent data 4. Explain the working of logicgates 5. Apply Boolean rules and laws to solve the Boolean expression	

Note:

1. **Use visual/graphic content for demonstration**
2. **Demonstrate data representation inside the computer using virtuallabs**
3. **Demonstrate logic gates using virtual labs**
4. **Explain with block diagram, circuit diagram and truth table**

2	**LOGIC CIRCUITS**		**17**
	2.1 Combinational Circuits • Characteristics • Logic circuit design • Block diagram, features & Applications of • adders, subtractors and comparators • multiplexers, demultiplexers • encoders, decoders and code converters (7 segment) 2.2 Sequential Circuits • Characteristics • Types • Asynchronous • Synchronous(clocked, unclocked) • Flip flops- Types, circuit analysisand truth table • Applications of sequential circuits • Shift registers(types and application) • Counters (classificationand application)	1. Identify logic circuits 2. Describe the working of logiccircuits 3. Compare combinational and sequential circuits 4. List the applications of logiccircuits	

Note:

1. **Demonstrate logic circuits and their application using virtual labs**

3	**INTRODUCTION TO COMPUTER CONCEPTS**	**10**
	3.1 Introduction to computers • Evolution of computer (abstractonly) • Generation of computers	

	• Classification of computer • Applications 3.2 Components of computers • Hardware (different types of hardware components) • Software (System Software, Application Software, E-accessibility Software)		
	(Open source, freeware and proprietary software) • Peripherals (working of keyboard and laser printer) Computer Network (Concept Only) • Basics • Categories • Protocols (Application layer) • Advantages. 3.3 Methods of data processing (concepts only) • Single user programming • Multi programming • Real-time processing • On-line processing • Time sharing processing • Distributed processing 3.4 Computer Security • Types of threats and source of threats	1. Describe the characteristics of computer of various generations 2. Identify the functional units and peripherals of a computer 3. Identify components of a computer system 4. Explain computer network concepts such as types, protocols 5. Identify and distinguish threats and viruses	
Note: 1. Demonstrate computer and computer software's using videos and other visual/graphical method			
4	**INTRODUCTION TO COMPUTER ORGANIZATION & OPERATING SYSTEM**		**12**

	4.1 Introduction • Overview of functional units of a computer • Stored Program Concept • Flynn's Classification of Computers 4.2 Memory Hierarchy • Main memory • Auxiliary memory • Cache memory 4.3 Introduction to BIOS and UEFI 4.4 OS Concepts • Overview • Types (Batch Operating System, Multitasking/Time Sharing OS, Multiprocessing OS, Real Time OS, Distributed OS, Network OS, Mobile OS) • Services	1.Examine the working of each functional unit 2. Explain memory hierarchy 3.Explain BIOS and UEFI 4.Describe type and functions ofOS	
Note: 1. Demonstrate using videos and other visual/graphical method			
5	**INTRODUCTION TO COMPUTER PROGRAMMING**		**10**
	5.1 Basics of programming • Algorithms and Flowcharts • Basics • Decision making • Iterative (With sufficient examples) 5.2 Programming Languages • Generation of languages • General concepts of variables and constants	1.Writing algorithms for mathematical concepts 2.Representation with flowchart 3. Identify the naming rules for variables	
Note: 1. Demonstrate using videos and other visual/graphical method **Use of online tools for flowchart design. ex:https://app.diagrams.net/**			

10. MAPPING OF CO WITH PO

COURSE NAME	COs	PROGRAMME OUTCOMES (POs)							PROGRAMME SPECIFIC OUTCOMES (PSOs)	
		1	2	3	4	5	6	7	1	2
FUNDAMENTALS OF COMPUTERS	CO1	3	-	-	2	-	-	1	-	1
	CO2	3	-	-	2	-	-	1	2	-
	CO3	3	-	-	2	-	-	1	2	2
	CO4	3	-	-	2	-	-	3	2	-
	CO5	3	-	-	2	-	-	3	-	2
AVERAGE VALUE		3	-	-	2	-	-	1.8	2	1.67

Level 3-Highly Mapped, Level 2-Moderately Mapped, Level 1-Low Mapped, Level 0- NotMapped

11. SUGGESTED LEARNING RESOURCES

	BOOKS
1	Digital fundamentals – Thomas L. Floyd, PEARSON EDUCATION publication, Eleventh edition – Global Edition, ISBN 10: 1-292-07598-8, ISBN 13: 978-1-292-07598-3
2	Digital Electronics –principles and integrated circuits. Anil K. Maini. Wiley publications, first edition. ISBN: 978-81-265-1466-3
3	Digital Electronics –principles and integrated circuits. Anil K. Maini. Wiley publications, first edition. ISBN: 978-81-265-1466-3
4	Digital principles and applications. Donald P Leach, Albert Paul Malvino, GoutamSaha, McGraw Hill Publisher, 7th edition, ISBN (13 digit): 978-0-07-014170-4 ISBN (10 digit):0-07-014170-3
5	Digital Computer Fundamentals, - Thomas C Bartee, McGraw-Hill Publisher,4th edition.ISBN 0-07-003892-9
6	Digital Logic and Computer Design M. Morris Mano
7	Introduction to Computer Science, ITL Education Solutions Pvt. Ltd., Pearson Education
8	"Computer Fundamentals" by Goel
	URL'S
1	**https://www.tutorialspoint.com/basics of computer science**
2	https://www.guru99.com/operating-system-tutorial.html
3	https://www.javatpoint.com/computer-organization-and-architecture-tutorial

12. SUGGESTED LIST OF PROPOSED STUDENT ACTIVITYS

Note: the following activities or similar activities for assessing CIE (IA)

SL. NO.	ACTIVITY
1	Prepare a report on programming languages and their features
2	Prepare a report on open source and proprietary, system and application software
3	Prepare a report on recent viruses(computer)
4	Identify the logic circuits used in construction of memory and prepare a report
5	Identify the utilities of OS and prepare a report

13. COURSE ASSESSMENT AND EVALUATION CHART

SL.NO.	ASSESSMENT	DURATION (in minutes)	MAX MARKS	CONVERSION
1	CIE Assessment 1 (Written Test -1) – At the end of 6th week	**80**	**30**	Average of three written tests 30
2	CIE Assessment 2 (Written Test -2) – At the end of 10th week	**80**	**30**	
3	CIE Assessment 3 (Written Test -3) – At theend of 15th week	**80**	**30**	
4	CIE Assessment 4 (MCQ/Quiz)- At the end of 8th week	**60**	**20**	Average of three 20
5	CIE Assessment 5 (Open book Test) – At theend of 13th week	**60**	**20**	
6	CIE Assessment 6 (Student activity/ Assignment)- At the end of 16th week	**60**	**20**	
7	**Total Continuous Internal Evaluation (CIE) Assessment**			**50**
8	Semester End Examination (SEE) Assessment (Written Test)	**3 hrs**	**100**	**50**
TOTAL MARKS				**100**

14. RUBRICS FOR ACTIVITY

RUBRICS FOR ACTIVITY (Example Only)						
Dimension	**Poor**	**Below average**	**Average**	**Good**	**Exemplary**	**Student Score**
	4	**8**	**12**	**16**	**20**	
Collection of data	Does not collect any information relating to the topic	Collects very limited information; some relate to the topic	Collect much information ; but very limited relate to the topic	Collects some basic information; most refer to the topic	Collects a great deal of information; all refer to the topic	8
Fulfill team's roles/ & duties	Does not perform any duties assigned to the team role	Performs very little duties but unreliable.	Performs very little duties	Performs nearly all duties	Performs all duties of assigned team roles	6
Shares work equally	Always relies on others to do the work	Rarely does the assigned work; often needs reminding	Usually does the assigned work; rarely needs reminding	Normally does the assigned work	Always does the assigned work without having to be reminded.	8
Listen to other Teammates	Is always talking; never allows anyone else to speak	Usually does most of the talking; rarely allows others to speak	Talks good; but never show interest in listening others	Listens, but sometimes talk too much	Listens and speaks a fair amount	8
			Average / Total Marks: (8+6+8+8)/4			**7.5 = 8 marks**

Model Question Paper

IA Test (CIE)

Programme:	**Semester: I**
Course :	**Max Marks : 30**
Course Code :	**Duration : 1 Hr 20 minutes**
Name of the course coordinator:	**Test : I/II/III**

Note: Answer one full question from each section. One full question carries 10 marks.

Qn.No	Question	CL	CO	PO	Marks
	Section-1				
1.a)					
b)					
c)					
2.a)					
b)					
c)					
	Section-2				
3.a)					
b)					
c)					
4.a)					
b)					
c)					
	Section-3				
5.a)					
b)					
c)					
6.a)					
b)					
c)					

Model Question Paper for End Examination

FUNDAMENTALS OF COMPUTERS

Duration: 3 Hours] **Subject Code: 3412** **[Max. Marks: 100**

Instruction: *Answer all the questions considering the internal choice in each section. Each section carries 20 marks.*

SECTION – 1

1. Multiple choice Four questions 4 Marks
2. a) 8 marks

OR

b)

3. a) 8marks

OR

b)

SECTION – 2

4. Multiple choice Four questions 4 Marks
5. a) 8 marks

OR

b)

6. a) 8marks

OR

b)

SECTION – 3

7. Multiple choice Four questions 4 Marks
8. a) 8 marks

OR

b)

9. a) 8marks

OR

b)

SECTION-4

10. Multiple choice Four questions 4 Marks
11. a) 8 marks

OR

b)

12. a) 8marks

OR

b)

SECTION – 5

13. Multiple choice Four questions 4 Marks
14. a) 8 marks

OR

b)

15. a) 8marks

OR

b)

Government of Karnataka

DEPARTMENT OF COLLEGIATE AND TECHNICAL EDUCATION

JSS POLYTECHNIC FOR THE DIFFERENTLY ABLED(AUTONOMOUS)

PROGRAM: COMPUTER SCIENCE AND ENGINEERING

Course Code	**3413**	Semester	**I**
Course Name	**BASIC ENGLISH**	Course Group	**Core**
No. of Credits	**4**	Type of Course	**Lecture**
Course Category	**AR/CS/EC/JD**	Total Contact Hours	**4 Hrs. / Week** **64 Hrs. / Semester**
Prerequisites	**English Knowledge**	Teaching Scheme	**[L : T : P]=4:0:0**
CIE Marks	**50**	SEE Marks	**50**

Preamble

Basic English language plays an essential role in our lives as it helps in communication. It is the main language for studying any subject all over the world. English is important for students as it broadens their minds, develops emotional skills, improve the quality of life by providing job opportunities.

Moreover, the use of English as an International language is growing with time because it is the only medium for communication in many countries. English is also used widely in the literature and media section to publish books, most of the writers write in the English language due to the vast majority of readers know only the English language and they can describe their ideas best in the English language.

1. COURSE OBJECTIVES

At the end of the course, the students will be able to acquire the following skills:

1. Develop Basic Skills in English.
2. Build better communication skills: oral and written expressions and body language
3. Learn Communication Skills in English.
4. Develop Reading, writing and listening skills.

2. COURSE OUTCOMES

At the end of the course, students will be able to:

	Course Outcomes
CO1	Use English alphabets both upper and lower case in framing the words and sentences.
CO2	Differentiate between Masculine and Feminine Gender.
CO3	Apply singular and plural forms in a sentence.
CO4	Acquire the knowledge of writing grammatically correct sentences.
CO5	Develop knowledge of vocabulary and grammar in reading notes without mistakes.

3. COURSE CONTENT OUTLINE WITH TEACHING HOURS AND MARKS FOR SEE

UNIT NO.	UNIT TITLE	TEACHING HOURS	DISTRIBUTION LEVELS (Marks)			TOTAL
			R	U	A	
01	The English Alphabet	12	10	10	20	40
02	Masculine and Feminine Gender	12	10	10	20	40
03	Number	12	10	10	20	40
04	Sentence	13	10	10	20	40
05	Basic English Vocabulary & Reading Comprehension	15	10	10	20	40
Total		**64**	50	50	100	**200**

(R = Remember, U = Understand, A = Apply and above levels (Bloom's Revised Taxonomy)

4. DETAILS OF COURSE CONTENT:

The following topics / subtopics is to be taught and accessed in order to develop Unit Skill sets for achieving CO to attain identified skill sets:

UNIT NO.	UNIT SKILL SET	TOPICS / SUBTOPICS	HOURS L-T-P
UNIT-1 The English Alphabet	Use English alphabets both upper and lower case in framing the words and sentences.	1.1 Capital letters 1.2 Small letters 1.3 Vowels –Consonants 1.4 Finding words from the Dictionary 1.5 Arranging the letters in Dictionary order 1.6 Arranging the words in the Dictionary order 1.7 Identifying words through pictures.	12-0-0
UNIT– 2 Masculine and Feminine Gender	Understand the difference between male and female gender	2.1 Gender: Definition Nouns and Pronouns 2.2 Identifying the Gender through pictures 2.3 Identifying the Gender by reading the names 2.4 Writing the other Gender Activity/Exercises	12-0-0

UNIT NO.	UNIT SKILL SET	TOPICS / SUBTOPICS	HOURS L-T-P
UNIT- 3 Number	Understand to change singular and plural numbers in a sentence	3.1 Singular and Plural Number 3.2 Formation of plurals 3.3 Rules -Fill in the blanks with the plural form of the word 3.4 Changing the Singular form into Plural form in a sentence 3.5 One word substitution. Activity/Exercises	12-0-0
UNIT– 4 Sentence	Understand the concept of sentence and kinds of sentences.	4.1 Types of a sentence. 4.2 Parts of a sentence. 4.3 Sentence formation. 4.4 Correction of errors in a sentence. 4.5 Rearranging the words in a sentence. 4.6 Making sentences from the given table. 4.7 Writing simple sentence. 4.8 Changing Assertive sentence to Interrogative, 4.9 Negative or Exclamatory sentence. 4.10 Writing simple sentences by seeing the pictures. Activity/Exercises	13-0-0
UNIT-5 Basic English Vocabulary & Reading Comprehension	Develop knowledge of vocabulary and grammar in reading notes without mistakes.	5.1 Learning English through pictures like Buildings, Appearances, Clothes, Eating at home, General Furniture and Equipment, Food, Entertainment, Jobs and work, The Human Body and Anatomy, English Greetings etc., 5.2 The art of reading and comprehending passages 5.3 Giving titles to the passages after reading comprehension 5.4 Framing questions and answering them	15-0-0

5. MAPPING OF CO WITH PO

CO	Course Outcomes	PO Mapped	Unit Linked	CL R/U/A	Theory in Hrs.	Total Marks
1	Use English alphabets both upper and lower case in framing the words and sentences.	1,2,3,6,7	1	R/U/A	12	40
2	Differentiate between Masculine and Feminine Gender.	1,3,4,7	2	R/U/A	12	40
3	Apply singular and plural forms in a sentence.	1,3,4	3	R/U/A	12	40
4	Acquire the knowledge of writing grammatically correct sentences.	1,3,4	4	R/U/A	13	40

5	Develop knowledge of vocabulary and grammar in reading notes without mistakes.	1,3,4	5	R/U/A	15	40
Total					**64**	**200**

6. LEVELS OF CO AND PO MAPPING

Course	CO's	Programme Outcomes							Programme Specific Objectives		
		1	2	3	4	5	6	7	1	2	3
Basic English	CO1	3	-	-	-	2	2	3	2	3	-
	CO2	3	-	-	-	-	2	3	2	3	-
	CO3	3	-	-	-	2	2	3	2	3	-
	CO4	3	-	-	-	2	2	3	2	3	-
	CO5	3	-	-	-	2	2	3	2	3	-
AVERAGE		**3**	**-**	**-**	**-**	**2**	**2**	**3**	**2**	**3**	**-**

Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.
Method is to relate the level of PO with the number of hours devoted to the COs which address the given PO.
If >40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 3
If 25 to 40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 2
If 5 to 25% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 1
If < 5% of classroom sessions addressing a particular PO, it is considered that PO is considered not-addressed.

7. INSTRUCTIONAL STRATEGY

There are various strategies that can be adopted by the teachers today related to the course outcomes.

- Helping out the students to develop the basic knowledge of Grammar.
- Supporting them to build self-confidence, self-managing, and Team managing spirit.
- Encouraging them to improve their communication skills.
- Developing the student's language skills in written, spoken, and communication.
- Encouraging them to use new vocabularies in the context.
- Encourage active involvement in classroom activities.
- Explain the concept in a simple and easily understood manner.
- To teach language skills across the syllabus.
- Enhancing the student skills for employability needs.
- Getting knowledge to understand the basic skills through language.

8. SUGGESTED LEARNING RESOURCES:

Sl. No	Author	Title of Books	Publication / Year
1	Dr. Shruti Das	Contemporary Communicative English	S Chand Publications
2	Wren and Martin	English Grammar And Composition	S Chand Publications
3	M.A Pink and S.E Thomas	English Grammar And Composition	S Chand Publications
4	Sanjay kumar Sinha	The King's Grammar	S Chand Publications

9. Educational Components (Bloom's Category)

Questions for CIE and SEE will be designed to evaluate the various educational components such as:

EC-1 : Remembering : 20 % weightage
EC-2 : Understanding the course : 30 % weightage
EC-3 : Apply the knowledge acquired from the course : 50 % weightage

10. COURSE ASSESSMENT AND EVALUATION CHART

Course Assessment And Evaluation Chart

MODEL OF RUBRICS /CRITERIA FOR ASSESSING STUDENT ASSIGNMENT

Example: Assignment on Story Writing

Assessment Method	Type of Assessment		Target	Assessment methods	Max Marks	Type of record	CO's for assessment
Direct Assessment	CIE Continuous Internal Evaluation	IA Testes	STUDENT	Three Tests (Average of Three Tests will be Computed)	30	Test Books	All CO's
		Assignment & Student Activity		Average of MCQ + Open Book Assignment + Assignment	20	Log of record/Activity Book	Specified CO by the course coordinator
				Total CIE Marks	50		
	SEE	Semester End Exam		End of the Course	50	Answer Scripts by BTE	All CO's
				Total	100		

Indirect Assessment	Student feedback	STUDENT	Middle of the course	-NA-	Feedback forms	CO's which are covered
	End of Course survey		End of course		Questioner ire	All CO's Effectiveness of delivery of instructions and

11 . COURSE ASSESSMENT METHODOLOGY

Sl.No.	Assessment	Duration	Max Marks	Conversion
1	CIE Assessment – 1 (Written Test – 1) At the end of 6th Week	80 Minutes	30	Average of three written tests 30 Marks
2	CIE Assessment – 2 (Written Test – 2) At the end of 10thWeek	80 Minutes	30	
3	CIE Assessment – 3 (Written Test – 3) At the end of 15thWeek	80 Minutes	30	
4	CIE Assessment 4 (MCQ / Quiz) At the end of 8thWeek	60 Minutes	20	Average of three 20 Marks
5	CIE Assessment 5 (Open book Test) At the end of 13thWeek	60 Minutes	20	
6	CIE Assessment 6 (Student Activity / Assignment) At the beginning of 16thWeek	60 Minutes	20	
Total Continuous Internal Evaluation (CIE) Assessment				50
7	Semester End Examination (SEE) Assessment (Written Test)	3 Hours	100	50
Total Marks				100

Note:

1. SEE (Semester End Examination) is conducted for 100 Marks theory courses for a time duration of 3 Hours.

2. Three CIE (written test), each of 30 marks for a time duration of 80 minutes shall be conducted. Also, three CIE (MCQ or Quiz/Open book test/student activity or assignment) each of 20 marks for the time duration of 60 minutes shall be conducted. Any fraction at any stage during evaluation will be rounded off to the next higher digit

3. Assessment of assignment and student activity is evaluated through appropriate rubrics by the respective course coordinator. The secured mark in each case is rounded off to the next higher digit.

12. DETAILED COURSE CONTENTS

UNIT NO. AND NAME	DETAILED COURSE CONTENT	CO	PO	CONTACT HRS.	TOTAL
UNIT-1 The English Alphabet	1.1 Capital letters	1	1,5,6,7	2	12
	1.2 Small letters	1	1,5,6,7	2	
	1.3 Vowels –Consonants	1	1,5,6,7	2	
	1.4 Finding words from the Dictionary	1	1,5,6,7	2	
	1.5 Arranging the letters in Dictionary order	1	1,5,6,7	1	
	1.6 Arranging the words in the Dictionary order	1	1,5,6,7	1	
	1.7 Identifying words through pictures.	1	1,5,6,7	2	
UNIT– 2 Masculine and Feminine Gender	2.1 Gender: definition Nouns and Pronouns	2	1,6,7	4	12
	2.2 Identifying the Gender through pictures	2	1,6,7	3	
	2.3 Identifying the Gender by reading the names	2	1,6,7	3	
	2.4 Writing the other Gender	2	1,6,7	2	
UNIT- 3 Number	3.1 Singular and Plural Number	3	1,5,6,7	3	12
	3.2 Formation of plurals	3	1,5,6,7	3	
	3.3 Rules -Fill in the blanks with the plural form of the word	3	1,5,6,7	2	
	3.4 Changing the Singular form into Plural form in a sentence	3	1,5,6,7	2	
	3.5 One word substitution.	3	1,5,6,7	2	

UNIT NO. AND NAME	DETAILED COURSE CONTENT	CO	PO	CONTACT HRS.	TOTAL
UNIT– 4 SENTENCE	4.1 Types of a sentence.	4	1,5,6,7	2	13
	4.2 Parts of a sentence.	4	1,5,6,7	2	
	4.3 Sentence formation.	4	1,5,6,7	2	
	4.4 Correction of errors in a sentence	4	1,5,6,7	1	
	4.5 Rearranging the words in a sentence	4	1,5,6,7	1	
	4.6 Making sentences from the given table.	4	1,5,6,7	1	
	4.7 Writing simple sentence.	4	1,5,6,7	1	
	4.8 Changing Assertive sentence to Interrogative,	4	1,5,6,7	1	
	4.9 Negative or Exclamatory sentence.	4	1,5,6,7	1	
	4.10 Writing simple sentences by seeing the pictures.	4	1,5,6,7	1	
UNIT-5 Basic English Vocabulary & Reading Comprehension	5.1 Learning English through pictures like Buildings, Appearances, Clothes, Eating at home, General Furniture and Equipment, Food, Entertainment, Jobs and work, The Human Body and Anatomy, English Greetings etc.,	5	1,5,6,7	6	15
	5.2 The art of reading and comprehending passages	5	1,5,6,7	3	
	5.3 Giving titles to the passages after reading comprehension	5	1,5,6,7	3	
	5.4 Framing questions and answering them	5	1,5,6,7	3	
Total					**64**

13. MODEL OF RUBRICS /CRITERIA FOR ASSESSING STUDENT ASSIGNMENT

Example: Assignment on Story Writing

RUBRICS FOR ACTIVITY(10 Marks)						
Dimension	**Unsatisfactory**	**Developing**	**Satisfactory**	**Good**	**Exemplary**	**Student Score**
	2	**4**	**6**	**8**	**10**	
Creativity	Little evidence of creativity and no imagination	Contains few creative details but has tried to use imagination	Contains a few creative details but has used his imagination	Contains many creative details and has used his imagination	Excellent use of creativity and imagination n	10
Dialogue	It is not clear which character is speaking	There is not much dialogue used but is clear who is speaking	Sufficient dialogue used and is clear which character is speaking	An appropriate amount of dialogue used and it is clear which character is speaking	Excellent use of dialogue and narrative to bring the character to life	8
Organization	Ideas and scenes are randomly arranged	Little hard to follow. The transitions are sometimes not clear	Easy to follow and transitions are somewhat clear	Well organized. Clear transitions are used	Very well organized. Logical sequencing with clear transitions	10
Character	It is hard to tell who the main characters are	The main characters are named but development is minimal	The main characters are satisfactorily described.	Characterization is up to the mark	Very well developed characters	6
					Total marks	**34**
Total marks / 4 = (10+8+10+6) = 34/4 = 8.5 = 09						**09**

14. SUGGESTED ACTIVITIES

1. Write your self-introductions.
2. Customer relation skills: Write a short paragraph on an experience, either positive or negative, when you approached an office/ organization for a service.
3. Positivity skills: Read about people who have survived deadly diseases and how they coped with their difficulties. Write a brief report.
4. Describe your favourite Tourist place/ Teacher/ Role model / Sports person / Actor / Politician etc.
5. Write an imaginary story on any topic of your choice.
6. Frame a timetable of your scheduled activity for a day.
7. Mock interviews

8. Word Building
9. Group Discussion
10. Time Management Activity
11. Debates
12. Jumbled and missing letters game
13. Memory Games
14. Presentation
15. Enact an Advertisement
16. Role play
17. Telephonic conversations
18. Pick and Speak
19. Discuss with your friend and write a brief paragraph, if one's mother tongue is an important part of one's life.
20. Interview an eminent person in your locality.
21. Interview your local shop owners about how important 'reliability' is in their business. Prepare a brief report.
22. Collect information about any initiatives by government or private organizations to promote professionalism among their employees.
23. Leadership skills: Have you ever been in a leadership position? What did you learn from your experience? Share your thoughts.
24. Holistic and Visionary skills: when you start working in the future, how will you contribute to the company, and what do you expect from the company in return. Briefly write about your plans.

First Semester Examination, Model Question Paper – 2021

Basic English

Duration: 3 Hours] **Subject Code: 21EG11T** **[Max. Marks: 100**

Instruction: Answer all the questions considering the internal choice in each section.
Each section carries 20 marks**.**

SECTION – 1 [20 Marks]
[Questions from Unit 1 – The English Alphabet which covers CO-1 and POs 1,5,6,7]

Question Number	Question 1		Question 2	Marks
1	State the question		State the question	5
2	State the question	**OR**	State the question	5
3	State the question		State the question	5
4	State the question		State the question	5

SECTION – 2 [20 Marks]
[Questions from Unit 2 – Masculine and Feminine Gender which covers CO-2 and POs 1,6,7]

Question Number	Question 1		Question 2	Marks
1	State the question		State the question	5
2	State the question	**OR**	State the question	5
3	State the question		State the question	5
4	State the question		State the question	5

SECTION – 3 [20 Marks]

[Questions from Unit 3 – Number which covers CO-3 and POs 1,5, 6,7]

Question Number	Question 1		Question 2	Marks
1	State the question		State the question	5
2	State the question	**OR**	State the question	5
3	State the question		State the question	5
4	State the question		State the question	5

SECTION – 4 [20 Marks]

[Questions from Unit 4 – Sentence which covers CO-4 and POs 1,5,6,7]

Question Number	Question 1		Question 2	Marks
1	State the question		State the question	5
2	State the question	**OR**	State the question	5
3	State the question		State the question	5
4	State the question		State the question	5

SECTION – 5 [20 Marks]

[Questions from Unit 5 – English vocabulary & Reading Comprehension which covers CO-5 and PO 1,5,6,7]

Question Number	Question 1		Question 2	Marks
1	State the question		State the question	5
2	State the question	**OR**	State the question	5
3	State the question		State the question	5
4	State the question		State the question	5

15. MODEL QUESTION PAPER FOR SEE

IC: 210 **Codes: 21EG11T**

FIRST SEMESTER DIPLOMA EXAMINATIONS

BASIC ENGLISH

Time: 3 Hours Max. Marks: 100

Instructions: i) All four sections are compulsory.
ii) Answer one full set of questions from each main.
iii) Follow the instructions carefully while writing answers.
iv) Marks shall be deducted for spelling and grammatical errors.

SECTION- 1

1. Arrange the letters in the Dictionary Order. 5x1=5

a) F D C H K
b) N M S U V
c) P I B N T
d) E C H L I
e) S W U R V

OR

a) D E F M W
b) S I K T E
c) W V R J S
d) N Q Z L P
e) P K T Y C

2. Arrange the words in the Dictionary Order. 5x1=5

a) Pen, ink, book, nib
b) Sing, dance, play, jump
c) Red, black, white, green
d) Father, mother, brother, sister
e) Donkey, monkey, elephant, fox

OR

a) Pen, ink, book, nib
b) Sing, dance, play, jump
c) Red, black, white, green
d) Father, mother, brother, sister
e) Donkey, monkey, elephant, fox

3. Write the other Gender. 5x1=5

a) Uncle
b) Husband
c) Monk

d) Pig
e) Lion

OR

a) Actor

b) Author

c) Bachelor

d) Brave

e) Bride

4. Match the following with the other Gender. 5x1=5

a) Hero	vixen
b) Sir	Cow
c) Cock	heroine
d) Fox	Madam
e) Ox	hen

OR

a) Peacock	Madam
b) Tiger	Tigress
c) Sir	Rooster
d) Hen	Daughter
e) Son	Peahen

SECTION- 2

5. Write the Plural form of 5x1=5

a) Apple
b) Negro
c) Dam
d) Church
e) Box

OR

a) box
b) tooth
c) leaf
d) hobby
e) woman

6. Fill in the blanks with the right words. 5x1=5

a) One Peach, Five _____

b) Four temples, one _____
c) Six schools, one _____
d) One mouse, Several _____
e) Six geese, one _____

OR

a) One sheep, many _____
b) One hero, several _____
c) One peach, five _____
d) One pen, four _____
e) Four temples, one _____

7. Change the sentences from Singular to Plural. 5x1=5

a) The child is eating an apple
b) This story is interesting.
c) A soldier is marching.
d) The woman has a necklace.
e) The man stole the silver spoon.

OR

a) The child is eating an apple
b) This story is interesting.
c) A soldier is marching.
d) The woman has a necklace.
e) The man stole the silver spoon.

8. Change the following Sentences from Plural to Singular. 5x1=5

a) The Soldiers climbed the hills on the ponies.
b) The Policemen were chasing the thieves.
c) The birds are flying in the sky.
d) The girls have four books.
e) The pigs chased the dogs away.

OR

a) The stairs are over there, Sir.
b) Your sunglasses are on the table.
c) The scissors on the table are mine.
d) *The cats are drinking their milk.*
e) There are many logs.

SECTION- 3

9. Underline the mis spelt word in each group . Write the correct Spellings in your answer sheet.
5x1=5

a) Son, dughter, wife, husband, cousin
b) Alone, togather, happily, quietly, surely
c) People, polite, please, parents, complane
d) Reason, wealth, marrige, horrible, forgive
e) Started, busines, merchant, shop, unlucky

OR

a) Trouble, excited, praceed, Gazed, sparkled
b) Utter, fluter, mutter, shutter, clutter
c) Tasty, useful, safe, weste, waist
d) Large, piece, breaad, loaf, rhyme
e) Tale, tail, tall, tell, tald

10. Complete the sentences choosing the correct word from the options given below. 5x1=5

a) Water is _____for life. We cannot live without water.
i) Important ii) essential iii) useful
b) The common _____of water are lakes, river, springs, ponds, wells and tube wells.
i)sources ii) resources iii) requirements
c) All water is not _____to drink as it may contain certain germs.
i) tasty ii) useful iii) safe
d) We should not ____water.
i) waste ii) waist iii) save
e) Trees grow with _____
i) water ii) Juice iii) alcohol

OR

a) Cats like to drink _____
i) Milk ii) rat iii)fruits
b) There are _____days in a week
i) nine ii) eight iii) seven
c) Birds are _____in the air
i) Flying ii) dancing iii) jumping
d) I don't care _____ Your opinion.
i) About ii) of iii) with
e) Who takes _____ the sick?
i) care of ii) care about iii) after

11. Write the opposites of 5x1=5

a) Light
b) Old
c) Full
d) Uneven
e) Warm

OR

a) Ability
b) Happy

c) Import
d) Interior
e) Maximum

12. Correct the following sentences 5x1=5

a) This is a water
b) She has umbrella
c) He is a Coward man
d) He has resigned from his post
e) My father is in the teaching line

OR

a) I have seen him yesterday.
b) We had gone to the movies last night.
c) I had spoken to them about my holiday.
d) You must attend your teacher's instructions.
e) The hen has lain six eggs.

SECTION –4

13. Make Five sentences from the given table. 5x1=5

Shall Should	I We	Participate? Proceed? Observe? Plan?
Can Could	I We They She He	Manage? Examine? Instruct? Dictate?

OR

she	cleaned	Two Three five	Big small	Plates. Cups. Tables.

14. Rearrange the words in a sentence 5x1=5

a) Play /foot/ ball/ I
b) Cow/ the/ two/ has /horns.
c) Full/ basket/ the/ is/ fruits/ of
d) Rope/ Tina /skipping/ is/ a /with
e) There /days/ are/ week/ in /a/ seven

OR

a) Tie /can/ your /you /hair?
b) Hat /black/ is /the.
c) Pretty /leaves/ are/ the.
d) Can/ bat/ the/ fly.
e) Like/ I /candy.

15. Match the two parts of sentences 5x1=5

a. Cats like	is crying
b. The Policeman	to drink milk
c. The baby	caught the thief
d. The noise	are flying in the air
e. Birds	woke up the child

OR

a) The cat	bite me.
b) The crow	caught the mouse.
c) This purse	gave me a book.
d) A mosquito	made of paper.
e) My aunt	spread its wings.

16. Write 8 to 10 sentences about your Parents or Grand Parents. 5x1=5

OR

Write 8 to 10 sentences about your Favorite school teacher.

SECTION –5

17. Choose the correct word to fill in the blanks. 10x1=10

(wasted, brought, bundle, ordered, turned, broken, divided ,untied, quarreled, tried)

A farmer had three sons. They _____their time and energy in quarrelling with on another. Their father's advice had no effect on them. They _____ a deaf ear to it.

When the farmer was on his death-bed, he ordered his servant to bring a ____of dry sticks. When they were _____,he sent for his sons. When they came, he asked-them to break the bundle of sticks. All _____their best, but with all their youthful strength, none could break the bundle.

Then the farmer ___them to untie the bundle and break the sticks one by one. When the bundle was_____, sticks fell apart. Now all were _____in no time.At this the old farmer said, "Look here, my sons; Learn a lesson from this experience. United you J stand, _____you fall. From that day the sons never_____.

OR

(ground, cricket, leaves, turned, found, worked, beggar, refused, stored, sang)

Once upon a time there was a young___. He spent the sunny days of spring and summer in singing. At that time he had plenty to eat. He had no worries. But soon winter set in., The _____ was covered with snow. There were no _____or flowers on the trees. He ____that there was nothing to eat.

Nearby there lived many ants. They had _____very hard during summer and had collected enough food for

the winter season.

When the cricket began to starve, he went to an ant and _____it to lend him some food. The ant_____. The ant asked the cricket if he had ___some food in the summer months for foodless day of winter, he would not have begged for food. The cricket said, that at that time the spring had been in full swing; so he _____-throughout the season.

"Well then", said the ant, "If you sing in spring, you must dance all through the winter," So saying it ___, out the poor silly cricket.

18. Read the following passage and answer the questions that follow : 10

Darius was the Emperor of Persia. His empire was vast, his army was big and he himself was known for his courage and daring. Alexander had set his heart on conquering Persia. He came to Persia marching at the head of his army which was much smaller than that of Darius. On the eve of the battle the whole valley was lit by the torches of the Persian Soldiers. Some of the Macedonian officers were dismayed. They wondered if they could defeat such a mass of humanity. They went to Alexander and advised him to attack the enemy at night. Alexander smiled and gave them the famous answer, "I will not steal a Victory".

Sometime later Alexander received a letter from Darius in which he offered to pay a huge amount of money in exchange for Persian Prisoners and give him his daughter in marriage if he promised to be his friend. Alexander told his friend Parmenio about the proposals made by Darius. " If I were Alexander, I would accept them" said Parmenio. " So would I", said Alexander "If I were Parmenio".

Questions :

a) What were the two qualities of a warrior Darius had ?
b) Why were the Macedonian officers dismayed ?
c) Alexander did not like the idea of attacking the enemy at night because_____.
d) What did the letter from Darius to Alexander contain ?
e) What was Parmenio's advised to Alexander and how did Alexander react to that ?

OR

Lokamanya Tilak was imprisoned by the English. He kept himself busy in studies while in jail. The jail was a quiet place, where even the birds wouldn't chirp. Tilak started putting away some food for birds while having his meals. The food was untouched in the beginning. But after some days, a few birds started coming there. Slowly their number increased and they were all around Tilak. The birds would sit on his head and shoulders fearlessly. One day a jailor came to Tilak's cell while on his rounds. On hearing the chirping of birds, he peeped in and he was totally surprised. "So many birds; where have they come from?" he asked. Tilak replied, "Friend, I didn't bring them from India. These are from here only" The jailor was surprised. He said, "everybody eats birds; hence the birds do not come here" Tilak laughed and said, "The birds can also distinguish between friends and enemies."

Question:

a) Whom did English imprison?
b) How did Tilk keep himself busy?
c) Why did the birds come to the prison?

Government of Karnataka

DEPARTMENT OF COLLEGIATE AND TECHNICAL EDUCATION

JSS POLYTECHNIC FOR THE DIFFERENTLY ABLED(AUTONOMOUS)

PROGRAM: COMPUTER SCIENCE AND ENGINEERING

Course Code	**3414**	**Semester**	I
Course Title	**FUNDAMENTALS OF ELECTRICAL & ELECTRONICS ENGINEERING**	**Course Group**	Core
No. of Credits	4	**Type of Course**	Lecture & Practice
Course Category	PC	**Total Contact Hours**	6 Hrs Per Week
			96 Hrs Per Semester
Prerequisites	Basic Science	**Teaching Scheme**	(L:T:P)= 2:0:4
CIE Marks	60	**SEE Marks**	40

RATIONALE

Fundamentals of Electrical and Electronics Engineering is essential for all streams of diploma engineering to work in any industry as it covers basic electrical safety, troubleshooting and repairing of simple electrical systems. Basic knowledge of electrical wiring circuits, protective devices, electrical machines and basic electronics devices is required to work in any engineering field.

1. COURSE SKILL SET

The aim of the course is to help the student to attain the following industry identified competency through various teaching –learning experiences

1. Perform and test domestic wiring
2. Can operate electrical machine
3. Test different electronics devices

2. INSTRUCTIONAL STRATEGY

1. Expose to different learning tools used in respective labs, Operational safety and Procedure to be followed in the laboratory.
2. Instructor should give examples from daily routine as well as, engineering/technology applications on various concepts and principles in each topic so that students are able to understand and grasp these concepts and principles. In all contents, SI units should be followed.

3. Activity- Theory - Demonstrate/practice approach may be followed throughout the course so that learning may be skill and employability based.

4.Use oral and Sign language in the class room as many of the students are hearing impaired.

5.Use of Audio and Visual techniques like E-Books, PPT, Videos ete.

6. Teaching through group discussion, Guest lecture ete.

7.Providing course materials.

8.Providing extra inputs through industrial visits, employability skills and career awareness programs.

9.Additional inputs' through MOOCs and NPTEL courses.

10.Hands on training through demonstration to tutorial classes in laboratories.

3. COURSE OUTCOMES

On successful completion of the course, the students will be able to

CO1	Comply with the safety procedures and Apply the fundamentals of electricity.
CO2	Install and test electrical wiring system.
CO3	Identify and Operate electrical machines, Batteries and UPS.
CO4	Identify and test the different electronic devices.

4. COURSE TOPICS:

Unit No.	Unit Name	Hours
1	Electrical Safety and Fundamentals	30
2	Protective Devices and Wiring circuits	18
3	Electric Machines and Batteries and UPS	18
4	Introduction to Electronic Devices and DigitalElectronics	30
	Total	**96 Hours**

5. COURSE CONTENT

The following topics/sub topics is to be taught and assessed in order to develop Unit Skill sets for achieving CO to attain identified skill sets

SL No	**Unit skill set (Incognitive domain)** On successful completion ofthe class, the students will be able to	**Topics / Sub topics**	**Practical**	**Hours L-T-P**
UNIT-1 Electrical Safety and Fundamentals				
1	Comply with the Electrical safety	1. Electrical Symbols 2. Electrical safety • Identify Various types of safety signsand what they mean • Demonstrate and practice use of PPE • Demonstrate how to free a personfrom electrocution • Administer appropriate first aid tovictims, bandaging, heart attack, CPR, etc. • Fire safety, causes and precautionaryy activities. • Use of appropriate fire extinguisherson different types of fires. • Demonstrate rescue techniques applied during fire hazard, correctmethod to move injured people during emergency • Inform relevant authority about any abnormal situation • Earthing: Types ➢ http://nreeder.com/Flash/symbols.htm ➢ http://bouteloup.pierre.free.fr /iufm/as/de/house/safety.html	1. Electrical symbols related to electrical engineering. 2. Electrical safety 3. Electrical earthing	4-0-8
2	1. Identify and select the different measuring devices. 2.Identify Identify open circuit, close circuit and short circuit conditions.	1. Describe the sources of electrical energy. 2. Electrical current, voltage, emf, potential difference, resistance with their SI units. 3. Mention the meters used tomeasure different electrical quantities. Identification Measuring devices • Ammeter • Voltmeter • Wattmeter • Ohmmeter • Digital Multimeter • Megger • Tong tester 4. Explain supply systems like AC, DC. http://nreeder.com/Flash/units.htm	1. Connect voltmeter and ammeter in a simple circuit. (Practicing of identification andconnection of differentmeters)	1:0:2
3	Calculate basic electrical quantities	• Relationship between V, I and R. (Ohms law) • Behavior of V, I in Series andParallel DC circuits.	1.Measure current, voltage and analyze effective resistance in	1:0:2

		• Describe open circuit, close circuit and short circuit • http://nreeder.com/Flash/ohmsLaw.htm	series circuit 2.Demonstrate effects ofshorts and opens in a circuit	
4	Connect resistances indifferent combination	1. Equation to find the effectiveResistances connected in series 2. Equation to find effective Resistancesconnected in parallel 3. Resistances connected series andparallel combinations 4. Simple problems.	1. Determine the equivalent Resistance of parallel connected resistances.	1:0:2
5	Calculate and measurement of different parameters of an AC quantity.	**Ac sinewave: S**inusoidal voltage,current, amplitude, time-period, cycle, frequency, phase, phase difference, and their units. http://nreeder.com/Flash/freqPeriod.htm http://nreeder.com/Flash/oscilloscope.htm	Generate and Demonstrate the measurement	1:0:2
6	1.Calculate and measure electric power and energy 2.Identify and differentiate Single phase and Three phase supply	1. Electrical work, power and powerfactor • SI units • Mention the meters used tomeasure them ➢ http://nreeder.com/Flash/powerLaw.htm	• Measure the voltage, current, power using relevant measuring instruments in a Single-phase load.	1:0:2
7		1. Electrical energy • SI units • Mention the meters used tomeasure them 2. Single phase and Three phasesupply.	1. Measure single phaseenergy using relevantmeasuring instrumentsin a Single-phase load. 2. Measure the voltages in Three phase supply.	1:0:2
UNIT-2 Protective Devices and Wiring circuits				
8	1.Identify and select Protective Devices for given current and voltagerating 2.Identify and select thevarious electrician tools	• Necessity of ProtectiveDevices • Various Protective devices and their functions • fuse wire, • Glass cartridge fuse • HRC fuse • Kit-kat fuse • MCB • MCCB • RCCB • ELCB • Relay • Different types of electriciantools and their function. • Describe various wiring tools. • State procedure of care andmaintenance of wiring tools.	1. Wire up and test PVC Conduit wiring tocontrol one lamp fromtwo different places using suitable protective devices.	2:0:4
9	1.Identify and select Wiring systems for a given applications	1. Describe different types of wiringsystems. • Surface conduit • concealed conduit	1. Wire up and test PVC Conduit wiring to control of 2 sockets and 2 lamps.	3:0:6

	2. Identify and select thecables used for different current and voltage ratings. 3.Draw the wiring diagram	• PVC casing capping 2. Wiring systems and their applications. 3. Describe the types of wires, cablesused for different current and voltageratings.		
10	Estimate and planelectrical wiring	Explain Plan and estimate the cost of electrical wiring for one 3m × 3m roomconsisting of 2 lamps, 1ceiling fan, 2three pin sockets.	Prepare the estimationand plan	1:0:2
UNIT-3 Electrical Machines and Batteries and UPS				
11	1. Identify the types of transformer. 2. Verify the transformation ratio.	**Transformer** • working principle • Transformation ratio • Types and applications withtheir ratings	Connect the Single-phasetransformer as Step-Up, Step-Down transformer and verify the transformation ratio.	1:0:2
12	1. Start and run the induction motor. 2.Troubleshoot DOL / Star-delta starter and induction motor	**1. Induction motor** • Single phase and three phase Induction motor. • Necessity of starters. • Describe DOL AND STAR-DELTA starters. 2. What are different causes and remedies for a failure of starter and induction motor.	1. Construct a suitable circuit to start and reverse the direction of three phase induction motor using DOL/ Star-delta starter. 2.Troubleshoot the DOL/Star-delta starter and induction motor	2:0:4
13	Select and test the batteryfor a given application	**Battery** • Types of batteries (Lead acidbattery, lithium, sealed maintenance free (SMF) battery, Modular battery). • Selection criteria of batteries fordifferent applications. • Ampere-Hour Capacity. • Efficiency	Testing Condition of charging and dischargingof a Lead-acid battery	1:0:2
14	Select the size of the UPSfor a given application	**UPS** • List the types and applications • Selection criteria of UPS • Sizing of UPS	Sizing of UPS	2:0:4
UNIT-4 Introduction to Electronic Devices and Digital Electronics				
15	Identify and differentiate Conductors, insulators and semiconductors.	1.Compare Conductors, insulators and semiconductors with examples. 2. Identification of types and values ofresistors-color codes. ➢ http://nreeder.com/Flash/resistor.htm	Determine the value of resistance by color code and compare it with multimeter readings.	1:0:2
16	Identify and test PN Jjunction Diode	**PN junction diode** • Symbol • Characteristics	Identify the terminals of aDiode and test the diode for its condition.	1:0:2

		• Diode as switch. • Types of diodes and ratings • Applications		
17	Build and test bridgerectifier circuit	**Rectifier** • Need for AC to DC conversion • Bridge rectifier with andwithout C Filter, • Rectifier IC.	Construct and test bridgerectifiers using semi- conductor diode and rectifier IC. Compare the waveforms using CRO.	1:0:2
18	1.Identify and test Transistor 2.Build and test transistor as an electronic switch	**Transistor (BJT)** • Symbol • Structure • Working principle	1. Identification 2. Construct and test thetransistor as an electronic switch	2:0:4
19	Identify and test different digital IC	• Comparison of analog and digitalsignal • Digital systems, examples. • Binary numbers, Boolean identities and laws. • Digital system building blocks:Basic logic gates, symbols and truth tables. IC-Definition and advantages.	• Test a Digital IC. • Identification and selection of suitable ICs for basic gates. 1. Verify NOT, AND, OR, NOR, EXOR and NANDgate operations (two inputs).	2:0:4
20	Identify and test variousSensors and actuators.	**1.Sensors** • Concept • Types: Temperature, Pressure,Water, Light, Sound, Smoke, proximity Sensors, Flow, humidity, voltage, vibration, IR (Principle/working, ratings/ specifications, cost, and applications) **2.Actuators** • Concept • Types and applications. • Relay as an actuator.	2. Connect and test an IR proximity sensor to a Digital circuit. • Connect and test a relay circuit using an Opto-coupler. (Photo Diode& Transistor) **Refer note**	2:0:4
21	Know the application of Microcontroller and PLC	• Microcontroller as a programmable device, and listof real-world applications. • PLC and Their applications. (Activity based learning)	• Identify different application microcontroller. • Identify commercially available PLC and their specifications	1:0:2
			TOTAL	**32-0-64=96 Hours**

6. PRATICAL SKILL EXERCISES

Sl. No.	Practical Out Comes / Practical exercises	Unit No.	PO	CO	L: T:P Hrs.
1	• Identify Various types of safety signs and what they mean Demonstrate and practice use of PPE • Demonstrate how to free a person from electrocution appropriate first aid to victims, bandaging, heart attack, CPR, etc. • Fire safety, causes and precautionary activities. • Use of appropriate fire extinguishers on differenttypes of fires. • Demonstrate rescue techniques applied during fire hazard. • Inform relevant authority about any abnormalsituation during fire hazard.	1	1,4	1	0:0:4
2	• Demonstrate different types of earthing/usingvideos. • Prepare a Report on types of Earthing	1	1,4	1	0:0:4
3	Connect voltmeter and ammeter in a simple circuit. (Practicing of identification and connection of different meters)	1	1,4	2	0:0:2
4	1. Determine the equivalent Resistance of series connected resistances. 2. Demonstrate effects of shorts and opens in a circuit	1	1,4	2	0:0:2
5	Determine the equivalent Resistance of parallelconnected resistances.	1	1,4	2	0:0:2
6	Generate and demonstrate the measurement of frequency, time period and phase difference of ACquantity using CRO and function generator.	1	1,4	2	0:0:2
7	Measure the voltage, current, power using relevant measuring instruments in a Single-phase load.	1	1,4	2	0:0:4
8.	1. Measure single phase energy using relevant measuring instruments in a Single-phase load. 2. Measure the voltages in Three phase supply.	2	1,4	2	0:0:2
9.	Wire up and test PVC Conduit wiring to control onelamp from two different places using suitable Protective devices.	2	1,4	3	0:0:2
10	2. Wire up and test PVC Conduit wiring to control of 2 sockets and 2 lamps.	2	1,4	3	0:0:2
11	Wire up and test PVC Conduit wiring to control onelamp from two different places.	2	1,4	3	0:0:4

12	Plan and estimate the cost of electrical wiring for one 3mx3m room consisting of 2 CFL 1ceiling fan, 2 three pin sockets.	2	1,4	3	0:0:2
13	Connect the Single- phase transformer as Step-Up, Step-Down transformer and verify thetransformation ratio.	3	1,4	4	0:0:4
14	Construct a suitable circuit to start and reverse the direction of three phase induction motor using DOL/star-delta starter.	3	1,4	4	0:0:2
15	Troubleshoot the DOL/Star-delta starter andinduction motor	3	1,4	4	0:0:2
16	Testing Condition of charging and discharging of aLead-acid battery.	3	1,4	4	0:0:2
17	Estimate the UPS rating for a computer lab with 50 computers / domestic.	3	1,4	4	0:0:2
18	Determine the value of resistance by color code and compare it with multimeter readings	4	1,4	5	0:0:2
19	Identify the terminals of a Diode and test the diodefor its condition.	4	1,4	5	0:0:2
20	Construct and test bridge rectifiers using semiconductor diode and rectifier IC. Compare thewaveforms using CRO.	4	1,4	5	0:0:2
21	Identification of transistor terminals and test. Construct and test the transistor as an electronic switch.	4	1,4	5	0:0:2
22	Test an IC. Verify the truth-table AND, OR, NOT logic gates.	4	1,4	5	0:0:2
23	Verify the truth-table NAND, NOR, EX-OR, EX-NOR logic gates.	4	1,4	5	0:0:2
24	Connect and test an IR proximity sensor to a Digital Circuit. **NOTE:** Any sensor listed in the theory may beused for condition appropriately.	4	1,4	5	0:0:2
25	Connect and test a relay circuit using an Optocoupler. (Photo Diode & Transistor)	4	1,4	5	0:0:2
26	1. Identify MCS-51 variants 2. Identify commercially available PLC and their specifications.	4	1,4	5	0:0:4
				Total	**0:0:64 =64Hrs**

7. MAPPING OF CO WITH PO and PSO

CO	Course Outcome	PO Mapped	PSO Mapped	Experiment	Cognitive Level R/U/A	Lecture & PracticalSessions in Hrs
CO1	Comply with the safety Procedures and Apply the fundamentals ofelectricity.	PO1,PO4, PO7	PSO1, PSO3	1-7	A	30
CO2	Install and test electrical wiring system and protective devices.	PO1,PO4, PO7	PSO1, PSO3	8-12	A	18
CO3	Identify and Operate electrical machines, Batteries and UPS.	PO1,PO4, PO7	PSO1, PSO3	13-17	A	18
CO4	Identify and test the different electronic devices.	PO1,PO4, PO7	PSO1, PSO2, PSO3	18-26	A	30

A=Apply and above levels (Bloom's Revised Taxonomy)

Course	CO's	PO's							PSO's		
		1	2	3	4	5	6	7	1	2	3
Fundamentals of Electricaland Electronics Engineering	CO1	3	0	0	3	0	0	2	3	0	3
	CO2	3	0	0	3	0	0	2	3	0	3
	CO3	3	0	0	3	0	0	2	3	0	3
	CO4	3	0	0	3	0	0	2	3	3	3
AVERAGE		**3**	**0**	**0**	**3**	**0**	**0**	**2**	**3**	**3**	**3**
Level 3- Highly Mapped, Level 2-Moderately Mapped, Level 1-Low Mapped, Level 0-Not Mapped											

8. SUGGESTED LEARNING RE SOURCES:

Reference Books:

1. ABC of Electrical Engineering by B. L. Theraja and A. K. Theraja, S Chand Publishers, New Delhi,2014 Edition.
2. Basic Electrical and Electronics Engineering by S. K. Bhattacharya, Pearson Education India, 2012 Edition.
3. Electronic Devices and Circuits by I. J. Nagrath, PHI Learning Pvt. Ltd., 2007 Edition.
4. Basic Electrical Engineering byV. Mittle and ArvindMittle, McGrawHill Companies, 2005 Edition.
5. The 8051 Microcontroller & Embedded systemsusinkbnnnjbbh bbvvvvg assembly and C (2ndEdition)–M.A.Mazidi , J.C. Mazidi&R.D.McKinlay ISBN: 81-317-1026-2
6. Programmable Logic controllers, W BOLTON

e-Resources

1. https://www.youtube.com/watch?v=mc979OhitAg&list=PLWv9VM947MKi_7yJ0_FCfzTBXpQU-Qd3K
2. https://www.youtube.com/watch?v=CWulQ1ZSE3cen. wikipedia.org/wiki/Transformer
2. www.animations.physics.unsw.edu.au//jw/AC.html
3. www.alpharubicon.com/altenergy/understandingAC.htm

4. www.electronics-tutorials
5. learn.sparkfun.com/tutorials/transistors
6. www.pitt.edu/~qiw4/Academic/ME2082/Transistor%20Basics.pdf
7. www.technologystudent.com/elec1/transis1.htm
8. www.learningaboutelectronics.com

9. SUGGESTED LIST OF STUDENTS ACTIVITYS for CIE

Note: the following activities or similar activities for assessing CIE (IA) (Any one)
Each student should conduct different activity and no repeating should occur

1	Using suitable meters/ instruments give the practical working circuits to measure
2	Resistance, Current, Voltage, Power and Energy in DC and AC (Single phase) Circuits.
3	List out the different types of wiring systems used in your laboratories or house withtheir representation.
4	Mini-Projects: Like preparing extension box, switch box and wiring models,
5	List out the different protective devices used in your laboratories or house with their ratings.
6	Applications of Electro Magnetic Induction statically induced and dynamically induced emf, self and mutual induced emfs.
7	Prepare a report on types of starters and enclosures used for various industrialapplications of AC motors.
8	Types of Cells and Battery maintenance
9	Visit nearby Battery charging shop or show room and prepare a report of the visit.
10	Prepare a report on various types of diodes used for various industrial applications.
11	Prepare a report on various types of sensors and actuators used for various industrialapplications.
12	Mini-Projects: Connect and test a sensor (domain application) to a Digital circuit

10. COURSE ASSESSMENT AND EVALUATION CHART

Sl. No	Assessment	Duration	Max marks	Conversion	
1	CIE Assessment 1 (Written Test -1-theory) - At the end of 5th week	60 minutes	20	Average of two written tests 20	
2	CIE Assessment 2 (Written Test -2-theory) - At the end of 15th week	60 minutes	20		
3	CIE Assessment 3 (Skill test) - At the end of 7th week	3 Hours	100	20	Average of three skill tests 20
4	CIE Assessment 4 (Skill test) - At the end of 9th week	3 Hours	100		
5	CIE Assessment 5 (Skill test) - At the end of 11th week	3 Hours	100		
6	CIE Assessment 6 (Student activity) - At the end of 13th week	-	20	20	
7	Total Continuous Internal Evaluation (CIE) Assessment			60	
8	Semester End Examination (SEE) Assessment (Practical Test)	3 Hours	100	40	
			Total Marks	**100**	

Note:

1. CIE written test is conducted for 20 marks (Two sections). Each section shall have two full questions of same CL, CO. Student shall answer one full question (10 marks) from each section.
2. CIE Skill test is conducted for 100 marks (3 Hours duration) as per scheme of evaluationand the obtained marks are scaled down to 20 marks

10. DETAILED COURSE CONTENTS

UNIT NO. AND NAME	DETAILED COURSE CONTENT	CO	PO	CONTAC THRS.	TOTAL
UNIT-1 Electrical Safety and Fundamentals	1.Electrical Symbols 2.Electrical safety • Identify Various types of safety signsand what they mean	1	1, 4	1	10
	• Demonstrate and practice use of PPE • Demonstrate how to free a personfrom electrocution	1	1, 4	1	
	• Administer appropriate first aid tovictims, bandaging, heart attack, CPR, etc. • Fire safety, causes and precautionaryy activities. • Use of appropriate fire extinguisherson different types of fires.	1	1, 4	1	
	• Demonstrate rescue techniques applied during fire hazard, correctmethod to move injured people during emergency • Inform relevant authority about any abnormal situation • Earthing: Types	1	1, 4	1	
	1. Describe the sources of electrical energy. 2. Electrical current, voltage, emf, potential difference, resistance with their SI units. 3. Mention the meters used tomeasure different electrical quantities. Identification Measuring devices • Ammeter • Voltmeter • Wattmeter • Ohmmeter • Digital Multimeter • Megger • Tong tester 4. Explain supply systems like AC, DC.	1	1, 4	1	
	• Relationship between V, I and R. (Ohms law) • Behavior of V, I in Series andParallel DC circuits. • Describe open circuit, close circuit and short circuit	1	1, 4	1	

	1. Equation to find the effectiveResistances connected in series 2. Equation to find effective Resistancesconnected in parallel 3. Resistances connected series andparallel combinations Simple problems.	1	1, 4	1	
	Ac sinewave: Sinusoidal voltage,current, amplitude, time-period, cycle, frequency, phase, phase difference, and their units.	1	1, 4	1	
	1. Electrical work, power and powerfactor • SI units • Mention the meters used tomeasure them	1	1, 4	1	
	1. Electrical energy • SI units • Mention the meters used tomeasure them Single phase and Three phasesupply.	1	1, 4	1	
UNIT-2 Protective Devices and Wiring circuits	• Necessity of Protective Devices • Various Protective devices and their functions • fuse wire, • Glass cartridge fuse • HRC fuse • Kit-kat fuse • MCB • MCCB • RCCB • ELCB • Relay	2	1, 4	1	06
	• Different types of electriciantools and their function. • Describe various wiring tools. State procedure of care andmaintenance of wiring tools.	2	1, 4	1	
	Describe different types of wiringsystems. • Surface conduit • concealed conduit • PVC casing capping	2	1, 4	1	
	Wiring systems and their applications.	2	1, 4	1	
	Describe the types of wires, cablesused for different current and voltageratings.	2	1, 4	1	
	Explain Plan and estimate the cost of electrical wiring for one 3m × 3m roomconsisting of 2 lamps, 1ceiling fan, 2three pin sockets.	2	1, 4	1	
UNIT-3 Protective	**Transformer** • working principle • Transformation ratio	3	1, 4	1	

	• Types and applications withtheir ratings				06
	1.Induction motor • Single phase and three phase Induction motor. • Necessity of starters. • Describe DOL AND STAR-DELTA starters.	3	1, 4	1	
	What are different causes and remedies for a failure of starter and induction motor.	3	1, 4	1	
	Battery • Types of batteries (Lead acidbattery, lithium, sealed maintenance free (SMF) battery, Modular battery).	3	1, 4	1	
	• Selection criteria of batteries fordifferent applications. • Ampere-Hour Capacity. • Efficiency	3	1, 4	1	
	UPS • List the types and applications • Selection criteria of UPS • Sizing of UPS	3	1, 4	1	
UNIT-4 **Introduction to Electronic Devices and Digital Electronics**	3.Compare Conductors, insulators and semiconductors with examples. 4. Identification of types and values ofresistors-color codes. ➢ http://nreeder.com/Flash/resistor.htm	4	1, 4	1	10
	PN junction diode • Symbol • Characteristics • Diode as switch. • Types of diodes and ratings • Applications	4	1, 4	1	
	Rectifier • Need for AC to DC conversion • Bridge rectifier with andwithout C Filter, • Rectifier IC.	4	1, 4	1	
	Transistor (BJT) • Symbol • Structure • Working principle	4	1, 4	2	
	• Comparison of analog and digitalsignal • Digital systems, examples. • Binary numbers, Boolean identities and laws. • Digital system building blocks:Basic logic gates, symbols and truth tables. IC-Definition and advantages.	4	1, 4	2	
	3.Sensors • Concept • Types: Temperature, Pressure,Water, Light, Sound, Smoke, proximity Sensors, Flow,	4	1, 4	2	

	humidity, voltage, vibration, IR (Principle/working, ratings/ specifications, cost, and applications) **4. Actuators** • Concept • Types and applications. • Relay as an actuator.				
	• Microcontroller as a programmable device, and listof real-world applications. • PLC and Their applications. (Activity based learning)	4	1, 4	1	

11. SCHEME OF VALUATION FOR SKILL TEST (CIE) & SEE

(CONTINOUS INTERNAL & SEMESTER END EXAMINATION)

Sl. No	Particulars	Marks
1	Identification of meters/ equipment/wires/tools etc.	10
2	Writing Circuit/writing diagram and Procedure*	25
3	Conduction	35
4	Results	10
5	Viva-voce	20
	Total	**100**

12. RUBRICS FOR ACTIVITY

RUBRICS FOR ACTIVITY (Example only) Faculty need to develop appropriate rubrics for respective activity						
Dimension	**Beginning**	**Developing**	**Satisfactory**	**Good**	**Exemplary**	**Student Score**
	4	**8**	**12**	**16**	**20**	
Collection of data	Does not collectany information relating to the topic	Collects verylimited information; some relate to the topic	Collect much information; but very limited relate to the topic	Collects some basic information; most refer to the topic	Collects a great deal of informatio n;all refer to the topic	
Fulfill team's roles &duties	Does not perform any duties assigned to the team role	Performs very little duties but unreliable.	Performs very little duties	Performs nearly all duties	Performs allduties of assigned team roles	
Shares work equally	Always relies on others to do the work	Rarely does the assigned work; often needs reminding	Usually doesthe assigned work; rarely needs reminding	Normally does the assigned work	Always doesthe assigned work without having to be reminded.	
Listen to other Team mates	Is always talking; never allows anyone else to speak	Usually doesmost of the talking; rarely allows others to speak	Talks good; but never show interest in listening others	Listens, but sometimes talk too much	Listens and speaks a fair amount	
					Average / Total Marks:	

Lab Equipment Requirement

The following are the specification of the apparatus required for FEEE lab and number of apparatus required for the batch of 20 students.

Sl. No.	Name of Equipment and Specification	Quantity Required
1	Dual Channel 30 V, 2 A continuously variable DC RegulatedPower Supply with Current and Overload Protection	05 Nos.
2	+/- 15 V, 2 A, fixed DC Regulated Power Supply	05 Nos.
3	Portable Moving Coil DC Voltmeters a) 0 - 1 V b) 0 - 10 V c) 0 - 30 V	Each 05 Nos.
4	Portable Moving Iron AC Voltmeters a) 0 - 300 V b) 0 - 600 V	Each 05 Nos.
5	Portable Moving Coil DC Ammeters a) 0 - 100 mA b) 0 - 1 A c) 0 - 2 A	Each 05 Nos.
6	Portable Moving Iron AC Ammeters a) 0 - 2 A b) 0 - 5 A c) 0 - 10 A	Each 05 Nos.
7	Watt-meters a) 150/ 300V, 2 A, UPF b) 300/ 600 V, 5/ 10 A, LPF	Each 02 Nos.
8	Rheostats – 25 Ohms, 50 Ohms, 150 Ohms, 220 Ohms (all rated at 3 A)	Each 05 Nos.
9	Rheostat Loads s – 1 KW, 230 V	02 Nos.
10	Wire wound Resistors- 5 Ohms 2 Watts, 25 Ohms 5 Watts, 330 Ohms 2 Watts, 560 Ohms 2 Watts, etc.	Each 05 Nos.
11	Soldering Iron 60 W	05 Nos.
13	Single Phase Energy meter 10 A, 230 V, 50 Hz, Digital type	05 Nos.
14	Multi-meter Digital ¾”	06 Nos.
15	Duel Trace Oscilloscope – 30 MHz	02 Nos.
16	Three Phase Induction Motors :1 HP – 440 V 50 Hz,2 HP – 440 V50 Hz.	Each 02 Nos.
17	Three phase DOL, Star-Delta, Auto transformer starter	Each 02 Nos.
18	UPS 1 KVA	01 Nos.
19	Battery Lead-Acid type, 140 A-hr and Hydrometers	02 Nos.

20	I C Trainer kit	05 Nos
21	Digital IC's 7400, 7402, 7404, 7408, 7486 etc	Each 10 Nos.
22	Wooden Wiring board (2x3) ft	10
23	Wiring accessories a) PVC conduit - ¾" - 10 lengths b) Cap and casing - ¾" - 10 lengths c) Switches Single Pole- 5A, 230 V d) Switches two way – 5 A, 230 V e) 3 Pin Sockets 5A, 230 V f) Bulb Holders – 5 A, 230 V g) 3 Pin Plug 5A, 230 V h) 60 Watts Lamps i) 100 Watts Lamps j) 15 W CFL lamps k) Copper Wires of sizes mm^2, 2.5 mm^2, 4 mm^2 – 1 coil each l) Gang boxes (1+1, 2+1, 2+2) m) Kit –Kat fuses 5A, 15 A n) MCB 16 A & 32 A/ 230 V, Single and Double Pole o) ELCB 16 A & 32 A/ 230 V, Double Pole p) Neutral link- 16 A, 230 V q) Screws of assorted sizes r) Testers	
24	Electronic Components a) Diodes - BY 127 and IN 4001 b) Zener Diodes – 6.2 V, 5.6 V, 7.8 V c) Relays – solid state Sugar cube type, SPST, Coil 6V,Power circuit 230 V, 5 A. d) Spring Boards e) Bread Boards f) Tag Boards.	Each 10 Nos.
25	Simple PANEL BOARD/ CUBICAL consisting of bus-bars, CB/MCB/ELCB, meters, HRC fuses, magnetic contactors,cables, earthing points.	1 No

Government of Karnataka

DEPARTMENT OF COLLEGIATE AND TECHNICAL EDUCATION

JSS POLYTECHNIC FOR THE DIFFERENTLY ABLED(AUTONOMOUS)

PROGRAM: COMPUTER SCIENCE AND ENGINEERING

Course Code	3415	**Semester**	I/II
Course Title	**IT SKILLS**	**Course Group**	ES/CS
No. of Credits	4	**Type of Course**	Lecture + Practice
Course Category	ES	**Total Contact Hours**	6Hrs Per Week 96Hrs Per Semester
Prerequisites	Basic Computer Skills	**Teaching Scheme**	(L:T:P)= 1:0:2
CIE Marks	60	**SEE Marks**	40

1. RATIONALE

Information Technology is crucial to the majority of the business and has a great influence on innovation and engineering. Every branch of engineering and every organization opt for computers and IT skills for business automation, communication/connectivity, resource planning, work automation and securing information etc. All engineering diploma students must be conversant with the basic IT skills which empower them to learn new technologies, adapt to changes, businessdevelopment, communication etc.

2. COURSE SKILL SET

The aim of the course is to help the student to attain the following industry identified competency through various teaching –learning experiences.

Perform jobs related to web design and maintenance, business process automation tool management, cyber security and safety and program assistant.

3. COURSE OBJECTIVES

1. Demonstrate the basics of coding.
2. Design and develop web pages that include static and dynamic content.
3. Describe the basic concepts of Cloud and IoT.
4. Express the workflow and business automation
5. Recognize the best practices of Cyber Safety and security.

4. JOB ROLE

SL.NO	LEVEL	JOB ROLES
1	3	Junior software developer - web.
2	3	Junior Creative Designer/Digital Artist

5. PREREQUISITES

STUDENT	Basic Computer skills (Students without basic computer skills should be taught basic skills)
TEACHER	Computer science faculty with required knowledge of IT Skills.

6. COURSE OUT COMES

On successful completion of the course, the students will be able to demonstrate industry orientedCos associated with the above mentioned competency:

COURSE OUTCOME		UNIT LINKED	CL	LINKED PO	TEACHING HOURS
C01	Illustrate the basics of coding and develop simple applications for android phones	1	U,A	1,4,7	18
C02	Design and Develop Websites.	2	U,A	1,4,7	33
C03	Identify Cloud Services LOT applications & Apply Workflow and use ERP for simple project plan	3	U	1,4,7	30
C04	Implement best practices of Cyber safety and Security in the workplace	4	U,A	1,4,7	15
				TOTAL	**96**

7. INSTRUCTIONAL STRATERGY

These are sample strategies, which teacher can use to accelerate the attainment of the variouscourse outcomes

1. Lecturer method(L) does not mean only traditional lecture method, but different type of teaching method and media visual/graphical content that are employed to develop the outcomes
2. Massive Open on-line courses (MOOCS) can be used to teach various topics/subtopics.
3. Online coding platform wherever mentioned.
4. Hands on coding should be practiced.
5. About 15 to 20% of the topics/subtopics which are relatively simpler or descriptive in nature is to be given to the students for self-directed learning

6. Use oral and Sign language in the class room as many of the students are hearing impaired.
7. Use of Audio and Visual techniques like E-Books, PPT, Videos ete.
8. Teaching through group discussion, Guest lecture ete.
9. Providing course materials.
10. Providing extra inputs through industrial visits, employability skills and career awareness programs.
11. Additional inputs' through MOOCs and NPTEL courses.
12. Hands on training through demonstration to tutorial classes in laboratories.

8 .DETAILS OF COURSE CONTENT

The following topics/subtopics is to be taught and assessed in order to develop Unit Skill sets for achieving CO to attain identified skill sets

UNIT NO	Topics/Sub topics	Unit skill set/Learning outcomes (In cognitive domain)	Hours L-T-P
1	**UNIT 1 - INTRODUCTION TO BASICS OF CODING**		6:0:12
	1.1 Introduction to computer programming 1.2 Algorithms –With sufficient examples 1.3 Flowcharts – With sufficient examples 1.4 Execute simple programs **Note: Below listed or any other suitable online/offline coding platforms should be used to demonstrate and provide coding experience to students.** **a.** https://scratch.mit.edu/	1. Understand computer programming 2. Create and write Algorithm for programmable problems. 3. Design Flowchart for programmable problems. 4. Develop simple Android application.	

	b. https://studio.code.org/projects Suggested programs are listed in Table 1 1.5 Introduction to Applicationdevelopment 1.6 Simple android application development (No knowledge of programming language is required). **Note:** ***i. The purpose of application development is to ignite and promote programming skills.*** ***ii. Application development should be done using any App builder platforms such as*** ***iii. MITApp Inventor: https://appinventor.mit.edu/*** ***iv. Thunkable: https://thunkable.com/*** ***v. ibuildapp: https://ibuildapp.com/*** ***vi. The student should be introduced to the android application development environment for further research and learninghttps://developer.android.com/*** Activity: create a simple Android application (Unique for each student) publish on the learning management system.		
2	**UNIT 2 - DESIGN AND DEVELOP WEB PAGES**		11:0:22
2	2.1 Basic web technologies • Browser • Web –Server • Client-Server Model • URL • SEO techniques • Domain names and domain name system. Creating Web-pages with HTML5 - Static	1. Understand and examine basic web technologies 2. Creating static web pages 3. Formatting Webpages with cascading style sheets (CSS) 4. Creating Dynamic web pageswith JavaScript	

	web pages. • Introduction, Editors • Tags, Attributes, Elements, Headings • Links, Images, List, Tables, Forms • Formatting, Layout, Iframes. Formatting web pages with style sheets(CSS3). • Introduction to CSS • Inline CSS, Internal CSS, Classes andIDs • div, Color, Floating, Positioning • Margins, Padding, Borders • Fonts, Aligning Text, Styling Links Creating a web page dynamic usingJavaScript. • Dynamic web page and Introductionto JS • Basic syntax • Functions • Events Note: Refer https://www.w3schools.com **2.6** Creating dashboards in websites. **2.6 Activity: Personal website design and launch with a free platform or Create a Blogging website.** • **Online platforms (Learning and executing)** • **https://www.w3schools.com/** • **https://studio.code.org** • **https://www.khanacademy.org** **Note:** **1) The student must be introduced to website development platforms - worldpress.com.** **2) The student must be made familiar with launching websites.**	5. Creating and launching dashboard based personalwebsite.	

	Certification available: • HTML - W3schools • CSS - W3schools • JavaScript - W3schools		
3	**UNIT 3 -BUSINESS PROCESS AUTOMATION/ERP & INTRODUCTION TO CLOUD AND IOT CONCEPTS**		10:0:20
3	3.1 Introduction to business process automation. 3.2 Organization structure and functions composition-Properties and applications • Structure • Types • Functional Units **Note: Students should be made familiar with organization, types and components of a big enterprise to make him understand the working of organization keeping him as part of org.** 3.3 Workflows • Introduction • Components • Use and use cases **Note: Use free and open-source platform to demonstrate and create workflows.** **Example:** **https://airflow.apache.org/** **https://taverna.incubator.apache.org/** **https://trello.com/** **https://www.processmaker.com/** 3.4 Enterprise resource planning • History • Evolution • Uses of ERP • ERP software tools.	1. Identify and examine the needs of business process automation. 2. Understand Organization structure and functions 3. Create and use workflows 4. Use Enterprise resource planning in workplace.	

	Note: The student should be introduced into Enterprise resource planning software tools to understand importance of ERP. **Examples:** • **https://erpnext.com/** • **www.bitrix24.com** • **https://www.odoo.com/**		
	3.5 Fundamentals of cloud 3.6 Cloud service models • IaaS (Infrastructure-as-a-Service) • PaaS (Platform-as-a-Service) • SaaS (Software-as-a-Service) 3.7 Cloud deployment types • Public, • Private, • Hybrid • Community Cloud 3.8 Cloud services: • Google Drive - file storage and synchronization service developed by Google; • Google docs- bring your documents to life with smart editing and styling tools to help you easily format text and paragraphs; • Google Co-lab (Usage of Jupyter Notebook): • *Colab* notebooks allow you to combine	1. Understand Cloud concepts 2. Identify and use Cloud services 3. Understand IoT concepts 4. Identify IoT applications	

executable code and rich text in a single document, along with images, HTML, LaTeX, and more.

- Google App Engine: Google App Engine is a Platform as a Service and cloud computing platform for developing and hosting web applications in Google-managed data centers. Applications are sandboxed and run acrossmultiple servers.

Note: Above cloud services are not compulsory for all branches; teacher can recommend other cloud service based on need of engineering branch.

3.9 Working of IoT and IoT components (Only brief introduction and demonstration through videos)

3.10 Explain concept of Internet of Things with examples

- Smart home
- Smart city
- Smart farming

Note:

a. Teacher can also select specific area of work where Things (autonomous computing devices) could be interconnected over TCP/IP to establish IoT.

b. The students should be introduced to the IoT environment for further research and study.

Example:

- **https://www.raspberrypi.org/**
- **https://www.arduino.cc/**

	3.11Activity: • **Project plan for summer internship - use open source ERP Software** • **Identify different components of nearby organization with recourseplan and workflow design.** • **Identify types of ERP software available with their market share.** • **Create your cloud service account and demonstrate using cloud services.** • **Identify cloud service provider with respect to service models and deployment types.** • **Identify areas where Internet of Things could bring positive changes.**		
4	**UNIT 5 - CYBERSECURITY AND SAFETY**		**5:0:10**
	4.1Introduction to Cyber security and cybersafety. • Brief awareness on cyber safety measures • Identification of basic security issues in mobile phones and personal computers • Installation of Antivirus software • Firewall concepts • Browser settings • Importance of privacy and Password policy (Best practices). 4.2 Common threats - Demonstration • Phishing • DoS attack • Man in the middle attack • Eavesdropping • Spamming	1. Identify need for Cyber security and cyber safety 2. Identify basic security issues in mobile phones and personal computers 3. Examine Importance of privacy, Password policy 4. Implement best practices of cyber safety and security in work place	

4.3 Activity

- **Identification of basic security issues in computers of your college and fixing the same.**
- **Visit nearby government organization.**
  - **Identify basic cyber security issuesand fixing the same**
  - **Demonstrate the importance ofcyber security, password policy, and cyber safety.**

9. SUGGESTED PRACTICAL SKILL EXERCISES

TABLE-I

Sl. No.	Practical Out Comes/Practical exercises	Unit No.	PO	CO
1	Write an algorithm for programmable problems Example for Reference: • Add/subtract two numbers • Find the largest/smallest of 3 numbers • Calculate and print sum of 'N' numbers	1	1,4,7	1
2	Design a flowchart for programmable problems Example for Reference: Add/subtract two numbers Find the largest/smallest of 3 numbers Calculate and print sum of 'N' numbers	1	1,4,7	1
3	Design and create simple game using MIT-scratch/Code.org	1	1,4,7	1
4	Design and create simple android application (MIT App Inventor)	1	1,4,7	1
5	Design and create webpage for displaying your poem (Title, header, paragraph, formatting tags)	2	1,4,7	2
6	Design and create webpage for your wish list (What you want to do). Also list challenges and opportunities along with images to present your dreams (List ordered and unordered, Image, table)	2	1,4,7	2
7	Design and create webpage using HTML and CSS about an awesome animal (Use necessary CSS tags)	2	1,4,7	2
8	Design and create web page for a travel book/recipe book with more than 3 pages, table to list places/recipes (iframe, hyperlink)	2	1,47	2
9	Design and create web page with JavaScript to design a simple calculator to perform the following operations: sum, product, difference and quotient	2	1,4,7	2
10	Design and create a personal webpage with dashboard	2	1,4,7	2
11	Design and create web page about advantages of business process automation with respect to your branch of engineering	2,3	1,4,7	2,3

12	Create a workflow for education loan approval in bank/diploma admission process (Use any tool)	3	1,4,7	3
13	Demonstrate ERP with ERPNext Demo for manufacturing, retail and service sector (Use any other ERP tools)	3	1,4,7	3
14	Create user account and demonstrate use of Google drive, Google docs, Google Co-lab (Usage of Jupyter Notebook)	4	1,4,7	3
15	1.1 Demonstrate Internet of Things using with examples a. Smart home b. Smart city c. Smart farming Note: Teacher can also select specific area of work where Things (autonomous computing devices) could be interconnected over TCP/IP to establish IoT.	4	1,4,7	3
16	Installation of Antivirus software	5	1,4,7	4
17	Demonstration and hands on browser settings	5	1,4,7	4
18	Demonstration and hands on privacy settings and password policy	5	1,4,7	4
19	Demonstration of common security threats (using videos) a. Phishing b. DoS attack c. Man in the middle attack d. Spamming e. Virus	5	1,4,7	4

The suggested practical activities (TABLE-I) in this section are demonstrated for the attainment of the competency. These practical activities can also be used for the student assessment in portfolio mode for awarding CIE marks. **The lecturer can enhance the competency level of the students by sketching more practical exercises.**

NOTES:

1. It is compulsory to prepare log book/record of exercises. It is also required to get each exercise recorded in logbook, checked and duly dated signed by the teacher
2. Student activities are compulsory and are also required to be performed and noted in logbook.
3. Student activity is compulsory and part of skill assessment. The activity enable student to explore the course, help student to demonstrate creativity & critical thinking.
4. Student activity report is compulsory part to be submitted at the time of practical ESE
5. Term work report is compulsory part to be submitted at the time of practical ESE.

6. Student activity and student activity reports must be uploaded to Learning management system.
7. For CIE, students are to be assessed for Skills/competencies achieved.

11. MAPPING OF CO WITH PO

COURSE	CO'S	PROGRAMME OUTCOMES (POs)							Program Specific Outcomes (PSOs)	
		1	2	3	4	5	6	7	1	2
IT SKILLS	CO1	3	-	-	3	-	-	3	2	3
	CO2	3	-	-	3	-	-	3	2	3
	CO3	3	-	-	3	-	-	-	2	3
	CO4	3	-	-	3	-	-	-	2	3
AVERAGE		**3**	**-**	**-**	**3**	**-**	**-**	**3**	**2**	**3**
Level 3- Highly Mapped, Level 2-Moderately Mapped, Level 1-Low Mapped, Level 0- Not Mapped										

12 SUGGESTED LEARNING RESOURCES

	BOOKS
1	The Art of Programming Through Flowcharts & Algorithms, A. B. Chaudhuri, Firewall Media publication
2	HTML5 Black Book, by Publishing company Limited. Kogent Learning Solutions Inc.
3	"World Wide Web design with HTML", Xavier, Tata McGraw-Hill
4	Internet of Things – A Hands on Approach, By ArshdeepBahga and Vijay Madisetti Universities Press, ISBN: 9788173719547
	URL'S
1	https://scratch.mit.edu
2	https://studio.code.org
3	http://ai2.appinventor.mit.edu
4	https://www.w3schools.com
5	https://www.tutorialspoint.com/javascript/index.htm
6	https://www.geeksforgeeks.org/html-tutorials/
7	Android:https://developer.android.com
8	https://www.khanacademy.org
9	Tools for Web Development a. https://www.wix.com b. https://atom.io/ c. https://www.openelement.com/

13. SUGGESTED LIST OF PROPOSED STUDENTS ACTIVITY

Note: Refer activities mentioned in DETAILS OF COURSE CONTENT table

14. COURSE ASSESSMENT AND EVALUATION CHART

	SL.NO	ASSESSMENT	DURATION (in minutes)	MAX MARKS	CONVERSION
DIRECT ASSESSMENT	1	CIE Assessment 1 (Written Test -1 TH) - At the end of 3 d week	60	20	Average of two written tests 20
	2	CIE Assessment 2 (Written Test -2 TH) - At the end of 13 week	60	20	
	3	CIE Assessment 3 (Skill Test) - At the end of 5 week	3 hrs	20	Average of three skill test 20
	4	CIE Assessment 4 (Skill Test) - At the end of 7 week	3 hrs	20	
	5	CIE Assessment 5 (Skill Test) - At the end of 9 week	3 hrs	20	
	6	CIE Assessment 6 (Student activity)- At the end of 11 week	-	20	20
	7	**Total Continuous Internal Evaluation (CIE) Assessment**			60
	8	Semester End Examination (SEE) Assessment (Practical Test)	3 hrs	100	40
				TOAL MARKS	100

INDIRECT ASSESSMENT METHODS	Student Feedback on course	Students	Middle of the Course	Feedback forms
	End of Course Survey		End of the Course	Questionnaire

Note: CIE written test is conducted for 20 marks (Two sections). Each section shall have two full questions of same CL, CO. Student shall answer one full question from each section.

15. RUBRICS FOR ACTIVITY

RUBRICS FOR ACTIVITY (Example Only) Appropriate rubrics shall be developed by the concerned faculty						
Dimension	**Poor**	**Below Average**	**Average**	**Good**	**Exemplary**	**Student Score**
	4	**8**	**12**	**16**	**20**	
Concept	Does not collect any information relating to the concept	Collects very limited information; some relate to the concept	Collect much information; but very limited relate to the concept	Collects some basic information; most refer to the concept	Collects a great deal of information; all refer to the concept	8
Design	Design is not acceptable/very poorly structured	Design is poor and not well structured.	Design Fallowed layout samples and well structured	Design & convey both content and context	Design considered all aspect of concept, concept and presentation (UI)	6
Creativity	Very little creativity in design/implementation	Creativity in concept or design or implementation	Creativity in concept /design/implementation	Creativity in concept /design/implementation which complements each other	Creative concept, content, presentation and implementation	8
Implementation	Poorly implemented	Partially implemented	Implemented on time with results (content)	Product convey both content and context	Product is creative with easy-to-use UI, structure	8
				Average / Total Marks: (8+6+8+8)/4		**7.5 = 8**

16. RUBRICS for Skill Test Evaluation (Both for CIE & SEE)

Sl No	Parameter to be Observed	Marks Allotted
1	Design-Written Skill Test 1: Algorithm / Flowchart/Visual DesignSkill Test 2: Web site visual design Skill Test 3: Work flow or Project plan or cyber security plan or Cloud service Concept	30
2	Implementation Skill Test 1: Android application Skill Test 2: Web site / Web pages Skill Test 3: Create or use cloud service account or Cyber safety and security- Antivirus Installation or browser settings	50
3	Appeal and Presentation	20
Total		**100**

17. SYSTEM REQUIREMENTS:

Sl. No.	Specification	Quantity
1.	Computers with HD Graphics Card	20
2.	Software: GIMP, KRETA, BLENDER, PHOTOSHOP or any other relevant open-source software.	-
3.	Internet Connectivity	-

Note: Above specification is for a batch of 20 students

Government of Karnataka

DEPARTMENT OF COLLEGIATE AND TECHNICAL EDUCATION

JSS POLYTECHNIC FOR THE DIFFERENTLY ABLED(AUTONOMOUS)

PROGRAM: COMPUTER SCIENCE AND ENGINEERING

Course Code	**3416**	**Semester**	I
Course Title	**ENVIRONMENTAL SUSTAINABILITY**	**Course Group**	Audit
No. of Credits	2	**Type of Course**	Lecture
Course Category	AU	**Total Contact Hours**	2Hrs Per Week
			32Hrs Per Semester
Prerequisites	Basic Environmental Science	**Teaching Scheme**	(L: T:P) = 2:0:0
CIE Marks	50	**SEE Marks**	No

Rationale:

Technicians working in industries or elsewhere essentially require the knowledge of environmental science so as to enable them to work and produce most efficient, economical and eco-friendly finished products.

1.Course skill set:

1. Solve various engineering problems applying ecosystem to produce eco – friendly products.
2. Use relevant air and noise control methods to solve domestic and industrial problems.
3. Use relevant water and soil control methods to solve domestic and industrial problems.
4. To recognize relevant energy sources required for domestic and industrial applications.
5. Solve local solid and e-waste problems.

2.COURSE OUTCOMES:

At the end of the course student will be able to know:

CO1	Importance of ecosystem and terminology.
CO2	The extent of air and noise pollution, effects, control measures and acts.
CO3	The water and soil pollution, effects, control measures and acts
CO4	Different renewable energy resources and efficient process of harvesting.
CO5	Solid Waste Management and Environmental acts.

3.DETAILS OF COURSE CONTENT

The following topics / subtopics is to be taught and accessed in order to develop UnitSkill Sets for achieving CO to attain identified skill sets:

UNITNO AND NAME.	UNIT SKILL SET	TOPICS / SUBTOPICS	HOU RSL-T-P
UNIT-1 Ecosystem	• Understand about ecosystem • Able to differentiate between biotic and abiotic components.	1.1 Structure of ecosystem 1.2 Biotic & Abiotic components 1.3 Aquatic (Lentic and Lotic) and terrestrial ecosystem. 1.4 Global warming - Causes, effects, Green House Effect, Ozone depletion.	03-0-0
Unit-2 Air Pollution and Noise Pollution	• Able to differentiate between natural and man made sources of air pollution • Gain knowledge about the preventive measure of air pollution. • Understand about the noise pollution • Able to prevent noise pollution	1.1 Air pollution 1.2 Natural and manmade sources of air pollution 1.3 Effects of air pollution 1.4 Air Pollutants and Types. 1.5 Control of air pollutants by Cyclone separator and Electrostatic Precipitator 1.6 Air (prevention and control of pollution) act 1981 1.7 Noise pollution: sources of pollution 1.8 measurement of pollution level, Effects and Control of Noise pollution 1.9 Noise pollution (Regulation and Control) Rules, 2000	05-0-0
Unit- 3 Water and Soil Pollution	• Able to list the sources of water pollution • Gain knowledge about to control measure of water pollution • Understand about importance of fertilizers pesticides and insecticides	1.1 Water pollution and Sources of water pollution 1.2 Types of water pollutants 1.3 Characteristics of water pollutants, control measures of water pollution. 1.4 Definition and list unit operations in water and Wastewater Treatment process. 1.5 Water (prevention and control of pollution) act 1974 1.6 Water conservation – Importance of Rainwater Harvesting. 1.7 Soil pollution, Causes, Effects and Preventive measures of Soil Pollution due to Excessive use of Fertilizers, Pesticides and Insecticides	08-0-0

Unit-4 **Renewable sources of Energy**	• Understand the concept of solar energy and use of solar water heater • Gain knowledge about the current and future prospects of wind energy • Able to list the new energy source based on environmental benefits.	1.1 Solar Energy: Basics of Solar energy. Definition and advantages of advanced solar collectors 1.2 Solar water heater and Solar stills and their uses. 1.3 Biomass: Overview of biomass as energy source. 1.4 Thermal characteristics of biomass as fuel. 1.5 Wind energy: Current status and future prospects of wind energy. Wind energy in India 1.6 Need of new Energy sources, Different type's new energy sources. 1.7 Environmental benefits of New Energy Sources-Hydrogen energy, Ocean energy resources, Tidal energy conversion.	08-0-0
Unit-5 **Solid Waste Management and Environmental Acts**	• Able to explain the sources and characteristics of municipal solid waste. • Able to reuse of the plastic products. • understand the importance of Environment act	1.1 Solid waste generation, Sources and characteristics of Municipal solid waste 1.2 Solid Waste Management rules 2016- 3R in SWM 1.3 E- Waste generation, Sources and characteristics. 1.4 E waste management rules 2016. 1.5 Plastic Waste generation, Sources and characteristics, Recycled plastic rules 2016. 1.6 Importance of Environment (protection) act 1986 1.7 Occupational health and safety measures.	08-0-0

Unit No & Name	Detailed Course Content	CO	PO	Contact Hrs
1. Ecosystem	Structure of ecosystem, Biotic & Abiotic components, Aquatic (Lentic and Lotic) and terrestrial ecosystem.	CO1	1,5,7	1
	Global warming - Causes, effects.	CO1	1,5,7	2
	Green House Effect, Ozone depletion - Causes, effects	CO1	1,5,7	3
2. Air Pollution and Noise Pollution	Air pollution, Natural sources of air pollution, Man Madesources of air pollution	CO2	1,5,7	4
	Air pollutants and Types, Effects of Particulate Pollutants andcontrol by Cyclone separator	CO2	1,5,7	5
	Effects of Particulate Pollutants and control by ElectrostaticPrecipitator, Air (prevention and control of pollution) act1981.	CO2	1,5,7	6
	Noise pollution: sources of pollution, Measurement of Noisepollution level.	CO2	1,5,7	7
	Effects and Control of Noise pollution. Noise pollution (Regulation and Control) Rules, 2000	CO2	1,5,7	8
3. Water and Soil Pollution:	Sources of water pollution. Types of water pollutants,Characteristics of water pollutants.	CO3	1,5,7	9
	Control measures of water pollution.	CO3	1,5,7	10
	Definition and list unit operations in water and WastewaterTreatment process, Water (prevention and control of pollution) act 1974.	CO3	1,5,7	11
	Water conservation – Importance of Rainwater Harvesting	CO3	1,5,7	12
	Soil pollution, Causes and Effects due to Fertilizers, Pesticidesand Insecticides	CO3	1,5,7	13,14
	Preventive measures of Soil Pollution due to Excessive use ofFertilizers, Pesticides and Insecticides.	CO3	1,5,7	15,16
4. Renewable sources of Energy	Solar Energy: Basics of Solar energy. Solar collectors and advantages of Advanced solar collectors.	CO4	1,5,7	17
	Solar water heater, Solar stills and their uses.	CO4	1,5,7	18
	Biomass: Overview of biomass as energy source. Thermal characteristics of biomass as fuel.	CO4	1,5,7	19
	Wind energy: Current status and future prospects of windenergy. Wind energy in India.	CO4	1,5,7	20
	Need of new Energy sources, Different type's new energysources. Environmental benefits of New Energy Sources-Hydrogen energy	CO4	1,5,7	21,22
	Environmental benefits of New Energy Sources- Ocean energyresources	CO4	1,5,7	23

	Environmental benefits of New Energy Sources-Tidal energy conversion.	CO4	1,5,7	24
5. Solid Waste Management and Environmental Acts	Solid waste generation, Sources, Characteristics of solid waste Solid Waste Management rules 2016	CO5	1,5,7	25
	E- Waste generation Sources and characteristics, E waste management rules 2016	CO5	1,5,7	26
	Plastic Waste generation Sources and characteristics, Plastic Waste Sources and characteristics	CO5	1,5,7	27,28
	Recycled plastic rules 2016, Importance of Environment(protection) act 1986,	CO5	1,5,7	29,30
	Occupational health and safety measures.	CO5	1,5,7	31,32
			Total	**32**

4.References:

(a) Suggested Learning Resources:

Books:

1. S.C. Sharma & M.P. Poonia, Environmental Studies,Khanna Publishing House,New Delhi
2. C.N. R. Rao, Understanding Chemistry, Universities Press (India) Pvt. Ltd., 2011.
3. Arceivala, Soli Asolekar, Shyam, Wastewater Treatment for Pollution Control and Reuse, Mc-Graw Hill Education India Pvt. Ltd., New York, 2007, ISBN:978-07-062099.
4. Nazaroff, William, Cohen, Lisa, Environmental Engineering Science, Willy, New York, 2000, ISBN 10: 0471144940.
5. O.P. Gupta, Elements of Environmental Pollution Control, Khanna Publishing House, New Delhi
6. Rao, C. S., Environmental Pollution Control and Engineering, New Age International Publication, 2007, ISBN: 81-224-1835-X.
1. Rao, M. N.Rao, H.V.N, Air Pollution, Tata Mc-Graw Hill Publication, New Delhi, 1988, ISBN: 0-07-451871-8.
2. Frank Kreith, Jan F Kreider, Principles of Solar Engineering, McGraw-Hill, New York ; 1978, ISBN: 9780070354760.
7. Aldo Vieira, Da Rosa, Fundamentals of renewable energy processes, Academic Press Oxford, UK; 2013. ISBN: 9780123978257.
3. Patvardhan, A.D, Industrial Solid Waste, Teri Press, New Delhi, 2013, ISBN:978-81-7993-502- 6
4. Metcalf & Eddy, Wastewater Engineering, Mc-Graw Hill, New York, 2013, ISBN: 077441206.
5. Keshav Kant, Air Pollution & Control, Khanna Publishing House, New Delhi (Edition 2018)

(b) Open source software and website address:

1. www.eco-prayer.org
2. www.cpcp.nic.in
3. www.indiaenvironmentportal.org.in
4. www.sustainabledevelopment.un.org
2. www.teriin.org
4. www.cpcp.gov.in
6. www.whatis.techtarget.com
8. www.conserve-energy-future.com

Teachers should use the following strategies to achieve the various outcomes of the course.

- Different methods of teaching and media to be used to attain classroom attention.

- Massive open online courses (MOOCs) may be used to teach various topics/subtopics.
- 15-20% of the topics which are relatively simpler or descriptive in nature should be given to the students for self-learning and assess the development of competency through classroom presentations.
- Micro-projects may be given to group of students for hand-on experiences
- Encouraging students to visit sites such as Railway station and research establishment around the institution.

5.Mapping of Course Outcomes with Programmed Outcomes

CO	Course Outcome	PO Mapped	Cognitive Level R/U/A	Theory Session sIn Hrs	Allotted marks for CIE on cognitive levels		TOTAL
					R	U	
CO1	Importance Of ecosystemand terminology	1,5,7	R, U	03	02	04	06
CO2	The extent of air and Noise pollution, effects, control measures and acts.	1,5,7	R, U	05	02	04	06
CO3	The water and soil pollution, effects, control measures and acts	1,5,7	R, U	08	02	04	06
CO4	Different renewable energy resources and efficient process of harvesting.	1,5,7	R, U	08	02	04	06
CO5	Solid Waste Managementand Environmental acts.	1,5,7	R, U	08	02	04	06
Total Hours of instruction				**32**	**30**		

R-Remember , U-Understanding.

6.Level of Mapping PO's with CO's

Course	CO's	Programme Outcomes (PO's)						
		1	**2**	**3**	**4**	**5**	**6**	**7**
Environmental Sustainability	**CO1**	3	0	0	0	2	0	1
	CO2	3	0	0	0	2	0	1
	CO3	3	0	0	0	2	0	1
	CO4	3	0	0	0	2	0	1
	CO5	3	0	0	0	2	0	1
AVERAGE		3	0	0	0	2	0	1

Level 3- Highly Mapped, Level 2-Moderately Mapped, Level 1-Low Mapped, Level 0- NotMapped

Method is to relate the level of PO with the number of hours devoted to the CO s which maps the given PO.
If ≥50% of classroom sessions related to the CO are addressing a particular PO, it is considered that PO is mapped at Level 3
If 30 to 50% of classroom sessions related to the CO are addressing a particular PO, it is considered that PO is mapped at Level 2 If 5 to 30% of classroom sessions related to the CO are addressing a particular PO, it is considered that PO is mapped at Level 1
If < 5% of classroom sessions related to the CO are addressing a particular PO, it is considered that PO is considered not mapped i.e. Level 0

7.aCourse Assessment and Evaluation Chart

Assessment Methods	Types of Assessment		Target	Assessment Methods	Max Marks	Types of Record	Course Outcomes for Assessment
DIRECT ASSESSMENT	CIE CONTINUOUS INTERNAL EVALUA-TION	IA Test	STUDENTS	Three tests (Average of Three tests will be Computed)	30	Blue Books	All Co's
		Assignment & Student activity		Average of MCQ/Quiz +Open book +Assignment	20	Activity Book	Specified CO by the Course Coordinator
				Total CIE Marks	50		
	SEE SEMESTER END EXAMINA-TION	Semester End Exam					
INDIRECT ASSESSMENT	Student Feedback		STUDENTS	Middle of the Course	Feed Back Forms		

b.Course Assessment summary

Sl. No	Assessment	Duration	Max marks	Conversion
1.	CIE Assessment 1 (Written Test -1 - At the end of 6th week	80 minutes	30	Average ofthree written tests 30
2.	CIE Assessment 2 (Written Test -2) - At the end of 10th week	80 minutes	30	
3.	CIE Assessment 3 (Written Test -3) - At the end of 15th week	80 minutes	30	
4	CIE Assessment 4 (MCQ/Quiz) - At the end of 8th week	60 minutes	20	Average ofthree 20
5	CIE Assessment 5 (Open book Test) - At the endof 13th week	60 minutes	20	

6	CIE Assessment 6 (Student activity/Assignment)-At the beginning of 16th week	60 minutes	20	
7.	Total Continuous Internal Evaluation (CIE) Assessment			50
TOTAL MARKS				**50**

Note:

1. Average marks of Three CIE marks shall be considered.
2. Assessment of assignment and student activity is evaluated through appropriate rubrics by the respective course coordinator.

MANDATORY STUDENT ACTIVITY: EACH STUDENT HAS TO SELECT ANY ONE OF THE LISTED

1. Students chose one thing to reduce at home each week and write journal entries about their successes and challenges implementing the change. In class, they form groups and create "Do You Know?" posters.
2. Students pretend they are architects and come up with a series of design changes to make their school more environmentally friendly. They then grade their projects according to a rubric.
3. A presentation for Green Team Club members to introduce themselves and the purpose of their club. They explain how to use their new recycling bins, in the classroom and in the cafeteria.
4. Ever wonder what's in your school's waste? This hands-on activity helps students assess their school's waste in order to think of ways to reduce it. The results can be incorporated into theschool's recycling plan.
5. How do we measure climate change? What activities contribute to climate change?
6. 6. Start a compost or worm bin. Composting is a hands-on way to learn about important life science concepts such as ecosystems, food webs and biodegradation. Students experience how worms and other decomposers recycle fruits and vegetable scraps into compost. Use the compost in your college garden! Have green team students make up a skit and present details about the new composting program to all classrooms. Have them make signs for the bins (compost, recycle, and landfill), monitor the waste collection at lunchtime, cart the food waste to the compost, and decide how and where the compost will be used.
7. Paint posters and decorate bulletin boards or the doors to the cafeteria with waste- free lunch messages to announce or support a waste-free event, and have students vote for their favoriteposter.
8. Conduct a classroom audit to identify waste and look for ideas to reduce and reuse. Empowerthe student to set goals, search for solutions and review progress.
9. Go on a field trip. Visit your local landfill, recycling centre, or a nearby composing facility where the students can see first-hand what is happening to waste and learn about the lifecycle of waste and its effect on the environment.
10. Home energy audit: Have students make a list of all the appliances and light bulbs in their house. How much energy does their house use if all the lights are on for 4 hours per day? If their appliances are on for 2 hours per day? How much energy could they save if they switched to energy-efficient appliances or light bulbs?

11. Use recycled material in art projects: Recycled materials can make beautiful art projects such as jewelry, planters, and bird houses. Incorporating materials that would otherwise be thrown away into art projects can show your students how to find new uses for these items.

12. Life cycle: One way to show students what happens when you put something in the trash versus recycling or reusing the object is to do a life cycle analysis. This is a flow chart that shows the environmental impacts of an object, from extracting the raw materials to decomposition and everything in between. When something is put in the trash instead of being reused or recycled, the life cycle assessment will show a bigger environmental impact. When something is reused or recycled, the environmental impact is less because raw materials don't need to be extracted to create something new.

Model Question PaperI A Test (CIE)

Programme :					**Semester: I**
Course :					**Max Marks : 30**
Course Code :					**Duration : 1 Hr 20 minutes**
Name of the course coordinator:					**Test : I/II/III**
Note: Answer one full question from each section. One full question carries 10 marks.					
Qn.No	**Question**	**CL**	**CO**	**PO**	**Marks**
	Section-1				
1.a)					
b)					
c)					
2.a)					
b)					
c)					
	Section-2				
3.a)					
b)					
c)					
4.a)					
b)					
c)					
	Section-3				
5.a)					
b)					
c)					
6.a)					
b)					
c)					

Government of Karnataka

DEPARTMENT OF COLLEGIATE AND TECHNICAL EDUCATION

JSS POLYTECHNIC FOR THE DIFFERENTLY ABLED(AUTONOMOUS)

PROGRAM: COMPUTER SCIENCE AND ENGINEERING

Course Code	---	**Semester**	I
Course Title	**Sign Language – I**	**Course Group**	Audit
Type of Course	Lecture	**Total Contact Hours**	2Hrs Per Week 32Hrs Per Semester
Prerequisites	English Knowledge	**Teaching Scheme**	(L:T:P)=2:0:0
CIE Marks	50	**SEE Marks**	-

COURSE OBJECTIVES:

1. Understand Basic Sign Language and its types.
2. Know the Signs, variations and meanings of the words.
3. Improve signing skills.
4. Improve their communication skills in sign language.

Course Outcomes:

At the end of the course student will be able to achieve the following outcomes:

CO1	Acquire the knowledge of Basic Sign Language
CO2	Acquire and apply the knowledge of Finger Spelling
CO3	Obtain the knowledge of Calendar Words, Colors and Greeting words
CO4	Acquire and apply the knowledge of Educational Words with Simple Sentences
CO5	Acquire and apply the knowledge of General Vocabulary with Simple Sentences

Course Content:

Unit No & Name	Detailed Course Content	CO	PO	Contact Hrs
1. Introduction To Sign Language	1.1 Self-Introduction 1.2 Introduction to Sign Language with Definitions	CO1	1,5,6,7	2
	1.3 Importance of Sign language	CO1	1,5,6,7	1
	1.4 Different types of Sign	CO1	1,5,6,7	1
	1.5 Advantages and usages of Sign Language	CO1	1,5,6,7	1
	CIE Assessment 1			1
2. Alphabets and	2.1 Know the signs for Alphabets in American and Indian Sign language	CO2	1,5,6,7	2
	2.2 Finger spelling and its usages, in reading and	CO2	1,5,6,7	3

Finger Spelling	framing the words 2.3 Practice Session			
	CIE Assessment 2			1
3. Calendar Words, Colors, Time related Words and Greeting Words	3.1 Know Weeks names in finger spelling in signs 3.2 Know months names in finger spelling in signs 3.3 Know sign for numbers	CO3	1,5,6,7	2
	3.4 Know colour sign in finger spelling 3.5 Know the variations and to show time related words in Sign 3.6 Know the signs for the Greeting Words. 3.7 Practice Session	CO3	1,5,6,7	5
	CIE Assessment 3			1
4. Educational Words With Simple Sentences	4.1 Know the signs for the Educational Words 4.1 Know the signs to frame the sentences	CO3	1,5,6,7	4
	4.2 Practice Session			1
	CIE Assessment 4			1
5. General Vocabulary with Simple Sentence	5.1 Know the signs for General Vocabulary and variants 5.1 Know the signs to frame the sentences.	CO3	1,5,6,7	4
	5.2 Practice Session			1
	CIE Assessment 5			1

References:

(a) Suggested Learning Resources:

Books:

1. Book on Sign Language, Ali Yavar Jung National Institute for the Hearing Handicapped, Training Center for Adult Deaf.
2. Indian Sign Language Dictionary, Ramakrishna Mission Vidyalaya.
3. Book on Hearing Impairment, Ali Yavar Jung National Institute for the Hearing Handicapped, Training Center for Adult Deaf.
4. Signing Naturally Level 1, Cheri Smith, Ella Mae Lentz , Ken Mikes.
5. Signing Naturally Level 2, Cheri Smith, Ella Mae Lentz , Ken Mikes

(b) Open source software and website address:

1) www.indiansignlnguage.org
2) www.islrtc.nic.in
3) www.talkinghands.co.in
4) www.def.org.in

Teaching strategies:

- Demonstrating the words using signs.

- Interaction with the students using sign language.
- Online assistance is given to the students.
- Involving the students in group discussion.

Mapping of Course Outcomes with Programme Outcomes

CO	Course Outcome	PO Mapped	Cognitive Level R/U/A	Units	Theory Sessions In Hrs
CO1	Acquire the knowledge of Basic Sign Language	1,5,6,7	R,UA	1	6
CO2	Acquire and apply the knowledge of Finger Spelling	1,5,6,7	R,U,A	2	6
CO3	Obtain the knowledge of Calendar Words, Colors and Greeting words	1,5,6,7	R,U,A	3	8
CO4	Acquire and apply the knowledge of Educational Words with Simple Sentences	1,5,6,7	R,U,A	4	6
CO5	Acquire and apply the knowledge of General Vocabulary with Simple Sentences	1,5,67	R,U,A	5	6
Total Hours of instruction					32

Level of Mapping PO's with CO's

Course	CO's	Programme Outcomes(PO's)							Programme Specefic Outcomes(PSO's)	
		1	2	3	4	5	6	7	1	2
Sign Language-I	CO1	2	0	0	0	2	2	2	1	0
	CO2	2	0	0	0	2	2	2	1	0
	CO3	2	0	0	0	2	2	2	1	0
	CO4	2	0	0	0	2	2	2	1	0
	CO5	2	0	0	0	2	2	2	1	0
	AVERAGE	2	0	0	0	2	2	2	1	0

Level 3-Highly Mapped, Level 2-Moderately Mapped, Level 1- Low Mapped, Level 0-Not Mapped

Method is to relate the level of PO with the number of hours devoted to the CO's which maps the given PO.
If ≥50% of classroom sessions related to the CO are addressing a particular PO, it is considered that PO is mapped at Level 3
If 30 to 50% of classroom sessions related to the CO are addressing a particular PO, it is considered that PO is mapped at Level 2
If 5 to 30% of classroom sessions related to the CO are addressing a particular PO, it is considered that PO is mapped at Level 1
If < 5% of classroom sessions related to the CO are addressing a particular PO, it is considered that PO is considered not-mapped i.e.; Level 0

Course Assessment and Evaluation Chart

Sl. No	Assessment	Duration	Max marks	Conversion
1.	CIE Assessment 1 (Activity 1 – At the end of 3rd week	60 minutes	10	Total of all the CIE Assessment
2.	CIE Assessment 2 (Activity -2) – At the endof 6th week	60 minutes	10	
3.	CIE Assessment 3 (Activity -3) – At the end of 10th week	60 minutes	10	
4	CIE Assessment 4 (MCQ/Quiz) – At the end of 13thweek	60 minutes	10	
5	CIE Assessment 5 (Activity/Assignment) – At the beginning of 16th week	60 minutes	10	
7.	Total Continuous Internal Evaluation (CIE) Assessment			50
			Total Marks	**50**

Government of Karnataka

DEPARTMENT OF COLLEGIATE AND TECHNICAL EDUCATION

JSS POLYTECHNIC FOR THE DIFFERENTLY ABLED(AUTONOMOUS)

PROGRAM: COMPUTER SCIENCE AND ENGINEERING

Course Code	---	Semester	I
Course Title	Psychology and Counseling - I	Course Group	Audit
Type of Course	Lecture	Total Contact Hours	2 Hrs. / Week
			32 Hrs. / Semester
Prerequisites	English Knowledge	Teaching Scheme	[L : T : P] 2:0:0
CIE Marks	50	SEE Marks	-

1. COURSE OBJECTIVES:

At the end of the course the students shall be able to:

1. Understand basics of psychology and its importance.
2. Build cognitive ability.
3. Practice to control the emotions effectively.
4. Manage stress effectively.

2. COURSE OUTCOMES

At the end of the course, the students shall be able to

Co's	Course Outcomes
CO 1	Acquire and apply knowledge about self-development for better quality of life.
CO 2	Obtain knowledge to improve cognitive ability.
CO 3	Acquire verbal and non verbal communication.
CO 4	Develop basic knowledge on emotion management.
CO 5	Obtain basic knowledge on stress management.

3. COURSE CONTENT OUTLINE WITH TEACHING HOURS AND MARKS

UNIT NO	UNIT TITLE	TEACHING HOURS	MARKS
01	Introduction to Psychology & Self-development	06	10
02	Cognition	08	10
03	Communication	06	10
04	Emotions	06	10
05	Stress and Resilience	06	10

Total	32	50

4. DETAILS OF COURSE CONTENTS

The following topics / subtopics are to be taught and accessed in order to develop Unit Skill sets for achieving CO to attain identified skill sets:

UNIT NO.	SKILLS	TOPICS / SUBTOPICS	HOURS
UNIT– 1. Introduction to Psychology & Self-development	Understand psychology, Mind and body relationship which helps in understanding self. Understanding and incorporation self-development and self-confidence.	1.1 Introduction to psychology. 1.2 Mind-body relationship. 1.3 Self-development. 1.4 Self-confidence.	06
UNIT– 2. Cognition	Understand what is thinking. Techniques of learning and improve learning skills. Understand memory and improving memory skills.	2.1 Thinking. 2.2 Learning. 2.3 Memory.	08
UNIT- 3 Communication	Understand effective communication skills and adapt them.	3.1 Effective communication 3.2 Types of communication among differently abled: a) Verbal/sign language Communication b) Non Verbal Communication c) Written communication d) Visual communication 3.3 Improving relations with the help of communication.	06
UNIT- 4 Emotions	Understand the emotions and learn how to cope with it. Learn anger management techniques.	4.1 Different types of emotions. 4.2 Coping with emotion. 4.3 Emotional intelligence. 4.4 Anger Management	06
UNIT-5 Stress and Resilience	Understand stress and its roots. Learn stress management and coping mechanism. Develop resilience.	1 Understanding stress 2 Stress Management 3 Coping Mechanism 4 Resilience.	06

5. MAPPING OF CO WITH PO

CO	Course Outcome	PO Mapped	Unit	CL R/U/A	Theory in Hrs.
1	Acquire and apply knowledge about self-development for better quality of life.	1,5,6,7	1	R/U/A	06
2	Obtain knowledge to improve cognitive ability.	1,5,6,7	2	R/U/A	08
3	Acquire verbal and non verbal communication.	1,5,6,7	3	R/U/A	06
4	Develop knowledge on emotion management.	1,5,6,7	4	R/U/A	06
5	Obtain knowledge on stress management.	1,5,6,7	5	R/U/A	06
				Total	32

6. LEVELS OF CO AND PO MAPPING

Psychology and Counseling	Programme Outcomes (PO's)							Programme Specific Outcomes (PSO's)	
Course outcomes	2	2	3	4	5	6	7	1	2
CO1	2	0	0	0	3	1	2	0	0
CO2	2	0	0	0	3	1	2	0	0
CO3	2	0	0	0	3	1	2	0	0
CO4	2	0	0	0	3	1	2	0	0
CO5	2	0	0	0	3	1	2	0	0
AVERAGE	2	0	0	0	3	1	2	0	0

Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.
Method is to relate the level of PO with the number of hours devoted to the COs which address the given PO.
If >40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 3
If 25 to 40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 2
If 5 to 25% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 1
If < 5% of classroom sessions addressing a particular PO, it is considered that PO is considered not-addressed.

7. COURSE ASSESSMENT AND EVALUATION CHART

Sl.No	Assessment	Duration	Max marks	Conversion
1.	CIE Assessment 1 (Activity) - At the end of 3rd	60 minutes	10	Total of all the

	week			CIE assessments.
2.	CIE Assessment 2 (Activity) - At the end of 7th week	60 minutes	10	
3.	CIE Assessment 3 (MCQ/Quiz) - At the end of 10th week	60 minutes	10	
4.	CIE Assessment 4 (Activity) - At the end of 13th week	60 minutes	10	
5.	CIE Assessment 5 (MCQ/Quiz) - At the beginning of 16th week	60 minutes	10	
Total Continuous Internal Evaluation (CIE) Assessment				50
Total Marks				**50**

8. INSTRUCTIONAL STRATEGY

- Emphasis on demonstration based learning activities.
- Involve the students in the group discussions.
- Explain the students with real time problems.
- Providing the course materials in soft copy, power point presentation and hard copy to revise the contains in depth.
- Encourage innovative teaching by providing online references.

9. DETAILED COURSE CONTENTS

UNIT NO. AND NAME	DETAILED COURSE CONTENT	CO	PO	CONTACT HRS.	TOTAL
1. Introduction & Self-development	Introduction to psychology.	1	1,5,6,7	1	**06**
	Mind-body relationship.	1	1,5,6,7	1	
	Self-development.	1	1,5,6,7	1	
	Self-confidence.	1	1,5,6,7	1	
	Activity on self confidence	1	1,5,6,7	1	
	CIE Assessment 1	1	1,5,6,7	1	
2. Cognition	Thinking.	2	1,5,6,7	1	**08**
	Learning.	2	1,5,6,7	1	
	Memory.	2	1,5,6,7	1	
	Activity on thinking	2	1,5,6,7	1	
	Activity on learning	2	1,5,6,7	1	
	Activity on memory	2	1,5,6,7	2	
	CIE Assessment 2	2	1,5,6,7	1	
m m un ica	Effective communication	3	1,5,6,7	1	**06**

	Types of communication among differently abled: a) Verbal/sign language Communication b) Non Verbal Communication c) Written communication d) Visual communication	3	1,5,6,7	1	
	Improving relations with the help of communication.	3	1,5,6,7	1	
	Individual activity on communication	3	1,5,6,7	1	
	Group activity on communication	3	1,5,6,7	1	
	CIE Assessment 3	3	1,5,6,7	1	
4. Emotions	Different types of emotions.	4	1,5,6,7	1	**06**
	Coping with emotion. Emotional intelligence.	4	1,5,6,7	1	
	Anger Management.	4	1,5,6,7	1	
	Activity on understanding emotions.	4	1,5,6,7	1	
	Activity on anger management.	4	1,5,6,7	1	
	CIE Assessment 4	4	1,5,6,7	1	
5. Stress and Resilience	Understanding stress	5	1,5,6,7	1	**06**
	Stress Management	5	1,5,6,7	1	
	Coping Mechanism	5	1,5,6,7	1	
	Resilience	5	1,5,6,7	1	
	Activity on resilience techniques	5	1,5,6,7	1	
	CIE Assessment 5	5	1,5,6,7	1	
				Total	**32**

10. SUGGESTED LIST OF STUDENTS ACTIVITIES

Sl. No	Suggested Activities
1	Puzzle activity- to build their creativity.
2	Individual tasks in the classroom stage to build confidence
3	Healthy competitions to know their caliber and learn to encourage and support each other.
4	Group discussions

11. SUGGESTED LEARNING REFERENCES

Sl.No	References
1	Introduction to Psychology by Morgan and king
2	Social Psychology by Shelley E. Taylor
3	Positive Psychology by Baumgardner Steve Crothers Marie
4	13 Things Mentally Strong People Don't Do by Amy Morin
5	The Righteous Life by A.P.J. Abdul Kalam
6	https://www.youtube.com/watch?v=8PpE8eqEsnU
7	https://www.youtube.com/watch?v=Z6SGZ_UpIZM