CURRICULUM STRUCTURE

I Semester Scheme of Studies – Diploma In Architecture Assistantship (C-21)

SL. No	Course Category / Teaching Department	Course Code	Course Title	Hours per week			Total contact Hrs/ week	Credits	CIE Marks		SEE Marks		Total Marks	Min Marks for passing (Including CIE Marks)	Assigned Grade	Grade Point	SGPA and CGPA
				L	T	P			Max	Min	Max	Min					
THEORY COURSES																	Only SGPA for 1st Semester
1	ES/AR	1411	Materials of construction	4	0	0	4	4	50	20	50	20	100	40			
2	HS/EG	1412	Basic English	4	0	0	4	4	50	20	50	20	100	40			
PRACTICAL COURSES																	
3	BS/SC	1413	Statistics and Analytics	2	0	4	6	4	60	24	40	16	100	40			
4	ES/AR	1414	Architectural graphics	2	0	4	6	4	60	24	40	16	100	40			
5	ES/EC	1415	Fundamentals of Electrical and Electronics Engineering	2	0	4	6	4	60	24	40	16	100	40			
AUDIT COURSES																	
6	AU/SC	1416	Environment Sustainability	2	0	0	2	2	50	20	-	-	50	20			
7	AU/SL		Sign Language – I	2	0	0	2	Not for Examination									
8	AU/Psy		Psychology and Counselling– I	2	0	0	2	Not for Examination									
9	AU Physical Activity		Sports/NCC/NSS/youth Red Cross/ Yoga / Technical Club	Student Shall enrol in any one of these activities in 1st Semester and shall participate actively. The student shall obtain 'Participation Certificate' in the activity to get eligible for the award of Diploma.													
			Total	**20**	**0**	**12**	**32**	**22**	**330**	**132**	**220**	**88**	**550**	**220**			

Note : 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.

1. Assigned Grade, Grade Point, SGPA and CGPA to be recorded in the Grade/ Marks card.
2. AU- Physical Activity – Student 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 SEE is conducted for 100 marks (3 Hours duration) and for Practical course, CIE and SEE is conducted for 100 marks (3 Hours duration)
4. The First digit in the Course code indicates the "Dept. Code", 2nd Digit indicates " Number of Curriculum Revisions", 3rd digit indicates : "Semester", 4th Digit indicates "Course Sl. No."

Government of Karnataka
Department of Collegiate and Technical Education
JSS Polytechnic for the Differently Abled (Autonomous)

MATERIALS OF CONSTRUCTION

Course Code	**1411**	**Semester**	**I**
Course Name	**MATERIALS OF CONSTRUCTION**	**Course Group**	**AR**
Number of Credits	**4**	**Type of Course**	**Lecturing**
Course Category	**ES**	**Total Contact Hours**	**4 Hrs. / Week** **64 Hrs. / Semester**
Prerequisites	**Basic sciences at matriculation level**	**Teaching Scheme**	**[L : T : P] = 4 : 0 : 0**
CIE Marks	**50**	**SEE Marks**	**50**

RATIONALE:

Materials of construction play an important role as the vital tool for material selection and application in the production and manufacturing of products, etc. Therefore, an engineering diploma student must be conversant with the properties, composition and behavior of materials from ***the point of view of reliability, sustainability and performance of the product***. The study of basic concepts of materials will help the students understanding engineering subjects where the emphasis is laid on the application of these materials.

1. COURSE SKILL SET

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

1. Select Engineering materials based on properties, behavior and environmental effect for given engineering application.
2. Examine microstructure and alloying elements of given alternative materials for suitable application.

2. COURSE OUTCOMES

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

CO-1	Understand the properties and engineering application of Stones and Bricks.
CO-2	Illustrate the Properties of Lime, Cement and Cement concrete.
CO-3	Identify the properties and engineering applications of timber.
CO-4	Select relevant ferrous metals, non-ferrous metals and alloys for Engineering application.
CO-5	Understand the properties and engineering application of various modern building materials.

3. COURSE CONTENT OUTLINE WITH TEACHING HOURS AND MARKS

UNIT NO.	UNIT TITLE	TEACHING HOURS	DISTRIBUTION LEVELS (Marks)			
			R	U	A	TOTAL
1	Stones and Bricks	14	10	20	10	40
2	Lime, Cement and Cement Concrete	14	10	20	10	40
3	Timber	14	10	20	10	40
4	Metals and Alloys	12	10	20	10	40
5	Miscellaneous and Modern building materials:	10	10	20	10	40
CIE Tests-03						
Total		**64**	**50**	**100**	**50**	**200**

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

4. DETAILS OF COURSE CONTENTS

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 & NAME	COURSE CONTENT DELIVERY	DURATION [Hours]
UNIT-1 STONES & BRICKS	1.1 Introduction to stone as an engineering material	1
	1.2 Classification of rocks.	1
	1.3 Characteristics of good stones	1
	1.4 Properties and uses of important types of stones	2
	1.5 Engineering aspects of bricks.	1
	1.6 Raw materials for manufacturing bricks	1
	1.7 Requirements of good bricks.	1
	1.8 Classification and uses of bricks.	1
	1.9 Classification of bricks based on shape and purpose.	2
	1.10 Refractory bricks- their types and uses.	1
	1.11 Cement concrete blocks (Solid and Hollow)	1
	1.12 Properties and uses of stabilized soil blocks, fly ash bricks and burnt clay blocks (Solid and Hollow).	1
	Total	14
UNIT-2 LIME, CEMENT and CEMENT CONCRETE	2.1 Engineering aspects of lime. Sources of lime.	1
	2.2 Various types of lime and their uses.	1
	2.3 Engineering aspects of cement. Composition of ordinary cement.	2
	2.4 Definitions of natural cement and artificial cement.	1
	2.5 Functions of ingredients of cement.	1
	2.6 Initial setting time and final setting time of cement	1

	2.7 Methods of storing cement.	1
	2.8 Introduction to Cement Concrete. Sources of Fine and Coarse aggregate.	1
	2.9 Ingredients and Properties of Cement Concrete.	1
	2.10. Uses of Cement Concrete, Characteristics of Cement Concrete, Water Cement Ratio.	2
	2.11 Functions, Properties and Uses of mortar.	1
	2.12 Bulking of Sand.	1
	Total	14
UNIT-3 TIMBER	3.1 Engineering aspects of timber.	2
	3.2 Classification of trees, Hard wood and soft wood and their differences.	2
	3.3 Defects of timber.	2
	3.4 Methods of seasoning of timber	2
	3.5 Market forms of timber.	2
	3.6 Industrial timber-properties, sizes and uses of plywood, block board, particle board.	2
	3.7 Properties, sizes and uses of fiber board, laminates and veneers	2
	Total	14
UNIT-4 METALS AND ALLOYS	4.1 Ferrous metals- Engineering aspects of ferrous metals.	1
	4.2 Properties of ferrous metals like cast-iron, wrought iron.	1
	4.3 Market forms of wrought iron and cast-iron and their engineering application.	2
	4.4 Properties of mild steel. Market forms of mild steel and their engineering application..	2
	4.5 Non-Ferrous metals- Engineering aspects of non-ferrous metals.	1
	4.6 Properties of non-ferrous metals - Copper, Aluminum.	1
	4.7 Properties of non-ferrous metals- Zinc and Tin	1
	4.8 Properties and engineering uses of copper and Aluminum.	1
	4.9 Properties and engineering uses of Zinc and Tin.	1
	4.10. Properties and uses of Aluminium alloys and Copper alloys.	1
	Total	12
UNIT-5 MISCELLEN EOUS AND MODERN BUILDINGM ATERIALS	5.1 Engineering aspects, Objects, Characteristics and types of paints.	2
	5.2 Engineering aspects, Objects, Characteristics and types of varnishes.	1
	5.3 Engineering aspects, Objects, Characteristics of distemper	1
	5.4 Ingredients of paints, varnishes and distemper and their functions.	2
	5.5 Engineering aspects of glass and Plastics.	1
	5.6 Properties and uses of different types of glass and Plastics.	1

	5.7 Definition, Properties, uses and limitations of FRP (Fibre Reinforced Plastics), UPVC.	1
	5.8 Definition, Properties uses and limitations of Linoleum sheet, Acrylic flooring.	1
	Total	10

5. MAPPING OF CO WITH PO

CO	Couse Outcome	PO Mapped	Unit Linked	CL R/U/A	Theory in Hrs.
1	Understanding the properties and engineering application of Stones and Bricks	1, 5,7	1	R/U/A	**14**
2	Uses of Lime, Cement and Cement concrete.	1, 5,7	2	R/U/A	**14**
3	Identify the different industrial timber, properties and engineering applications.	1, 5,7	3	R/U/A	**14**
4	Select relevant ferrous metals, non-ferrous metals and alloys for Engineering application.	1, 5,7	4	R/U/A	**12**
5	Understanding the properties and engineering application of various modern building materials.	1, 5,7	5	R/U/A	**10**
Total					**64**

6. LEVELS OF CO AND PO MAPPING

Course	CO's	Programme Outcomes (POs)						
		1	**2**	**3**	**4**	**5**	**6**	**7**
MATERIALS OF CONSTRUCTION	**CO-1**	3	0	0	0	2	0	2
	CO-2	3	0	0	0	2	0	2
	CO-3	3	0	0	0	2	0	2
	CO-4	3	0	0	0	2	0	2
	CO-5	3	0	0	0	2	0	2
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. Teachers 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.
2. Use of sign language for communication in classroom since most of students are hearing impaired.
3. Use of Audio-Visual aids like ppt, videos, Animation, E-books etc

4. Use of demonstration can make the subject interesting and develop scientific temper in the students.Student assignments should be planned on all the topics
5. 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
6. Show Video/animation films to explain functioning of various application of materials in Engineering domain.

8. SUGGESTED LEARNING RESOURCES:

A. List ofBooks

1. Engineering Materials by Sushilkumar.
2. Engineering Materials by Rangwala.
3. Engineering Materials by G.J.Kulkarni.
4. Engineering Materials byP.C.Varghese.

B. List of Software/Learning Websites

1. https://en.wikipedia.org/wiki/Building_material
2. http://nptel.ac.in/courses/105102088/
3. http://www.journals.elsevier.com/construction-and-building-materials/
4. http://freevideolectures.com/Course/86/Building-Materials-and-Construction

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 Evaluation</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 Examination</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"></td><td>Total</td><td>100</td></tr>
<tr><td>Indirect Assessment</td><td colspan="2">Student Feedback</td><td>Students</td><td>Middle of the Course</td><td colspan="3">Feed Back Forms</td></tr>
</table>

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 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 6 (Student Activity / Assignment) At the end 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 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.

10. RUBRICS FOR ACTIVITY (Example Only).

Concerned Faculty need to devise appropriate rubrics as per the activity

Dimension	Beginning	Developing	Satisfactory	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 referto the topic	Collects a great deal of information; all refer tothe topic	4
Fulfil team's roles & duties	Does not perform any duties assigned to the team role	Performs very little duties but unreliable.	Performsvery littleduties	Performs nearly all duties	Performs all duties of assigned team roles	8
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 tobe reminded.	12
Listen to other Team mates	Is always talking; never allowsanyone else to speak	Usually does mostof the talking; rarely allow others to speak	Talks good;but never show interest in listening others	Listens, but sometimes talk too much	Listens and speaks a fair amount	16
Average / Total Marks: (4+8+12+16)/4						**10 marks**

First Semester Examination, Model Question Paper – 2021

MATERIALS OF CONSTRUCTION

Duration: 3 Hours] **Subject Code: 21AR11T** **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 - CO-1 and POs 1, 5 &7]

Question Number	Question 1		Question 2	Marks
1	Multiple choice Four questions			**4**
2	State the question	**OR**	State the question	8
3	State the question		State the question	8

SECTION – 2 [20 Marks]

[Questions from Unit 2 - CO-2 and POs 1, 5 &7]

Question Number	Question 1		Question 2	Marks
4	Multiple choice Four questions			**4**
5	State the question	**OR**	State the question	8
6	State the question		State the question	8

SECTION – 3 [20 Marks]

[Questions from Unit 3 - CO-3 and POs 1, 5 &7]

Question Number	Question 1		Question 2	Marks
7	Multiple choice Four questions			**4**
8	State the question	**OR**	State the question	8
9	State the question		State the question	8

SECTION – 4 [20 Marks]

[Questions from Unit 4 - CO-4 and POs 1, 5 &7]

Question Number	Question 1		Question 2	Marks
10	Multiple choice Four questions			**4**
11	State the question	**OR**	State the question	8
12	State the question		State the question	8

SECTION – 5 [20 Marks]

[Questions from Unit 5 - CO-5 and POs 1, 5 &7]

Question Number	Question 1		Question 2	Marks
13	Multiple choice Four questions			**4**
14	State the question	**OR**	State the question	8
15	State the question		State the question	8

Model Question Paper
I 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)					
	OR				
2.a)					
b)					
	Section-2				
3.a)					
b)					
	OR				
4.a)					
b)					
	Section-3				
5.a)					
b)					
	OR				
6.a)					
b)					

Government of Karnataka
Department of Collegiate and Technical Education
JSS Polytechnic for the Differently Abled (Autonomous)

BASIC ENGLISH

Course Code	**1412**	**Semester**	**I**
Course Name	**BASIC ENGLISH**	**Course Group**	**AR/EC/CS/JD&T**
No. of Credits	**4**	**Type of Course**	**Lecture**
Course Category	**HS**	**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**

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. Learn Communication Skills in English.
3. 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	10	10	10	20	40
03	Number	12	10	10	20	40
04	Sentence	12	10	10	20	40
05	Basic English Vocabulary & Reading Comprehension	15	10	10	20	40
CIE Tests		03				
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	10-0-0
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	12-0-0
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	10	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	12	40
5	Develop knowledge of vocabulary and grammar in reading notes without mistakes.	1,3,4	5	R/U/A	15	40
Total					**61**	**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	-

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	10
	2.2 Identifying the Gender through pictures	2	1,6,7	2	
	2.3 Identifying the Gender by reading the names	2	1,6,7	2	
	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	12
	4.2 Parts of a sentence.	4	1,5,6,7	2	
	4.3 Sentence formation.	4	1,5,6,7	1	
	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					**61**

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: 1412 [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	**OR**	State the question	5
2	State the question		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	**OR**	State the question	5
2	State the question		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	**OR**	State the question	5
2	State the question		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	**OR**	State the question	5
2	State the question		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	**OR**	State the question	5
2	State the question		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: 1412**

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?
d) Where would the birds sit when they came to the prison?
e) Give a title for this passage.

****

Government of Karnataka
Department of Collegiate and Technical Education
JSS Polytechnic for the Differently Abled (Autonomous)

STATISTICS AND ANALYTICS

Course Code	**1413**	**Semester**	**I**
Course Name	**STATISTICS AND ANALYTICS**	**Course Group**	**AR/CS/EC**
Number of Credits	**4**	**Type of Course**	**Lecture and Practice**
Course Category	**BS**	**Total Contact Hours**	**6 Hrs. / Week**
			96 Hrs. / Semester
Prerequisites	**SSLC Mathematics**	**Teaching Scheme**	**[L : T : P] = 1 : 0 : 2**
CIE Marks	**60**	**SEE Marks**	**40**

RATIONALE:

Statistics and analytics help the learner to use the proper methods to collect the data, employ the correct analyses, effectively present the results and conduct research, to be able to read and evaluate journal articles, to further develop critical thinking and analytic skills, to act as an informed consumer and to know when you need to hire outside statistical help. The python language is one of the most accessible programming languages available because it has simplifiedsyntax and not complicated, which gives more emphasis on natural language.

1. COURSE OUTCOMES

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

CO-1	Understand the tools of data collection, classification and cleaning of data.
CO-2	Able to summarize the given statistical data
CO-3	Understand the measure of location and dispersion of data.
CO-4	Learn the basics of Python programming.

2. 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 AND NAME	Unit skill set (In cognitive domain)	Topics/Subtopics	L-T-P Hours
UNIT-1 STATISTICAL DATA COLLECTION AND TYPES	➢ Able to collect statistical data. ➢ Able to distinguish the data types. ➢ Understands the usage of data collection tools ➢ Able to specify problem statement for data collection ➢ Able to collect data pointing the root cause of the problem statement.	a. Definition of data and classification (qualitative quantitative discrete and continuous data). b. Data collection tools a. Questionnaires. b. Survey. c. Interviews. d. Focus group discussion. c. Data cleaning.	3-0-12
UNIT-2 SUMMARIZATION OF DATA	➢ Sketches bar, pie and histograms on Microsoft Excel spread sheet. ➢ Sketches frequency curve and frequency polygon for the data set on Microsoft Excel spread sheet. ➢ Sketches bar, pie and histograms on Microsoft Excel spread sheet. ➢ Sketches frequency curve and frequency polygon for the data set on Microsoft Excel spread sheet.	a. Descriptive statistics i. Data tabulation (frequency ii. Table iii. Relative frequency table. b. Grouped data i. Bar graph ii. Pie chart iii. Line graph iv. Frequency polygon v. Frequency curve vi. Relative frequency vii. polygon viii. Histograms ix. Box plot x. Leaf-stem plot To be done in Microsoft excel.	12-0-21
UNIT-3 MEASURE OF LOCATION AND DISPERSION	➢ Able to determine the descriptive statistical variables using Microsoft Excel. ➢ Able to determine the absolute measures of dispersion of the given data set. ➢ Explain the symmetry and asymmetry of the distributed data.	a. Determination of central tendencies Range, Mean, Mode and Median for the datain Microsoft Excel. b. Determination of absolute measures of dispersion for data like range quartile deviation, mean deviation, standard deviation and variance in Microsoft Excel. c. Skewness and Kurtosis graphs in Microsoft excel and Interpretations of results.	6-0-12

UNIT NO AND NAME	Unit skill set (In cognitive domain)	Topics/Subtopics	L-T-P Hours
UNIT-4 INTRODUCTION TO PYTHON PROGRAMMING	➢ Able Install and run the Python interpreter. Create and execute Python programs. ➢ Understand the concepts of file I/O. ➢ Able to read data from a text file using Python. ➢ Learn variable declarations in Python. ➢ Learn control structures. ➢ Learn loop constructs.	a. Introduction to PYTHON. b. Syntax of PYTHON. c. Comments of PYTHON. d. Data types of PYTHON. e. Variables of PYTHON. f. If-else in PYTHON. g. Loops in PYTHON. h. Arrays and functions in PYTHON.	9-0-21

3. PRACTICAL OUTCOMES / PRACTICAL EXERCISES WITH CO-PO MAPPING

SL. NO.	PRACTICAL OUTCOMES / PRACTICAL EXERCISES	UNIT NO.	CO	PO	L : T : P
1	Prepare a questionnaire (closed end) containing 25questions for a specified problem statement: for example Experience of an individual in a restaurant.	1	1	1,2,4,5,7	1 : 0 : 2
2	Prepare a Google form for a specified problem statement to collect the dataset. (for example questionnaire to conduct online quiz)	1	1	1,2,4,5,7	1 : 0 : 2
3	Send out a survey on your problem statement to number of 50 (By Google forms) and collect the data.	1	1	1,2,4,5,7	1 : 0 : 4
4	Remove duplicate or irrelevant observations. Remove Unwanted observations from the dataset provided, including duplicate observations or irrelevant observations.	1	1	1,2,4,5,7	1: 0 : 4
5	In Microsoft Excel spread sheet draw the frequency Distribution table for the given data (data set should contain minimum 50 data).	2	2	1,2,4,5,7	1 : 0 : 2
6	In Microsoft Excel spread sheet draw the relative frequency distribution table for the given data (data set should contain Minimum 50 data).	2	2	1,2,4,5,7	1 : 0 : 2
7	Using Microsoft Excel spread sheet plot bar graph for the data collected from 100 people(for example, conduct a survey on the favorite fruit of a person in your locality (restricting to 5 to 6 fruits). Explain the bar graph with Minimum 30 words.	2	2	1,2,4,5,7	1 : 0 : 2

SL. NO.	PRACTICAL OUTCOMES / PRACTICAL EXERCISES	UNIT NO.	CO	PO	L : T : P
8	Using Microsoft Excel spread sheet plot pie chart for the data collected from 50 people(for example, conduct a survey on the smokers with respect to their ages in your Locality. Explain the pie chart with minimum 30 words.	2	2	1,2,4,5,7	1 : 0 : 4
9	Using Microsoft Excel spread sheet draw a line graph for the given dataset.	2	2	1,2,4,5, 7	2 : 0 : 2
10	Using Microsoft Excel spread sheet draw frequency polygon and frequency curve for the data collected from 50 people. (For example, marks obtained by the students in your class in 5 subjects in previous examination). Explain your observations from the graph in minimum 30 words.	2	2	1,2,4,5, 7	2 : 0 : 3
11	Using Microsoft Excel spread sheet construct a box plot for the given dataset. (For example data set can be the number of passengers in a flat form at different time in a day).	2	2	1,2,4,5, 7	2 : 0 : 4
12	Using Microsoft Excel spread sheet construct a leaf plot for the given dataset. Explain the graph with minimum 30 words.	2	2	1,2,4,5, 7	0 : 0 : 2
13	Using Microsoft Excel spread sheet find the Mean, Mode and Median for the data (univariate data) given and also represent them in a Histogram.	3	3	1,2,4,5, 7	1: 0 : 2
14	Generate a 50 random data sample (even and odd number dataset) using Microsoft Excel spread sheet and determine the range and Quartiles.	3	3	1,2,4,5, 7	1: 0 : 2
15	Collect the current yield of a crop from 50 different persons (problem statement can be changed according to priorities of the tutor) in your locality and determine mean deviation and Quartile deviation in Microsoft excel spread sheet and brief your inference with less than 30 words.	3	3	1,2,4,5, 7	1: 0 : 2
16	Collect the data of any 2 livestock population from 50 different houses in your locality (problem statement can be changed according to priorities of the tutor) and determine standard deviation for both the two separately in Microsoft excel spread sheet and brief your inference with less than 30 words.	3	3	1,2,4,5, 7	1: 0 : 2

SL. NO.	PRACTICAL OUTCOMES / PRACTICAL EXERCISES	UNIT NO.	CO	PO	L : T : P
17	Collect the data of two wheeler (with a rider and a pillion) crossing a busy junction in your locality in the peak hours (problem statement can be changed according to prioritiesof the tutor) and determine the variance of the data in Microsoft excel spread sheet and brief your inference with less than 30 words.	3	3	1,2,4,5, 7	1: 0 : 2
18	Using Microsoft Excel spread sheet draw a Skewness graph and kurtosis graph for randomly generated dataset.	3	3	1,2,4,5,7	1: 0 : 2
19	Write a python program to add 2 integers and 2 strings and print the result.	4	4	1,2,4,5, 7	1 : 0 : 2
20	Write a python program to find the sum of first 10 natural Numbers.	4	4	1,2,4,5, 7	1 : 0 : 2
21	Write a python program to find whether the number is odd or even.	4	4	1,2,4,5, 7	1 : 0 : 2
22	Write a python program to find the variance and standard deviation for the given data.	4	4	1,2,4,5, 7	2: 0 : 4
23	Write a python program to display student marks from the record.	4	4	1,2,4,5, 7	1 : 0 : 2
24	Write a python program to create a labeled bar graph using matpoltlib. pyplot.	4	4	1,2,4,5, 7	2: 0 : 4
25	Write a python program to create a labeled pie chart using matpoltlib. pyplot.	4	4	1,2,4,5, 7	2 : 0 : 4
TOTAL HOURS					**96**

4. MAPPING OF CO WITH PO

CO	COURSE OUTCOME	PO MAPPED	EXPERIMENT LINKED	COGNITIVE LEVEL (R / U / A)	TUTORIAL & PRACTICAL SESSIONS IN HRS.
CO-1	Understand the tools of data Collection, classification and cleaningof data.	1, 2, 4, 5, 7	1-4	A	15
CO-2	Able to summarize the given statistical data	1, 2, 4, 5, 7	5-12	A	33
CO-3	Understand the measure of location And dispersion of data.	1, 2, 4, 5, 7	13-18	A	18
CO-4	Learn the basics of Python Programming.	1, 2, 4, 5, 7	19-25	A	30
Total					**96**

Course	COs	Programme Outcomes (POs)						
		1	**2**	**3**	**4**	**5**	**6**	**7**
Statistics & Analytics	CO-1	3	3	0	3	3	0	3
	CO-2	3	3	0	3	3	0	3
	CO-3	3	3	0	3	3	0	3
	CO-4	3	3	0	3	3	0	3
Level – 3 : Highly Mapped, Level – 2 : Moderately Mapped, Level – 1 : Low Mapped and Level – 0 : Not Mapped								

5. INSTRUCTIONAL STRATEGY

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

1. Use of sign language for communication in classroom since most of students are hearing impaired in nature.
2. Use of Audio-Visual aids like ppt, videos ,Animation, E-books etc..
3. Hands on training providing for the students in pratical and tutorial clases through demonstration.
4. Encourage to attend interactive sessions, Group discussion, guest lectures, workshops, Industrial visit, MCQ/Quiz, Assignment, open book test to facilitate students for learning.
5. Providing the course material in soft/hard copy in advance to the students, to come prepared to the class.

6. SUGGESTED LEARNING RESOURCES:

a. Statistical Analysis with Excel For Dummies (For Dummies Series) Paperback Import, 9April 2013 by Joseph Schmuller (Author)

b. https://www.brianheinold.net/python/A Practical Introduction to Python ProgrammingHeinold.pdf

c. http://www.bikeprof.com/uploads/9/0/6/5/9065192/excel stats handout npl.pdf

d. Introduction to Python programming for beginners by Vivian Baily Kindle edition.

e. PYTHON PROGRAMMING: Python programming: the ultimate guide from a beginner toexpert by Clive Campbell.

f. Open source for python: https://hub.gke2.mybinder.org/user/jupyterlabjupyterlab-demo-zfkdwy4y/lab

7. SUGGESTED LIST OF STUDENT ACTIVITIES

Note: The following activities or similar activities for assessing CIE (IA) for 10 marks (Any one)

Sl. No.	Activity
1	Describe the data collection activity itself (interviews, surveys, library research, etc.) AND why this specific form of data collection was chosen. Be sure to explain why you think this kind of data will help you in your design process. Also be sure to provide details about the activity: how many interviews, how longthey took, where they took place, how many questions asked in a survey, how many respondents, **etc**.

	Present the results of your data collection. You do not have to have completely analyzed all your data, but do make sure you present the results of your research. If you did a survey, please attach a copy of the survey as an appendix; if you did interviews, please attach a copy of the interview questions. Discuss any preliminary analysis of your data. What have you learned thus far from the data should be discussed from an analytical perspective (rather than a data dump). For example, if you surveyed people about their use of the local bus system, and 90% of your respondents said they take the bus when it is raining, and 60% of your respondents said they usually wait more than 10 minutes for a bus, think about what this teaches you rather than just the information itself. In this instance, you can see that people are generally waiting for several minutes in the rain for bus, so a covered bus stop might be a good idea. Keep in mind that your findings from data should lead directly to the conclusions you make about your design recommendations. This is the time to begin thinking very specifically about your research in those terms. This is also an opportunity to think about your definition of "better" and howit applies to your design goals and your choice of research activities (for example, if you are choosing to make something better by making it cheaper, maybe you are interviewing people to see how much loss of functionality or decrease in features for a technology they are willing to tolerate).
2	https://ils.unc.edu/courses/2013spring/inls541001/Assignments.html#Assignment 9 DOWNLOAD a dataset from the above link and use data visualization tools to Analyze it.
3	Acquire the dataset from https://www.kaggle.com/datasets (For example acquire the data of IPL ball by ball scores and find the standard deviation and Variance of score of a batsmen)and clean the data for the root cause of the problemstatement and summarize the date and explain the inference.

8. A. COURSE 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 Evaluation	IA Test	Students	Two tests (Average of two tests will be Computed)	20	Blue Books	All Co's
		Skill test		Three tests (Average of three tests will be Computed)	20	Model/ Report	Specified CO by the Course Coordinator
		Student Activity			20	Model/ Report	
				Total CIE Marks	60		
	SEE Semester End Examination	Semester End Exam		End of the Course	40	Answer Scripts	All Co's
				Total	100		
Direct Assessment	Student Feedback		Students	Middle of the Course	Feed Back Forms		

b. COURSE ASSESSMENT AND EVALUATION CHART

SL. NO.	ASSESSMENT	Evidence Collected	DURATION	COs	MAX MARKS	CONVERSION
1	CIE Assessment 1 (Written Test -1-theory) - At the end of **3rd week**	Blue Book	1 Hour	1, 2	20	Average of 2 written tests20
2	CIE Assessment 2 (Written Test -2-theory) - At the end of **13th week**	Blue Book	1 Hour	3, 4	20	
3	CIE Assessment 3 (Skill test) - At the end of **5th week**	Model / Report	3 Hours	1, 2	20	Average of 3skill tests 20
4	CIE Assessment 4 (Skill test) - At the end of **7th week**	Model / Report	3 Hours	3	20	
5	CIE Assessment 5 (Skill test) - At the end of **9th week**	Model / Report	3 Hours	4	20	

6	CIE Assessment 6 (Student activity) - At the end of **11th week**	Model / Report	--	1, 2, 3	20	20
Total Continuous Internal Evaluation (CIE) Assessment						**60**
7	Semester End Examination (SEE) Assessment (Practical Test)	Answer Booklet	3 Hours		100	**40**
Total						**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 evaluation and the obtained marks are scaled down to 20 marks.
3. SEE is conducted for 100 Marks (3 Hours duration) as per scheme of evaluation.

First / Second Semester Examination, Model Question Paper – 2021
[Common to all Engineering Programmes]

STATISTICS AND ANALYTICS

Duration: 3 Hours] **Subject Code: 1413** **[Max. Marks: 100**

Instruction: *Answer both the questions. Each question carries 50 marks.*

Qn. No.	Question	CL	COs	POs	Marks
1	Short and Objective type Questions	R / U	1	1, 2, 4, 5, 7	10
2	For the given ungrouped data set plot the bar graph by grouping the data in Microsoft Excel spread sheet and interpret the obtained results. (Dataset. bar graphs and interpretation have to be entered in the answer script). **OR** Generate a random data set in Microsoft excel spread sheet containing 50 data and find the mean mode and median in Microsoft excel spread sheet and interpret the obtained results. (Dataset, bar graphs and interpretation have to be entered in the answer script).	A	2, 3	1, 2, 4, 5, 7	45
3	Write the python program to enter two integers and two strings and to print the sum two integers and two strings.	A	4	1, 2, 4, 5, 7	45
Total Marks					**100**

Questions are not framed from Unit 1 in the final SEE. Short questions can only be asked fromthat unit.

SCHEME OF EVALUATION FOR BOTH CIE AND SEE

Sl. No.	Particulars of Evaluation	Marks
1.	Short questions from Unit 1	10
2.	Writing of Observation / Flow Chart / Logic / Algorithm / Program	30
3.	Conduction of experiment	20
4.	Output and Interpretation of results	20
5.	Viva-Voce	20
Total		**100**

---ooo---

Government of Karnataka
Department of Collegiate and Technical Education
JSS Polytechnic for the Differently Abled (Autonomous)

ARCHITECTURAL GRAPHICS

Course Code	**1414**	**Semester**	**I**
Course Name	**ARCHITECTURAL GRAPHICS**	**Course Group**	**AR/CS/EC**
Number of Credits	**4**	**Type of Course**	**Lecture& Practice**
Course Category	**ES**	**Total Contact Hours**	**6 Hrs Per Week** **96 Hrs Per Semester**
Prerequisites	**Zeal to learn the subject Visualizing/Creativity**	**Teaching Scheme**	**(L:T:P)-1:0:2**
CIE Marks	**60**	**SEE Marks**	**40**

1. COURSE RATIONALE

Engineering Drawing is an effective language of engineers. It is the foundation block which strengthens the engineering & architectural structure. Moreover, it is the transmitting link between ideas and realization.

2. LIST OF COMPETENCIES

The course content should be taught and implemented with the aim to develop different types ofskills leading to the achievement of the following competencies:

a. Prepare Architectural drawings manually with given geometrical dimensions using prevailing drawing standards and drafting instruments.
b. Visualize the shape of simple object from orthographic views and vice versa.
c. Explaining the composition possibilities through SOMA CUBE

3. COURSE OUTCOME

CO1	Adopt the standards in dimensioning and to reproduce given drawings to given scale.
CO2	Visualize solid objects in all planes and to develop two dimensional views using principles of orthographic projection for graphical communication in design process.
CO3	Development of surface for geometrical objects and Develop axonometric views like Isometric, diametric trimetric.
CO4	Develop technique methods in drawing perspective views of geometrical objects.

4. INSTRUCTIONAL STRATEGY

1. Teacher should show model of real of the component/part whose drawing is to be made. Emphasis should be given on cleanliness, dimensioning and layout of sheet.
2. Focus should be on proper selection of drawing instruments and their proper use.

5. 5-a CONTENTS

The following topics/sub topics are to be taught and assessed in order to ensure acquisition of skill sets by students for achieving CO to attain identified learning topics.

5-b. COURSE CONTENT DETAILS.

Unit	Major Learn in Topics and Sub- Topics	Outcomes (in cognitive domain)	Hours L-T-P
UNIT-1 **Dimensioning &Geometrical constructions**	1.1 List the different drawing instruments and Application Graphical conventions of various types of lines and its application (Thick, Thin, Axis etc) Practice use of drawing instruments 1.4 Representative fraction Scales - Full Scale, Reduced Scale and Enlarged Scale 1.6 Dimensioning Aligned system and Unidirectionalsystem in the given drawings. 1.7 Dividing line into given Number of equal parts & ratio 1.8 Constrnct different polygons.	1. Drawing equipment's, instruments and materials. 2. Standard sizes of drawing sheets, layout of drawing sheets, title block. Types of lines & their applications, Pencils-grades, applications Scaling technique used in drawing. 3. Dimensioning methods.- Aligned system and unidirectional system. 4. Dividing line into equal parts 5. Constructions of geometrical figures.	**6-0-12**

UNIT-2 Orthographic Projections	2.1 Introduction to Projections Principal Planes of Projection and Principal Views 2.2 Introduction to First angle method. Projection of Solids. Draw orthographic views of objects like cube, prism, pyramid, cylinder, cone. Note: Problem should be restricted to development of-Front view/Elevation, Top view/Plan and Side views only. Use First Angle Method only.	1. Reference planes, orthographic projections. 2. Concept of quadrant, first angle projections and their representation. Projections of solids in various positions with respect to the Reference planes. (Parallel, perpendicular and inclined to HP and / or VP Note : To consider the object in simple & stable positions	**7-0-14**
UNIT-3 Developmentof surfaces & Axonometric Views	3.1 Draw the development of surfaces of solids, cube, prism, pyramid, cylinder & cone. 3.2 Introduction to 3d views of objects- Isometric, Dimetric & Trimetric views. 3.3 Develop Isometric views of geometrical objects - cube, prism, pyramid, cylinder & cone. Develop Isometric views of simple objects - Steps, pedestal, table.	1. Develop the complete lateral Surface of solid geometrical objects. 2. Isometric scales. 3. Isometric view and isometric drawing. 4. Difference between isometric projection and isometric drawing. 5. Illustrative problems limited to Simple elements Development of dimetric & trimetric views Note : Focus more on isometric views and give brief information about dimetric and trimetric views.	**10-0-20**
UNIT-4 Perspective Drawings	4.1 Techniques& methods of perspective drawing of geometrical Objects. i. One point - simple objects cube, prism, pyramid, cylinder, cone, steps & pedestal ii. Two point - simple objects cube, prism, pyramid, cylinder, cone, steps &pedestal Etc., Introduction to Perspective drawing Technical terms used in perspective	Principle of Perspective projections. Definitions of Perspective elements. Methods of drawing Perspective views. Visual Ray Method and Vanishing point method. One point perspective or parallel perspective. Two point or Angular perspective	**7-0-14**
		TOTAL	**30-0-60**

6. LIST OF PRACTICAL EXERCISES

The exercises/practical/experiments should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the competency. Following is the list of exercises/practical/experiments for guidance.

Sl. No.	Unit No.	Practical Exercises (Outcomes in Psychomotor Domain)	Hours
1	1	1.a. Teacher will demonstrate the use of Drawing instruments. b. Planning and layout as per ISC: Scaling technique.	**1-0-2**
		2. Draw following. Problem - 1 Drawing horizontal, vertical, 30 degree, 45 degree, 60 & 75 degrees lines using Tee and Set squares/ drafter.(Sketch book) Problem - 2 Indicate different convention of lines on the drawing.(Drawing sheet)	**1-0-2**
		Problem – 3 Copy the drawing to the required scale anddimensioning adopting right System and positioning dimensions using Tee and Set squares / drafter.(Drawing sheet)	**1-0-4**
		Problem 4 Dividing given line in to equal number of parts.	**1-0-2**
		Problem 5. Draw regular geometric constructions Pentagon, Hexagon, (Drawing sheet)	**1-0-2**
		Problem 6. Draw regular geometric constructions Square, circle, Triangle and other shapes. .(Drawing sheet)	**1-0-2**
2	2	First angle Projection symbol Problem 5: Draw Projection of points in 1St, 2nd,3rd and 4th Quadrants.(Drawing sheet)	**1-0-2**
		Problem 6: Draw Projection of Lines a) Parallel to both the planes b) Parallel to one and Perpendicular to another c) Parallel to one and Inclined to another. .(Drawing sheet)	**1-0-2**
		Introduction to orthographic projection – principal planes of projection– Concept of first angle projection. Draw plan and elevation of Geometrical objects given the position and location. Draw plan and elevation of Geometrical objects given the position and location.	**1-0-2**

Sl. No.	Unit No.	Practical Exercises (Outcomes in Psychomotor Domain)	Hours
		Draw the orthographic views of objects – cubes,	**1-0-2**
		Draw the orthographic views of objects – prism,	**1-0-2**
		Draw the orthographic views of objects –pyramids, Cylinder, cone etc.	**2-0-4**
3	3	Development of complete surface of solid geometrical objects such as cube, prism, pyramid cylinder and cone	**4-0-8**
		-Explain the concept of axonometric views such as isometric diametric and trimetric. Isometric scale & projections.	**2-0-4**
		Draw isometric projections of geometrical objects and isometric views	**2-0-4**
		Draw isometric views of the sketch shown in the figures whose orthographic views are given	**2-0-2**
4	4	Principle of Perspective projections Definitions of Perspective elements.	**1-0-2**
		Methods of perspective projections and related problems with one point and two point perspective views	**6-0-12**
		TOTAL	**30-0-60**

1 Theory & practice should be in first angle projections and IS codes should be followed wherever applicable.

2 The dimensions of line, axes, distances, angle, side of polygon, diameter, etc. must be varied for

each student in batch so that each student will have same problems, but with different dimensions.

3 The portfolio has to contain data of all problems, solutions of all problems and student Activities performed.

4 Students' activities are compulsory to be performed. A hand out containing be applicable standards from IS codes including title block as per IS standard should be given to each student by concerned teacher.

5 SEE (Practical) shall be conducted For 40 marks; students are to be assessed for competencies achieved.

7. SUGGESTED LIST OF STUDENT ACTIVITIES.

SR. NO.	ACTIVIY
1	Sketch the combinations of set squares to draw angles in step of (15°, 30°. 45°.60°. 75°,90°,105°,120°,135°,150° ,165°, 180 °).
2	Take two simple objects. Sketch isometric of them. Also draw orthographic projections of them (all views).
3	Take one circular shape. Assume one point on circumference and mark it. Roll that shape on flat and circular surface. Obse1ve the path of point.
4	Prepare geometrical objects models such as cube, prism pyramid cylinder and cone.
5	Activity using SOMA CUBE

Note: Concern course coordinator can suggest the relevant student activities from the above suggestive activities

8. SUGGESTED LEARNING RESOURCES:

1. Bureau of Indian Standards. Engineering Drawing Practice for Schools and Colleges IS: Sp-46. BIS.Government of India, Third Reprint, October 1998; ISBN: 81-7061-091-2.
2. Bhatt, N. D. Engineering Drawing. Charotar Publishing House, Anand, Gujrat 2010; ISBN:978-93- 80358-17-8.
3. Jain &Gautam, Engineering Graphics & Design, Khanna Publishing House, New Delhi(ISBN: 978- 93-86173-478)
4. Jollie, D. A. Engineering Drawing. Tata McGraw Hill Edu. New Delhi, 2010; ISBN: 978-0-07-064837-1
5. Dhawan, R. K. Engineering Drawing. S. Chand and Company, New Delhi; ISBN: 81-219-1431-0.
6. Shah, P. J. Engineering Drawing. S. Chand and Company, New Delhi, 2008, ISBN:81-219-2964-4.

9. SOFTWAREJ.LEARNING WEBSITES

1. htt ps://www.youtube.com/ wa tch?v=Tl4 jGyDWCw
2. htt ps: //www.youtube.com/wa tch?v=dmt 6 n7Sgcg
3. https://www.youtube.com /wa tch?v= MOS cnLXL0M
4. https://www.youtube.com/watch?v=3WXPanCq9LI
5. https: //www.youtube.com/ wa tch?v=fvjk7PlxAuo
6. http://www.me.umn.edu/coursesme2011/handouts/engg%20graphics.pdf
7. https://www.machinedesignonline.com

10. COURSE OUTCOMES WITH PROGRAMME OUTCOMES (SUGGESTIVE ONLY)

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

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

11. COURSE 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	Two skill tests (Average of Two skill tests will be Computed)	20	Blue Books and Drawing sheet	All CO's
		Assignment & Student activity		Portfolio	30	Portfolio	Specified CO by the Course Coordinator
				Activity	10	Activity	
				Total CIE Marks	60		
	SEE SEMESTER END EXAMIN A-TION	Semester End Exam		End of the Course	40	Answer Scripts	All CO's
				Total	100		
INDIRECT ASSESSMENT	Student Feedback		STUDENTS	Middle of the Course	Feed Back Forms		
	End of Course Survey			End of the Course			

COURSE ASSESSMENT SUMMARY

Sl. No	Assessment	Time frame in semester	Duration	Max marks	Conversion
1	Portfolio Evaluation of Drawings		-	30	30
2	Skill Test-1	At the end of 8th week	3 Hrs	20	Average of two skill tests 20
3	Skill Test-2	At the end of 15th week	3 Hrs	20	
4	Student Activity	-		10	10
5	Total Continuous Internal Evaluation (CIE) Assessment			**60**	60
6	Semester End Examination(SEE) Assessment (Written Test)		3 Hours	**100**	40
	TOTAL				**100**

Note:

1. Graded exercises will be evaluated.
2. Skill test to be conducted for 100 marks as per scheme of evaluation and the obtained marks are scaled down to 20 marks.
3. SEE to be conducted for 100 marks as per scheme of evaluation and the obtained marks are scaled down to 40 marks.

12. SCHEME OF VALUATION FOR END EXAMINATION (SUGGESTIVE)

SL NO	QUESTIONS	MARKS
1	a. Divide a line of length 170 mm in to seven equal parts. b. Copy the sketch to 1:1 scale and dimension it using Aligned system.	**20**
2	A Hexagonal pyramid of base edge 25mm and axis length 70 mm is resting on its apex such that the axis of the pyramid is perpendicular to HP. Two of its adjacent base edges make equal inclinations with VP and lies nearer to it. Draw the projections of the pyramid when the axis lies at 30 mm in front of VP 25 mm from L.P.P and 40 mm from R.P.P respectively.	**20**
3	Develop the complete surface of a pentagonal prism of base edge 30mm and its axis length80mm.	**20**
4	Draw isometric view for the given orthographic sketch	**20**
5	A pentagonal prism of base edge 30mm and axis length 80 mm is resting on its pentagonal face such that one of its lateral rectangular faces is parallel to PP and 10 mm behind and nearer to it. The station point lies on a central visual ray passing through a point at a distance of 50 mm to the left of the axis of the prism of the station is at a distance of 160 mm in front of PP and 100 mm above the ground. Draw one point perspective view of the prism.	**20**

Note- Internal choice can be given.

MODEL QUESTION BANK (Suggestive only)

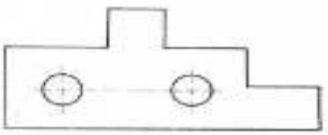
1. a) Illustrate the elements of dimensioning with the help of a sketch.
2. b) Illustrate the dimensioning of given common features: diameter, radius, chord, Arc and angle.
3. a) Mention the uses of the following drawing instruments.

i) T-square ii) Set square iii) Bow compass iv) Clinograph v) Mini drafter

b) Mention the uses of the following drawing instruments.

i) French curves ii) Protractor iii) Clips iv) Erasing Shield v) Drafting machine

4. Define RF. Mention the types of scales based on RF.
5. Draw the conventional representation of lines
6. Divide a line of length 170 mm in to seven equal parts.
7. Reproduce the views given in the sketch below, to its full size and dimension the same byunidirectional dimensioning system
8. Construct a octagon in a given 100 mm square
9. Reproduce the top and front views given in the sketch below to a scale of 1:20 and dimension the same by unidirectional dimensioning system.
10. Draw 45° inclined lines in a rectangular box
11. Draw the various types of lines using 0.5 range thickness of line according to the specification
12. Copy the sketch to 1:1 scale and dimension it using Aligned system.



13. Copy the sketch to 1:1 scale and dimension it using unidirectional system with Chaindimensioning method.

14. Construct a heptagon of side of length 35mm without angular instrument.
15. Construct a pentagon of side of length 35mm without angular instrument.
16. Reproduce the views given to its full size and dimension the same by unidirectional system of dimensioning.

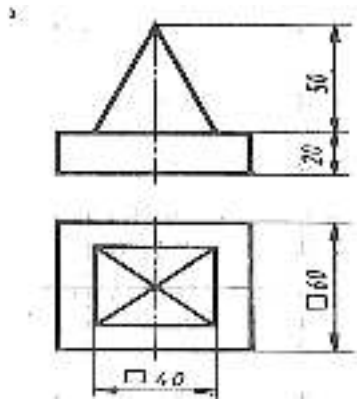
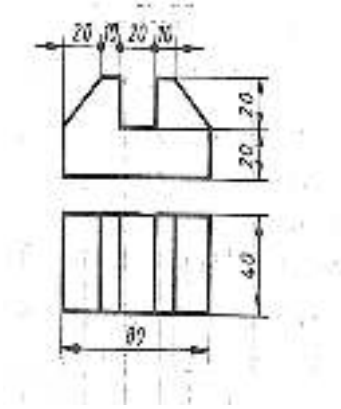
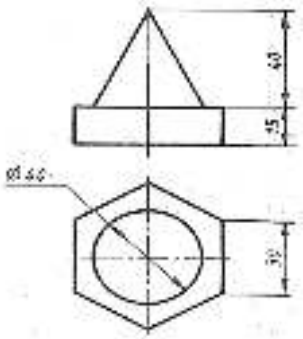
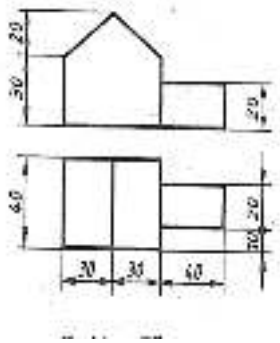
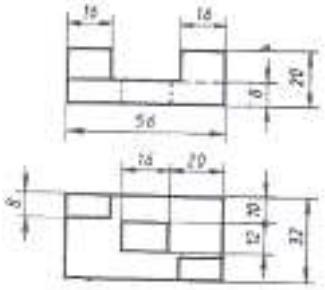
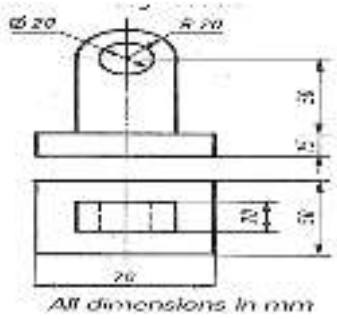
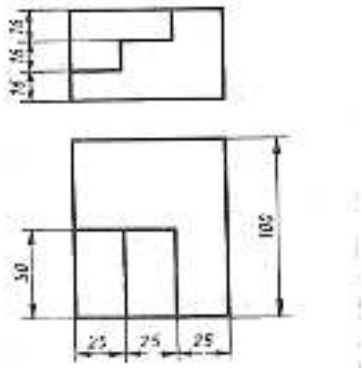
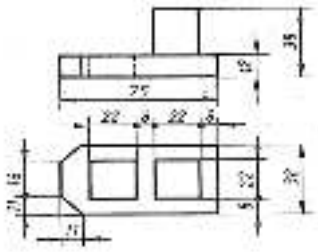
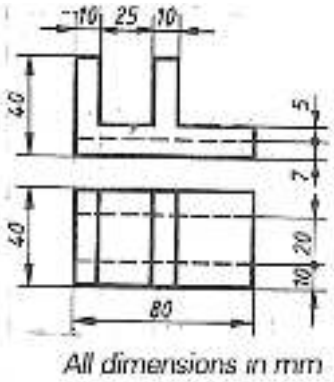
ORTHOGRAPHIC PROJECTIONS

1. A triangular prism of base edge 40mm and height 65mm rests with its base on HP so that one of the base edges is parallel to VP and it lies at20mm from VP. Draw the top view, front view and profile, view when the axis of the prism is perpendicular to HP. The LPP&RPP are at25 mm from the nearer edge of the prism.
2. A pentagonal prism of base edge 30 mm and 60 mm long is resting on one of its lateral edges such that two of its adjacent rectangular faces containing this lateral edge are equally inclined to H.P. The edge on which it is resting is parallel to VP and lies at a distance of 40 mm in front of it. The two ends of the axis which is nearer to L.P.P and R.P.P at 25mm and 35 mm these two planes of projection. Draw the projections of the prism.
3. A Hexagonal pyramid of base edge 25mm and axis length 70 mm is resting on its apex such that the axis of the pyramid is perpendicular to HP. Two of its adjacent base edges make equal inclinations with VP and lies nearer to it. Draw the projections of the pyramid when the axis lies at 30 mm in front of VP 25 mm from L.P.P and 40 mm from R.P.P respectively.
4. A triangular pyramid of base edge 60mm and axis length 85mm is resting on its triangular base in such a way that one of its base edge is parallel to VP and lies at a distance of20mm from the nearer to it. The two base corners which are nearer to LPP and RPP are at 30mmand 35mm from these two planes of projection. Draw the front view, top views and profile views of the pyramid.
5. A Hexagonal prism of base edge 30mm and axis length 85mm is resting on one of its rectangular faces such that the axis of the prism is parallel to VP and lies at a distance of 60mm in front of it . The two Hexagonal faces which are nearer to RPP and LPP are at 25mm from these two planes of projections. Draw the top, front and profile views of the prism.
6. A Cylinder of base diameter 50mm and axis length 80mm is resting on one of its generators such that the axis of the cylinder is parallel to VP and lies at a distance of60mm in front of it . The nearest circular faces to LPP and RPP are at 25mm & 365mm from these two planes of projection. Draw the projection of the Cylinder.
7. A cone of base diameter 60mm and axis length 85mm is resting on its circular base with its axis vertical. A section plane perpendicular to VP and Parallel to one of its end generator is passing through a point on the axis which is 15mm below the apex. Draw the sectional top view, sectional front view and true shape of the section. Name the curve obtained in the true shape.
8. Draw the top and front views of a square pyramid of base edge 50mm and height 80mm when it lies with one of its square base on HP. the one of base edge is inclined at 60o to VP. With one of its nearest corners lying at a distance of 20mm in front of VP. Axis of the pyramid lies at 60mm from LPP and 50mm from RPP respectively.

DEVELOPMENT OF SURFACES & AXONOMETRIC VIEWS

1. Develop the complete surface of a pentagonal prism of base edge 30mm and its axis length80mm.
2. Develop the complete surface of a hexagonal pyramid of base edge 30mm and axis length 80mm.
3. Develop the complete surface of a cylinder of base diameter 30mm and axis length 80mm.
4. Develop the complete surface of a cone of base diameter 30mm and axis length 80mm.
5. Develop the complete surface of a pentagonal pyramid of base edge 30mm and axis length80mm.
6. Draw the isometric view of a Hexagonal Prism of base edge 30 mm and axis length 80 mm.
7. The sketch below shows the Orthographic views of an object. Draw the Isometric view of the same.
8. Draw the Axonometric view of a Pentagonal Pyramid of base edge 25 mm and axis length 75mm.
9. Obtain axonometric view of an object whose orthographic views have been given in the sketch below.
10. Draw the isometric view of hexagonal pyramid of base edge 25 mm and axis length 75mm.
11. Obtain axonometric view of an object whose orthographic views have been given in the sketch below.
12. Draw axonometric view of a Octagonal prism of base edge 30 mm and axis length 80mm.
13. Draw axonometric view of an object whose orthographic views have been given in the sketch below.
14. Draw the isometric view of a cone of base diameter 50mm and axis length 75 mm.
15. Draw the isometric view of an object whose orthographic views have been given in the sketch below.
16. Draw axonometric view of Pentagonal pyramid of base edge 25 mm and axis length 75 mm.
17. Obtain axonometric view of an object whose orthographic views have been given in the sketch below.

18. Draw the isometric view of the sketch whose orthographic views are given below:

1. 	2. 	3. 
4. 	5. 	6. 
7. 	8. 	9. 

PERSPECTIVE DRAWING

1. Draw two point perspective of an object whose orthographic views have been in the sketch below along with position of station point, eye level and picture plane.
2. A pentagonal prism of base edge 30mm and axis length 80 mm is resting on its pentagonal face such that one of its lateral rectangular faces is parallel to PP and 10 mm behind and nearer to it. The station point lies on a central visual ray passing through a point at a distance of 50 mm to the left of the axis of the prism of the station is at a distance of 160 mm in front of PP and 100 mm above the ground. Draw one point perspective view of the prism.
3. A rectangular pyramid of sides of base 30 mm x 20 mm and height 50 mm rests with its base on ground such that one of its longer base edges is parallel to picture plane and 30 mm behind it. The station point is 50 mm in front of picture plane, 30 mm to the left of axis of pyramid and 50 mm above ground level. Draw the perspective of pyramid.
4. Draw two point perspective of an object whose orthographic projections are given below. Station point is located 90 mm in front of picture plane and 70 mm above Ground level.
5. A hexagonal Pyramid of base side 30 mm and axis length 50 mm is resting on ground on its base with a side of base is parallel and 25 mm behind PP. the station point is 60 mm above ground, 90mm in front of PP and lies on a central plan which is 55 mm to the left of the axis of the pyramid. Draw the Perspective view of the Pyramid.
6. Draw one point perspective view of an object whose orthographic views have been given in sketch below along with the position of picture plane and station point.
7. Draw the perspective view of a pentagonal prism of base edge 30mm and axis length 80mm which is resting on one of its pentagonal faces with its axis vertical. The prism rests in such a way that one of its vertical lateral edge touches PP and two adjacent lateral rectangular faces containing this edge are equally in inclined to PP. The station point lies on a central visual ray which passes through a point at a distance of 40mm to the left of the axis of the prism. The station point is at a distance of 150mm in front of Pp and 100mm above the ground. Draw the perspective view of the prism.
8. Draw the point perspective view of an object whose orthographic views have been given along with station point and picture plane position.
9. Draw a perspective view of an object whose orthographic views along with the positions of station point and eye level are given in the details.
10. A rectangular pyramid of sides of base 30mm and 20mm and height 35mm rests with its base on ground such that one of the longer base edges is parallel to the pitcher plane and 30mm behind it. The station point is 50mm in front of the pitcher plane, 30mm to the left of the axis of the pyramid and 50mm above the ground. Draw the perspective view of the pyramid.

Government of Karnataka
Department of Collegiate and Technical Education
JSS Polytechnic for the Differently Abled (Autonomous)

FUNDAMENTALS OF ELECTRICAL & ELECTRONICS ENGINEERING

Course Code	**1415**	**Semester**	**I**
Course Title	**FUNDAMENTALS OF ELECTRICAL & ELECTRONICS ENGINEERING**	**Course Group**	**AR/CS/EC**
No. of Credits	**4**	**Type of Course**	**Lecture & Practice**
Course Category	**ES**	**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.

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 differentelectrical supply systems 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 to measure 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 different meters)	1:0:2

3	Calculate basic electrical quantities	• Relationship between V, I and R. (Ohms law) • Behavior of V, I in Series and Parallel DC circuits. • Describe open circuit, close circuit and short circuit • http://nreeder.com/Flash/ohmsLaw.htm	1.Measure current,voltage and analyze effective resistance inseries circuit 2.Demonstrate effects of shorts and opens in a circuit	1:0:2
4	Connect resistances indifferent combination	1. Equation to find the effectiveResistances connected in series 2. Equation to find effective Resistances connected in parallel 3. Resistances connected series andparallel combinations 4. Simple problems.	1. Determine theequivalent 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 of frequency, time period and phase difference of AC quantity using CROand function generator.	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 to measure 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 to measure them 2. Single phase and Three phase supply.	1. Measure single phase energy using relevant measuring 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	1. Wire up and test PVC Conduit wiring tocontrol one lamp fromtwo different places using suitable protective devices.	2:0:4

		function. • Describe various wiring tools. • State procedure of care andmaintenance of wiring tools.		
9	1.Identify and select Wiring systems for a given applications 2. Identify and select thecables used for different current and voltage ratings. 3.Draw the wiring diagram	1. Describe different types of wiringsystems. • Surface conduit • concealed conduit • PVC casing capping 2. Wiring systems and their applications. 3. Describe the types of wires, cablesused for different current and voltageratings.	1. Wire up and test PVC Conduit wiring tocontrol of 2 sockets and2 lamps.	3:0:6
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- phase transformer 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 discharging of 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 of resistors-color codes. ➢ http://nreeder.com/Flash/resistor.htm	Determine the value of resistance by color codeand compare it with multimeter readings.	1:0:2
16	Identify and test PN Jjunction Diode	**PN junction diode** • Symbol • Characteristics • Diode as switch. • Types of diodes and ratings • Applications	Identify the terminals of a Diode and test the diode for its condition.	1:0:2
17	Build and test bridgerectifier circuit	**Rectifier** • Need for AC to DC conversion • Bridge rectifier with andwithout C Filter, • Rectifier IC.	Construct and test bridge rectifiers 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 oftransistor terminals and test. 2. Construct and test the transistor as anelectronic 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 arelay 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 different types of fires. • Demonstrate rescue techniques applied during fire hazard. • Inform relevant authority about any abnormal situation 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 & Practical Sessions 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
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.www.electrical4u.com 10.https://www.youtube.com/watch?v=zLW 7TPf310
11. https://www.youtube.com/watch?v=8PTNjw-hQIM

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	1	1, 4	1	

	• Digital Multimeter • Megger • Tong tester 4. Explain supply systems like AC, DC.				
	• 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 ProtectiveDevices • 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 Devices and Wiring circuits	**Transformer** • working principle • Transformation ratio • Types and applications withtheir ratings	3	1, 4	1	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	
U N I T	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, humidity, voltage, vibration, IR (Principle/working, ratings/ specifications, cost, and applications) **4.Actuators** • Concept • Types and applications. • Relay as an actuator.	4	1, 4	2	
	• 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)

ENVIRONMENTAL SUSTAINABILITY

Course Code	**1416**	**Semester**	**I**
Course Name	**ENVIRONMENTAL SUSTAINABILITY**	**Course Group**	**AR/CS/EC/JD&T/ CP/CA**
Number 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	HOURS L-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 wasteSolid 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**

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, NewDelhi
6. Rao, C. S., Environmental Pollution Control and Engineering, New Age InternationalPublication, 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 Sessions In Hrs	Allotted marks forCIE 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 efficientprocess 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

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 2If 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 EXAMIN A-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
2.	CIE Assessment 2 (Written Test -2) - At the end	80 minutes	30	

	of 10th week			tests 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 thecompost in your college garden! Have green team students make up a skit and present detailsabout 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 favorite poster.
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 bethrown 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)

SIGN LANGUAGE – I

Course Code		**Semester**	**I**
Course Title	**Sign Language – I**	**Course Group**	**AR/CS/EC/JD&T/ CP**
Type of Course	**AU**	**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	CO1	1,5,6,7	2
	1.2 Introduction to Sign Language with Definitions	CO1	1,5,6,7	1
	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			
	CIE Assessment 1			1
2. Alphabets and Finger Spelling	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 framing the words 2.3 Practice Session	CO2	1,5,6,7	3
	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)						
		1	2	3	4	5	6	7
Sign Language-I	CO1	2	0	0	0	2	2	2
	CO2	2	0	0	0	2	2	2
	CO3	2	0	0	0	2	2	2
	CO4	2	0	0	0	2	2	2
	CO5	2	0	0	0	2	2	2

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 13th week	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**

Unit 1

1.1. Self Introduction

1. 2 Introduction to sign language?

A sign language is a language which is a means of communication to convey the message or meaning. This involves simultaneously combining hand shapes, orientation and movement of the hands, arms or body, and facial expressions to express a speaker's thoughts. Although signing is used primarily by the deaf, it is also used by others, such as people who can hear but more importantly cannot physically speak, or have trouble with speaking due to disability.

1.3. Importance of sign language?

- A sign language is signing primarily used by deaf
- It is currently the means of interactions and a basis of social living
- It is a basic instinct for humans to interact, and for the deaf, it is through signs that makes their interaction complete.
- It is used to understand concepts of the academics

1.4. Different types of sign languages

Sign Language varies from Region to Region as well as from Countries

In India we follow:

- Indian Sign Language: Double handed
- American Sign Language: Single hand
- British Sign Language: Double handed

1.5. Advantage of Sign Language

1. Deaf students can communicate with their peers and teachers
2. They start to develop confidence in communicating
3. Start to understand subject related words

Unit 2

2.1. Alphabets

Single Handed Alphabets

a b c d e f g h I j k l m n o p q r s t u v w x y z

Double Handed Alphabets

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

2.2 Finger Spelling (30)

Bench, Table, Chart, Drawing, Subject, Marks, Question, Answer, Certificate, Distribution

2.3 Practice session

Unit 3

3.1 Weeks

Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

3.2 Months

January

February

March

April

May

June

July

August

September

November

December

3.3 Number

1	11	30	1000
2	12	40	10000
3	13	50	1 Lakh
4	14	60	1 Crore
5	15	70	
6	16	80	
7	17	90	
8	18	100	
10	20		

3.4 Colours

1. Red
2. Blue
3. Green
4. Yellow
5. Orange
6. White
7. Black
8. Brown
9. Pink
10. Purple

3.5 Time related words

1. Time
2. Minute
3. Second
4. Days
5. Week
6. Month
7. Year
8. Hour
9. Today
10. Tomorrow

11. Yesterday
12. How
13. Many

3.6 Greeting Words

1. Good morning
2. Good night
3. Good evening
4. Good afternoon
5. What is your name?
6. How do you feel?
7. Nice to meet you
8. You are late
9. Thank you
10. You're welcome
11. Excuse me
12. Sorry
13. Please
14. Welcome

3.7 Practice Session

Unit 4

4.1 Educational Words

1. School
2. College
3. Book
4. Pen
5. Pencil
6. Table/Desk
7. Question
8. Answer
9. Read
10. Write

11. Study
12. Sentence
13. Word
14. Teacher
15. Student
16. Principal
17. Teach
18. Learn
19. Library
20. Classroom
21. Laboratory
22. Magazine
23. Course/Programme
24. Subject/topic
25. Exam
26. Test/check
27. Homework
28. Result
29. Paper/Sheet
30. Work shop

4.1 Sentences

1. My School name is ____
2. My college name is____
3. I learn English.
4. Write in 5 Sentence.
5. He writes in Pencil.

4.2 Practice Session

Unit 5

5. 1. General Vocabulary

1. Absent
2. Present
3. Understand
4. Doubt
5. Respect
6. Uniform
7. Explain
8. Example
9. Meaning
10. Dictionary
11. Technical
12. Education
13. Institution
14. Identity card
15. Important
16. Exam fee
17. Accept
18. Hotel/Canteen
19. Bank
20. Xerox
21. Hostel
22. Register number
23. Hall ticket
24. Marks card
25. Seminar hall
26. Practice
27. Last date
28. Fine
29. Certificate
30. Health centre

5.1 Sentences

1. Bank is closed today.
2. I stay in Hostel
3. I don’t the meaning of the word
4. Did you understand?
5. Yesterday, I was absent

5.2 Practice Session

Government of Karnataka
Department of Collegiate and Technical Education
JSS Polytechnic for the Differently Abled (Autonomous)

PSYCHOLOGY AND COUNSELING – I

Course Code	**-**	**Semester**	**I**
Course Title	**Psychology and Counseling - I**	**Course Group**	**AR/CS/EC/JD&T/ CP/CA**
Type of Course	**AU**	**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

	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.	5.1 Understanding stress 5.2 Stress Management 5.3 Coping Mechanism 5.4 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 Counselling	**Programme Outcomes**						
Course outcomes	1	2	3	4	5	6	7
CO1	2	0	0	0	3	1	2
CO2	2	0	0	0	3	1	2
CO3	2	0	0	0	3	1	2
CO4	2	0	0	0	3	1	2
CO5	2	0	0	0	3	1	2

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 week	60 minutes	10	Total of all the 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	

3. Communication	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