

MRSPTU SKILL CERTIFICATE COURSE IN ANSYS
2022 BATCH ONWARDS (6 months course)

Code	Units	Study Scheme Total Hrs.			Credits	Marks Evaluation Scheme									Total Marks
						Internal Assessment			External Assessment						
		Th	Tut	Pr		Th	Pr	Total	Th	Hrs	Pr	Hrs	Total		
CMEE5-101	Communication Skills	8	-	-	1.0	25	-	25	25	1	-	-	25	50	
CMEE5-101P	Communication Skills Lab.	-	-	24	1.0	-	25	25	-	-	50	3	50	75	
CASYS1-101	Introduction to ANSYS TM workbench	12	28	-	2.0	50	-	50	50	2	-	-	50	100	
CASYS1-102	Sketching and part modeling	18	-	80	3.0	-	50	50	-	-	100	4	100	150	
CASYS1-103	Placed features and assembly	25	45	60	2.0	50	-	50	50	2	-	-	50	100	
CASYS1-104	Meshing	24	-	90	4.0	-	50	50	-	-	100	4	100	150	
CASYS1-105	Static Structural Analysis	25	55	70	2.0	50	-	50	50	2	-	-	50	100	
CASYS1-106	Electronic and Thermal analysis	24	-	92	4.0	-	50	50	-	-	100	4	100	150	
CMEE5-106P	#Student Centre Activity	-	-	48	2.0	-	25	25	-	-	-	-	-	25	
CMEE5-107P	+4-Week Industrial Training and Major Project (At the end of Semester)	-	-	-	4.0	-	-	-	-	-	100	3	100	100	
	TOTAL	136	128	464	25	175	200	375	175	-	450	-	625	1000	

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SCA will comprise of co-curricular activities like extension lectures on entrepreneurship, Industrial tour, environment, sports, hobby club, such as, photography, etc., seminars, declamation contest, educational field visits, NCC, NSS, cultural activities, etc.

+Industrial Training

Before completion of the semester, the students will go for training in a relevant industry/field organization for a minimum period of 4 weeks and prepare a diary. The student will prepare a report at the end of training. This report will be evaluated by the concerned instructor in the presence of one industry representative from the relevant trade/field.

Total weeks per semester: 16, Total working days per week: 5, Total hours per day: 7, Total hours in a semester: $16 \times 5 \times 7 = 560$

One credit is defined as one hour of lecture per week or two hours of practical per week in the program.

GUIDELINES FOR ASSESSMENT OF STUDENT-CENTRED ACTIVITIES (SCA)

The maximum marks for SCA should be 25. The marks may be distributed as follows:

- i) 5 marks for general behavior and discipline

(By Principal or HOD in consultation with the instructor(s)/trainers)

- ii) 5 marks for attendance as per following

(By the instructors/ trainers of the department)

- | | |
|---------------|----------|
| a) Up to 75% | Nil |
| b) 75% to 80% | 02 marks |
| c) 80% to 85% | 03 marks |
| d) Above 85% | 05 marks |

- iii) 15 marks maximum for sports/NCC/NSS/Cultural/Co-curricular activities as per following:

(By In-charge of Sports/ Cultural/NCC/NSS/Co-curricular activities) 15 marks

- for National level participation or inter-university competition 10 marks -
participation any two of the activities

05 marks – participation at the internal sports of the institute/college/university

Note: There should be no marks for attendance in the internal sessional of different subjects.

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UNIT – I
SUBJECT CODE: CMEE5-101
COMMUNICATION SKILLS

Learning Outcomes:

After undergoing this unit, the students will be able to:

- 1 Speak confidently.
- 2 Overcome communication barriers.
- 3 Write legibly and effectively.
- 4 Listen in proper prospective.
- 5 Read various genres adopting different reading techniques.
- 6 Respond to telephone calls and E-Mails effectively.

Practical (24Hours)	Theory (08Hours)
	Basics of Communication • Process of communication • Types of communication-formal and informal, oral and written, verbal and non- verbal • Objectives of communication • Essentials of communication • Barriers to communication • Respond to e-mail effectively (1hour)
• Looking up words in a dictionary (meaning and pronunciation) (2hours)	Functional Grammar and Vocabulary • Parts of speech • Tenses • Correction of incorrect sentences (2hours)
• Self and peer introduction • Greetings for different occasions (1 hour)	Listening • Meaning and process of listening • Importance of listening • Methods to improve listening skills Speaking • Importance • Methods to improve speaking • Manners and etiquettes (2hours)
• Newspaper reading	Reading

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(1 hour)	• Meaning Techniques of reading: skimming, scanning, intensive and extensive reading (1hour)
• Vocabulary enrichment and • Exercises on sentence framing accurately (6hours)	Functional Vocabulary • One-word substitution • Commonly used words which are often misspelt • Punctuation • Idioms and phrases (2hours)

Means of Assessment

1. Assignments and quiz/class tests
2. Mid-term and end-term written tests
3. Viva-voce
4. Presentation

UNIT-II
SUBJECT CODE: CASYS1-101
INTRODUCTION TO ANSYS TM WORKBENCH

Learning Outcome 1. Basic understanding of ANSYS Workbench	
Practical	Theory(12hrs)
• Introduction to ANSYS software • Features of ANSYS software • Working with FEM, Elements and shape functions, FEA software	• Engineering analysis, Procedure to conduct FEM • About ANSYS workbench • Database and file format in ANSYS • Changing the unit system • Component of system

Means of Assessment

- 1 Assignments and quiz/class tests
- 2 Mid-term and end-term written tests
- 3 Viva-voce
- 4 Presentation

UNIT-III
SUBJECT CODE: CASYS1-102
SKETCHING AND PART MODELLING IN DESIGN MODELER

Learning outcomes			
• How to use Design Modeler			
Practical		Theory	
(80hrs)		(18 hrs)	
• I-section • Spring plate • Clamp • Extrusion • Revolution • Sweep • Sketching • CAD System • Surface and line models		• Introduction to modeling • Introduction to design modeler	

Means of Assessment

1. Assignments and quiz/class tests
2. Mid-term and end-term written tests
3. Viva-voce
4. Presentation

UNIT-IV
SUBJECT CODE: CASYS1-103
PLACED FEATURES AND ASSEMBLY

Learning Outcomes	
Learn about assembly	
Practical (30hrs)	Theory (25hrs)
• Adding a hole • Adding a round • Adding a chamfer	• Introduction • Adding Features
• Patterns • Assembly • Extrusion , Union, Intersection,	

Means of Assessment

- 1 Assignments and quiz/class tests
- 2 Mid-term and end-term written tests
- 3 Viva-voce
- 4 Presentation

UNIT-V
SUBJECT CODE: CASYS1-104
MESHING

Learning outcome Understanding basic concept of Meshing	
Practical (24hrs)	Tutorial (90hrs)
• Meshing of Plate with holes (2D &3D) • Optimizing the model • Generating the local mesh • Assembly meshing	• Meshing • Generating the mesh

Means of Assessment

- 1 Assignments and quiz/class tests
- 2 Mid-term and end-term written tests
- 3 Viva-voce
- 4 Presentation

UNIT-VI
SUBJECT CODE: CASYS1-105
STATIC STRUCTURAL ANALYSIS

Learning Outcome • Various Solution • Pre-processing • Holes and slots	
Practical (70hrs)	Theory (25 hrs)
• Plate with central circular holes • Square Slot • Bracket	• Introduction to static structural analysis • Structural analysis of cantilever beam
• Clevis assembly • Algorithm used to stabilize and improve accuracy of the solution • Numerical discretization • Boundary conditions	• Governing equations

Means of Assessment

1. Assignments and quiz/class tests
2. Mid-term and end-term written tests
3. Viva-voce
4. Presentation

UNIT-VII
SUBJECT CODE: CASYS1-106
ELECTRONIC AND THERMAL ANALYSIS

Learning outcome • Thermal analysis and thermal stresses			
Practical		Theory	
(92 hrs)		(24 hrs)	
• Electronic Analysis • Steady state thermal analysis of brake • Heat Sink • Transient thermal analysis of piston • Thermal stress in cylinder		• Important term used in thermal analysis • Types of thermal analysis • Thermal stresses	

Means of Assessment

1. Assignment and quiz/class tests
2. Mid-term and end-term written tests
3. Viva-voce
4. Practical work

SUBJECT CODE: CMEE5-107P
INDUSTRIAL TRAINING– I and MAJOR PROJECT (4 Weeks)

The purpose of industrial training is to:

1. Develop understanding regarding the size and scale of operations and nature of industrial/field work in which students are going to play their role after completing the courses of study.
2. Develop confidence among the students through first-hand experience to enable them to use and apply institute based knowledge and skills to perform field activities.
3. Develop special skills and abilities like interpersonal skills, communication skills, attitudes and values.
4. To choose a meshing and structural analysis make a major project in ANSYS.

It is needless to emphasize further the importance of Industrial Training of students during their certificate program. It is industrial training, which provides an opportunity to students to experience the environment and culture of world of work. It prepares students for their future role as skilled person in the world of work and enables them to integrate theory with practice.

An external assessment of 100 marks has been provided in the study and evaluation scheme of 1st Semester. Evaluation of professional industrial training report through viva- voce/presentation aims at assessing students understanding of materials, industrial process, practices in industry/field organization and their ability to engage in activities related to problem solving in industrial setup as well as understanding of application of knowledge and skills learnt in real life situations.

The instructor along with one industrial representative from the concerned trade will conduct performance assessment of students. The components of evaluation will include the following:

	Punctuality and regularity	20%
	Industrial training report	50%
	Presentation and viva-voce	30%

NOTE: Major project should include the complete use of SOLIDWORKS including the assembly tools. Physical model of this component should be available at the industry where the student chooses to internship.