



JAIPUR ENGINEERING COLLEGE AND RESEARCH CENTRE
DEPARTMENT OF MECHANICAL ENGINEERING

CENTRE of EXCELLENCE in COMPUTER- AIDED ENGINEERING (CAE)



JAIPUR ENGINEERING COLLEGE
AND RESEARCH CENTRE

Jaipur Engineering College and Research Centre

Department of Mechanical Engineering

CENTER of EXCELLENCE in COMPUTER AIDED ENGINEERING (CAE)


PRINCIPAL
Jaipur Engineering College &
Research Centre
Tonk Road, Jaipur-302022

About Center of Excellence:

I) Introduction

This scheme concentrates the efforts of the scientific community in the emerging field of Computer-aided Engineering (CAE) and design in order to meet the requirements of the technological era and to make the achievements in this promising field available to the society. It also helps to improve and competitiveness of the efforts and promote the transfer of innovations into the social and economic environment

II) Nature of Project Support

For promotion of research activities in emerging areas emerging of CAE and design is financially assisting Universities/R & D Institutions/Departments for setting Centre of Excellence. Emerging areas of CADD, 3D Printing and Automobile Engineering are identified by JECRC, Jaipur by time to time and applications are invited from Institutions as and when it is required to promote such areas.

Proposal focuses on any one subject of concern field and Institute/Department may take up Research/Development in that proposed areas.

III) Guidelines for Financial Assistance to the Centre of Excellence

- i. Jaipur Engineering College and Research Centre (JECRC), Jaipur shall provide financial assistance to the minor time bound research proposals/projects usually for emerging areas identified by respective departments.
- ii. Departments having some essential basic facilities for carrying out projects shall be eligible to apply for getting financial assistance for research proposals.
- iii. The principal investigator should have reasonable research experience to his credit.
- iv. Research work shall have to be carried out under any department of JECRC. Respective departments shall be monitoring the progress of the project
- v. Principal investigator shall provide a six monthly progress report to the principal, JECRC.
- vi. All proposals shall be in a prescribed format.
- vii. The Principal Investigator will be required to publish the Paper in the National or International Journal or conference before the release of Second /Third Instalment of

the Grant Financial assistance will be given on the basis of actual requirement of project on yearly basis for maximum three years duration on recommendation of Expert committee and availability of fund

IV) GENERAL TERMS AND CONDITIONS

- i. The Principal investigator should have at least 06 years teaching/ Research Experience.
- ii. The Principal investigator/ Departments/Project in charge should inform the principal of their consent to implement the programme as approved, by way of Acceptance letter.
- iii. The Principal of institution assumes financial and other administrative responsibilities of the project.
- iv. The manpower recruited for the project should be paid as per the rules of the Institute.
- v. It is proposed to maximize the use of an equipment. In this light, Investigator shall permit the use of spare or idle capacities of equipment procured under the project by users.
- vi. The grant-in-aid will be utilized strictly for the specific programme and should be exclusively spent on the programme and within the time frame as specified in the sanction letter. Re-appropriation of funds from one stipulated head to another head is not permitted without prior approval of principal, JECRC.
- vii. Any expenditure incurred prior to the issuance of the approval letter and after the expiry of tenure of the programme is not all owed for any adjustment in the grant-in-aid.
- viii. Interest earned on the programme fund, if any, shall be treated as a part of the sanctioned grant-in-aid and shall be used to procure equipment or for other purposes of the programme approved by the principal, JECRC.
- ix. The grant-in-aid released under these programmes cannot be spent on creating infrastructural facilities such as construction of roads and building, purchase of vehicles, air-conditioning etc.


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- x. JECRC, reserves the right to terminate the project at any stage if it is convinced that the grant-in-aid has not been properly utilized and/or sufficient progress is not achieved towards the purpose for which the grant-in-aid was sanctioned.
- xi. The assets acquired out of the grant-in-aid shall be the property of the Institute. No assets acquired out of the grant-in-aid shall be disposed off without the permission of the institute.
- xii. The Grantee Departments shall observe all financial norms and guidelines as prescribed by the JECRC.
- xiii. The Principal Investigator must take steps to ensure that the audited Utilization Certificate and statement of accounts for the grant-in-aid are submitted by the Institute/ department.
- xiv. JECRC shall review the progress of the centre from time to time. The Principal Investigator will be invited to present the progress of the project before the experts in the Monitoring committees to ascertain the progress of the project and guide the principal investigator in implementing the programme. The recommendations of the committee may be conveyed to the Principal investigator/Institution/Department may also constitute a monitoring committee to visit the Institution to review the progress of the programme and to verify proper utilization of grant-in-aid.


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Infrastructure:

JECRC college has a well-equipped computer laboratory with state of art hardware and industry specific software's. The laboratory has 25 high performance computers with 64 bitprocessor, I-3 core 2 duo, and 4 GB RAM. Licensed version of Ansys is installed on 25 computers.

Faculty Expertise:

1. Dr. Manoj Gupta , Associate Professor
2. Mr. Satyendra Kumar, Assistant Professor
3. Mr. HemantBansal , Assistant Professor

Training Programme:

Day	LAB DF-08 (ANSYS)	
	1:30-3:30	3:40-5:30
Day 1	Batch A	Batch B
Day 2	Batch A	Batch B
Day 3	Batch A	Batch B
Day 4	Batch A	Batch B
Day 5	Batch A	Batch B
Day 6	Batch A	Batch B
Day 7	Batch A	Batch B
Day 8	Batch A	Batch B
Day 9	Batch A	Batch B
Day 10	Batch A	Batch B
Day 11	Batch A	Batch B
Day 12	Batch A	Batch B



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ANSYS Workbench Syllabus

Session 1

Chapter 1: Introduction to CAE

Introduction to CAE General working of FEA Stiffness matrix Boundary conditions Elements and Element Shapes General procedure to conduct FEA software Key Assumptions in FEA Types of Engineering Analysis Important terms and definitions Classification of materials

Chapter 2: Introduction to ANSYS Workbench

System requirements Starting ANSYS Workbench 18.2 ANSYS Workbench 18.2 GUI Working on a Project Units in ANSYS Workbench ANSYS Workbench Database and File format Changing the unit system Components of the system

Introduction to Modeling Introduction to DesignModeler Window Illustration1: I-section Illustration 2: Spring Plate Illustration 3: Clamp

Session 2

Chapter 3: Solid Modeling Fundamentals

Overview Introduction Extrusion Revolution Sweep Sketching

Chapter 4: Placed Features and Assembly

Overview Introduction Adding a hole Adding a round Adding a chamfer Patterns Assembly

Session 3

Chapter 5: Defining Material Properties

Introduction to Engineering Workspace Creating and Adding Materials Assigning Material to the Beam Assigning Material to the Clamp Assigning Material to the Assembly

Session 4

Chapter 6: Meshing

Introduction Meshing of Plate with Holes Generating the mesh, optimize the model and generating the local mesh.

Session 5

Chapter 7: Static Structural Analysis

Introduction to Static Structural Analysis Pre-processing Solution Post-processing Static Structural Analysis of: Cantilever Beam Plate with a central circular holes Plate with a square slot Pressure vessel Bracket Clevis assembly

Fatigue loading-ductile material

Session 6

Chapter 8: Natural Frequencies

Overview Introduction Performing the Modal analysis Specifying analysis settings Modal analysis :
Cantilever beam Simply supported beam

Session 7

Chapter 9: Buckling Loads

Introduction Buckling analysis of Fixed free column (flag pole) Pinned-pinned column Built-up structure

Session 8

Chapter 10: Thermal Analysis

Introduction Important terms used in thermal analysis Types of thermal analysis Steady state thermal
analysis of Car Disk Brake Rotor Heat sink Transient thermal analysis of Piston

Session 9

Chapter 11: Thermal Stress

Introduction Thermal stress-uniform temperature change Thermal stress in a cylinder

Approximate Charges:








A nominal charge of Rs. 1000/- per student is proposed for 15 days training.

Outcome: Benefits to Students

The training imparted in the proposed COE will increase employability of students in following industries:




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 Oil & Gas	 Mold, Tool, Die	 Consumable Items	 Manufacturing
 R & D	 Simulation	 Heavy Equipments	 Life Science

Specific Benefits to Students:

- Focused training in CAE aligned to the Engineering Industries.
- Upgradation of the Conceptualizing, Engineering and Designing skills of engineering students to a Professional Level.
- Industry-Ready and be readily employable students.
- Providing students with deep knowledge & providing hands-on experience, so that they can excel in their career.
- Introduction to cutting edge technologies which are meant for future engineers and professionals.
- Technical skill enhancement of students professionals who are looking for career boosting training to be employed in renowned companies.



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Major Software and IT structure for COE

S.No.	Name of Equipment/Software	Research Application	Total Cost
1	ANSYS 18.2	Design and FEM Analysis	731600
2	Scilab	Control System and Automation	Open Source
3	GCC	Computer Programming	Open Source
4	FreeCad	Computer Aided Design and Drawing	Open Source


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Stock Register scan with sign verification:

Name of Article Computers (CPU)
वस्तु का नाम

Date तिथि	Particulars विवरण	Bill No. बीजक सं.	Receipt प्राप्ति	Issue देय	Balance बाकी	Signature हस्ताक्षर
15/17	GPU HCL Intel (R) D3 2100, 3.1 GHz Processor 320 GB HDD 4 GB RAM DVD (RW)		20		20	<i>[Signature]</i>
15/17	HCL Pentium (R) Dual-Core, 2.80 GHz Processor 160 GB HDD 2 GB RAM DVD (RW)		06		06	<i>[Signature]</i>
15/17	Compag Pentium (R) Dual-Core 2.50 GHz Processor 320 GB HDD 2 GB RAM DVD (RW)		05		05	<i>[Signature]</i>
15/17	Compag Pentium Dual-Core 2.50 GHz Processor 320 GB HDD 1 GB (RAM) DVD (RW)		01		01	
15/17	HCL Intel (R) P3200, 3.1 GHz Processor 4 GB RAM DVD (RW)	20	04		24	<i>[Signature]</i> Received from DE-05

[Signature]
16/1/19

[Signature]
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STOCK REGISTER



Name of Article Monitor
वस्तु का नाम

Date दिनांक	Particulars विवरण	Bill No. बीजक सं.	Receipt प्राप्ति	Issue देय	Balance बाकी	Signature हस्ताक्षर
11/8/17	Monitors 18.5" TFT, HCL		29	-	29	<i>[Signature]</i> Seema
11/8/17	Compag monitor 15"6 TFT		03	-	03	<i>[Signature]</i>
			<i>Received 10/07/18</i>			
			<i>Recd 10/08/19</i>			
						<i>[Signature]</i>
						Head of the Department Mechanical Engineering JECRC, Jaipur



Name of Article Mouse
वस्तु का नाम

Date तिथि	Particulars विवरण	Bill No. बीजक सं.	Receipt प्राप्ति	Issue देय	Balance बाकी	Signature हस्ताक्षर
11/8/17	mouse (USB)		32 Vasity Point 10/07/18	-	32	
			Point 10/08/19			

Head of the Department
Mechanical Engineering
JECRC, Jaipur

