



AICTE ID: 1-3548321

College Code: 231

R.D. ENGINEERING COLLEGE

Approved by AICTE New Delhi & Affiliated to Dr. APJ Abdul Kalam Technical University, Lucknow
under the aegis of IQAC

Vision of Institute

Our vision is to aspire and provide dynamic, creative, and international education, aiming to establish R.D Engineering College as the foremost institution in terms of exceptional education, research, and dedication to the nation growth.

Mission of Institute

- M1.** To create additional opportunities through the establishment of an incubation center.
- M2.** To expand the number of labs to become centers of excellence for technical and management education.
- M3.** To foster qualities such as leadership, professionalism, executive competence, and corporate understanding in students.
- M4.** To instill and strengthen human values, ethics, and morals among our students.
- M5.** To prepare students to compete globally and become internationally competitive professionals.


Director
R.D. Engineering College
Ghaziabad



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IQAC Vision

To ensure effective supervision and monitoring of academic programme & research activities and to support in achieving the vision of R. D. Engineering College.

IQAC Mission

To develop and execute strategies to accomplish the vision of institution and IQAC.


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DEPARTMENT OF APPLIED SCIENCE & HUMANITIES

Vision:

The department is gate way of engineering. It is committed to lay a strong foundation for the students to inculcate expertise in the students in the field of basic science, technology and humanity so that our students will become capable and responsible citizens of our nation.

Mission:

DM1. To provides outcome based learning experience in Mathematics, Engineering physics, engineering chemistry and English.

DM2. To impart knowledge, leading to understanding between engineering and other core areas of applied sciences and humanities.

DM3. To provides the students basic tools of analysis as well as knowledge of the principles on which engineering is based.


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DEPARTMENT OF CIVIL ENGINEERING

Vision:

To be Centre of excellence in civil engineering education, research and consultancy to support community directly or indirectly.

Mission:

DM1. To adopts processes enhancing student learning experience and professional skills.

DM2. To enhances entrepreneurial skills among the students through Industry Institute Interface.

DM3. To work in-tandem with industry to facilitate advancement of technology for societal needs.


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DEPARTMENT OF CSE & ALLIED SPECIALIZED BRANCHES

Vision:

To provide affordable quality education and offers need based, value based and career based programmes and produces technocrats who are independent and self sufficient and are capable of taking on new challenges and above all good human beings.”

Mission:

DM1.To develops young aspirants into skilled competent and socially responsible citizens.

DM2.To guides the construction of a strong nation by educating them in a variety of technical fields to meet the demand for human resources on a global scale.

DM3.To offer sustainable quality education, training and aspiring environment.


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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

Vision:

To impart quality technical education in Electronics and Communication Engineering with accent on creativity, innovation and research to fulfil the more acute need of the development of the country by producing qualified Engineers.

Mission:

DM1. To impart quality education in Electronics and Communication Engineering through innovative teaching learning process.

DM2. To facilitate the students to define, design and solve engineering problems using various EDA tools.

DM3. To encourage research culture among students and faculties through consistent interaction with R&D organizations and industry.


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IT DEPARTMENT

Vision:

The department of Information Technology envisions creating technically competent and skilled intellectual IT professionals to meet the current challenges of the modern computing industry and contribute for sustainable development of nation.

Mission:

DM1. To prepare students to become an industry ready IT professional by inculcating creativity, team spirit, leadership through industry academia collaboration.

DM2. To provide an atmosphere for students and faculty for continuous learning to investigate, apply and transfer knowledge.


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DEPARTMENT OF MECHANICAL ENGINEERING

Vision :

To create a pool of mechanical engineers capable of participating in the national effort of reducing poverty and sufferings of citizens through interdisciplinary efforts.

Mission :

DM1. To achieve a state of excellence in Mechanical Engineering Education which can become a benchmark in this field.

DM2. To instill confidence in the students of Mechanical Engineering that they are capable of analyzing mechanical systems and use the results of the analysis for practical applications.

DM3. To equip the students with the technological tools to make them fit to face the technical challenges in their professional life.


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MASTER OF COMPUTER APPLICATION

Vision: Maintain a high standard of integrity and performance leading to the achievement of academic and professional goals and success of the students at RDEC.

Mission:

DM1. To impart high quality professional training at the postgraduate level inculcating a capacity for critical and lateral thinking.

DM2. To Bridge the gap between industry and academia by framing curricular and syllabi based on industrial and societal needs.

DM3. To offer tasks for experiential technology-intensive knowledge through collaborative and interdisciplinary activities.


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MASTER OF BUSINESS ADMINISTRATION

Vision: To urge for excellence in providing higher education and to become a world class institute imparting the Management education in a manner to exceed the expectations of all our stakeholders including the students, parents and industry.

Mission:

DM1. Engaged in right pursuit of imparting quality education to the students for the assimilation of positive Attitude, Skill and Knowledge.

DM2. To make them competent professional with honesty and socially responsible citizens, by providing the blend of state-of-the-art infrastructure and innovative pedagogy.

DM3. To provides relevant and contemporary knowledge and skills for career building across sectors in the society to generate dynamic attitude and professional skills.


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PROGRAMME OUTCOMES (POs) UNDER GRADUATE COURSES

Program Outcome	
PO1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex computer engineering problems.
PO2	Problem analysis: Identify, formulate, review research literature, and analyse complex computer engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	Design/development of solutions: Design solutions for complex computer engineering problems and design system components or processes that meet the specific needs with appropriate considerations for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide conclusions
PO5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
PO6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent relevant to the professional engineering practices
PO7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
PO8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norm of the engineering practices
PO9	Individual and team work: Function effectively as an individual, and as a



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	member or leader in diverse teams, and in multidisciplinary settings
PO10	Communications: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life learning in the broadest context of technological change.


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Sample of Course Outcome (COs)

KME301: Thermodynamics

CO	CO Statement
CO1	To apply energy balance to systems and control volumes, in situations involving heat and work interactions.
CO2	To evaluate changes in thermodynamic properties of substances.
CO3	The students will be able to evaluate the performance of energy conversion devices.
CO4	To differentiate between high grade and low-grade energies.
CO5	To evaluate the changes in properties of substances in various processes.

Table. 1

Sample of CO- PO mapping

Mapping of Course Outcomes with Program Outcomes												
KME301: Thermodynamics												
CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	2	1	-	-	-	-	-	2
CO2	3	2	3	3	2	1	-	-	-	-	-	2
CO3	3	3	2	3	2	2	-	-	-	-	-	1
CO4	2	3	3	3	3	1	-	-	-	-	-	2
CO5	3	2	3	3	2	1	-	-	-	-	-	2
Average	2.8	2.6	2.8	3	2.2	1.2	-	-	-	-	-	1.8

Table.2

Enter correlation levels 1, 2 or 3 as defined below:

- 1: Slight (Low)
- 2: Moderate (Medium)
- 3: Substantial (High)

If there is no correlation, put “-”


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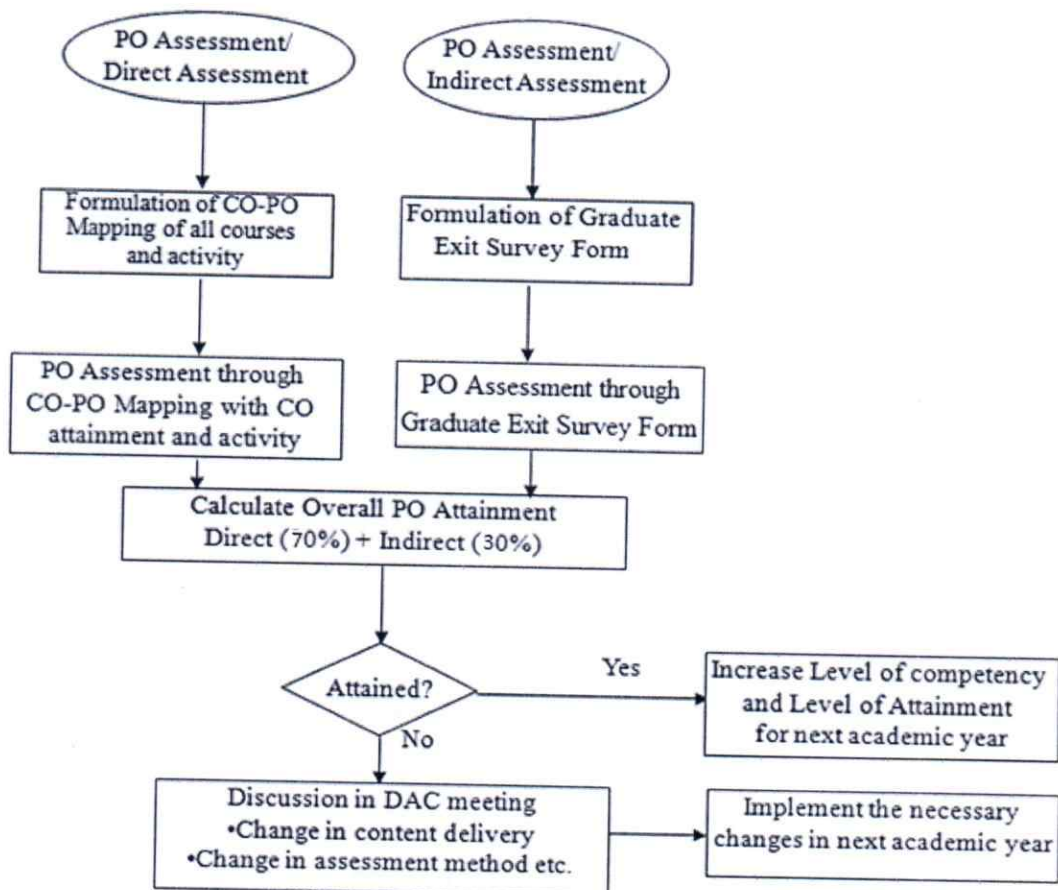


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Program Level attainment calculation

POs Attainment	Assessment method	Assessment Tool
	Direct Attainment (70%)	Overall Course Outcomes Attainment
Indirect Attainment (30%)	Graduate Exit Survey	



Flow Chart. 1


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COURSE OUTCOME ESTIMATION

A. Course Outcome

The Course Outcome for any course can be formulated in form of various sentences giving the expected outcome of a particular course or what the students would get at the end of the course. The Course Outcomes are formulated by subject expert by involving various stakeholders like Alumni, Industry etc. The Course Outcome of UG subject Thermodynamics is as follows.

The students would able:

- To apply energy balance to systems and control volumes, in situations involving heat and work interactions
- To evaluate changes in thermodynamic properties of substances.
- To evaluate the performance of energy conversion devices
- To differentiate between high grade and low-grade energies
- To evaluate the changes in properties of substances in various processes.

B. Mapping and CO Estimation

The department of MECHANICAL ENGINEERING has formulated 12 POs based on twelve NAAC graduate attributes. A correlation of various courses is established with Program Outcomes based on strong (3), moderate (2) and weak (1) correlation. If there is no correlation, put “-”.

It is shown in Table 2. In CO-PO Mapping Table the average of different columns gives Expected PO. The Actual PO is calculated through Net CO. In Net CO calculation 30% weightage is for internal and 70% weightage is for external.

CO attainment Level & Assessment Tools

Assessment Methods	Level	Number of Students (in %) with set target marks
Direct Assessment (Internal Evaluation)	1	<=50 % Students have scored 70% marks
	2	>50 - <= 60% Students have scored 70% marks
	3	> 60 % Students have scored 70% marks
Direct Assessment (External Evaluation)	1	<=50 % Students have scored 50% marks
	2	>50 - <= 60% Students have scored 50% marks
	3	> 60 % Students have scored 50% marks
Indirect Assessment (Course Exit Survey)	1	<=50 % Students attained the course outcome
	2	>50 - <=60% Students attained the course outcome
	3	> 60 % Students attained the course outcome

Table.3

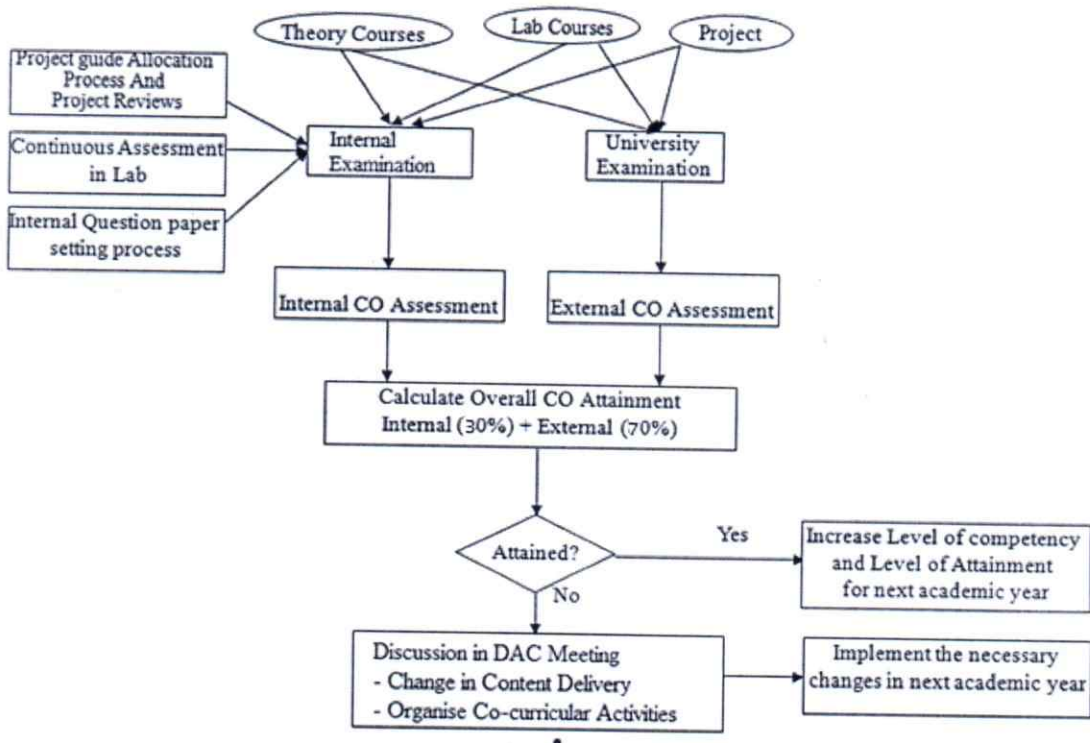
Total CO Attainment:

Direct Attainment (DA) = (External Assessment)*0.7+(Internal Assessment)* 0.3

Indirect Attainment (IA) = Course Exit Survey

Total Attainment = (DA) * 0.7 + (IA) * 0.3


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**Process for Assessment and Attainment of COs****Flow Chart.2**

Attainment levels for all theory and practical courses individually:

For University Examinations:

- Attainment Level 1: $\leq 50\%$ Students have scored 50% marks in the University examinations
- Attainment Level 2: $> 50 - \leq 60\%$ Students have scored 50% marks in the University examinations
- Attainment Level 3: $> 60\%$ Students have scored 50% marks in the University examinations

For Internal Assessments:

- Attainment Level 1: $\leq 50\%$ Students have scored 70% marks in the internal examinations.
- Attainment Level 2: $> 50 - \leq 60\%$ Students have scored 70% marks in the internal examinations.
- Attainment Level 3: $> 60\%$ Students have scored 70% marks in the internal examinations.



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Calculations:

Direct Attainment (DA) = External Assessment * 0.7 + Internal Assessment * 0.3

Indirect Attainment (IA) = Course Exit Survey

Total Attainment = DA * 0.7 + IA * 0.3

Target Attainment Level = -----

The assessment process is based on utilizing direct and indirect tools for attaining PEOs and POs. The direct tool includes internal and external results, project evaluations and percentage of placements. The indirect tool utilizes conducting surveys by giving a set of questions to various stakeholders like alumni, employers and students.

The assessment is based on student's performance in internal and external examinations. This also includes the performance of students in various assignments and quizzes. Complete procedure is shown in flow chart 2.


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Sample Question Paper

Subject Code: KME303

Roll No:

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R D ENGINEERING COLLEGE
B. TECH ME (SEM III)
SESSIONAL EXAMINATION 2022-23
MATERIAL ENGINEERING

Time: 2 Hours

Total Marks: 60

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt all questions in brief.

2 X 5 = 10

Q no.	Question	Marks	CO
a.	Define material science and gives it's importance?	2	1
b.	Gives Gibb's phase rule.	2	2
c.	What is unary phase diagram?	2	2
d.	Write any six type of iron microstructure name.	2	2
e.	Define toughness, hardness, resilience and yield strength.	2	1

SECTION B

2. Attempt any six of the following:

5 X 6 = 30

Q no.	Question	Marks	CO
a.	Explain binary phase diagram with example.	5	2
b.	Explain slip system and dislocation mechanism.	5	1
c.	Explain comparison between Frenkel and schotkey defect.	5	1
d.	Draw plane- (i) (011) (ii) (111) (iii) (121) (iv) (132) (v) (010)	5	1
e.	In a unit cell of simple cubic structure find angle between normal to pail plane whose miller indices are (i) (110) and (100) (ii) (121) and (111)	5	1
f.	Explain Generalized Hook's law.	5	2
g.	Explain CRSS.	5	1
h.	Explain Stress- strain curve with its salient points.	5	1

SECTION C

3. Attempt any two part of the following:

10 X 2 = 20

Q no.	Question	Marks	CO
a.	Calculate APF of HCP.	10	1
b.	Explain Bravais crystal system. Explain any five with suitable diagram.	10	1
c.	Give relations between true and engineering stress – strain curve.	10	2


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