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Standard Operating Procedure (SOPs) for the rubrics of the Mini and Major Projects

DEPARTMENT OF MECHANICAL ENGINEERING

Rubrics for Mini Project I (SE & TE Mechanical Engineering)

Sr. No.	Points	5	4	3	2	1
1	Quality of survey/ need identification	The survey thoroughly covers all key areas of need or interest with no significant gaps.	The survey covers most areas, with only minor gaps in coverage.	The survey covers some areas but leaves out important topics or aspects.	The survey provides limited coverage, missing key topics or details.	The survey is incomplete or significantly lacking in coverage of the topic.
2	Clarity of Problem definition based on need	The problem is clearly and comprehensively defined. It is directly linked to the underlying need, with a deep understanding of stakeholder concerns and all critical details addressed.	The problem is well-defined and closely tied to the underlying need. Stakeholders are identified, and their concerns are addressed, though some minor details may lack clarity.	The problem is defined with moderate clarity. The need is acknowledged but not deeply analyzed, and the relevance to stakeholders is only somewhat evident.	The problem is partially defined but lacks detail or specificity. There is limited connection to the underlying need, and key stakeholders are unclear or overlooked.	The problem is vague or undefined. There is no connection to the underlying need, and key stakeholders or affected parties are not identified.
3	Innovativeness in solutions	Demonstrates original, creative, and unique solutions that significantly advance existing ideas.	Proposes creative solutions with some level of originality and improvement over existing methods.	Offers moderately innovative ideas, primarily adaptations of existing solutions.	Shows limited creativity with minimal enhancement over standard solutions.	Lacks innovation; solution is entirely conventional or unoriginal.
4	Feasibility of	Proposed solutions are	Solutions are practical	Solutions are	Solutions have	Solutions are impractical or

	Proposed Problem Solutions and Selection of Best Solution	highly practical, well-validated, and the best solution is selected using thorough analysis.	with minor limitations; selection is based on sound analysis.	moderately feasible; analysis for selecting the best solution lacks depth.	significant feasibility issues; selection is poorly justified.	unworkable; no clear selection of the best solution.
5	Cost-Effectiveness	Delivers the solution with the highest value for cost, demonstrating exceptional cost efficiency.	Provides good cost-efficiency with minor optimization opportunities.	Achieves moderate cost-efficiency but leaves room for significant improvement.	Solution is functional but cost-inefficient.	Solution is prohibitively expensive with no regard for cost-effectiveness.
6	Societal Impact	Significantly benefits society, addressing critical needs and creating widespread positive change.	Positively impacts society with meaningful improvements in relevant areas.	Provides moderate societal benefits but with limited scope.	Minimal societal impact with little relevance to broader needs.	Negligible or negative societal impact.
7	Full Functioning of Working Model as per Stated Requirements	Fully operational model meets or exceeds all requirements effectively and efficiently.	Model is functional with minor deviations from requirements.	Partially meets requirements with noticeable gaps in functionality.	Limited functionality, meeting only basic requirements.	Model fails to meet stated requirements.
8	Effective Use of Skill Sets	Utilizes skill sets to their fullest potential, showcasing exceptional expertise and innovation.	Effectively applies skill sets with minor gaps in execution.	Demonstrates moderate skill application with room for improvement.	Shows limited use of relevant skills with noticeable deficiencies.	Poor application of skills, hindering solution quality.
9	Effective Use of Standard Engineering Norms	Strictly adheres to and innovatively applies standard engineering norms, ensuring high-quality output.	Adheres to norms with minor lapses or omissions.	Meets basic norms but lacks thoroughness or depth in application.	Limited adherence to norms with significant gaps.	Neglects standard engineering norms, resulting in substandard work.
10	Contribution as an Individual or Leader	Demonstrates outstanding contribution, excelling as a team member or leader.	Contributes effectively with minor areas for improvement.	Offers moderate contributions but lacks initiative or leadership.	Limited contribution with minimal leadership or teamwork.	Fails to contribute meaningfully to the team.
11	Clarity in Written and Oral Communication	Exceptionally clear, concise, and well-organized communication.	Clear communication with minor areas for improvement.	Moderately clear communication but lacks detail or precision.	Communication is unclear and lacks coherence.	Communication is confusing and ineffective.

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Rubrics for Mini Project II (SE & TE Mechanical Engineering)

Sr. No.	Points	5	4	3	2	1
1	Quality of problem and Clarity	The problem is clearly and comprehensively defined. It is directly linked to the underlying need, with a deep understanding of stakeholder concerns and all critical details addressed.	The problem is well-defined and closely tied to the underlying need. Stakeholders are identified, and their concerns are addressed, though some minor details may lack clarity.	The problem is defined with moderate clarity. The need is acknowledged but not deeply analyzed, and the relevance to stakeholders is only somewhat evident.	The problem is partially defined but lacks detail or specificity. There is limited connection to the underlying need, and key stakeholders are unclear or overlooked.	The problem is vague or undefined. There is no connection to the underlying need, and key stakeholders or affected parties are not identified.
2	Innovativeness in solutions	Demonstrates original, creative, and unique solutions that significantly advance existing ideas.	Proposes creative solutions with some level of originality and improvement over existing methods.	Offers moderately innovative ideas, primarily adaptations of existing solutions.	Shows limited creativity with minimal enhancement over standard solutions.	Lacks innovation; solution is entirely conventional or unoriginal.
3	Cost-Effectiveness	Delivers the solution with the highest value for cost, demonstrating exceptional cost efficiency.	Provides good cost-efficiency with minor optimization opportunities.	Achieves moderate cost-efficiency but leaves room for significant	Solution is functional but cost-inefficient.	Solution is prohibitively expensive with no regard for cost-effectiveness.

				improvement.		
4	Societal Impact	Significantly benefits society, addressing critical needs and creating widespread positive change.	Positively impacts society with meaningful improvements in relevant areas.	Provides moderate societal benefits but with limited scope.	Minimal societal impact with little relevance to broader needs.	Negligible or negative societal impact.
5	Full Functioning of Working Model as per Stated Requirements	Fully operational model meets or exceeds all requirements effectively and efficiently.	Model is functional with minor deviations from requirements.	Partially meets requirements with noticeable gaps in functionality.	Limited functionality, meeting only basic requirements.	Model fails to meet stated requirements.
6	Effective Use of Skill Sets	Utilizes skill sets to their fullest potential, showcasing exceptional expertise and innovation.	Effectively applies skill sets with minor gaps in execution.	Demonstrates moderate skill application with room for improvement.	Shows limited use of relevant skills with noticeable deficiencies.	Poor application of skills, hindering solution quality.
7	Effective Use of Standard Engineering Norms	Strictly adheres to and innovatively applies standard engineering norms, ensuring high-quality output.	Adheres to norms with minor lapses or omissions.	Meets basic norms but lacks thoroughness or depth in application.	Limited adherence to norms with significant gaps.	Neglects standard engineering norms, resulting in substandard work.
8	Contribution as an Individual or Leader	Demonstrates outstanding contribution, excelling as a team member or leader.	Contributes effectively with minor areas for improvement.	Offers moderate contributions but lacks initiative or leadership.	Limited contribution with minimal leadership or teamwork.	Fails to contribute meaningfully to the team
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DEPARTMENT OF MECHANICAL ENGINEERING

Rubrics for Major Project I (BE Mechanical Engineering)

Sr. No.	Points	5	4	3	2	1
1	Quality of problem Selected	The problem is clearly and comprehensively defined. It is directly linked to the underlying need, with a deep understanding of stakeholder concerns and all critical details addressed.	The problem is well-defined and closely tied to the underlying need. Stakeholders are identified, and their concerns are addressed, though some minor details may lack clarity.	The problem is defined with moderate clarity. The need is acknowledged but not deeply analyzed, and the relevance to stakeholders is only somewhat evident.	The problem is partially defined but lacks detail or specificity. There is limited connection to the underlying need, and key stakeholders are unclear or overlooked.	The problem is vague or undefined. There is no connection to the underlying need, and key stakeholders or affected parties are not identified.
2	Clarity of Problem Definition and Feasibility of Problem Solution	Clearly defines the problem with precision and detail; aligns with the context and purpose.	Defines the problem clearly, but lacks some precision or context.	Provides a general idea of the problem, but lacks clarity or context.	Problem is vague, poorly defined, or misaligned with the context.	Problem is unclear or missing.
3	Relevance to the specialization or industrial trends rubrics	Demonstrates a strong and direct alignment with key concepts, practices, and advancements in the field.	Aligns well with specialization, though some connections are less detailed or implicit.	Partially aligns with the specialization; connections to key concepts are weak.	Minimal alignment with the specialization; lacks understanding of field practices.	No evident alignment with the specialization.
4	Originality or Novelty of	Demonstrates a highly original and unique	Presents a moderately original idea that	Idea shows limited originality;	Idea lacks originality; closely	Idea is entirely derivative or unoriginal.

	Idea	concept that significantly advances the field or area.	builds on existing concepts with some innovation.	moderately extends or replicates existing ideas.	resembles existing work with minimal differentiation.	
5	Clarity of Objective and Scope	The objective is exceptionally clear, specific, and directly aligned with desired outcomes. No ambiguity exists.	The objective is clear and mostly specific but could use slight refinement to eliminate minor ambiguities.	The objective is somewhat clear but lacks detail or precision, leading to potential confusion.	The objective is unclear, vague, or only partially addresses the desired outcomes.	The objective is absent, undefined, or completely misaligned with the desired outcomes.
6	Quality of analysis and design	Analysis is thorough, well-documented, and supported by appropriate calculations, models, and tools.	Analysis is well-executed, with some minor gaps in thoroughness or documentation.	Analysis is conducted but lacks depth, precision, or clear documentation	Analysis is superficial or contains significant errors.	No analysis conducted
7	Quality of Written and Oral Communication	Exceptionally clear, concise, and well-organized communication.	Clear communication with minor areas for improvement.	Moderately clear communication but lacks detail or precision.	Communication is unclear and lacks coherence.	Communication is confusing and ineffective.
8	Contribution as an Individual or Leader	Demonstrates outstanding contribution, excelling as a team member or leader	Contributes effectively with minor areas for improvement.	Offers moderate contributions but lacks initiative or leadership.	Limited contribution with minimal leadership or teamwork.	Fails to contribute meaningfully to the team

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Rubrics for Major Project II (BE Mechanical Engineering)

Sr. No.	Points	5	4	3	2	1
1	Quality of problem Selected	The problem is clearly and comprehensively defined. It is directly linked to the underlying need, with a deep understanding of stakeholder concerns and all critical details addressed.	The problem is well-defined and closely tied to the underlying need. Stakeholders are identified, and their concerns are addressed, though some minor details may lack clarity.	The problem is defined with moderate clarity. The need is acknowledged but not deeply analyzed, and the relevance to stakeholders is only somewhat evident.	The problem is partially defined but lacks detail or specificity. There is limited connection to the underlying need, and key stakeholders are unclear or overlooked.	The problem is vague or undefined. There is no connection to the underlying need, and key stakeholders or affected parties are not identified.
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3	Innovativeness in solutions	Demonstrates original, creative, and unique solutions that significantly advance existing ideas.	Proposes creative solutions with some level of originality and improvement over existing methods.	Offers moderately innovative ideas, primarily adaptations of existing solutions.	Shows limited creativity with minimal enhancement over standard solutions.	Lacks innovation; solution is entirely conventional or unoriginal.
4	Quality of work	Project is fully functional, tested thoroughly, and	Project is functional with minimal errors;	Project functions with noticeable	Project has major functionality issues	Project is non-functional or largely incomplete.

	Completeness of Technical Project Work	free of errors.	testing is mostly complete.	errors or missing features.	and incomplete testing.	
5	Validation of results	Results are flawless, thoroughly tested, and validated with no errors.	Results are accurate, with minimal errors and adequate validation.	Results are reasonably accurate, with minor flaws or gaps in validation.	Results have noticeable inaccuracies or insufficient validation.	Results are unreliable, with significant errors and no proper validation.
6	Impact and business value of project	Transformational change in business operations, market position, or customer satisfaction. Broad and lasting benefits across the organization or industry.	Significant enhancements to critical processes, customer satisfaction, or operational efficiency. Benefits affect multiple departments or customer groups.	Noticeable improvements in processes, customer experience, or stakeholder satisfaction. Benefits are somewhat widespread within the organization.	Limited improvements to efficiency, customer satisfaction, or operational processes. Affects a small subset of stakeholders or functions.	Minimal or no observable effect on business operations, customers, or stakeholders. The project addresses a minor issue or an edge case.
7	Quality of Written and Oral Communication	Exceptionally clear, concise, and well-organized communication.	Clear communication with minor areas for improvement.	Moderately clear communication but lacks detail or precision.	Communication is unclear and lacks coherence.	Communication is confusing and ineffective.
8	Contribution as an Individual or Leader	Demonstrates outstanding contribution, excelling as a team member or leader	Contributes effectively with minor areas for improvement.	Offers moderate contributions but lacks initiative or leadership.	Limited contribution with minimal leadership or teamwork.	Fails to contribute meaningfully to the team

Note: These rubrics are for the mechanical engineering students. Hence, all the project guides (mini and major projects) of different departments have to prepare the proper rubrics in line with the syllabus guidelines of your respective branch.

Dean (R and D)

Principal