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Program Outcomes (PO) Engineering Graduates will be able to:

- **PO1** Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- **PO2 Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- **PO3 Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration 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 valid 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 responsibilities relevant to the professional engineering practice.
- **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 norms of the engineering practice.
- **PO9** Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- **PO10 Communication:** 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.

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- **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-long learning in the broadest context of technological change.

Vision

To create competent technical professionals in Mechanical Engineering with ethical behaviour and environment consciousness.

Mission

- 1. To provide contemporary and cutting-edge technical education in MechanicalEngineering.
- 2. To provide an ambience which nurtures research ideas in futuristic domains of Mechanical Engineering.
- 3. To initiate project based learning and practical exposures in the area of Mechanical Engineering.
- 4. To direct faculties in research and consultancy / advisory roles.
- 5. To establish strong linkages with well-known national and international technical institutes.
- 6. To promote the culture of imbibing environmental care and eco-friendly designs.
- 7. To become a department of aspiration & choice.

Program Educational Objectives (PEOs)

PEO1: To prepare the stakeholder to exhibit leadership qualities with demonstrable attributes in lifelong learning to contribute to the societal needs.

PEO2: To make ready the stakeholder to pursue higher education for professional development.

PEO3: To help the stakeholder to acquire the analytical and technical skills, knowledge, analytical ability attitude and behavior through the program.

PEO4: To prepare the stakeholders with a sound foundation in the mathematical, scientific and engineering fundamentals.

PEO5: To motivate the learner in the art of self-learning and to use modern tools for solving real

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life problems and also inculcate a professional and ethical attitude and goodleadership qualities. **PEO6**: To prepare the stake holder to able to Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

Program Specific Outcomes (PSOs)

PSO1:Successful Career and Entrepreneurship: Graduates will be able to understand the socialawareness and environmental wisdom along with ethical responsibility to have a successful career and to sustain passion and zeal for real-world applications using optimal resources as an entrepreneur.

PSO2: Hobbies and Career: Graduates have nurtured their hobbies which are useful intheir specific chosen career.

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TEAM RGIT RACING



The purpose of TEAM RGIT RACING - Student Chapter at Rajiv Gandhi Institute of technology, Mumbai - To enhance the knowledge base of members who are mobility practitioners. To provide to its members access to SAE International programs and services globally enabling them to practice world class standard in productivity and quality. Its area of focus is Automotive, Automobile, Aerospace and Commercial Vehicle.

SAE International is a professional organisation and has over 138,000 global members. Aside from its standardization efforts, SAE International also devotes resources to projects and programs in STEM education, professional certification, and collegiate design competitions.

SAEINDIA is membership organization Founded in 1994 and in 2003 SAEINDIA became an Affiliate of SAE International. Today the President of SAEINDIA is Dr. R.K. Malhotra and has a membership count of more than 40,000 members around India.

Website TEAM RGIT RACING: <u>https://www.teamrgitracing.com/</u>

Website SAE INTERNATIONAL: <u>http://www.sae.org/</u>

Website SAEINDIA: http://www.saeindia.org/

Team RGIT Racing's Faculty Advisers: Prof. S. D. Gaikwad

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Events & Activities from July 2022 to December 2022

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Events & Activities	Dates
Second Year Vehicle Compliance	20 th July 2023
Report Submission(SVCR)	
Structural Equivalency	20 July 2023
Spreadsheet submission (SES)	
Impact Attenuator Design	20 July 2023
submission (IAD)	
Presentation at FE induction	10 th August 2023
(know your department)	
Business Plan Pitch Video	20 th August 2023
submission (BPPV)	
Conceptual Research and	20 th August 2023
Management Report	
Fee Payment phase 2	30th August 2023
Electrical Safety Form submission	25 th August 2023
(ESF)	
Business Plan Presentation (BPP)	9 th September 2023
prelims	
Photo Submission (PS)	2 nd November 2023
Accumulator Pre-tech (ACC-PT)	2 nd November 2023
submissions	

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Engineering Design Presentation	16 th December 2023
Event	
Cost Report (CRD,	28 th December 2023
CSUP,CEXP,BOM,DBOM,CBOM)	
submissions	
Design Spec Sheet (DSS) & Team	25 th November 2023 & 16 th December
member information (TMI)	2023

Second year Vehicle Compliance Report Submission

Online

Since our team was participating with a second-year vehicle, we had to comply with the Formula Bharat rule which mandates:

- Submission of a Second Year Vehicle Compliance Report (SVCR):
 - Proof of Age: The report must demonstrate that the competition vehicle is not older than one year.
 - Previous Competitions: Provide details of the previous competitions attended by the competition vehicle.
 - Predecessor Details: Include information about the previous competition vehicle (predecessor), if any.
 - Chassis Changes: Photographic evidence and descriptions to prove significant changes in the chassis between the competition vehicle and its predecessor.
 - Technical Inspection Documents: Any approved technical inspection documents.

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The competition vehicle will only be approved as a second-year vehicle once the SVCR is approved. Therefore, we had to submit the SVCR report by the given date.

Structural Equivalency Spreadshee (SES)Submission

Online

A spreadsheet provided by Formula Bharat needs to be completed and submitted online. This spreadsheet is an essential part of the submission process and must be filled out accurately and thoroughly.

Impact Attenuator Design Submission

Online

The impact attenuator selected by the teams must have a design report submitted for verification by Formula Bharat. This design report is critical for ensuring that the impact attenuator meets all safety and performance standards as specified by the competition rules.

Presentation at FE induction program

College auditoriu

Our team gave a presentation during the 'Know Your Department' section of the FE induction at our college. The presentation included basic information about the team and its activities. It was designed to excite the newcomers about motor race engineering and encourage them to participate in our SAE team.

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Business plan pitch video (BPPV) submission

online

According to Formula Bharat rules, teams must submit a Business Plan Pitch Video (BPPV) before the competition to convince potential investors or partners of the team's value. The BPPV should be viewed as the first impression of the business idea and must include relevant investment figures.

Therefore, we had to:

- Create a Business Plan Pitch Video (BPPV)
- Ensure the video serves as a compelling first impression
- Include all relevant investment figures in the video
- Submit the pitch video before the competition

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This submission is crucial for demonstrating the viability and potential of our business plan to investors and partners.

Conceptual research and manufacturing report submission

online

According to Formula Bharat rules, teams must submit the Conceptual Research and Manufacturing Report (CRMR) by the deadline specified on the website. The CRMR will be evaluated, and feedback will be provided based on its content.

The CRMR should include:

- Design Development Phase: Detailed description of the design development phase of the conceptual prototype.
- Vehicle Concept Highlights: Key highlights of the vehicle concept.
- Processes Involved: Explanation of the processes involved in the development.

The report must cover:

- Goals:
 - Overall team goals
 - Overall design goals
 - Section-based goals
- Key Strategies:
 - Procurement
 - Manufacturing
 - Recruitment
 - Budgeting
 - Finance
- Management Processes:
 - Team management

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- Timeline management
- Constraint management

Therefore, we had to submit the CRMR by the specified deadline.

Fee Payment Phase 2

online

We made our phase 2 registration fee payment towards Formula Bharat on 30th

August 2023

Electrical System Form (ESF) submission

Online

A Formula Bharat rule requires us to fill out an Electrical Safety Form (ESF) and submit it by the specified date. The ESF template is provided by Formula Bharat.

Business Plan Presentation prelims

zoom

We participate in the Business Plan Presentation. The objective of the Business Plan Presentation (BPP), as stated by Formula Bharat, is as follows:

Business Plan Presentation Objective:

- Assessment: The objective of the BPP is to assess the team's ability to develop and present a comprehensive business model.
- Relevance: This business model must relate to the team's specific prototype vehicle or a specific component of it.

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- Offering: The business must offer the vehicle or component as a product, or sell a service based on it.
- Profitability: The business should provide a rewarding opportunity that creates a monetary profit.
- Judges' Role: Judges should be treated as if they were potential investors or partners for the presented business model.

This presentation aims to demonstrate our capability to create a viable and profitable business model based on our prototype vehicle or its components.





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Photo Submissions

Google Drive

In this event the photos of car from different angels with driver. Also includes photos of different component installed in car.

Exterior photos: These photos show the car's exterior from different angles, highlighting its overall design and shape. This may include front, back, side, and top views of the car.

Interior photos: These photos showcase the car's interior design and layout, including the driver's seat, pedals, steering wheel, and other controls.

System photos: These photos focus on specific systems or components of the car, such as the suspension, braking, or drivetrain systems. Close-up shots of these components can help showcase the car's technical innovations and design features.

Action photos: These photos show the car in motion, such as driving on a track. These photos can help demonstrate the car's performance and handling capabilities.

Team photos: It include photos of the team working on the car or posing with the car, to show the amount of effort and dedication that went into the design and construction process.



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Accumulator Pre- Tech

• The following are some of the key elements that are checked during accumulator pre-tech in an EV FSAE competition:

Capacity: The capacity of the accumulator is measured and checked to ensure that it meets the competition regulations.

Voltage: The voltage of the accumulator is checked to ensure that it falls within the permitted range.

Isolation: The accumulator system is checked to ensure that it is electrically isolated from the rest of the car and that there is no chance of accidental contact.

Safety: The accumulator system is checked to ensure that it is installed safely, with appropriate mounting and fastening, and that all wires and connections are secured and properly insulated.

Emergency shut-off: An emergency shut-off switch is required for EV FSAE cars, and this switch is checked during accumulator pre-tech to ensure that it is functional and can stop the flow of electrical energy in case of an emergency.

Documentation: FSAE teams are typically required to provide documentation that details the specifications of the accumulator system.



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Engineering Design Presentation

Google Meet

- It typically involves the use of slides, images, diagrams, videos, and prototypes to illustrate the design solution and explain how it meets the desired objectives and constraints. The presentation is given orally, and the engineer may answer questions and receive feedback from the judge.
- It also includes sections on the problem or challenge, the design objectives, the design process, the proposed solution, and the analysis and evaluation of the design.
- The report also includes technical drawings, calculations, and other supporting documentation to provide a more complete picture of the design solution.



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Cost Reports submission

We submitted the required cost documents as per the rules of Formula Bharat: the Cost Report Documents (CRD).

Cost Report Documents (CRD):

- Bill of Materials (BOM):
 - Includes DBOM (Detailed Bill of Materials) and CBOM (Costed Bill of Materials).
 - Created online on the <u>www.formulastudent.de</u> website.
- Supporting Material File:
 - Uploaded as a PDF file to the competition website.
- Cost Explanation File:
 - Uploaded as a PDF file to the competition website.

These documents are essential for complying with Formula Bharat's requirements and ensuring transparency and accuracy in the cost assessment of our project.

Design Specification Sheet (DSS)

Microsoft Excel

• It is a document that outlines the specifications and requirements for a particular design project. It is a comprehensive document that includes detailed information about the design, including its purpose, technical requirements, and design elements.

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- By documenting the specifications and requirements upfront, it helps to prevent misunderstandings and ensure that everyone involved in the project is on the same page.
- Basically it gives a depth information about all the important calculations and readings of different parts of car.

Team Member Information (TMI)

- It helps to ensure that team members are aligned and working effectively towards the goals of the project. By having a clear understanding of each team member's skills, expertise, and availability, team leaders can assign tasks and responsibilities in a way that maximizes efficiency and minimizes conflicts.
- Additionally, by tracking performance metrics, team leaders can identify areas where individual team members may need additional support or coaching and can make data-driven decisions about how to optimize the team's performance.