



Lancers Racing Team

Team Members

The Lancers Racing Team of ACS Athens consist of 6 students currently enrolled in the 8th grade. In this Report you will find the Roles and Responsibilities of each Team Member, the areas explored by the team along with our Action Plan, some initial sketches of our F1 car and some key differences between last year's and this year's technical regulations for the competition.

Roles & Responsibilities

| Student's Name | Student's Role in the Team and areas of work. |
|----------------|---|
| Student 1 | <p>In F1 in Schools, Manufacturing Engineers and Technicians work together to craft the car. Engineers select materials and manage production, ensuring designs are feasible. Technicians handle hands-on construction, ensuring precision and quality. The Project Manager coordinates tasks, oversees progress, and bridges communication between the team and stakeholders.</p> <p>Marketing is a multifaceted role involving Graphic Designers who create a visual identity, Resource Managers handling finances and sponsor relations, Marketing and Presentation Specialists crafting presentations and strategies, and Social Media and PR Coordinators managing online presence and sponsor outreach. These roles collectively build the team's image, secure sponsorships, and showcase the project's journey to the public.</p> |
| Student 2 | <p>Marketing involves promoting products to get other companies to sponsor our F1 in schools team. Marketing also involves creating a logo for our team and to promote it through social media. In conclusion, what we do with marketing is create a logo and a name for the team and be able to find sponsors to get certain material when we need it, for example to get 3D printer filament, rubber or bearings for the F1 car.</p> <p>Data analysis team is responsible for testing the car and finding any mistakes or anything we can do better, like: aerodynamics.</p> |
| Student 3 | <p>Mechanical design entails the creation and development of physical components, systems, or products, utilizing principles of engineering, CAD (Computer-Aided Design) software, and material selection to ensure functionality, reliability, and manufacturability.</p> <p>Manufacturing encompasses the processes and techniques used to transform raw materials into finished products, involving various stages such as machining, assembly, quality control, and logistics management.</p> |

| | |
|-----------|--|
| | <p>Simulations refer to the use of computer models and mathematical algorithms to replicate real-world scenarios, providing insights into the behavior, performance, and interactions of systems or processes, often used for testing, optimization, and predictive analysis.</p> <p>Data analysis involves the extraction, transformation, and interpretation of information from diverse datasets, utilizing statistical methods, programming languages, and visualization tools to derive meaningful insights, support decision-making, and drive business strategies.</p> |
| Student 4 | <p>Team Branding: Create and maintain the team's brand identity, which includes the team name, logo, and colors. Ensure consistency in branding across all materials</p> <p>Sponsorship and Fundraising: Seek out sponsors and funding opportunities for the team. Develop sponsorship proposals and maintain relationships with sponsors. This often involves creating presentations, promotional materials, and delivering pitches to potential sponsors.</p> <p>Market Research: Conduct market research to understand the target audience and competition. This can help in shaping the team's marketing strategy.</p> <p>Social Media and Promotion: Manage the team's social media accounts and create content to promote the team, its achievements, and activities. This may involve creating videos, blog posts, and other promotional content.</p> <p>Manufacturing: Car Design and Development: Design and develop the miniature Formula 1 car that will be used in the competition. This includes working on the aerodynamics, materials, and construction of the car.</p> <p>Manufacturing Process: Oversee the manufacturing process of the car. This involves selecting materials, creating prototypes, and coordinating the construction of the final car.</p> <p>Quality Control: Ensure the car is built to high standards and meets all competition regulations. Perform quality control checks and make necessary adjustments.</p> |
| Student 5 | <p>Manufacturing, Simulations & Data Analysis is a comprehensive approach to optimizing industrial processes through the integration of advanced technologies.</p> <p>Manufacturing refers to the process of converting raw materials into finished products on a large scale, utilizing various techniques such as machining, assembly, and packaging. It involves the efficient management of resources and production facilities to meet market demand.</p> <p>Simulations in this context involve the use of computer-generated models to imitate real-world manufacturing processes. These simulations allow for the testing and optimization of various production scenarios, helping to identify potential issues, streamline operations, and improve overall efficiency.</p> <p>Data analysis plays a crucial role in this framework, as it involves the collection, interpretation, and application of large volumes of data generated during the</p> |

manufacturing process. By employing advanced analytical tools and techniques, manufacturers can gain valuable insights into production trends, quality control, and supply chain management, enabling them to make data-driven decisions for enhanced productivity and cost-effectiveness.

Team Goals

F1 in Schools is a global competition that challenges students to design, build, and race miniature Formula 1 cars. To succeed in the competition, your team should set specific and achievable goals. Here are some team goals for an F1 in Schools team competing in Greece in 2023:

Performance Goals:

- **Race Success:** Aim to design and build a car that performs exceptionally well in the F1 in Schools competition, with a focus on speed, precision, and reliability.
- **Time Targets:** Set specific time goals for completing various project milestones, from design to construction to testing.

Innovation and Engineering:

- **Innovative Design:** Strive to create a unique and innovative car design, incorporating features or materials that set your team apart.
- **Engineering Excellence:** Aim for a high level of engineering precision, accuracy, and attention to detail in every aspect of the car.

Team Collaboration:

- **Effective Communication:** Ensure that team members communicate openly and effectively, sharing ideas, progress, and challenges.
- **Conflict Resolution:** Develop strategies for resolving conflicts and disagreements within the team to maintain a harmonious working environment.

Project Management:

- **Timely Milestones:** Create a project timeline with clear milestones and deadlines, and consistently track progress to stay on schedule.
- **Resource Management:** Efficiently manage available resources, including budget, materials, and team members' time.

Learning and Development:

- **Skill Enhancement:** Encourage team members to learn new skills, whether related to engineering, design, or project management.
- **Educational Outreach:** Consider sharing your experience with local schools or organizations to promote STEM education.

Safety and Quality:

- **Safety First:** Prioritize safety in all aspects of the project, from car design to workshop practices.
- **Quality Assurance:** Implement quality control measures to ensure the car's components and assembly meet high standards.

Community and Sponsor Engagement:

- **Sponsor Relationships:** Develop and maintain positive relationships with sponsors, showing appreciation for their support.
- **Community Involvement:** Engage with your local community and school to raise awareness and support for your project.

Presentation and Marketing:

- **Effective Pitch:** Prepare a compelling verbal and visual presentation for the competition, showcasing your car, team, and project journey.
- **Branding:** Create a strong team brand and marketing materials to make a lasting impression.

Adaptability and Resilience:

- **Flexibility:** Be ready to adapt to unexpected challenges, setbacks, or changes in the project plan.
- **Resilience:** Develop a resilient team spirit to overcome obstacles and setbacks.

Areas explored by the team

Marketing involves the strategic planning and execution of activities aimed at promoting products or services to a target audience, encompassing market research, branding, advertising, and customer relationship management.



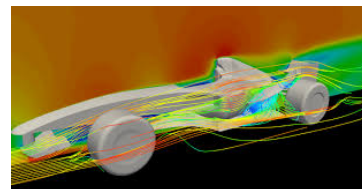
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Manufacturing encompasses the processes and techniques used to transform raw materials into finished products, involving various stages such as machining, assembly, quality control, and logistics management.



Simulations refer to the use of computer models and mathematical algorithms to replicate real-world scenarios, providing insights into the behavior, performance, and interactions of systems or processes, often used for testing, optimization, and predictive analysis.

Data analysis involves the extraction, transformation, and interpretation of information from diverse datasets, utilizing statistical methods, programming languages, and visualization tools to derive meaningful insights, support decision-making, and drive business strategies.



Initial Sketches

Our team started working on the Initial sketch and design of our F1 car. We used [TinkerCAD](#) to 3D design the initial sketch. Below you may find some screenshots of the design. You can see the restricted areas from the Technical Regulation and a draft design from the front wing and wheels. We have also included the files for Halo and Helmet, taken from the official site of F1 in Schools.

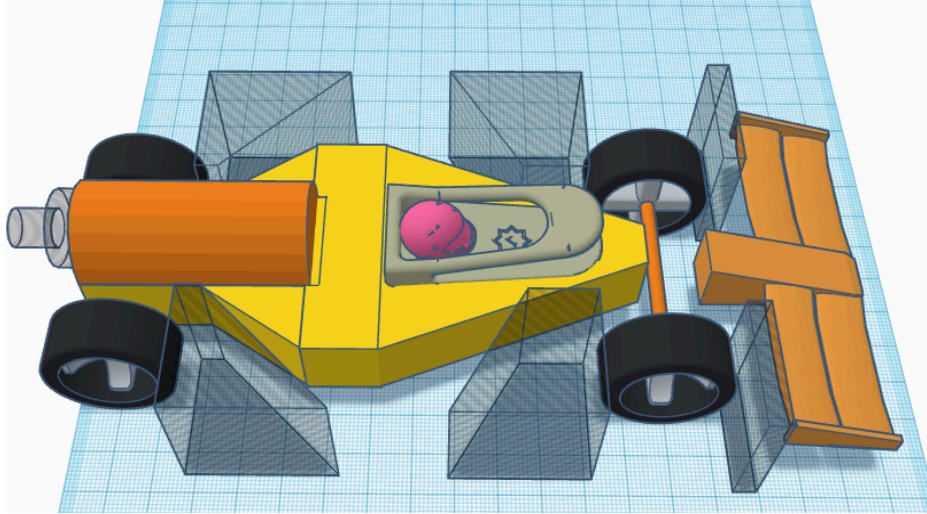


Image 1: Top view of our draft design of the F1 car.

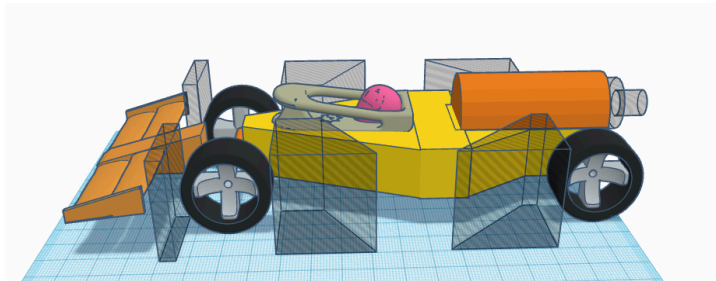


Image 2: Side view of our draft design of the F1 car.

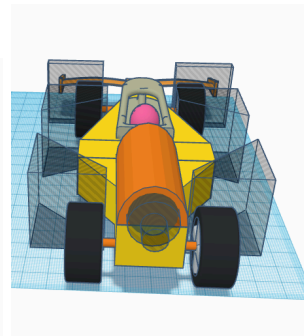


Image 3: Back view of our draft design of the F1 car.

Initial Action Plan

The Lancers Racing Team from ACS Athens has outlined a comprehensive action plan aimed at maximizing their success in the F1 in Schools Greece competition. The team is strategically focused on achieving their goals through a multifaceted approach. In the realm of marketing, they plan to create and maintain a strong team brand identity, seeking sponsorship opportunities and engaging in promotional activities through social media platforms. The team recognizes the importance of effective communication, conflict resolution, and resource management in fostering a collaborative environment. Their dedication to innovation and engineering excellence is evident in their commitment to creating a unique and innovative car design, backed by a high level of precision and attention to detail.

Furthermore, the team is actively engaged in areas such as mechanical design, manufacturing, simulations, and data analysis. Their emphasis on safety, quality assurance, and community engagement showcases a holistic approach to the project. The team's action plan includes outreach to different companies for sponsorships and fundraising, leveraging social media for visibility, and meticulous planning for effective time and resource management. The use of TinkerCAD for 3D design and their adherence to technical regulations demonstrate a thoughtful and thorough approach to their initial sketches. The Lancers Racing Team's action plan reflects a strategic and well-rounded effort, showcasing their commitment to excellence in the F1 in Schools competition.


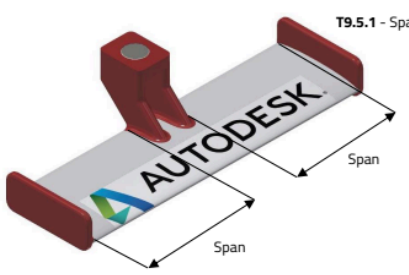
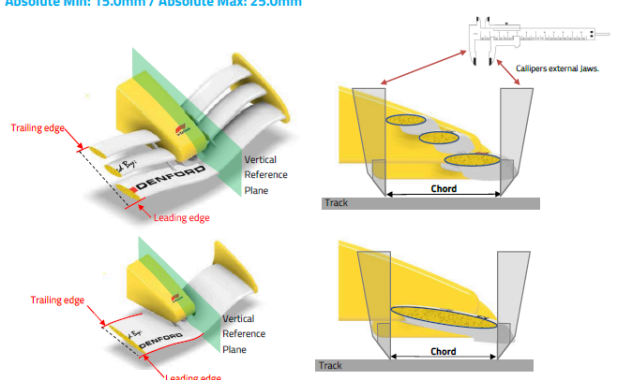
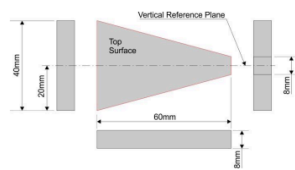
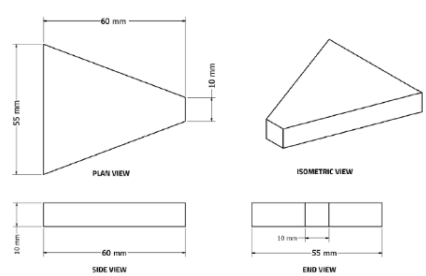
Below you may find our Timeline for the beginning of our team until the competition. This timeline will be frequently updated in order to mark any deadline change or milestone.

| Teams Name | Sep | | | | Oct | | | | Nov | | | | Dec | | | | Jan | | | | Feb | | | | Mar | | | | Apr | | | | May | | | |
|------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th |
| Team Formation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Team Formation</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Assign Roles</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Complete the Application</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Complete the first Report</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Marketing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Creating Name & Logo</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Social Media</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Site</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Sponsors</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>T-shirts & Stickers</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Fundraising Actions</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Technical #1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Report #1</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Check Technical Regulations</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>3D Design Training</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Draft Design</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Test prints</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Assembly of F1 Car</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Testing | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>CFD Test</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Data Analysis</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Suggest Improvements</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Technical #2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Final Design</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Prints</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Assembly of F1 Car</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Competition | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Table 1. Timeline of Lancers Racing Team

Differences between Technical Regulations

There are multiple differences between the Technical Regulations of 2022 and the one of 2023. Below we have some of the basics while many others can be found in the reports. As we continue designing and examining all the regulations we will spot even more differences.

| 2022 Technical Regulations | 2023 Technical Regulations |
|--|---|
| <p>No halo and driver</p> <p>(No Photo)</p> | <p>Needs halo and driver</p> <p>T4.4.2 Halo visibility front and side views - [GENERAL Penalty - 10 pts] Visibility of the Halo must not be physically obstructed by any other component when viewed in the front or side views.</p> <p>SIDE VIEW When viewed from the side, everything inside the red outline MUST be visible.</p> <p>FRONT VIEW When viewed from the front, everything inside the red outline MUST be visible.</p>  <p>T4.4.3 Halo visibility top view - [GENERAL Penalty - 10 pts] The Halo must not be physically obstructed in the plan view except by the helmet.</p> |
| <p>Differences on the nose cone and front wing. Different dimensions and different geometry / design.</p> <p>Absolute Min: 25mm x 2 = 50.0mm or 50mm x 1 = 50mm</p>  <p>T9.5.1 - Span</p> | <p>Absolute Min: 15.0mm / Absolute Max: 25.0mm</p>  |
| <p>Differences in the Virtual Cargo dimensions.</p> <p>T4.2 Virtual cargo - [PERFORMANCE Penalty - 25pts] A virtual cargo must be completely encompassed by the body and be wholly positioned between the front and rear wheel centre lines. The virtual cargo must have minimum dimensions as shown below, with its top surface located symmetrical about and positioned normal (90 degrees) to the vertical reference plane. The virtual cargo may be intersected by the FRONT wheel support system and may also share common faces with the car body. All dimensions shown are absolute minimum.</p>  | <p>T4.2 Virtual cargo - [PERFORMANCE Penalty - 25pts] A virtual cargo must be completely encompassed by the body and be wholly positioned between the front and rear wheel centre lines. The virtual cargo must have minimum dimensions as shown below, with its top surface located symmetrical about and positioned normal (90 degrees) to the vertical reference plane. The virtual cargo may also share common faces with the car body. All dimensions shown are absolute minimum.</p>  |

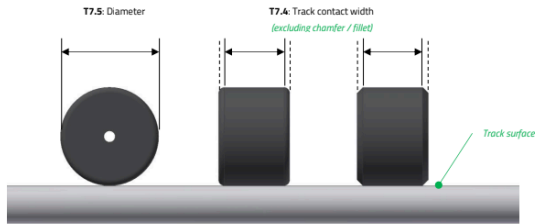
Differences in the dimensions of the tyres.

PP 1 T7.4 Track contact width - [PERFORMANCE | Penalty - 2.5pts per millimetre per wheel]

This is measured along the surface of the wheel that makes constant contact with the track surface, excluding any chamfers or fillets.

T7.4.1 Front Wheels - Absolute Min: 12.0mm

T7.4.2 Rear Wheels - Absolute Min: 15.0mm



PP 1 T7.4 Track contact width - [PERFORMANCE | Penalty - 2.5pts per millimetre per wheel]

This is measured along the surface of the wheel that makes constant contact with the track surface, excluding any chamfers or fillets.

T7.4.1 Front wheels - Absolute Min: 13.0mm

T7.4.2 Rear wheels - Absolute Min: 17.0mm



LOGO:

Lancers Racing Team

LANCERS RACING TEAM

