Formula UBC

Department of Mechanical Engineering
6250 Applied Science Lane
Vancouver, BC V6T 1Z4

2010 New Members Handbook

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1.0 What is Formula SAE?

Formula SAE (Society of Automotive Engineers) is an international competition between engineering students involving the design, construction, and dynamic testing of an open-wheeled race car. As with all "formula" racing, there are numerous restrictions on the design of the Formula SAE vehicle to ensure that the knowledge, ingenuity, and imagination of competing students will be challenged. Most design restrictions are aimed at driver safety and team parity, the former being of paramount importance. To this end, the cars must meet strict front impact and roll-over standards, and engine intake is limited by the use of an intake restrictor. To keep the competition fresh, and allow younger students to gain as many benefits as possible, the rules also require that no car be campaigned in more than one competition year.

2.0 What is Formula UBC?

Formula UBC is a diverse team of talented engineering students determined to get the most of their educational experience. Through passion and commitment, students collaborate as a team to design and build a formula style open-wheeled race car that competes in the annual Formula SAE competition in Detroit, Michigan. Each member contributes his or her skills in a specialized area of interest, such as engine, chassis, suspension, electronics, controls or body. A dynamic team leader works to synchronize all of these efforts and create a unique vehicle that will proudly represent its school in a field of over 70 universities from around the world. After 18 years of innovative vehicles and inspirational success stories, Formula UBC is poised to carry on the tradition in 2010 as it continues to transform students into well-rounded engineers.

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3.0 Design Philosophy

Direct resources to maximize our points in the FSAE West competition.

4.0 Design Goals

- Design for Reliability
- Reduce weight (430lbs to 450lbs)
- Ease of manufacturing and clean packaging

5.0 Executive Team

Team Leader: David Rompen

Team Coordinators: Collin Cavell, Erik Roy

Aerodynamics: Terrence Hui

Engine: Erik Roy

Chassis: Collin Cavell

Drivetrain: Collin Cavell

Electronics: Keir Maguire

Suspension: Gordon Lau

Controls: David Rompen

Faculty Advisor: Dr. Martin Davy

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6.0 Administration

New Members:	David Rompen, Matthew Pater
Weekly Meetings:	Collin Cavell
Sponsorship:	Collin Cavell, Edward Chu
Releases:	
Cost Report:	Collin Cavell
Design Report and Posters:	Erik Roy
ESTC:	David Rompen, Edward Chu
Event Coordinator:	Erik Roy
Testing Manager:	David Rompen
Technical Advisor:	Erik Roy
Website:	David Rompen
Scheduling and Workdays:	Collin Cavell
Shop Manager:	Erik Roy
Design Review:	Collin Cavell

7.0 Benefits of Formula UBC membership

Formula UBC supports education and the development of students; these efforts result in the following benefits:

- Gives you the opportunity to reach your full potential as an engineering student
- Provides you with an edge over others competing for careers in automotive engineering
- Enhances your experience in UBC's Faculty of Applied Science

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8.0 Facilities

8.1 MECH Machine Shop

Located in CEME 1190, the MECH machine shop houses various manufacturing equipment such as: the lathe, mill, drill press, and band saw. The shop supervisor is Markus Fengler, PEng. Use of the shop requires successful completion of the machine shop orientation and the machine sign-up sheet. During the semester, the shop is open late one night a week for exclusive student team use.

8.2 Rusty Hut Shop

This is Formula UBC's main shop. It is where the majority of fabrication and time is spent, as 24hr access to this facility is available. The car and all of its components, as well as all of Formula UBC's tools and equipment are stored in the Rusty Hut. It is imperative that the shop remains clean and that all shop safety guidelines are followed.

8.3 Formula UBC Office

The Formula UBC office is located in the CEME building, room number 1002 and is accessible through the main foyer or the exterior of the building. The majority of design work, and sponsor communication is completed on the multiple office computers. The office should remain a fun, yet professional atmosphere that allows members to work efficiently.

8.4 Online

Our website address is www.formulaubc.com, please make sure you check the website for updates and information about the team as well as the picture and video gallery. Formula UBC's team forum is located at www.forum.formulaubc.com. As the forum is the main hub of communication it is essential that members check in daily.

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9.0 Your First Project

9.1 SolidWorks Project

All components of the car are designed and modelled in SolidWorks. This allows for the successful integration of multiple projects to come together as one cohesive package. CAD in SolidWorks is an essential skill for all members of Formula UBC and for this reason it is required that you complete the following tutorials.

Part A: Complete SolidWorks Tutorials listed below:

- Getting Started - Lesson 1 – Parts
- Getting Started - Lesson 2 – Assemblies
- Getting Started - Lesson 3 – Drawings
- Building Models - Advanced Design
- Building Models - Revolves and Sweeps
- Working with Models - Advanced Drawings

Part B: Create a Solidworks model of the following machine shop component located in the new member section on our website (www.formulaubc.com/newmembers) from the two PDF drawings. If you encounter any problems please email a team member and arrange a quick meeting to help you get underway again.

Save your files for both part A and B and email them to info@formulaubc.com as a zip file. Name the file with your full name, for example JohnSmith.zip. The deadline for submission is November 13, 2009.

9.2 Machine Shop Orientation

Permission to work in the machine shop is granted only to those who have participated in a machine shop orientation, directed by the shop supervisor Markus Fengler, PEng. As part of the orientation, you will be required to take a quiz which must be passed in order work in the shop. The ability to machine parts is a valuable skill to have on the team, as many of the car's components are made in-house. You will be informed of the dates and times that will be available for the orientation when they are finalized. Note, however, that it's your responsibility to come to this session even if it's not a favourable time. In case of special circumstances, please send us an email a week in advance. There is also an ESTC online Safety Quiz which you must complete, together with the machine shop orientation.

10.0 Contact Information

CEME 1002

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