

ENES 100 Introduction to Engineering Design Project Milestones – Spring 2008

In the next few weeks your group will be developing a plan to help you successfully design, build, and test your autonomous hovercraft. As part of that plan you will have a proposed schedule that will be displayed on a Gantt Chart. You will learn more about Gantt charts soon, but basically they display planned activities at various levels. The most detailed entries are called work packages, where the questions: *who?*, *when?*, and *how?* are answered for all required tasks. *Milestones* are high-level entries that indicate when major tasks or groups of tasks will be initiated or completed. Milestones are indicated on a Gantt Chart by a single diamond on the date they are to be reached.

In a real company or enterprise, milestones are taken very seriously and there is often a flurry of activity as the milestone is approached, especially if the company is behind schedule. Often there are financial rewards or penalties for meeting or missing a milestone, respectively. Your group will have two types of milestones: internal and global. Internal milestones are for your own benefit and there will be no penalties if you do not make them. Global milestones are milestones required of all groups in all sections of ENES 100. The global milestones are listed below. There *will* be penalties in terms of your grade for not meeting a global milestone. All milestones (internal and global) must be indicated on your Gantt Charts.

Global milestone descriptions

MS #1 *Project Development Plan Presentation* [due date: 2/27-28/08] – You must (1) present a summary of your initial concept discussions, (2) introduce your team and management structure, and (3) present and defend your program plan via your team's Gantt Chart. If your concept is still not complete, that is fine, but you must include the time you need to concretize your concept in the Gantt Chart. You must turn in to your instructor an electronic copy of this presentation.

MS #2 *Preliminary Design Presentation* [due date: 3/12-13/08] – You must present and defend (1) your detailed hovercraft design concept, (2) your preliminary Bill of Materials (BOM), (3) your self-evaluation of your team performance, and (4) your compliance with your schedule. The design concept must address all major subsystems in a concrete manner and your BOM should be complete with part numbers, quantities, pricing and vendor information. All parts needed to build your preliminary design should be included. You must show your progress in comparison with your original Gantt Chart and a revised

ENES 100 Introduction to Engineering Design Project Milestones – Spring 2008

Gantt Chart that reflects any new developments with respect to the design or the schedule.

MS #3 *Preliminary Design Report* [due date: 3/14/08] – You must turn in your design report that expands on the details of the Preliminary Design Presentation. A summary of the format and content description of this report will be handed out in class. A copy of the Power-Point preliminary design presentation must be included in the package.

MS #4 *Prototype Fabrication Start* [due date: 3/24-25/08] – You must begin fabrication of your hovercraft. You need to present to your instructor (1) a flow chart of your planned Robo-lab control program, (2) a copy of receipts for your parts (all parts for the preliminary design need to be purchased/ordered before this date), (3) the physical hardware / components to be used in the first week of fabrication, and (4) a written task list (e.g. Gantt Chart excerpt) that shows what each person will be responsible for completing during the first week of fabrication. All team members must have participated in a safety lecture by this date.

MS #5 *Preliminary Testing* [due date: 4/16-17/08] – You must demonstrate to your instructor (1) that your hovercraft can hover for 10 minutes without moving more than 3 feet from its initial location, (2) that your hovercraft can move forward in the course 15 feet without hitting a sidewall, and (3) that your sensors and control system is capable of successfully navigating the course by demonstrating its functionality on an NXT ground vehicle or a ball-bearing “floating” platform.

MS #6 *Final Testing* [due date: 5/9/08] – You must demonstrate that your hovercraft can successfully navigate the course in under 10 minutes (given three attempts).

MS #7 *ENES 100 Competition* [due date: 5/12/08] – Your hovercraft must participate in the final course-wide time-trial ENES 100 competition event.

MS #8 *Final Project Presentation* [due date: 5/12-13/08] – You must present the results and analysis of your hovercraft’s performance. You must also present your final design details, final BOM, and final Gantt Chart. Your hovercraft must be available for inspection and discussion.

MS #9 *Final Project Report* [due date: 5/16/08] – You must turn in your final project report that expands on the details of the Final Project Presentation. A summary of the format and

ENES 100 Introduction to Engineering Design Project Milestones – Spring 2008

content description of this report will be handed out in class. All product deliverables must be included in this package (except for the hovercraft itself).