

## **ENGINEERING AND MATHEMATICAL SCIENCES PROGRAM**

### **I. OVERVIEW**

The purpose of the Engineering and Mathematical Sciences program is to encourage academic success, while intellectually stimulating its members and providing opportunities to establish a firm grasp on the concepts of engineering and mathematics in the real world. The program will enhance academic achievements as well as allow undergraduate students to take advantage of the resources that returning students have gained through their own academic and real world experience. Within the program community there will be plenty of opportunities for peer academic advising. Teamwork will develop with academic group study sessions, and by clearly communicating academic and social issues to the program community so a resolution can be found. Members will acquire a strong social atmosphere by means of events which include, but are not limited to, program meetings, program events, and field trips.

### **II. LEARNING OBJECTIVES**

#### LEARNING OBJECTIVE 1

Each member will be exposed to the work that individual practicing engineers, mathematicians, or computer scientists in their respective fields do every day.

#### **ACTION STEPS**

- A) Members will attend lectures presented by guests-- an example being the University of Vermont professors and visiting professors through the Engineering and Mathematical Sciences department.
- B) Members will present their own projects on topics of interest from their own classes or personal research. At program meetings, members will discuss interesting aspects of their major that they have recently learned or discovered. Members can make suggestions of things to do as a group that are of interest to them.
- C) Members will attend field trips to local sites of interest pertaining to Engineering and Mathematical Sciences.

## LEARNING OBJECTIVE 2

Enhance the quality of education obtained by the members by assisting fellow classmates with their academic endeavors. Teamwork, which is emphasized in the practical applications of engineering and mathematics, will be practiced from the beginning.

### ACTION STEPS

- A) Members will utilize the multitude of talents and accomplishments that can be found in the other members of the program. Being surrounded by members who are also fellow classmates can offer helpful advice about classes as well as learn together.
- B) Members of the program will be available to assist other members with classes in progress as they live in the same community by utilizing resources and knowledge from classes previously taken and experiences within clubs.
- C) Members will be available to advise other members on which classes to take by giving a personal opinion of the class in question. This will allow a clearer picture of the class objective and curriculum than what is presented in the course catalogue.
- D) Study groups will be established as soon as classes begin in order to stress the importance of the benefits of teamwork in a group learning atmosphere. This will allow students to reap the benefits of the knowledge and information that each member possesses. Group study reinforces teamwork, a skill that is paramount for any job in a science related field.

## LEARNING OBJECTIVE 3

Understanding the process and value of teamwork. Each member is important to the team; the more involved a member is to their academic study sessions and the program, the more certain is their academic success.

### ACTION STEPS

- A) Meetings will be held to discuss and analyze the quality, success and effectiveness of the group study sessions, and a group discussion will be held in which to brainstorm ideas of how to make the study sessions more productive and helpful to all the members. Upcoming important dates will be announced to remind members of event deadlines and our program advisor,

Joan M. Rosebush, will hold a group consultation to see how everyone is handling the workload and give advice on how to succeed academically.

- B) Team building exercise will be implemented and executed at the beginning of the semester to build friendships and a team atmosphere among all of the members of the program.
- C) Members will hold study sessions to engage students outside of the program and to promote academic success as a whole.

#### LEARNING OBJECTIVE 4

Better understanding of individual learning styles and capabilities and involvement with the outside community.

#### ACTION STEPS

- A) The program will encourage all members to evaluate their learning styles and capabilities. Teamwork is a wonderful way to learn the material, as is studying on one's own. The self discipline to study by one's self is an attribute that each member will find useful when other members cannot assist them with the topic on hand. Members will implement and observe set quiet hours for self study and group study sessions in available classrooms.
- B) Faculty members who specialize in different learning styles will speak to the group in order to educate all the members on the numerous learning styles, study skills, and types of collaborative learning to practice in different subject areas.
- C) Activities such as bridge building competitions or pine wood derby car races to be held in the FPL will be ways in which the suite can promote teamwork and awareness of different learning styles.

*All of the program meetings planned will take place on a monthly basis , and will be dependent on the schedule of the program members, and the schedule of the program advisor, Lecturer Joan M. Rosebush. Group study sessions will begin as soon as classes begin.*

### **III. COMMUNITY SERVICE**

Members will leave the University of Vermont in better condition than it was when they first saw it. An important part of maturing into an adult and preparing yourself for the

“real world” is the ability to give back to the community, and to enrich it for the next generation.

- A) Members will volunteer to assist at the College of Engineering and Mathematical Sciences sponsored events, which include high school science fairs and competitions, as well as events in the Burlington area that may benefit the members.
- B) Each member will find a community project to participate in, whether it is Habitat for Humanity, Earth Day, or volunteering at a soup kitchen.

### **VIII. PLANS FOR INTERACTIONS WITH OTHER L/L PROGRAMS**

The Engineering and Mathematical Sciences program plans to interact with other programs by advertising other programs’ activities within our own living community. We will show support for other programs by attending and actively participating in as many of these activities that we can. We will co-program with as many of these events as we can, lend support, give help, and lend materials where we can. The Engineering and Mathematical Sciences suite plans to do a potluck brunch or pancake breakfast on Sundays once a month as a social event and bonding experience between members of the column. Any events that the program does, for example, an egg drop from Cook Science building, and testing the compressive and tensile strength of a Nalgene bottle in the Votey steel lab in Votey 112 is open to all members of Living and Learning and the University of Vermont.

## ENGINEERING AND MATHEMATICAL SCIENCES Timeline Explanation

1. **Program Meetings with Joan Rosebush** are structured meetings focused on academics and participation in engineering and mathematic related activities on and off campus. Attendance is mandatory unless a valid excuse can be provided such as another academic event conflicts with the meeting time like an evening lab.
2. **Quick Unofficial Meetings** are meetings run by just the program directors to inform and/or remind program members of important dates and events. These meetings are more casual and are not mandatory, however, it is highly recommended that program members attend these meetings.
3. **Group Study Sessions** on the timeline refer to study sessions with other program members in the same classes to review the course material. Over the course of the entire semester, program members are supposed to on their own time get together with other program members and study in groups. At the start of the semester, everyone will bring their schedules and decide amongst themselves which days and time frames work best for them to study in small groups. Since students' lives can be very hectic and schedules change, the only Group Study Sessions that is set in stone on the timeline are the ones right before finals. Members are not required to attend study sessions, but they are highly encouraged. We know that people have different ways of studying, and many study best alone. These sessions are flexible and subject to change.
4. **On-Campus Activities** such as broomball will be perfect ways to relieve stress during the Fall Semester. This will also be provide great opportunities for bonding and for everyone in the program to get to know everyone better
5. **Decorating The Suites** is a bonding time for program members in which creativity and teamwork is combined. It is an activity that is not academically related but program members will have to incorporate an engineering or mathematical design so it is a fun activity that still involves engineering or mathematics.
6. **Possible Field Trips** are going to IBM, Husky Injection Molding in Milton, VT, Tri-Angle MetalFab in Milton, VT, Ben and Jerry's Factory Tour, Waterbury, VT, and Burton Factory Tour, Williston, VT. These companies are relatively close to campus, and are companies that have hired University of Vermont students in the past. They all have some form of relationship with the University of Vermont, whether it be clubs, lectures, or other events