

Composites and Polymer Engineering (CAPE) Laboratory

Student Team Support Policy

Revision: V2.1; August, 2012

The Composites and Polymer Engineering Laboratory, CAPE, is a state-of-the-art polymer and composites development facility. Students, staff, faculty and industrial and government clients use CAPE on a user-fee basis to develop the next innovations in rapid tooling, polymer development and processing and composites development and processing. CAPE is dedicated to the principles and goals of our mission:

The mission of the CAPE Lab is to provide a stimulating and collaborative environment for innovative research, and rigorous education in polymers, polymer matrix composites and related areas; to build strong, productive relationships with our industrial, governmental and academic partners; and to create dedicated teams of SDSM&T students, faculty and staff focused on advancing knowledge in the polymer and composites field.

As CAPE has matured, the demands on our time and resources have increased and must be allocated equitably. The student team support policy reflects these demands, as well as the goals and direction of the lab, and is intended to improve the quality of support and documentation while requiring significantly less staff time than has previously been donated.

The requirements placed on student teams in return for support are intended to improve the experience and results for all parties involved. The formalization of the support request and manufacturing plan processes lead to several positive outcomes, including:

- Industrially relevant experience
- Improved understanding of composites design and manufacturing
- Application of “Design for Manufacturing” principles
- Documentation of design, decision and processing information
- Ability to demonstrate understanding of composites-related principles to audiences and judges and
- Demonstration of capabilities to potential industrial partners or future employers.

Student teams are encouraged to use CAPE to test new materials and processing techniques. CAPE staff will be available to student teams free of charge for a maximum of 40 hours of consulting time each semester. Consulting time is subject to the staff member’s availability, and must be divided among all student teams supported by CAPE. Materials and supplies will be available for teams to purchase from CAPE at our cost. Teams which lack funding for purchasing materials and supplies may request that they be donated by CAPE – to do so, please contact a CAPE staff member.

Team Composites Lead Member

In order to simplify and streamline the interactions between CAPE and student teams, CAPE requires that each team identify an individual student to act as the team’s Composites Lead. This team member must have completed or be enrolled in and passing CAPE’s “Composites Manufacturing” course, cross-listed as CBE/MET-489. This member will act as the liaison between CAPE Staff and the team, and will be responsible for coordinating use of CAPE resources and meeting CAPE requirements (see below for details.)

The Composites Lead is the primary point of contact for matters related to the team as a whole and its projects at CAPE.

“Composites Manufacturing” Course, CBE/MET-489

Each team that will make use of CAPE’s facilities must have a minimum of one member who has completed, or is enrolled in and passing, the “Composites Manufacturing” course, cross-listed as CBE/MET-489. This is specifically required of the team’s Composites Lead member.

CAPE Support Request

At the beginning of each school year, student teams will have the opportunity to submit a request for support from CAPE. Support can be given in the form of materials, equipment usage and CAPE Staff time. This request should be submitted in writing no later than September 30th. This request should be based on, and include a summary of, the team’s previous work with CAPE and projected needs for equipment and supplies. The account number to which materials, supplies, etc. will be billed must be included in the support request. A preliminary timeline of projects and their deadlines will also be required. More detail on the information required can be found in the CAPE Support Request template.

CAPE Support Commitment

After reviewing the support request, CAPE Staff will meet with the team leaders to discuss the projects planned for the coming year, and the level of support which CAPE is prepared to offer. Projects which investigate new materials or processing techniques which will expand the capabilities of CAPE may be specifically granted extra support, and may be given priority over other less innovative projects.

CAPE Services

CAPE operates as a user-fee based laboratory. Equipment, materials and staff time are available for use, but must be paid for accordingly. Use of processing equipment must be scheduled in advance in CAPE’s online schedule, for which each team may have one user account, and CAPE Staff must train and approve any individual who will operate the equipment. Material usage will be billed at CAPE’s cost, and equipment and personnel time will be billed according to CAPE’s standard rates. Materials and supplies must be requested from CAPE staff, and will be billed BEFORE USE – we will no longer be providing supplies as needed and billing afterward. Additionally, cost for replacement or repair of tools and equipment which are damaged due to negligence on behalf of the team’s members (not including ordinary wear-and-tear) will also be billed. In case of a conflict for use of equipment or staff time between a student team and a funded project, the funded project will receive priority.

Student Team Responsibilities

In return for CAPE’s support, the team is expected to satisfy certain responsibilities.

1. Safety Protocol

First and foremost, team members are expected to comply with the *CAPE Environmental, Health and Safety Procedures and Policies Manual* (<http://capelab.sdsmt.edu/docs/>) and to operate in a safe and respectful manner at all times when using the lab. Failure to do so may result in removal of lab privileges.

2. Manufacture Plan

Each project undertaken by the team will require a manufacture plan which has been reviewed and approved by CAPE Staff. A Manufacturing Plan Template is available, and CAPE Staff will assist in completing it if needed. The first draft of the manufacture plan is due at the time of the team's Critical Design Review (CDR.) The final plan is due no later than two weeks after the CDR. If the final plan does not include sufficient information or indicate sufficient planning, the part will not be approved and will not be supported by CAPE. After initial approval, any proposed changes to the manufacture plan must be reviewed and approved before continuing the project.

3. Staff Time

Meetings with CAPE Staff must be scheduled in advance, preferably at least one full day before the proposed meeting time. Members are expected to arrive on time and prepared. If you need to arrive late or reschedule, call and inform the staff before your meeting time.

4. Reporting

At the end of the year, the team is required to submit a report summarizing the past year's projects, successes and needs for improvement. Most of this content will consist of the compiled Manufacturing Plan documents accompanied by an overall self-review of the team's performance.

5. Billing

Teams must provide the account number to be billed for materials, supplies, etc. in their support request. Any outstanding bills from the previous year must be settled before the support request for the current year will be accepted.

Schedule Summary

- CAPE support request – *Due September 30th*
- Draft manufacture plans – *due at CDR*
- Final manufacture plans – *due two weeks after CDR*
- Year-end report – *due before start of following school year*

We look forward to a new year of working together, and encourage team members to provide feedback and suggestions on our policies and procedures.