

Maine Space Grant Consortium (MSGC)  
ESMD (Exploration System Mission Directorate) Internship Program for  
Undergraduate Students

**List of Participating Host Institutions**

Below is a list of institutions (currently seven) in Maine who are participating in our ESMD internship Program. If you are interested in applying to this program, but are not sure if your qualifications fit with the company's needs below, you may still apply, as we are continually working with new companies whose information might not be posted to date. Also, please check back periodically for updates to this list.

Students should NOT contact the companies directly with questions. All questions should be directed to Jana Hall at MSGC.

If you have any questions, please contact Jana Hall at MSGC [jana.hall@msgc.org](mailto:jana.hall@msgc.org) or 622-4688

**1. Applied Thermal Sciences, Inc.  
Sanford, Maine**

***Description of project/position/company needs:***

The job responsibilities for this position will include assisting in the design, development and testing of a closed loop control system using National Instruments LabView program. This project is the design, fabrication and testing of a revolutionary reciprocation free piston engine for high power/low weight applications such as UAV's.

The intern will also be involved in the fabrication and testing of launch vehicles for research being conducted. ATS is developing a low cost test platform for speeds greater than Mach 3 (3300 ft/sec). The responsibilities of the intern under would involve the assisting in the design and fabrication of composite launch vehicles being tested in the near future.

This position will require the person to work independently on specific tasks with minimal supervision. Strong oral and written communication skills are a must.

***Minimum Qualifications needed if any:***

Mechanical and Electrical Engineering majors with junior (3<sup>rd</sup> year) or senior (4<sup>th</sup> year) status. Courses in controls and control system design with hands on experience would be a preferred. In addition, a background in composites and fabrication would be a plus. Experience with SolidWorks or another CAD program, and programming with LabView would be a bonus and a willingness to get your hands dirty.

***Preferred Internship dates:*** either summer or academic year – no preference

## **2. Artel, Inc. Westbrook, Maine**

### ***Description of project/position/company needs:***

Artel, an internationally recognized leader in the development and manufacture of liquid delivery verification systems, is searching for motivated and organized summer interns to join our product development team. Artel's products involve instrumentation, chemical solutions and software. Internship opportunities are available which focus on development of all components of the product, and duties may range from software quality assurance to laboratory preparation of highly accurate solutions of organic and inorganic compounds, measurement of solution properties, testing prototype equipment, designing, running, and analyzing experiments, stability studies, packaging, applications, validation of new procedures, transfer to manufacturing, troubleshooting and quality control of final product.

### ***Minimum Qualifications needed if any:***

The ideal candidate will:

- be pursuing a technical degree in mechanical/electrical engineering, physics, chemistry, math, or other related engineering/science fields;
- have completed at least 1 year of coursework, including laboratory sections;
- demonstrate the ability to work in a team environment;
- possess good analytical, documentation and communication skills;
- be proficient with computers, including use of Windows, MS-Word, MS-Excel, etc.
- demonstrate self-motivation with the ability to prioritize and work independently;
- be interested in learning new things and addressing new challenges

***Preferred Internship dates:*** Summer 2008

## **3. Ascendant Energy Company, Inc. Rockland, Maine**

### ***Description of project/position/company needs:***

Ascendant Energy is seeking a mechanical engineering or building sciences intern to assist with engineering of its combined Photovoltaic/Thermal Solar Modules. Responsibilities include materials research, unit and system design, construction and testing

### ***Minimum Qualifications needed if any:***

Candidates should be enrolled in mechanical engineering and/or building sciences curricula with coursework or exposure to one or more of the following:

- Materials science
- Solar energy principles
- Wind and structural modeling
- Roof construction methods
- Building mechanical (HVAC) systems
- Absorption cycle or refrigeration technology
- Metal fabrication methods
- CAD

## **4. Bath Iron Works**

### **Bath, Maine**

#### ***Description of project/position/company needs:***

Assist engineers and or naval architects with:

- Reviewing vendor submitted drawings, technical reports, procedures, and other technical documentation
- Developing/maintaining diagrams, functional schematics, calculations, technical reports, and/or purchase specifications
- Interfacing with Navy, Construction Trades, Procurement, Quality Assurance, Fleet Service Engineering, Planning Yard, Vendors, and Design in resolving technical issues and developing appropriate correspondence
- Working with customers to define requirements and demonstrate performance
- Integrating equipment into shipboard design
- Completing various engineering analyses
- Performing weight analysis and calculations
- Assisting with other tasking as needed

#### ***Minimum Qualifications needed if any:***

- Active student majoring in Naval Architecture or other relevant Engineering discipline (Junior year completed)
- GPA of 3.0 or better preferred
- Excellent verbal and written communications skills
- Ability to organize, plan and execute projects
- Windows and Windows software operating skills are required; UNIX and/or CAD skills are desirable

***Preferred Internship dates:*** either summer or academic year – no preference

NOTE: BIW is interested in hosting multiple students

## **5. Enercon Technologies**

### **Gray, Maine**

#### ***Description of project/position/company needs:***

The job responsibilities for this position will include assisting in the test development of new and mature products. Candidates will be involved in the development and integration of state of the art test automation systems in our expanding contract manufacturing facility.

This position will require the candidate to work independently as well as in small groups for task accomplishment.

#### ***Minimum Qualifications needed if any:***

Candidates should be Electrical Engineering or Electrical Engineering with Computer Engineering Concentration majors in their junior (3+) or senior (4+) years of education. Familiarization with discrete and integrated circuits is expected. Knowledge of simulation as well as test tools like LabView would be a plus.

## **6. Howard Tool Company, Inc. Bangor, Maine**

***Description of project/position/company needs:***

Howard Tool Company is an ISO 9001:2000 certified company that provides high quality craftsmanship in precision machining and manufacturing. The company manufactures small intricate parts worldwide for lighting, defense, semi conductor and medical industries.

An intern at Howard Tool Company would be responsible for taking a project from beginning (customer needs) to completion (shipping dock) in all aspects of manufacturing.

***Minimum Qualifications needed if any:***

Mechanical Engineering background

***Preferred Internship dates:*** Summer 2008

## **7. LANCO Assembly Systems, Inc. Westbrook, Maine**

***Description of project/position/company needs:***

We are preparing phase two of a vision guided robotic work cell. The first phase, completed earlier this year, successfully demonstrated the use of a vision-guided robot to find parts, pick them up, and place them into a stationary fixture. Phase two requires that the same tasks be completed using continuous motion. That is, the ending fixture will not necessarily be in a defined location. It will be moving. The robot must find and track the fixture and then place the part into its proper position as the fixture is in motion.

***Minimum Qualifications needed if any:***

We would like to have one mechanical and one electrical engineering student for this project. Each student must have completed at least two years (preferably three) of engineering study in his/her chosen field.

***Preferred Internship dates:*** Summer 2008

## **8. Mainely Wired LLC Swanville, Maine**

***Description of project/position/company needs:***

The intern will be involved in all aspects of our wireless operation – signal determination and shaping, antenna selection, location and testing, analog digital interfacing, network control, client network design (LAN) , MW network design (WAN). A specific project will be assigned at the time of entry into the MW team.

*Minimum Qualifications needed if any:*

*Preferred Internship dates:* no preference

## **9. Results Engineering, Inc. Saco, Maine**

*Description of project/position/company needs:*

Position: Database/Data mining Programmer

Project: Data mining and Display. As a company we build control systems for everything from temperature control to robotics. Every system has its own data logging needs, and we are always developing or looking at new ways to mine and visualize this data. Naturally, as a for-profit consulting firm, we are also very interested in ways that make this development cycle quicker. The project consists of several phases, all of which will provide a valuable educational experience applicable to any type of database system and specifically to Control System project management.

1. Learn how to use a new commercial Java-based database “front-end” development environment.
2. Extend an existing SQL-Server database structure and use above environment to develop extensive reporting capabilities to visualize what is basically the same set of data in a myriad of reports. The resulting “product” from this phase (assuming its success) will be used internally as an overarching business and System management tool.
3. Using knowledge gained from the first two phases, plan and conduct in-house training for several topics / audiences.
  - a. Training on use of the System management tool produced to all Results Employees.
  - b. Workshop on advantages and challenges in developing database driven applications.
  - c. Finally, assuming that it is deemed worthy, training on the use of the above mentioned development environment to those employees who are already involved in data intensive projects.

*Minimum Qualifications needed if any:*

Engineering or CompSci, SQL database training & skills, MS SQL Server will be used in this project, but skills and experience with any SQL compatible database will work as well.

*Preferred Internship dates:* flexible

**10. Technology Systems, Inc.  
Brunswick, Maine**

***Description of project/position/company needs:***

Technology Systems Inc is a software based company working in advanced technology to include: Augmented Reality, Unmanned Systems, Robotics, and Geographic Information Systems. The intern will be assign in one or several of these areas to help with code development. Will be working with other software engineers

Another potential assignment is to complete the web site development work started by a summer intern

***Minimum Qualifications needed if any:***

Math and Computer Science or web site development

***Preferred Internship dates:*** flexible