Exploration Student Internship Opportunities!

The Michigan Space Grant Consortium announces the Michigan Initiative on Student NASA Exploration Research (MISNER) program. The MISNER program will give undergraduate and/or graduate students the opportunity to work in Exploration Systems Mission Directorate-related industries within the state of Michigan over the summer of 2012.

- 10-week internship program (within the May – August 2012 timeframe)
- $4,250 stipend with travel (up to $500) and housing (up to $1,250 total) = $6,000 Award Total

Visit the Michigan Space Grant Consortium on the web at www.mi.spacegrant.org

Eligibility

- The applicant must be a U.S. citizen (applicants with green cards are not eligible).
- The applicant can be an undergraduate or graduate student for affiliate institutions of the Michigan Space Grant Consortium (see website).
- Under-represented minority, women, and disabled students are strongly encouraged to apply.

Application Requirements

- Completed application form (next page).
- Brief statement of intent indicating motivation for seeking the internship and project experience (2-page limit).
- Resume (2-page limit).
- Most recent transcript (unofficial web transcript is fine).
- Letters of reference are welcomed but NOT REQUIRED (no more than 2 letters)
- Please review the internship opportunities on the pages that follow the application form and rank all five internships in the order that best match your educational background, skills and interests.
- All application materials must be attached in one PDF document and sent to Ms. Bonnie Bryant (blbryant@umich.edu) no later than Thursday, April 12, 2012. Please read carefully: Application documents must be converted into PDF format to ensure unhindered (platform-independent) reviewer readability. Please name the PDF package as follows (required): Last Name_Misner2012 (Example: Smith_Misner2012). Also, please ensure that the page counts of uploaded documents do not exceed the above limits. The application page must be printed out, completed, scanned, and added to your PDF package – please make it the first page of your package.

Questions regarding the MISNER Internship Program should be directed to Ms. Bonnie L. Bryant (blbryant@umich.edu).

*** Applications are due no later than Thursday, April 12, 2012. ***
The Michigan Initiative on Student NASA Exploration Research Program

- MISNER Application Form • 2012 -

Name of Applicant

Current Address

Applicant’s Telephone Number

Applicant’s E-Mail Address

University / College

- Calvin College
- Central Michigan University
- Eastern Michigan University
- Grand Valley State University
- Hope College
- Michigan State University
- Michigan Technological University
- Oakland University
- Saginaw Valley State University
- University of Michigan
- Wayne State University
- Western Michigan University

Current Year in School
(as of application deadline of April 12, 2012 – e.g. 3rd year undergraduate or if graduate student, Masters or Ph.D. and the month and year you plan to graduate)

Major

*Gender

- Male
- Female

*Ethnicity

- African American
- Native American
- Hispanic/Latino
- Caucasian
- Hispanic/Latino
- Asian
- Other
- Please specify: __________

Application package check-off list:

- Completed application form (this page)
- Statement of intent (2-page limit)
- Resume (2-page limit)
- Most recent transcript (unofficial web acceptable)
- Letters of recommendation, if any (not required)
- A list ranking all 5 internships (next page)

*For use in reporting demographic information to the federal government (NASA).
**Don’t Forget to Rank the Internship Opportunities!**

Rank #1 – #5

Your first choice should be ranked as #1. The internship that least matches your background or interests should be ranked #5.

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Internship Opportunities</th>
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<tbody>
<tr>
<td>_______</td>
<td>1. ElectroDynamic Applications, Inc. (Ann Arbor)</td>
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<tr>
<td>_______</td>
<td>2. Emagware.com (Ann Arbor)</td>
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<tr>
<td></td>
<td>Software Engineer</td>
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<tr>
<td>_______</td>
<td>3. Emagware.com (Ann Arbor)</td>
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<td></td>
<td>CAD Application Engineer</td>
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<td>_______</td>
<td>4. SoarTech (Ann Arbor)</td>
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<tr>
<td>_______</td>
<td>5. Aerophysics, Inc. (Houghton • Michigan’s UP)</td>
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The following businesses have internships available from May 2012 – August 2012:

1. ElectroDynamic Applications, Inc. • Ann Arbor, Michigan

ElectroDynamic Applications, Inc. (EDA) is a research and development firm principally focused on technologies for space and other severe environment applications. Our specialties include Electric Propulsion (EP) (Hall Thrusters, Ion Thrusters, Electrodynamic Tether Propulsion, and others), plasmas and plasma diagnostics, and related space and vacuum technology. We perform research for NASA, the Air Force, and several aerospace corporations. EDA does technology development at all stages from conceptual design and numerical plasma simulation, to prototype manufacturing, to testing and qualification. EDA works closely with leading research universities, including the University of Michigan, and provides "turn-key" testing in large vacuum facilities for commercial and government customers.

EDA's projects include: 1) Space technology development such as cold cathode electron emission and advanced Hall thrusters; 2) Plasma simulations of EP devices, EP plume interactions with spacecraft, RF/Laser communications, and re-entry plasma mitigation; and 3) Materials processing using plasmas; and 4) Large vacuum chamber experiments with EP devices and advanced sensors for high-altitude and space applications.

EDA is looking for an intern to assist in the design, assembly, and execution of experiments related to ongoing projects in the technology areas described above. EDA has a particular need for someone with interest and capability in the area of plasma physics and vacuum technology. EDA is a small company where all employees are involved in all aspects of projects, and the intern will become an active part of our ongoing programs. The MISNER intern will also potentially work in electrical engineering, programming, mechanical engineering, and other areas as well. Tasks will be diverse and challenging, requiring the personal motivation and the ability to learn quickly. In the process, the MISNER intern will be exposed to a wide variety of technologies and techniques and have an opportunity to contribute to the success of projects in a very real way. The internship may lead to long-term employment opportunities, depending on performance and funding availability.

Examples of assigned tasks include:

- Matlab and LabView programming to automate experimentation, data collection, and analysis
- Experiment hardware design, assembly, and test
- Plasma probe design, calibration, and performance analysis
- Gas and Plasma simulation

Requirements:

- Flexibility, motivation, and the desire to learn
- Junior or higher undergraduate standing, Master’s or Ph.D.
- U.S. citizenship

Desired:

- CAD experience, particularly in solidworks
- Experiment modeling experience, particularly in Comsol
- Plasma generation and/or measurement experience
- Electrical Engineering, particularly RF filter design
- Vacuum chamber and related technology experience
- Hands on experience with machine tools and mechanical assembly
2. Emagware.com • Ann Arbor, Michigan

Emagware.com is a division of EMAG Technologies Inc., a high-tech company specializing in innovative RF solutions. The MISNER intern will be a part of a high-energy team of RF and software engineers working in the areas of CAD development and scientific computing. This position involves development of web-based applications, writing PHP or C++ codes and testing of user interface feature or code modules. EMAG Technologies is working on a variety of military and commercial projects in the areas of RF, microwave and millimeter wave circuits, antennas, radar systems and radio wave propagation.

Summer Internship: Software Engineer

Examples of assigned tasks include:

- Developing web applications and JAVA Script or PHP applets
- Developing Windows applications and user interface programming
- Developing and testing scientific computing algorithms
- Participating in product cycle management
- Performing benchmark tests regarding speed, memory usage, and accuracy

Requirements:

- Senior undergraduate or Master’s student in Computer Science or Engineering or a related field
- Proficiency in C++, object-oriented programming and PHP or another scripting language
- Some previous coursework or exposure to engineering subjects
- Strong written and verbal communications, presentation, and planning skills

Desired:

- Familiarity with any of the following web languages: PHP, JavaScript, CSS, XML, ASP, Flash or ActionScript4
- Familiarity with Microsoft MFC, Visual Studio, and Visual.NET as well as LINUX environments
- Familiarity with OpenGL
- Familiarity with MySQL Database Management
- Familiarity with CVS or other Revision Control Environments
3. Emagware.com • Ann Arbor, Michigan

Emagware.com is a division of EMAG Technologies Inc., a high-tech company specializing in innovative RF solutions. The MISNER intern will be a part of a high-energy team of RF and software engineers working in the areas of CAD development and scientific computing. This position involves modeling and simulation of high frequency circuits and systems and wireless networks. EMAG Technologies is working on a variety of military and commercial projects in the areas of RF, microwave and millimeter wave circuits, antennas, radar systems and radio wave propagation.

**Summer Internship: CAD Application Engineer**

**Examples of assigned tasks include:**
- Testing new CAD software releases based on given test procedures and reporting bugs
- Creating new projects and test cases based on technical and research publications
- Performing benchmark tests regarding speed, memory usage, and accuracy
- Comparing software to competitors’ products

**Requirements:**
- Junior or Senior undergraduate or Master’s student in Electrical Engineering or a related field
- Some previous coursework or exposure to electromagnetic field and circuit theory
- Ability to learn new software packages quickly
- Strong written and verbal communications, presentation, and planning skills

**Desired:**
- Familiarity with CAD, CFD, FEA, or EM software tools
- Experience with software tools like Microwave Studios, HFSS, or ADS
- Familiarity with C++ and object-oriented programming
- Familiarity with MATLAB programming
4. SoarTech • Ann Arbor, Michigan

SoarTech, developer of TacAir-Soar, the world’s smartest intelligent pilot, and the SAGE visualization for the award-winning MAGIC robotic control suite (http://tinyurl.com/42mcdav), is seeking smart, energetic intern engineers to join us in advancing the state of the art in intelligent robotics control, human robot interactions, serious games, and other related fields. SoarTech is seeking skilled problem solvers with good design and programming skills in Java or C++ (Software Engineers) and specialists with experience in Artificial Intelligence (AI Engineers).

Intern engineers at SoarTech participate in all phases of development and have opportunities to learn and advance ideas, technologies, and software products. Intern engineers should be able to both think and act independently and support team members to effectively accomplish project objectives. Project teams consist of SoarTech staff, partners from industry and academia, as well as customers or sponsors.

**Examples of assigned tasks include:**
- Understand specifications and the ability to recommend changes to facilitate efficient and effective development
- Design, document, implement, debug, and test subsystems, and components
- Participate in integrated test sessions of components and full systems
- AI intern engineers are also expected to implement algorithms, knowledge bases, complex logic, and other AI technologies and support integration into larger components and products

**Requirements:**
- Enrolled in a BS or MS program in engineering, computer science, or a related discipline or equivalent experience
- Knowledge of either Java or C++ and the ability to use one or more IDEs (e.g., Eclipse)
- Desire to gain experience in solving challenging technical programs
- For AI Engineers, knowledge of AI technologies such as expert systems, cognitive architectures, agent-based systems, search algorithms, planning, machine learning, machine vision, natural language processing, or speech recognition
Aerophysics, Inc. is a space technology company located in Houghton, Michigan. Aerophysics performs early-stage research and development focusing on satellite technologies, including imaging, control, and propulsion. Our specialties include space situational awareness, electric propulsion and plasma diagnostics. We work with government customers such as the Air Force Research Laboratory, prime contractors, as well as other small research firms. Aerophysics is currently engaged in the development of a satellite-based space-situational awareness imager, advanced Hall thruster designs, and micro-propulsion devices.

Aerophysics is seeking a full-time software intern to assist in the development and testing of satellite instrumentation control software. The intern will have the opportunity to work with a small team of developers to implement and test real-time, embedded control code for a functional demonstration of a satellite imaging system. In addition to the primary software responsibilities, hands-on construction of system components and testing may also be required. The intern may also have the opportunity to develop software related to propulsion experiments and participate in the operation of the intern will also participate in debugging and testing of the device. The intern may also have the opportunity to develop software related to propulsion experiments and participate in the operation of micro-EP devices.

Examples of assigned tasks include:

- Develop code modules which control external hardware on an embedded processor
- Implement and improve attitude determination systems
- Design and develop basic image processing algorithms
- Participate in product testing and debugging
- Perform experiments on micropropulsion devices

Requirements:

- U.S. Citizenship
- Junior, senior, or Master's student in Computer Science or Electrical Engineering. Applicants seeking other degrees will be considered provided they can demonstrate software development experience
- Demonstrated proficiency in C and C++
- Demonstrated understanding of object-oriented design patterns
- Demonstrated ability to test and debug software and hardware systems

Desired:

- Understanding of common embedded system hardware, including CPU registers, memory systems, interrupts, and DMA
- Familiarity with real-time operating system development
- Familiarity with multi-threaded design
- Familiarity with Texas Instruments DSPs or similar embedded processors
- Familiarity with LabVIEW
- Familiarity with Linux system administration and kernel module development