Graduate and Undergraduate Opportunities for Applied Energy Research Experience

The Alaska Center for Energy and Power is on the cutting edge of applied energy research in Alaska. Since energy solutions are multi-disciplinary, ACEP builds teams across the university system to answer the questions that will drive Alaska’s energy future, providing our students with a big-picture perspective for practical problem solving.

ACEP relies on graduate and undergraduate students to be integral members of the team, working side by side with research faculty and other staff as well as our industry and agency partners. Our student employees have a unique opportunity to build their skills while solving real problems for Alaska’s communities.

Join our 2013 Summer Internship Program as a Research Technician!

ACEP has several student positions open for research of energy solutions, such as geothermal, hydrokinetics, high voltage direct current systems and wind-diesel hybrid applications. Interns may assist with other engineering projects or supporting projects including data collection, programming, website research and updates to our wiki. Interns will gain job experience working in the field, in the laboratory, or in the office alongside skilled staff, faculty and research engineers. As interns in the program, students will explore a weekly Energy for Alaska topic through lectures and field trips. In addition to a final product for individual projects, interns will create a presentation for peers and stakeholders. Apply now to ACEP’s summer internship program!

Application deadline is February 28, 2013.

Return application and cover letter to:
Melody Moen, Outreach Coordinator, Alaska Center for Energy & Power
melody.moen@alaska.edu  907-474-5402
www.uaf.edu/ACEP
Experience for Graduates and Undergraduates in Energy and Power Research

To apply, submit this application, your college transcripts (unofficial transcripts are acceptable), and a professional letter of reference from a faculty member familiar with your career interests, skills, and experience via email to ACEP Outreach Coordinator at melody.moen@alaska.edu. ALL APPLICATION MATERIALS MUST BE RECEIVED BY 5PM (ALASKA) ON FEBRUARY 28, 2013. Applications received after the application period closes on February 28, 2013 will be considered on a case-by-case basis.

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Are you a U.S. citizen or licensed to work in the U.S?

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How did you hear about this ACEP internship?

Please list reference information for an individual who will write a letter of recommendation on your behalf. This letter should be attached as part of your application package and sent electronically to melody.moen@alaska.edu.

**Professional Reference:**

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In the box below, please provide personal statement describing your interest in Alaska’s energy issues and/or energy and power research.

Please indicate preferred areas of research (check up to 3).

- Hydrokinetics
- Biomass
- Geothermal
- Wind
- Photovoltaics
- Diesel
- Battery Storage
- Electrical
- Mechanical
- Power electronics
- Technical Writing
- Wiki
- Public Education
- Environmental
In the box below, please briefly tell us about your career goals and expectations from the ACEP internship.

Thank you for your application. Electronically return application to melody.moen@alaska.edu. ALL APPLICATION MATERIALS MUST BE RECEIVED BY 5PM (ALASKA) ON FEBRUARY 28, 2013. Applications received after this date will be considered on a case-by-case basis.
Alaska Center for Energy and Power
2012 Summer Internship Program

Kelsey Boyer
Michigan Technical University
B.Sc. Mechanical & Biomedical Engineering

Amanda Byrd
University of Alaska Fairbanks
M.Sc. Natural Resource Management

Elliot Mitchell-Colgan
Lafayette College
Ph.D. Electrical & Computer Engineering

Amy Rath
University of Alaska Fairbanks
M.Sc. Natural Resource Management & Geography

Katelynne Lingaas
Cedarville University, Ohio
B.Sc. Mechanical Engineering
Intern Projects - Summer 2012
Subarctic and arctic focused research projects

- Hydrokinetic project
  - debris diversion device
- Power system
  - data collection
- Stranded renewable resources
- Solar thermal systems

- Organic rankine cycle
- Alaska Energy Wiki
- Economic analysis
- Modeling
- AK Energy Smart Curriculum
# Educational Opportunities for ACEP Interns

## ACEP Seminar Topics
- **Introduction to ACEP and an overview of energy & power research in Alaska**
- **Energy 101**
- **Energy in a social-political-historical context in rural Alaskan villages**
- **North Slope Issues**
- **Geothermal Research in Alaska**
- **Village Power System Integration**
- **Robotics**

## Summer Field Trips
- **Delta Wind Farm**
- **BioGas Landfill**
- **UAF Coal Plant and Diesel Energy Generator**
- **Alaska Sea Life Center’s Saltwater Heat Pump**
- **Usibelli Coal Mine**
- **Alaska Hydrokinetic Energy Research Center**
- **Chena Hot Springs and Geothermal Research**
2012 SUMMER SEMINAR CALENDAR

Week 1: May 25
Join the Alaska Center for Energy and Power for a welcome BBQ at ACEP’s Energy Technology Laboratory. Research Manager, Brent Sheets, will provide an Introduction to ACEP and an overview of Energy & Power Research in Alaska.

Week 2: June 1

Energy 101
Tom Johnson, Institute of Northern Engineering/ ACEP Research Engineer
Fairbanks-SKYPE-Anchorage

Week 3: June 8

Energy in a social-political-historical context in rural Alaskan villages
Ross Coen, Rural Energy Specialist, Tanana Chiefs Conference
Fairbanks-SKYPE-Anchorage

Week 4: June 15

Local Field Trip: Fairbanks students will attend a guided tour of the Delta Wind Farm. Anchorage students will attend a guided tour of the BioGas Landfill.

Week 5: June 22

North Slope Issues
Brent Sheets, ACEP Research Manager
Fairbanks-SKYPE-Anchorage

Week 6: June 29

Geothermal Research in Alaska
Gwen Holdmann, ACEP Director
Fairbanks-SKYPE-Anchorage

July 4th HOLIDAY: no presentation July 6

Week 7: July 13

Village Power System Integration
David Lockard, Alaska Energy Authority
Fairbanks-SKYPE-Anchorage
**Week 8: July 20**

*Local Field Trip:* Fairbanks students will attend a guided tour of the UAF Coal Plant and Diesel Energy Generator. Anchorage students will attend a guided tour of the Alaska Sea Life Center’s Saltwater Heat Pump.

**Week 9: July 27**

*Field Trip:* All Fairbanks and Anchorage students will participate in a guided tour of the *Usibelli Coal Mine in Healy, AK* and *Alaska Hydrokinetic Energy Research Center in Nenana, AK.*

*Usibelli Coal Mine*

Bill Brody, VP Customer Affairs 9:30 am – 1:30 pm

*Alaska Hydrokinetic Energy Research Center (AHERC) and Hydrokinetic Research*

Jack Schmid, Institute of Northern Engineering/ ACEP Research Engineer 3:00 – 4:00 pm

**Week 10: August 3**

*Institute of Northern Engineering research:*

Tom Johnson, Institute of Northern Engineering/ ACEP, Research Engineer

Robotics Team #3595 “Shrödinger's Hat”

(previously known as “Euler's Number Pi the Speed of Light”)

TBD

INE Electric Snow Machine
Fairbanks-SKYPE-Anchorage

**Week 11: August 10**

Depart MIRL 8:00 am – Return to MIRL 3:00 pm

*Local Field Trip:* All students will visit Chena Hot Springs and Geothermal Research Center. All interns will present a summary of their summer internship experience. Presenters ranked as the top five presentations will be provided an opportunity to present in Anchorage at the Northern Energy Science and Technology Fair (see attached flyer).
Syllabus
SUMMER SEMESTER 2012

ES 400/ 600 INTERNSHIP: METHODS FOR ENERGY AND POWER RESEARCH

Course Credits: 1 (P/F)        Contact Hours: variable, 800+ minutes of lecture

Course Prerequisites: Admission into the 2012 summer internship program with the Alaska Center for Energy and Power or permission of faculty sponsor.

Meeting Times and Location: Seminar will be conducted on Fridays as a scheduled lunch meeting and will be held at the Alaska Center for Energy and Power. Fairbanks interns will participate in person, Anchorage interns will participate via Skype. All presentation and discussion sessions will be held as a video-conference using Skype. Discussions will include lectures and literature reviews. Interns will also participate in scheduled field trips.

Fairbanks facility:  814 Alumni Drive, Fairbanks, Alaska 99775-5910
Anchorage facility:  500 L Street, Suite 201, Anchorage, Alaska 99501

Course Instructor: Gwen Holdmann        Office Hours: TBA
Director of the Alaska Center for Energy and Power
University of Alaska Fairbanks
407 Bunnell Building; P.O. Box 755910 Fairbanks, Alaska 99775-5910
Phone: (907) 590-4577 Fax: (907) 474-5475 email: gwen.holdmann@alaska.edu

Required Text: There is no required text for this course. Upon signing up for this course, interns will receive this syllabus, internship guidelines, and an orientation to ACEP.

Course Description: Under the supervision and mentorship of an ACEP researcher and qualified professionals in the field, interns will earn credit through exposure to research methods in a professional setting. Students will attend a weekly seminar, featuring presentations and
discussions on current and relevant topics, led by ACEP researchers. Students will gain an understanding of the field of energy and power research; become aware of pioneering work, existing projects, future research needs and the development of future projects; and gain exposure to potential employers in the field.

Course Goal: The Alaska Center for Energy and Power (ACEP) at the University of Alaska Fairbanks (UAF) is committed to providing an educational component to ACEP summer internships through the training of future professionals. Interns will gain exposure to research methods through presentations by experienced ACEP researchers and informative tours of field research stations. Through these experiences interns will develop valuable skills and gain insights into industry needs. Students may use these opportunities to obtain professional contacts. Interns will become integrated into the development of quality work products.

Potential Student Learning Outcomes:

1. Sharpen critical thinking skills.
2. Increase familiarity with methods for collecting, handling, summarizing, and/or analyzing data.
3. Improve communication of research concepts and ideas.
4. Gain an understanding of energy and power research.
5. Develop professional research skills.

Instructional Methods: Interns will gain knowledge of research methods through participation in an interactive seminar, which will include presentations, discussions, and research site visits. Class meetings will be held via video-conference, using Skype, and will be led by ACEP’s professional researchers.

COURSE POLICIES

Academic Honesty: All assignments submitted are to be entirely your own work, unless you receive specific instructions to the contrary. All aspects of your course work are covered by the Honor system. Any suspected violations (e.g. cheating, plagiarism) will be promptly reported and appropriate action(s) will be taken. Additionally, you will receive a zero for that assignment; two such violations and you will automatically fail. Honesty in your academic work will develop into professional integrity. The faculty and students of the University of Alaska Fairbanks will not tolerate any form of academic dishonesty.
EVALUATION / GRADING

PASS/ FAIL. To pass, interns must attend all presentations and field trips, unless given permission otherwise from their ACEP mentor or faculty sponsor. Interns must develop and present a poster or presentation summarizing their summer internship with ACEP.

**This course will not be offered for credit this summer.**

**Support/ Disabilities Services**: If you need accommodation because of a disability, please contact the faculty sponsor, Gwen Holdmann, as soon as possible in order to make the necessary arrangements. She will work with the Office of Disabilities Services (203 WHIT, 474-7043) to provide reasonable accommodation to students with disabilities.
SEMINAR CALENDAR

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All day 7:30 am – 5:00 pm

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Usibelli Coal Mine
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Week 10: August 3
1 hour

Institute of Northern Engineering research:
Tom Johnson, Institute of Northern Engineering/ ACEP, Research Engineer
Robotics Team #3595 “Shrödinger's Hat”
(previously known as “Euler's Number Pi the Speed of Light”)

TBD
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