EAPS WEEKLY NEWSLETTER

7 Nov. 2016| EAPS on Facebook | EAPS on Twitter

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Meetings/Events & Dept. News…………………………... ........1
Undergrad/Graduate Student News………………………….. 2
University News……………………………………………………..3

DEPARTMENT NEWS

EAPS COLLOQUIA

Shikha Sharma
(Faculty Candidate)
West Virginia University
Tuesday, November 8, 2016
3:00 PM
HAMP 2201

Jessica Larsen
University of Alaska, Fairbanks
Thursday, November 10, 2016
3:30 PM
HAMP 1252

Adam Stepanek
PhD Candidate
Tuesday, November 15, 2016
4:00 PM
HAMP 2201

Michael King
LASP, University of Colorado
Thursday, November 17, 2016
HAMP 1252

EAPS MEETINGS & EVENTS

COLLEGE OF SCIENCE-FALL FACULTY MEETINGS
November 29, 2016
3:30-4:30 PM
LWSN 3102A/B

EAPS-FALL/SPRING FACULTY MEETINGS
December 6, 2016
January 6, 2017
February 28, 2017
March 28, 2017
May 2, 2017
3:00 PM
HAMP 3201

AGU RECEPTION
(ALUMNI & FRIENDS RECEPTION)
December 15, 2016
7:00-9:00 PM
ThirstyBear, Billar Room
San Francisco, CA

CoS COMMENCEMENT
December 18, 2016
9:30 AM
Elliott Hall of Music

EAPS MINI-FACULTY RETREAT
January 6, 2017
3:00 PM
HAMP 2244

EAPS AWARDS BANQUET
April 17, 2017
Ross-Ade Pavilion, Buchanan Club

EAPS ALUMNI ADVISORY BOARD
April 18, 2017
8:30 AM-4:00 PM
HAMP 2201

http://www.eaps.purdue.edu/
EAPS HOLIDAY SCHEDULE

Thanksgiving: Nov. 24 & 25, 2016
Christmas: Dec. 23-26, 2016
Winter recess: Dec. 27, 28, 29, 2016
President’s Designated Holiday: Dec. 30, 2016
New Year’s Holiday: Jan. 2, 2017

EAPS FACULTY AND STAFF RESOURCE FUND

The EAPS Faculty and Staff Resource Fund provides faculty and full-time, permanent staff with a simple, open, and transparent way to request resources they need to be productive in their work. This is not intended to replace other sources (e.g. grants, discretionary accounts, start-up, competitive programs on campus, and usual supplies and expenses), rather it is to meet occasional needs that are important for individual productivity and advancement in cases where these other sources are not available to an individual. Examples include professional development course tuition, office needs, and professional conferences.

Procedure:

Applications to the fund should be sent via email (as a pdf) to the Assistant Department Head. Requests must include the following items and not exceed one page applicants name, position title, email address, a detailed, one paragraph description of what is being requested, a short explanation of how this will help the individual be productive in their work, amount requested (this program will accept requests between $200 and $2,000), constraints on what is being requested (e.g., a deadline for registration).

Request deadline is the 20th of each month. Decisions will be made by the 5th of the following month. All requests will be reviewed by a group including the Assistant Department Head, the Business Manager, and at least two members of the EAPS Executive Committee.

NASA ANNOUNCES A CALL FOR GRADUATE FELLOWSHIP PROPOSALS TO THE NASA EARTH AND SPACE SCIENCE FELLOWSHIP (NESSF) PROGRAM FOR THE 2017-2018 ACADEMIC YEAR. This call for fellowship proposals solicits applications from accredited U.S. universities on behalf of individuals pursuing Master of Science (M.Sc.) or Doctoral (Ph.D.) degrees in Earth and space sciences, or related disciplines. The purpose of NESSF is to ensure continued training of a highly qualified workforce in disciplines needed to achieve NASA’s scientific goals. Awards resulting from this competitive selection will be made in the form of training grants to the respective universities.

The deadline for NEW applications is February 1, 2017, and the deadline for RENEWAL applications is March 15, 2017.

The NESSF call for proposals and submission instructions are located at the NESSF 17 solicitation index page at http://nspires.nasaprs.com/ - click on “Solicitations” then click on “Open Solicitations” then select the “NESSF17” announcement. Also refer to “Program Specific Questions” and “Frequently Asked Questions” listed under “Other Documents” on the NESSF17 solicitation index page.

All proposals must be submitted in electronic format only through the NASA NSPIRES system. The faculty advisor has an active role in the submission of the fellowship proposal. To use the NSPIRES system, the faculty advisor, the student, and the university must all register. Extended instructions on how to submit an electronic proposal package are posted on the NESSF 17 solicitation index page listed

http://www.eaps.purdue.edu/

For further information contact Claire Macaulay, Program Administrator for NESSF Earth Science Research, Telephone: (202) 358-0151, E-mail: claire.i.macaulay@nasa.gov or Dolores Holland, Program Administrator for NESSF Heliophysics Research, Planetary Science Research, and Astrophysics Research, Telephone: (202) 358-0734, E-mail:hq-nessf-Space@nasa.gov.

WINTER BREAK 2016-2017 COURSE ANNOUNCEMENT

Approved Course: Caribbean Ecosystem Field Studies. They are accepting applications for their winter-break field course: Caribbean Ecosystem Field Studies

This course (ENST 391) is approved for 3 undergraduate semester credits through the Environmental Studies Program of the University of Montana at Missoula and is open to students in an ecosystem related department or major. Please click here with any questions.

VII EARTH SCIENCES CONVENTION (EXHIBITION OF PRODUCTS, NEW TECHNOLOGIES AND SERVICES)

The Cuban Geological Society (SCG) is inviting scientists, professionals, technicians, and university students of Geology, Geophysics, and Mining and related Geosciences, to participate in the VII Earth Sciences Convention, to be held at the International Conference Center in Havana, Cuba on April 3-7, 2017.

For further information, please contact: www.scg.cu; www.cubacienciasdelatierra.com geociencias@mnhnc.inf.cu Please see attached flier.

PUPS
PURDUE UNIVERSITY PLANETARY SCIENCE

There is a new student club called PUPS (Purdue University Planetary Science) to provide a sense of community for students who are interested in planetary sciences, as well as, providing encouragement and information about the future of planetary science. The goal is to increase awareness of and the interdisciplinary nature of planetary sciences.

Advisor: Briony Horgan.
E-mail: briony@purdue.edu

DISTINGUISHED DISCOVERY LECTURE SERIES
SUSTAINABLE SHALE OIL AND GAS NEEDS NEW ANALYTICAL AND PROCESSING METHODS

Vikram Rao
Executive Director, Research Triangle Energy Consortium, Advisor to the Chief Operating Officer RTI International, North Carolina

November 18, 2016
MRGN 121
10:30 AM

SAVE THE DATE: MORE THAN SKIN DEEP MEDICAL HUMANITIES SYMPOSIUM MONDAY, NOVEMBER 14, 2016

The Cancer, Culture, and Community group and the Purdue Medical Humanities program is pleased to announce MORE THAN SKIN DEEP, an all-day and evening symposium in Stewart Center on Monday November 14, launching Purdue’s new medical humanities program. All events are FREE and OPEN TO THE PUBLIC.

Guest speakers include:

Keith Wailoo, Townsend Martin Professor of History and Public Affairs at Princeton University
Data-flow computers, compared to conventional control-flow computers, offer speedups of 20 to 200 times (even 2000 times for some applications!), and power and size reductions by factors of up to 1/20. Please see the attached flyer for more details about this computing paradigm and the workshop. They encourage participants interested in the workshop to register for it by adding their names to the following ‘Google Docs’ link: https://docs.google.com/spreadsheets/d/1YwO_XhBO2iu1Cbd4imlW5hluhjLBXaqjCXZEca3c9Q/edit?usp=sharing

Please see attached flyer for more details.

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WRITING LAB AT PURDUE
At-A-Glance for Instructors, Faculty, and Advisors
Fall 2016

Main Location
Heavilon Hall Room 226
Monday - Thursday 9:00 AM - 6:00 PM
Fridays 9:00 AM - 1:00 PM

Appointments:
https://cla.purdue.edu/wlschedule

Satellite Locations:
Drop-in only—first come, first served
HSSE Library Collaborative Study Center
Mondays 6:00 - 9:00 PM

Latino Cultural Center
Tuesdays 6:00 - 9:00 PM

Mechanical Engineering (ME) 2nd Floor
Rooms 2138 & 2142
Wednesdays 6:00 - 9:00 PM

Please see attached informational sheet for more details.

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“SKILLS PERFORMANCE” TRAINING OPPORTUNITIES AVAILABLE FOR STAFF

Purdue University - Training offers a wide selection of extension courses for both personal and professional growth. Taught by experts in their fields, the courses
provide practical, hands-on experience. And, best of all, anyone can afford them. Take a look through their online catalog for courses that interest you. Then, register for the courses you want right now using the web site below!

Please click here to sign up for upcoming classes: https://www.eventreg.purdue.edu/training/Home.asp

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**STEM EDUCATION CONFERENCE AT PURDUE**

1/12/17

9:00 AM - 4:30 PM

Purdue will be hosting the 2nd Annual Indiana STEM Education Conference at Purdue on 1/12/17 from 9:00 AM to 4:30 PM. Proposals are due by 10/15/16. Email to carlacjohnson@purdue.edu. You will be notified of the decision on your proposal by 11/4/16.

Presenters will need to register for the conference at: https://goo.gl/5KbfKP

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### BIRTHDAYS

<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>Logan Judy</td>
<td>Nov. 6</td>
</tr>
<tr>
<td>Tim Filley</td>
<td>Nov. 10</td>
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<tr>
<td>Gerald Krockover</td>
<td>Nov. 12</td>
</tr>
<tr>
<td>Ken Ridgway</td>
<td>Nov. 12</td>
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</tbody>
</table>

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**IMPORTANT NOTICE ABOUT THIS NEWSLETTER**

This newsletter is used as the primary information source for current and upcoming events, announcements, awards, grant opportunities, and other happenings in our department and around campus. Active links to additional information will be provided as needed. Individual email announcements will no longer be sent unless the content is time-sensitive. We will continue to include our publications, presentations and other recent news items as well.

Those using paper copies of the newsletter should go to our newsletter archive on the EAPS website at http://www.eaps.purdue.edu/news/newsletters.html and click on News to access active links as needed. Material for inclusion in the newsletter should be submitted to Fallon McQuem (fmcquem@purdue.edu) by 5:00pm on Thursday of each week for inclusion in the Monday issue.

If it is in the newsletter, we assume you know about it and no other reminders are needed. For answers to common technology questions and the latest updates from the EAPS Technology Support staff, please visit: http://www.eaps.purdue.edu/resources/information_technology/index.htm

Also, as an additional resource for information about departmental events, seminars, etc., see our departmental calendar at http://www.EAPS.purdue.edu/events-calendar.html
**PURDUE UNIVERSITY**  
**Department of Earth, Atmospheric, and Planetary Sciences**  
**Colloquia – Fall 2016**  
**Thursdays at 3:30 PM, Room 1252 HAMP (unless noted)**

<table>
<thead>
<tr>
<th>Date</th>
<th>Speaker</th>
<th>Host</th>
<th>Title</th>
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<tbody>
<tr>
<td>Sept. 1</td>
<td>Joel Saylor, University of Houston</td>
<td>Ridgway</td>
<td>“Integrating Stable Isotopes and Basin Analysis for a Paleogene-Neogene Paleoelevation History of Southern Peru”</td>
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<td>Sept. 8</td>
<td>William McKinnon, Washington University in St. Louis</td>
<td>Melosh</td>
<td>“Pluto Revealed! Results from NASA’s New Horizons Mission”</td>
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<tr>
<td>Sept. 13</td>
<td>Wanchen Wu, PhD Candidate</td>
<td>Tung</td>
<td>“The Effects of Continental Aerosols on the Eyewall of a Typhoon”</td>
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<td></td>
<td><strong>Tuesday, 4:00PM, Room 2201/HAMP</strong></td>
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<tr>
<td>Sept. 15</td>
<td>Peter Colarco, NASA Goddard Space Flight Center</td>
<td>Harshvardhan</td>
<td>“Aerosol Modeling Applications in the NASA GEOS-5 Earth System Model”</td>
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<tr>
<td>Sept. 22</td>
<td>Oliver Boyd, U.S. Geological Survey</td>
<td>Gilbert/Freed</td>
<td>“Seismic Hazard and Geodesy in the New Madrid Seismic Zone”</td>
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<tr>
<td>Sept. 27</td>
<td>Sarah Bischoff, PhD Candidate</td>
<td>Flesch</td>
<td>“Breaking Down the Impact of Strength Heterogeneity on Deformation of the India-Eurasia Collision: A Numerical Modeling Approach”</td>
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<td><strong>Tuesday, 4:00PM, Room 2201/HAMP</strong></td>
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<tr>
<td>Sept. 29</td>
<td>Kevin Reed, SUNY-StonyBrook</td>
<td>Chavas</td>
<td>“High-resolution Global Simulations from Reduced Complexity to Future Projections”</td>
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<td>Oct. 4</td>
<td>Wendell Walters, PhD Candidate</td>
<td>Flesch</td>
<td>“Unraveling the “Fingerprints” of Nitrogen Oxides using Stable Isotopes: Implications for Source Partitioning and Evaluation of Atmospheric Oxidation Pathways”</td>
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<td><strong>Tuesday, 4:00PM, Room 2201/HAMP</strong></td>
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<td>Oct. 20</td>
<td>Fan-Chi Lin, University of Utah</td>
<td>Nowack</td>
<td>“Imaging the Yellowstone Magmatic and Hydrothermal System Using Seismic Tomography”</td>
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<tr>
<td>Oct. 25</td>
<td>Logan Dawson, PhD Candidate</td>
<td>Baldwin</td>
<td>“Examination of Mesoscale Feedbacks on Convective Scale Predictability During MPEX”</td>
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<td><strong>Tuesday, 4:00PM, Room 2201/HAMP</strong></td>
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<tr>
<td>Oct. 27</td>
<td>Allison Wing, Lamont-Doherty Earth Observatory</td>
<td>Chavas</td>
<td>“Clouds, Circulation, and Climate Sensitivity in Cloud Resolving Model Simulations of Self-Aggregation of Convection”</td>
</tr>
<tr>
<td>Nov. 1</td>
<td>Shaoqing Liu, PhD Candidate</td>
<td>Zhuang</td>
<td>“Quantifying Terrestrial Ecosystem Carbon Dynamics with Mechanistically-based Biogeochemistry Models and In Situ and Remotely Sensed Data”</td>
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<td><strong>Tuesday, 4:00PM, Room 2201/HAMP</strong></td>
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Nov. 3  Kristin Morell, University of Victoria  Host: Elliott  
“Lessons in the Landscape: Mountain Building and Seismic Hazards in Cascadia and the Himalaya”

Nov. 10  Jessica Larsen, University of Alaska, Fairbanks  Host: Elliott  

Nov. 15  Adam Stepanek, PhD Candidate  Advisor: Baldwin  
“Predictions of Severe Weather Environments by the Climate Forecast System Version 2 Model Suite”  
**Tuesday, 4:00PM, Room 2201/HAMP**

Nov. 17  Michael King, LASP  Host: Harshvardhan  
“Spatial and Temporal Distribution of Tropospheric Clouds Observed by MODIS on Board the Terra and Aqua Satellites”

Nov. 28  Tim Marshall, Haag Engineering  Host: Tanamachi  
“El Reno Tornado and Damage Survey”  
**Monday, 3:30PM, Room 2108/HAMP**

Dec. 1  Andy Davis, University of Chicago  Host: Caffee  
“Stardust in the Laboratory with CHILI”

Dec. 6  Christy Gibson, PhD Candidate  Advisor: Filley  
“”  
**Tuesday, 4:00PM, Room 2201/HAMP**
Abstract: The economic development of unconventional resources such as shale oil and gas depends, on the ability to find ‘sweet spots’ within the source rock. The source rocks have a high degree of geochemical, mineralogical and lithological heterogeneities. In order to maximize productivity, it is imperative to identify the zones that can be easily fractured and are likely to be the most productive. Integration of geochemical data into sequence stratigraphic models is one of the best ways to achieve this goal. Geochemical data can be used to understand controls on the spatiotemporal variations in total organic carbon and mineralogy, correlate lithological units from core to basin scale, and quantify the contribution of individual pay zones to co-mingled produced gas. In addition to the field development and production related issues, geochemistry also has widespread applications in understanding gas/fluid migration related to propagation of fractures into overlying and underlying zones and assessing any possible environmental impacts associated with oil and gas development. In this seminar, results from some ongoing projects will be presented that showcase how geochemistry can be used to extract and develop unconventional energy resources more efficiently and understand the environmental impact stemming from this development.
Okmok volcano, Aleutian Islands, Alaska, is a basaltic andesite shield volcano that contains two Pleistocene-Holocene, nested calderas from catastrophic eruptions 2050 and ~12,000 years ago. The most recent eruption from this frequently active volcano lasted 5-weeks (July 12 and August 23, 2008), was highly explosive, and caused disruptions to international air traffic. The eruption produced fine-grained tephra that covered most of northeastern Umnak Island. The eruption had a maximum Volcanic Explosivity Index (VEI) of 4, with eruption column heights up to 16 km during the opening phase. Several craters and a master tuff cone formed within the caldera as a result of phreatomagmatic explosions and accumulated tephra-fall and surge deposits. Ascending magma continuously interacted with an extensive shallow groundwater table within the caldera, resulting in the phreatomagmatic character of the eruption. Syn-eruptive explosion and collapse processes enlarged a pre-existing lake, created a second, entirely new lake, and formed new, deep craters. A field of ephemeral collapse pits and collapse escarpments formed where rapid groundwater withdrawal removed material from beneath capping lava flows. This was the first significant phreatomagmatic event in the U.S. since the Ukinrek Maars eruption in 1977. The focus of this seminar will be to explore the geology, geochemistry, and petrology of this fascinating, well-monitored and observed volcanic event.
A desire to improve understanding of subseasonal predictions of atmospheric conditions known to be directly correlated to the onset and maintenance of severe thunderstorms is the ongoing motivation for this research. Predictions from 29 years of Climate Forecast System Reforecast (CFSRR) output have been scrutinized for the spring (AMJ) months, and verified against Climate Forecast System Reanalysis (CFSR) data, with a climatological baseline generated from the long-term mean (32-year) of the CFSR.

The specific focus remains on the predictability of convective environments through the analysis of parameters with well-established correlations to severe weather – specifically convective available potential energy (CAPE) and deep layer vertical wind shear (VWS). Although inherently necessary for severe thunderstorms to occur, other catalysts, such as outflow boundaries and drylines, dictate whether or not convection initiation occurs. However, the non-negligible relationship between severe weather and CAPE / VWS can be used to distinguish an atmosphere supportive of rotating storms from one supportive of mainly non-severe convection.

Early results from operational CFSv2 analyses indicated potential value above and beyond a climatologically-based prediction for specified sub-regions of the central and eastern United States at leads as long as multiple weeks, based upon trends in root-mean-squared difference (RMSD) and Spearman rank correlation coefficients. A series of methodologies previously utilized for the operational CFSv2 have subsequently been applied to the CFSRR output, and are supplemented by additional techniques, including generation of cumulative distribution functions (CDFs), lagged average ensemble forecasting techniques, and complimentary procedures for determining model skill, all with a concerted effort to address inherent biases in the CFSv2 output of the aforementioned parameters. Furthermore, periods in which the CFSv2 exhibits noteworthy skill are further scrutinized to determine potential connections to the large scale pattern, based upon known skill of the model to predict features associated with El Nino-Southern Oscillation (ENSO) and the Madden Julian Oscillation (MJO) through established teleconnections.

Tuesday, November 15, 2016
4:00 p.m.
Room 2201 HAMP

Refreshments at 3:30 pm
Room 2201/ HAMP
Cloud properties have been retrieved from the Moderate Resolution Imaging Spectroradiometer (MODIS) over 16 years of continuous observations from Terra and over 14 years from Aqua. A comprehensive set of operational algorithms for the retrieval of cloud physical and optical properties (optical thickness, effective particle radius, water path, thermodynamic phase) have recently been updated using the new ‘Collection 6’ processing stream and are publicly available through the MODIS Adaptive Processing System (MODAPS) at NASA GSFC. The archived products from these algorithms include 1 km pixel-level (Level-2) and global gridded Level-3 products. The cloud products have applications in climate change studies, climate modeling, numerical weather prediction, as well as fundamental atmospheric research. In this talk, I will summarize the available Level-2 and Level-3 cloud properties and their associated statistical data sets, and show Terra and Aqua results from the available Collection 6 reprocessing effort. Results include the latitudinal and spatial distribution of cloud optical and radiative properties for both liquid water and ice clouds, as well as joint histograms of cloud optical thickness and effective radius for selected geographical locations around the world.

Thursday, November 17, 2016
3:30 p.m.
Room 1252 HAMP

Refreshments at 3:00 pm
Room 2201/ HAMP
9th Annual PURDUE RECEPTION at the AGU Fall Meeting

Thursday, December 15
7:00 PM - 9:00 PM

ThirstyBear Restaurant, Billar Room
661 Howard Street, San Francisco

Complimentary heavy hors d’oeuvres

Co-sponsored by:
Department of Earth, Atmospheric, and Planetary Sciences (EAPS)
and
Purdue Climate Change Research Center (PCCRC)
Approved Course: Caribbean Ecosystem Field Studies
Please Distribute This Winter-Break 2016-17 Session Flyer

Can you please help me by distributing this flyer or the below information to students who may be interested? Or, feel free to forward this on to anyone who may be interested.

We are accepting applications for our winter-break field course: Caribbean Ecosystem Field Studies. This course (ENST 391) is approved for 3 undergraduate semester credits through the Environmental Studies Program of the University of Montana at Missoula and is open to students in an ecosystem related department or major.

Thank you for considering to make this rewarding field opportunity available to your students. This is our 10th year of programming to over 450 satisfied students and we hope to serve some of yours. Please email me with any questions.

Thank you!
- Prof. Steve Johnson
Copy/Paste Text Version Below:

WINTER-BREAK 3-CREDIT FIELD COURSE OPPORTUNITY!
Caribbean Ecosystem Field Studies - Full Details - http://www.ecofs.org

- Study, snorkel & SCUBA dive along the Caribbean coast of Mexico *
  December 28, 2016 - January 16, 2017

An opportunity to apply your classroom & textbook learning while immersed in an incredible marine ecosystem setting!

- Gain valuable career skills in hands-on scientific field research *
- Earn 3 undergraduate transfer credits *
- SCUBA and snorkel daily to study the coral reef ecosystem *

Open to students from all universities & majors | Accredited by the University of Montana at Missoula's Environmental Studies | Program: ENST 391- for 3 undergraduate semester transfer credits.

Direct questions to Professor Steve Johnson, Course Director at steve@EcoFS.org

Ecosystem Field Studies
303-859-0173 | steve@ecofs.org | Visit Our Site

Ecosystem Field Studies, PO Box 1967, Boulder, CO 80305
SafeUnsubscribe™ barbara@purdue.edu
Certificate in Environmental and Sustainability Studies Plan of Study
Draft 10.22.16

Draft of Mission Statement

The Certificate in Environmental and Sustainability Studies (CESS) will give students working in multiple disciplines across Purdue a broad exposure to how environmental and sustainability challenges and solutions are conceived, represented, and researched in the Humanities, Social Sciences, Agriculture, and STEM disciplines. The CESS program will introduce students to a wide range of environmental issues from diverse perspectives so that they may more thoroughly comprehend and critically evaluate today’s environmental and sustainability challenges.

Draft of Learning Outcomes

Students acquiring the Certificate in Environmental and Sustainability Studies (CESS) will be expected to achieve the following learning outcomes:

1) **KNOWLEDGE**: Students will be able to identify, describe, and relate the diverse causes (social, cultural, political, economic, historical, scientific) and consequences of pressing environmental and sustainability challenges, such as climate change, resource scarcity, biodiversity, population growth).

2) **COMPREHENSION**: Students will be able to distinguish, paraphrase, and translate different disciplinary perspectives on these key environmental and sustainability challenges.

3) **ANALYSIS**: Students will familiarize themselves with the efficacies, and learn to push the boundaries, of different disciplinary approaches by comparing and contrasting solutions to environmental issues (scientific, technical, engineered, social, economic, historic, and ethical components).

4) **SYNTHESIS**: Students will learn to combine different disciplinary approaches by synthesizing, reorganizing, and reformulating diverse viewpoints.

5) **APPLICATION**: Students will demonstrate ability to communicate across disciplines on environmental and sustainability problems through the production of appropriate interdisciplinary instructional assignments. Students will illustrate their diversity of knowledge by applying their work in multi-disciplinary teams on sustainability challenges.

6) **EVALUATION**: Students will estimate the efficacy of different disciplinary approaches through assessing that efficacy in real-world applications.
**Preliminary Draft Plan of Study**

**Summary**

1) **Required 3-credit course: Core Concepts in Environmental and Sustainability Studies.** (New, team-taught interdisciplinary course introducing diverse perspectives on Environment and Sustainability problems, and skills in interdisciplinary communication and teamwork. This would be an annual course, offered every year starting in fall 2017).

2) **Required 9 additional credits: 3 additional courses required from selection of existing or new classes across departments in three categories:**

   - *Social, Economic, and Political Dimensions*

   - *Stewardship, Conservation, and Management Dimensions*

   - *Science, Engineering, and Technological Dimensions*

   One course required from each area. The plan is for these courses to be able to count for both the certificate and other existing academic requirements.

3) **Program to be administered by Discovery Park Center for the Environment, in consultation with sponsor college (CLA),** following administrative model of Burton Morgan Center Certificate in Entrepreneurship.

**Detailed Course Options**

Students participating in the Certificate in Environmental and Sustainability Studies are required to complete at least one course under each of the following three categories. By doing so, students will learn about the diversity of causes and consequences of environmental and sustainability challenges, and about the different disciplinary approaches to addressing these issues.

A preliminary list of courses that count towards each category is provided on the following page. Other courses may be counted, with the approval of the certificate administrator, provided that they meet the criteria defining one of the categories.

*Category 1: Social, Economic, and Political Dimensions*

This category emphasizes how knowledge of human behavior furthers our understanding of environmental and sustainability impacts. It includes courses that examine human interaction with the environment on a range of scales, from individual decision-making to regional, national, or global institutions. Courses relate to environmental outcomes and sustainability, focusing on economics; ethics and values;
individual and societal behaviors and interactions; and politics, policy analysis, or decision-making.

**Category 2: Stewardship, Conservation, and Management Dimensions**

This category focuses on the application of sustainability or environmental principles to planning and managing human interactions with the environment. This may include courses related to conservation biology; natural resource management; population and community ecology; restoration of ecosystem services; land use and urban planning; sustainable agriculture; and climate change adaptation or mitigation.

**Category 3: Science, Engineering, and Technological Dimensions**

This category focuses on the scientific and technological tools needed to understand and address environmental and sustainability challenges, particularly in the engineered and built environment. This may include coursework related directly to basic and applied ecology and environmental science, the development of emerging technologies for renewable energy, energy efficiency, or sustainable construction; it may also include instruction in systems analysis tools with applications to environmental or sustainability challenges, such as integrated assessment modeling or lifecycle assessment, or study of interactions between the environment and infrastructure.

Courses qualifying for each category:

**Category 1: Social, Economic, and Political Dimensions**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>ABE 32500</td>
<td>Agriculture Soil and Water Resource Engineering</td>
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<tr>
<td>AD 39700</td>
<td>Liberal Arts Sustainability in the Built Environment</td>
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<tr>
<td>AGEC 20400</td>
<td>Agriculture Introduction to Resource Economics &amp; Env Policy</td>
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<tr>
<td>AGEC 25000</td>
<td>Agriculture Economic Geography of World Food and Resources</td>
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<tr>
<td>AGEC 40600</td>
<td>Agriculture Natural Resource &amp; Environmental Economics</td>
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<tr>
<td>AGEC 52500</td>
<td>Agriculture Environmental Policy Analysis</td>
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<tr>
<td>ANTH 23500</td>
<td>Liberal Arts Great Apes and Conservation</td>
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<tr>
<td>ANTH 31300</td>
<td>Liberal Arts Archaeology of North America</td>
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<tr>
<td>ANTH 32700</td>
<td>Liberal Arts Environment and Culture</td>
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<tr>
<td>ANTH 33500</td>
<td>Liberal Arts Primate Behavior</td>
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<tr>
<td>ANTH 37700</td>
<td>Liberal Arts Anthropology of Hunter-Gatherer Societies</td>
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<td>ANTH 37900</td>
<td>Liberal Arts Native American Cultures</td>
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<tr>
<td>ANTH 59200</td>
<td>Liberal Arts GIS for Social Scientists</td>
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<tr>
<td>CE 59700</td>
<td>Engineering Dynamics of Social-Ecological and Technological Systems</td>
</tr>
<tr>
<td>EAPS 36000</td>
<td>Science Great Issues in Science and Society</td>
</tr>
<tr>
<td>ENG 23400</td>
<td>Liberal Arts Ecological Literature</td>
</tr>
<tr>
<td>ENG 34100</td>
<td>Liberal Arts Humans, the Environment, and the End(s) of Nature</td>
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</table>
Category 2: Stewardship, Conservation, and Management Dimensions

AGRY 29000 Agriculture Introduction to Environmental Science
BTNY 21100 Agriculture Plants and the Environment
CE/EEE 35500 Engineering Engineering Environmental Sustainability
EAPS 11300 Science Introduction to Environmental Science
EAPS 32700 Science Climate, Science and Society
FNR 10300 Agriculture Introduction to Environmental Conservation
FNR 37500 Agriculture Human Dimensions of Natural Resource Management
FNR 40800 Agriculture Natural Resources Planning
FNR 47000 Agriculture Fundamentals of Planning
HORT 42200 Agriculture Vegetable and Herb Production
HORT 44200 Agriculture Sustainability in the Managed Landscape
HTM 37000 HHS Sustainable Tourism And Responsible Travel
MET 42400 Polytechnic Green Processes and Sustainability
NRES 45000 Agriculture Soil Conservation & Water Management
TECH 52200 Polytechnic Sustainability Foundations

Category 3: Science, Engineering, and Technological Dimensions

ABE 32500 Agriculture Soil and Water Resource Engineering
AGEC 59600 Agriculture Global Change & the Challenge of Sustainably Feeding a Growing Planet
AGRY 28500 Agriculture World Crop Adaptation and Distribution
ASM 33600 Agriculture Environmental Systems Management
BCM 41900 Polytechnic Sustainability Construction
BIOL 48300 Science Environmental & Conservation Biology
BTNY 21100 Agriculture Plants and the Environment
CE/EEE 35500 Engineering Engineering Environmental Sustainability
CE 49700 Engineering Community Resilience: From Urban to Rural
<table>
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<th>Code</th>
<th>Department</th>
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<th>Course Title</th>
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<tr>
<td>EAPS</td>
<td>Science</td>
<td>10000</td>
<td>Planet Earth</td>
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<td>EAPS</td>
<td>Science</td>
<td>32000</td>
<td>Physics of Climate</td>
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<td>EAPS</td>
<td>Science</td>
<td>37500</td>
<td>Great Issues: Fossil Fuels, Energy &amp; Society</td>
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<td>EAPS</td>
<td>Science</td>
<td>52700</td>
<td>Principles of Terrestrial Ecosystem Ecology</td>
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<tr>
<td>EAPS</td>
<td>Science</td>
<td>52900</td>
<td>Modeling Ecosystems and Biogeochemical Cycles</td>
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<td>EAPS</td>
<td>Science</td>
<td>58400</td>
<td>Hydrogeology</td>
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<td>EEE</td>
<td>Engineering</td>
<td>43000</td>
<td>Industrial Ecology &amp; Life Cycle Analysis</td>
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<td>FNR</td>
<td>Agriculture</td>
<td>10300</td>
<td>Introduction to Environmental Conservation</td>
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<td>FNR</td>
<td>Agriculture</td>
<td>12500</td>
<td>Environmental Science and Conservation</td>
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<td>Agriculture</td>
<td>21000</td>
<td>Natural Resource Information Management</td>
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<td>FNR</td>
<td>Agriculture</td>
<td>35700</td>
<td>Fundamental Remote Sensing</td>
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<td>Agriculture</td>
<td>35900</td>
<td>Spatial Ecology and GIS</td>
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<td>Agriculture</td>
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<td>Fundamentals of Planning</td>
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<td>HTM</td>
<td>Health &amp; Human Sciences</td>
<td>37000</td>
<td>Sustainable Tourism And Responsible Travel</td>
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<td>MET</td>
<td>Polytechnic</td>
<td>42400</td>
<td>Green Processes and Sustainability</td>
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<td>NRES</td>
<td>Agriculture</td>
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<td>Environmental Decision Making</td>
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<td>Science</td>
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<td>TECH</td>
<td>Polytechnic</td>
<td>52400</td>
<td>Sustainability Analysis Assessment</td>
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<tr>
<td>TECH</td>
<td>Polytechnic</td>
<td>52300</td>
<td>Sustainable Critical Infrastructures</td>
</tr>
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</table>
In 2012, the University created a performance evaluation policy for staff which included a focus on capturing the professional development activities of staff throughout the year. The College of Science firmly believes that participation in professional development provides long lasting benefits to both the individual staff member and their department. As such, the College desires to support these activities.

**College of Science Professional Development Philosophy:**

- Professional development participation should be available to all full- or part-time, permanent staff—clerical, service, administrative/professional and managerial/professional.
- Professional development should focus on developing skills that will prepare staff to advance at Purdue or to perform their current duties more effectively.
- All supervisors are strongly encouraged to allow appropriate amounts of time for each staff person throughout the year to attend trainings that will help them accomplish their professional development goals. Approval for participation in such activities should be based on the business needs of each area.

**College of Science Professional Development Fund:**

In order to support staff professional development activities, the College has created a Professional Development Fund to financially assist with participation in trainings that involve fees or the purchase of training materials.

**Professional Development Fund Guidelines:**

- Professional Development funds are to be used to support College of Science staff’s participation in activities that will assist them in developing skills that will prepare staff to advance at Purdue or to perform their current duties more effectively.
- Award applications will be requested three times annually with approximately 10 awards per call. Funds requested may be used to defray costs associated with attending professional meetings or seminars, to participate in workshops, or to enroll in professional-oriented courses related to employment responsibilities. The funds must be utilized within two application cycles (Spring awards utilized by the end of Fall, etc.).
- Applications for amounts of up to $1000 will be accepted.
- Individuals are eligible for one award per calendar year.

**Application Deadlines:**

- Spring Application Call – application due by first Monday in October; decisions made by November 30
- Summer Application Call – application due by first Monday in March; decisions made by April 30
- Fall Application Call – application due by first Monday in June; decisions made by July 31
DataFlow SuperComputing

This course presents the DataFlow SuperComputing paradigm, defines its advantages and sheds light on the related programming model with hands-on coding experience. DataFlow computers, compared to ControlFlow computers, offer speedups of 20 to 200 (even 2000 for some applications), and power and size reductions of up to 1/20. However, the programming paradigm is different, and has to be mastered. The course explains the paradigm of programming in space, using Maxeler (a provider of multiscale dataflow computing systems) as an example, and gives an overview of ongoing research in the field. Examples include DataEngineering, DataMining, FinancialAnalytics, ImageProcessing, etc. The course also covers advanced DataFlow issues like: Compilation, OS, and methods for speed-up maximization, using tools like WebIDE and MaxIDE. DataFlow potentials are discussed through the notions introduced by four Nobel Laureates: Richard Feynman, Ilya Prigogine, Daniel Kahneman, and Andre Geim.

Registration: Please sign-up online at the following Google Docs link: https://docs.google.com/spreadsheets/d/1YwO_XhBOziu1Cbd4imlW5hluhJLBXagj_CXZEca3c9Q/edit?usp=sharing

Location & Schedule: HAMP-3144 Computing Lab:
Nov 15 (Tue) 9:00am - 10:00am: Introduction to DataFlow Computing
10:00am - 11:00am: Concepts of DataFlow Computing
11:00am - 12:00pm: Applications of DataFlow Computing
12:00pm - 1:00pm: Break
1:00pm - 2:00pm: Details of Programming in Space
2:00pm - 3:00pm: Selected Examples and Class Projects
3:00pm - 4:00pm: Advanced Issues and Open Research Problems

Supplementary Events: HAMP-4114:
Nov 16 (Wed) 1:00pm - 5:00pm: Office Hours
Nov 17 (Thu) 1:00pm - 5:00pm: Analysis of Class Projects and Joint Research (maxeler.mi.sanu.ac.rs)
Nov 18 (Fri) 1:00pm - 5:00pm: Discussion of Research Projects (appgallery.maxeler.com)

Interesting Facts and Links:
- A recent study from Tsinghua University in China reveals that, for Shallow Water Weather Forecast, which is a BigData problem, on the 1U level, the Maxeler DataFlow machine is 14 times faster than the Tianhe machine. Tianhe is rated #1 on the Top 500 list of fastest computers (based on Linpack, which is a smalldata benchmark).
- Maxeler resources: https://appgallery.maxeler.com and https://webide.maxeler.com

References:
  (The IET 2014 Premium Award for Computing and Digital Techniques).

About the speaker:
Prof. Veljko Milutinovic received his PhD from the University of Belgrade, spent about a decade on various faculty positions in the USA (mostly at Purdue University), and was a co-designer of the DARPA's first GaAs RISC microprocessor. Later he taught and conducted research at the University of Belgrade in Serbia, in EE and MATH. Now he serves as the Chairman of the Board of the Maxeler operation in Serbia. His research is mostly in datamining and dataflow computing, with the emphasis on algorithms and mappings of algorithms onto architectures. His co-authored paper on matrix multiplication for dataflow received "The IET Premium Award for 2014" (meaning the single best paper in IET Computing for 2012 and 2013). His paper on the research methodology was published in an ASCE journal and also received a Premium Award for 2014. He is a Fellow of the IEEE and a Member of Academia Europaea. He has over 40 IEEE or ACM journal papers, over 400 Thomson-Reuters citations, and about 4000 Google Scholar citations (including those that miss-spell his name :).
VII EARTH SCIENCES CONVENTION
EXHIBITION OF PRODUCTS, NEW TECHNOLOGIES AND SERVICES

XII Geology Congress (GEOLOGIA ‘2017)
IX Geophysics Congress (GEOFISICA ‘2017)
VII Mining Congress (MINERIA ‘2017)
VI Oil and Gas Congress (PETROGAS ‘2017)
XIII Informatics and Geosciences Congress (GEOINFO ‘2017)

“Geosciences at services of Society and Development”

The Cuban Geological Society (SCG) is pleased to invite scientists, professionals, technicians and university students of Geology, Geophysics, Mining and related Geosciences, to participate in the VII Earth Sciences Convention, and Exhibition of Products, New Technologies and Services, to be held at the International Conference Center of Havana, Cuba on April 3-7, 2017.

The convention welcomes presentations about Cuba, the Caribbean and other regions or in general about the geology, geophysics and mining experiences in the search and management of natural resources, including minerals (metals, industrial), water, oil and gas, construction, earthquake research and other geohazards, education of geosciences; as well as any other related to the sustainable exploitation of natural resources.

We invite professional societies, institutions and non-government organizations to organize workshops, round tables and meetings during the Convention.

Dr. Manuel A. Iturralde Vinent
President of the Cuban Geological Society

www.scg.cu; www.cubacienciasdelatierra.com
geociencias@mnhnc.inf.cu
Hello, we’d like to take this time to update you on Writing Lab news.

We now offer online appointments for clients, who can easily schedule one-to-one consultations at https://cla.purdue.edu/wlschedule. Clients can select convenient times and choose one of our highly trained consultants for face-to-face or online feedback.

In addition, we’ve been working with Purdue’s Institutional Research office to learn more about Writing Lab users. Our initial results indicate that when students have sessions with tutors in the Writing Lab, especially those who are enrolled in English 106, they have significantly higher semester GPAs than their peers who do not come to the Writing Lab.

We are always looking for ways to collaborate with faculty to support writers across disciplines. If you’d like to discuss how we can work with you and your students, please contact us.

Best wishes for a great semester.

Harry C. Denny, Ph.D. • hdenny@purdue.edu
Associate Professor of English and Writing Lab Director

Tammy Conard-Salvo • tcsalvo@purdue.edu
Associate Director

Featured FAQ

What appointment options do you offer?

Students can choose from three appointment types for one-to-one consultations:

- **In-person**: students meet face-to-face with one of our tutors in the Writing Lab or a satellite location.
- **Online**: Students can discuss their work with a tutor in real time using a text-based chat interface.
- **eTutoring**: Also known as asynchronous tutoring, students upload their documents in advance and receive comments at the appointed time.

More online at [owl.english.purdue.edu/writinglab/facultyfaq](https://owl.english.purdue.edu/writinglab/facultyfaq)

Main Location

Heavilon Hall Room 226
Monday – Thursday 9:00 AM – 6:00 PM
Fridays 9:00 AM – 1:00 PM

Appointments:
https://cla.purdue.edu/wlschedule

Satellite Locations

Drop-in only—first come, first served

- **HSSE Library Collaborative Study Center**
  Mondays 6:00 – 9:00 PM
- **Latino Cultural Center**
  Tuesdays 6:00 – 9:00 PM
- **Mechanical Engineering (ME) 2nd Floor**
  Rooms 2138 & 2142
  Wednesdays 6:00 – 9:00 PM

Writing Lab services are FREE and available to all Purdue students, faculty, and staff.

Heavilon Hall Room 226 • (765) 494-3723 • https://owl.english.purdue.edu/writinglab

@PurdueWLab • /PurdueUniversityWritingLab
One-on-One Tutorials
We offer free tutorials on an appointment basis. Writers can bring any document to the Writing Lab, at any stage of the writing process. Sessions commonly help with the following:

- Clarification: understanding an assignment
- Invention: brainstorming, coming up with ideas, discovering a focus
- Organization: ordering ideas, building an argument
- Revision: revising for clarity and coherence

Our graduate tutors can assist students with a variety of writing tasks, including writing in the disciplines. Our business and professional writing consultants are specialists in employment writing, memos, personal statements, and reports. Our undergraduate teaching assistants help students taking first year composition courses (English 106 and 108). All of our tutors undergo rigorous training.

The student FAQs at https://owl.english.purdue.edu/writinglab/policies answer common questions about our tutorial sessions and offer tips on how best to prepare for sessions.

Students can now schedule appointments online. In addition, our satellite locations offer drop-in hours in the evenings at various locations. Please see https://owl.english.purdue.edu/writinglab for hours of operation and location information.

ESL Services
The Purdue Writing Lab offers a range of services to non-native speakers of English, covering writing and reading skills and conversational fluency:

- Tutorials for feedback on writing projects
- Self-study resources (books, CD-ROMs) for language skills practice
- Daily conversation groups (open to all non-native speakers enrolled at Purdue) for improving oral fluency

For more information on in-lab services for ESL learners, see https://owl.english.purdue.edu/writinglab/esl.

Course-specific Resources
The Writing Lab is committed to Writing Across the Curriculum at Purdue, and we welcome ideas for collaboration with other disciplines in the university. We encourage you to submit your course syllabus and assignment descriptions to the Writing Lab to help us better assist your students in their tutorials. We are also available to consult with instructors about assigning and responding to student papers, encouraging students' use of the Writing Lab, and developing ideas for special projects connected with writing. To learn more or request a consultation, visit https://owl.english.purdue.edu/writinglab/consultation.

Experienced tutors are also available to provide your class with interactive presentations on the resources available to students at the Writing Lab. We also offer classroom workshops on writing topics that can be tailored to specific class projects on a limited basis. You can learn more and request a workshop for your class at https://owl.english.purdue.edu/writinglab/workshops/index.php.

Purdue’s Online Writing Lab (OWL)
The Purdue OWL (https://owl.english.purdue.edu) offers a wide variety of materials, presentations, and YouTube videos (https://www.youtube.com/OWLPurdue) to the Purdue University community and to users around the globe. The Purdue OWL also posts updates on Writing Lab events and produces the Purdue OWL News (https://owl.english.purdue.edu/purdueowlnews). Instructors and students use the OWL to:

- Access regularly-updated handouts on writing process, basic writing, and document design
- Find resources for English as a Second Language students
- Download classroom-ready PowerPoint presentations on a number of writing topics

Heavilon Hall Room 226 • (765) 494-3723 • https://owl.english.purdue.edu/writinglab
@PurdueWLab • /PurdueUniversityWritingLab