Contact information:
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Course delivery: Spring 2021 EPET 201/ME 201 'Exploration of the Solar System' will be delivered online asynchronous. Lectures will be provided as narrated PowerPoint presentations on Laulima, the University's teaching support system. All homework assignments and semester projects will be managed through Laulima and Zoom meetings arranged as needed.

Office Hours: A weekly Zoom meeting will be held on Wednesdays at 12:00 noon HST. Additional office hours are available by appointment.

Course Materials:
At the beginning of the semester or a major instructional section all instructional materials will be posted on Laulima in the EPET 201/ME 201 Resources folder.

Website: Computer access is required for this course. Homework assignments, reading assignments, course PowerPoint presentations and other course materials are posted on Laulima. Please check the Laulima resources folder for pre-class assignments before the class period! Please pay attention to class announcements provided through Laulima.

Description: EPET 201/ME 201, Exploration of the Solar System, is an introductory course for the EPET certificate aimed at any science or engineering student interested in the history and technology behind Solar System exploration and the available resources on other planetary bodies. The course will introduce students to the diverse sets of robotic spacecrafts, rovers, and landers sent to explore the various planetary bodies in our Solar System. Course topics will include suites of remote sensing instruments used to collect a variety of data, flight plans (fly-by, orbiter, or lander) of planetary missions.

Students will explore the key attributes of different planetary bodies in the Solar System (e.g., planetary environments, atmospheric conditions, planetary materials, and degree and types of geologic activity), and the basics of sensor design and operation. In this course, students will work in small teams to design their own hypothetical missions to a planetary

object of their choice and to develop both a detailed understanding of an object in the Solar System as well as the spacecraft performance needed to investigate this body.

Class contact hours: In the 2021 spring semester EPET 201/ME 201delivery there will be no direct class contact hours except for scheduled Zoom office hours (W 12:00 noon HST) and Zoom meetings arranged by appointment to discuss/advance class group projects. Zoom office hours and Zoom project meetings will be an important tool for the discussion and progress of projects. Please plan to participate regularly in scheduled office hours.

Learning Objectives/Course Objectives

University-Level Learning Objectives

The design and structure of the course delivers learning outcomes aligned with the University of Hawai‘i Institutional Learning Objectives for Undergraduate Students. The course:

- Gives in depth experience in the conduct of scientific inquiry and research
- Engages students in continuous practice with critical and creative thinking
- Is structured around procedures of conducting research in Earth and planetary science
- Engages students through intensive interaction with instructors and peers by means of classroom activities and projects
- Directly cultivates the habits of scholarly inquiry and intellectual curiosity, including inquiry across disciplines

Department-Level Learning Objectives

- Students can explain the relevance of solar system exploration outcomes to human needs
- Students can apply knowledge of relevant research methods, and the supporting disciplines to solve real world problems
- Students use the scientific method to define, critically analyze, and solve a problem in solar system exploration
- Students can report solar system exploration knowledge in both oral presentations and written reports
- Students can evaluate, interpret, and summarize the basic principles of solar system science, and their context in relationship to other core sciences to explain complex phenomena

Course-Level Student Learning Objectives:

1. Explain how the Scientific Method works, apply it to evaluate good versus bad science, and to analyze and assess data and draw conclusions about the world
2. Develop a better understanding and appreciation for the world we live and our solar system.
3. Improve cooperation, communication, and teamwork skills by collaborating in writing, presenting, and displaying data to communicate your knowledge, analysis and synthesis of data and ideas, and assessment of what they mean.

Topics

Exact content and order of topics will depend on progress and student interest:
Background on history of Solar System.
Properties of terrestrial planets and their moons and asteroids
Properties of the Jovian planets, icy bodies, and dwarf planets.
Science as a process.

Sensors for planetary exploration.
Engineering of spacecraft for planetary missions.
Designing planetary exploration missions.

Homework
Homework will count 20% toward your grade. EPET 201/ME 201 homework and due dates will be posted on Laulima, either completed on Laulima, or via submission of completed assignments to a student's personal drop box on Laulima.

Group Projects
Two EPET 201/ME 201 group projects will count 80% of the towards your grade (of the 80%, project 1 will contribute 30% and project 2 50%). Project requirements and due dates will be posted on Laulima.

Grading
Grading is not curved and therefore everyone can potentially get an A. Grading will be based on homework and each individual's grades in the group projects.

Percentage	Activity
20%	Homework
30%	Individual's Grade on Group Project 1
50%	Individual's Grade on Group Project 2

Letter grade breakdown:
A- = 90 – 92%, A = 93 – 96%, A+ = 97 – 100%
B- = 80 – 82%, B = 83 – 86%, B+ = 87 – 89%
C- = 70 – 72%, C = 73 – 76%, C+ = 77 – 79%
D- = 60 – 62%, D = 63 – 66%, D+ = 67 – 69%
F = < 60%

Grading of Group Projects
Group project teams may vary for each project and group project teams will be established through class discussion during scheduled office hours led by the instructors.

At the start of each project, a grading rubric will clearly establish how each project will be graded. Grading will vary slightly with each project, but in general, it will include the following considerations:

Written Report (few pages)
Problem or Question is clearly stated
Hypothesis is clearly stated
Hypothesis is testable
Materials and Methods or Procedure are appropriate to test hypothesis
Data analysis is thoroughly described
Data presentation is appropriate (numbers or graph or side-by-side images)
Conclusions drawn are supported by data: Is the hypothesis supported or contradicted by the data?
Bonus: If your hypothesis was supported, what predictions or further test of the hypothesis can you make? If contradicted, can you create a new testable hypothesis?

Oral Report (10-15 minutes)
All group members must participate in an oral presentation of the project results. Oral presentations will take place during scheduled office hours (W 12:00 noon HST). The presentation style must be clear and understandable. The presentation should be supported by the group's research results.

In-Group Participation
Your group's assessment of your participation in and contribution to each project will impact your individual project grade.

Other Group Assessments
Each group will also be provided an opportunity to give formative and summative assessment of the other group's projects. These assessments will NOT formally count toward your grade. They are part of the process of learning what makes a good presentation of a science project as it adds another perspective. Your peers from other groups will likely give you helpful comments that will allow you to improve your presentation (both written and oral), which will allow your group to get a higher grade.

Extra Credit
Opportunities for extra credit will be announced during the semester.

Plagiarism
You will be preparing short written reports and short oral presentations for each project. DO NOT JUST COPY text from the Internet or from a book without a citation. Put your findings in your own words. Plagiarized text in a group report will result in a grade reduction by 2 levels (e.g., grade drop from an A to a C) for the first occurrence. A second occurrence will result in a zero for that project.

Other Resources
Disability Access:
The Earth Science Department will make every effort to assist those with disability and related access needs. For confidential services, please contact the Office for Students with Disabilities (known as "KOKUA") located in the Queen Lili'uokalani Center for Student Services (Room 013): 956-7511, kokua@hawaii.edu, www.hawaii.edu/kokua

Learning Assistance Center (LAC) is here to help students:

- Use appropriate study skills to achieve academic goals.
- Learn how to adjust learning approaches to fit their individual learning needs.
- Learn how to study effectively with others.
- Use effective learning practices.
- Use self-reliant learning behaviors.
- Have a functional understanding of course content.
  www.manoa.hawaii.edu/learning

Gender-Based Discrimination or Violence
University of Hawai'i is committed to providing a learning, working and living environment that promotes personal integrity, civility, and mutual respect and is free of all forms of sex discrimination and gender-based violence, including sexual assault,

sexual harassment, gender-based harassment, domestic violence, dating violence, and stalking. If you or someone you know is experiencing any of these, the University has staff and resources to support and assist you. Staff can also direct you to community resources. Here are some options:

- If you wish to speak with someone **CONFIDENTIALLY**, contact the confidential resources available here: http://www.manoa.hawaii.edu/titleix/resources.html#confidential
- If you wish to **REPORT** an incident of sex discrimination or gender-based violence, contact: **Dee Uwono**, Title IX Coordinator, Hawai‘i Hall 124, t9uhm@hawaii.edu, (808) 956-2299
- **As members of the University faculty, your instructors are required to immediately report any incident of potential sex discrimination or gender-based violence to the campus Title IX Coordinator.** Although the Title IX Coordinator and your instructors cannot guarantee confidentiality, you will still have options about how your case will be handled. Our goal is to make sure you are aware of the range of options available to you and have access to the resources and support you need.