ASTR 299: High-Powered Rocketry

1 credit ( )

by arrangement

INSTRUCTOR:	**Joseph Ciotti**
OFFICE:	**'Imiloa 134**
OFFICE HOURS:	**posted on office door**
TELEPHONE:	**236-9111**
Email:	**ciotti@hawaii.edu**
EFFECTIVE DATE:	**Fall 2016**

WINDWARD COMMUNITY COLLEGE MISSION STATEMENT

Windward Community College is committed to excellence in the liberal arts and career development; we support and challenge individuals to develop skills, fulfill their potential, enrich their lives, and become contributing, culturally aware members of our community.

CATALOG DESCRIPTION

An advanced course on the design, fabrication and testing of space-flight certified payloads and launch of high-powered rockets. The project involves the launch of a high-powered rocket at the international rocketry competition ARLISS in Black Rock, Nevada. Expenses for this project will be funded through the Hawaii Space Grant Consortium. The student will also be required to make a presentation at the Fall Fellowship Symposium sponsored by Hawaii Space Grant Consortium. The project also involves the modification of an innovative sublimation rocket that is proposed for space flight in the summer of 2017.

Pre-requisite(s): PHYS 170 & ASTR 181

Activities Required at Scheduled Times Other Than Class Times N/A

GOALS

The goals of the course are:

1. To provide the student with an in-depth understanding of the design, construction and launch procedures of high-powered rockets and payloads.
2. To provide the student with basic scientific techniques involved with remote sensing, especially as related to payload sensors.
3. To enhance the students technical writing ability via detailed reports throughout the major phases of this project.
4. To promote greater student appreciation and awareness of the future of rocket design and exploration.

STUDENT LEARNING OUTCOMES

Upon successful completion of this course, the student will be able to:

1. employ the skills necessary for the design and construction of high-powered rockets
2. employ the skills necessary for constructing basic payload modules
3. write detailed, scientific and technically accurate reports
4. understand and apply basic techniques involved with remote sensing

LEARNING RESOURCES

1. Understanding Space: An Introduction to Astronautics by Jerry Jon Sellers
2 It's Only Rocket Science by Lucy Rogers
3. To Rise From Earth: An Easy-to-Understand Guide to Spaceflight by Wayne Lee
4. Rockets of the World by Peter Alway

ASSESSMENT TASKS AND GRADING

Method of Evaluation

Evaluation of the successful completion of the objectives of this course will be determined by grades received on established benchmarks pre-determined by the USLI competition.

The points are allotted as follows:

Sep.	ARLISS competition rocket launch	50
Oct.	Concept of Design review and teleconference	50
Nov.	Preliminary Design review and teleconference	50
	HSGC Fellowship Symposium presentation	50
Dec.	Critical Design review and teleconference	50
	Total points	**250**

Each letter grade and its respective level of achievement is as follows:

Letter Grade	Definition
A	90% - 100% of cumulative points possible
B	80% - 89% of cumulative points possible
C	70% - 79% of cumulative points possible
D	60% - 69% of cumulative points possible
F	below 60% of cumulative points possible
I	Incomplete: This temporary grade given at the instructor's option when a student has failed to complete a small part of a course because of circumstances beyond the student's control. All

required work must be completed by the last day of instruction of the succeeding semester.

The Cr/NC option must be declared by the end of the 10th week of classes. Written consent of instructor is required for this option.

Cr Achievement of objectives at the C level or higher.

NC Achievement of objectives at less than C level. (Formal grade)

N Achievement of objectives at less than C level. (Optional instructor's grade)

W Official withdrawal after the third week of a 16-week course and prior to the end of the 10th week. If a student officially withdraws by the end of the 3rd week of a 16-week course, the record of registration in this course will not appear on the student's transcript.

ADDITIONAL INFORMATION

1. If you have a physical, sensory, health, cognitive or mental health disability that could limit your ability to fully participate in this class, you are encouraged to contact the Disability Specialist Counselor, Ann Lemke, to discuss reasonable accommodations that will help you succeed in this class. She can be reached by phone at 235-7448 or via email lemke@hawaii.edu, or you may stop by Hale 'Akoakoa 213 for more information.

2. Besides the resources available at the NASA Flight Training Aerospace Education Laboratory ('Imiloa 112), the student is encouraged to use the facilities at WCC's the aerospace science library in the **Aerospace Exploration Lab** ('Imiloa 135).

3. A student can determine his/her current grade at any time during the semester by dividing his/her cumulative score by the cumulative points possible and converting into a percentage and referring to the table of Letter Grades.

4. Any student wishing to be informed of his/her semester grade in advance of the official report of grades should email a request for the grades to the instructor immediately after the last day of instruction. The student may also provide the instructor a stamped, self-addressed postcard or envelope with an enclosed note requesting the grades.

WINDWARD COMMUNITY COLLEGE
INDEPENDENT STUDY PROJECT PROPOSAL FORM

(Refer to current WCC Catalog for registration deadline)

Please type or print clearly in black or blue ink)

Student's Name: Mechler (Last) Cale (First) S (MI) ID #: 15390656

Mailing Address: 44-117 Kahinani Way (Street)

Kaneohe (City) HI (State) 96744 (Zip Code) Phone No.: 808-436-8236

Degree Objective: Bachelors Major: BS Physics

General Project Information

ASTR (Discipline) ☐ 99V ☐ 199V ☒ 299V No. of Credits: 1 (1 - 4) Grading Method: ☒ A-F ☐ CR-NC

Start date: 8 / 22 / 16 End date: 12 / 16 / 16

This project/study is an extension of: ASTR (Course) 181 (Number)

Project Advisor: Joseph Ciotti Contact Info: 236-9111

Title of Project (20 characters max): H i g h - P o w e r e d R o c k e t r y

To be filled out by Vice Chancellor of Instruction's Office

Course Alpha: ASTR 299

CRN: 63606

Semester (Check One): ☒ Fall ☐ Spring ☐ Summer

Year: 2016

If no course exists, please give reasons why the project should be approved.

Required Signatures

Student: Cale Mechler Date 9/13/16

Project Advisor: Joseph E. Ciotti Date 9/13/16

Dept. Chair: [signature] Approved ☑ Disapproved ☐ Date 9/14/16

Dean *or* Vice Chancellor of Instruction: [signature] Approved ☑ Disapproved ☐ Date SEP 15 2016

A&R 9/15/16 CP