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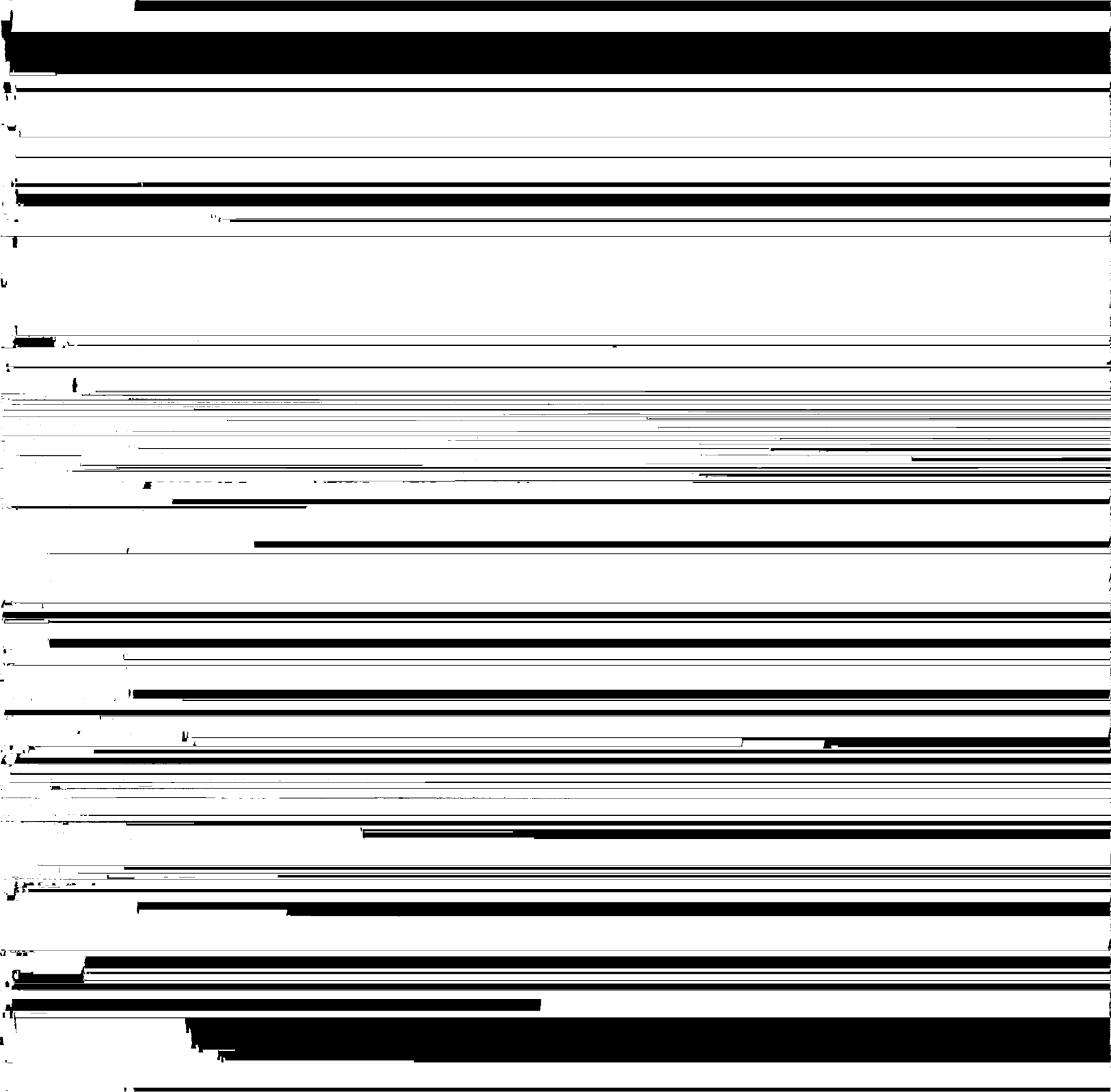
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Submit originals and one copy and electronic copy to Governance/Faculty Senate Office  
See <http://www.uaf.edu/uafgov/faculty/cd> for a complete description of the rules governing curriculum & course changes.

**CHANGE COURSE (MAJOR) and DROP COURSE PROPOSAL**

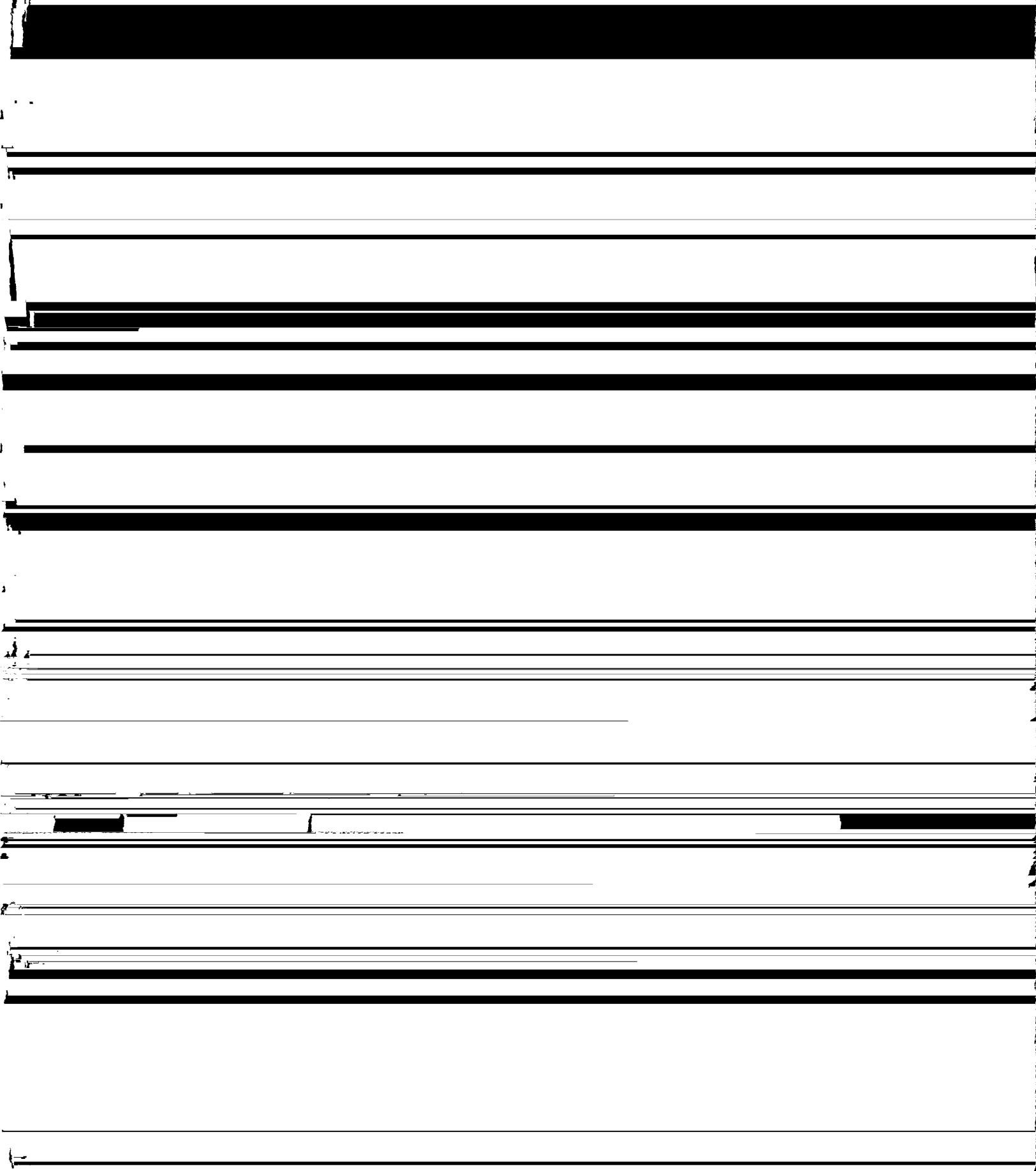
**SUBMITTED BY:**

Department	Electrical & Comp Engr	College/School	CEM
Prepared by	Richard Wies	Phone	474-7071
Email Contact	rwies@electr.edu	Faculty Contact	Richard Wies



6. CURRENT CATALOG DESCRIPTION AS IT APPEARS IN THE CATALOG: including dept., number, title and credits

EE F408 Power Electronics  
3 Credits Offered Spring  
Study of selected current technology used in power conversion and control equipment. Topics will include the



**JUSTIFICATION FOR ACTION REQUESTED**

The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. If you ask for a change in # of credits, explain why; are you increasing the amount of material covered in the class? If you drop a prerequisite, is it because the material is covered elsewhere? If course is changing to stacked (400/600) explain higher level of effort and performance required

explain what has been done to ensure that the quality of the course is not compromised as a result.

A course in power electronics design is needed to supplement the electrical engineering undergraduate senior design elective requirements for the power and controls option and student interest in emerging technology associated with power electronic devices and their use in modern electric power systems.

through the lecture portion of this course is similar to that presented EE 402/602, Power Electronics

ATTACH COMPLETE SYLLABUS (as part of this application).

The department and campus wide curriculum committees will review the syllabus to ensure that each of the items listed below are included. If items are missing or unclear, the proposed course change will be denied.

**SYLLABUS CHECKLIST FOR ALL UAF COURSES**

During the first week of class, instructors will distribute a course syllabus. Although modifications may be made throughout the semester, this document will contain the following information (as applicable to the

**1. Course information:**

Title,  number,  credits,  prerequisites,  location,  meeting time  
(make sure that contact hours are in line with credits).

**2. Instructor (and if applicable, Teaching Assistant) information:**

Name,  office location,  office hours,  telephone,  email address.

**3. Course readings/materials:**

Course textbook title,  author,  edition/publisher.  
 Supplementary readings (indicate whether  required or  recommended) and  
 any supplies required.

**4. Course description:**

Content of the course and how it fits into the broader curriculum;  
 Expected proficiencies required to undertake the course, if applicable.  
 Inclusion of catalog description is *strongly* recommended, and  
 Description in syllabus must be consistent with catalog course description.

University of Alaska Fairbanks  
Electrical and Computer Engineering Department  
EE 408/608 - Power Electronics Design  
Spring 2012

**Course Information:**

Title: EE 408/608 Power Electronics Design (3+3)  
Lecture Time: MWF (11:45AM-12:45PM) in Duckering 202

Prerequisites: COMM E121Y or COMM E141Y, EE 202, EE 224, EE 254, ENCL E111Y,

ENCL E211Y or ENCL 212Y or permission of instructor, senior standing

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Oral presentations will be graded according to content, voice, use of visual aides and format. There will be three presentations of at least 10 minutes each and one ~~presentation~~. Each presentation will be followed by a brief question

and answer period and instructor evaluation.

The percentages in the following grading criteria are based on the total points possible (1000) in the course.

<b>Exam I</b>	<b>75 (7.5%)</b>
<b>Exam II</b>	<b>75 (7.5%)</b>
<b>Written/Oral</b>	
<b>Written</b>	<b>500 (50%)</b>
<b>Project Reports</b>	
<b>Proposal</b>	<b>5%</b>
<b>Mid Term Progress</b>	<b>5%</b>
<b>Draft Report</b>	<b>15%</b>
<b>Final Report</b>	<b>10%</b>
<b>Lab Reports</b>	<b>15%</b>
<b>Oral Presentations</b>	<b>150 (15%)</b>
<b>Proposal</b>	<b>3%</b>
<b>Mid Term Progress</b>	<b>3%</b>
<b>Final</b>	<b>9%</b>
<b>Project Performance</b>	<b>150 (15%)</b>
<b>Homework</b>	<b>50 ( 5%)</b>

University of Alaska Fairbanks  
Electrical and Computer Engineering Department  
EE 499/609 Power Electronics Design

**Exams:** Midterm exams are open book and closed notes with *two* 8.5x11 (INCHES) formula sheets allowed. Formula sheets cannot have solved problems and must be attached to the exam. **Laptops, cell phones, and calculators with communication capability (Bluetooth, etc.) are not permitted to be used during the exams.** Absences from exams must be preceded by a valid excuse. In the event of a valid excused absence it is the student's responsibility to contact the instructor to arrange for a make-up exam.

**Cheating/Plagiarism:** Cheating and plagiarism will not be tolerated and will result in failure of the course.

**Attendance:** As directly quoted from the 2011-2012 UAF Course Catalog under Academics/Attendance (page 48):

“You are expected to attend class regularly; unexcused absences may result in a

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All dates and topics are tentative. Exam dates are subject to change.



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**Spring 2012**

Date	Topic	Date	Topic
<b>Apr. 2 – Lecture #26</b> Switch-Mode Inverters: Single-Phase Full-Bridge with Voltage Cancellation; Switch Utilization; Voltage Output Ripple – Sections 8.3.2.4-8.3.2.6	<b>Apr. 2 – Lab #10</b> <b>Design Project Time</b>	<b>Apr. 4 – Lecture #27</b> Switch-Mode Inverters: Push-Pull Inverters; Switch Utilization – Sections 8.3.3-8.3.4	<b>Apr. 6 – Lecture #28</b> Switch-Mode Inverters: Three-Phase Inverters and Voltage Source PWM – Sections 8.4.1
<b>Apr. 9 – Lecture #29</b>	<b>Apr. 9 – Lab #11</b>	<b>Apr. 11 – Lecture #30</b>	<b>Apr. 13 – Lecture #31</b>

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Electrical and Computer Engineering Department  
EE 408/608 – Power Electronics Design  
Spring 2012**

**Senior/Graduate Design Project: Regulated DC Hard Drive Bay Power Supply Design**

**Objective:**

The objective of this project is to design, simulate using PSPICE, and build a regulated dc power supply fed from a single phase AC source that meets the design requirements listed below. You will need to combine what you learn in the class lecture and laboratory and additional literature such as technical articles and/or materials from the textbook to complete this project.

**Design Problem Statement:**

You need to design a regulated DC power supply for a hard drive bay in a server to store power systems data that is being uploaded from remote monitoring sites in 20 remote communities in Alaska. Each community has a single 1TB hard

source to power a hard drive bay in a server to store power systems data that is being uploaded from remote monitoring sites in 20 remote communities in Alaska. Each community has a single 1TB hard

**Electrical and Computer Engineering Department**  
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Senior/Graduate Design Project: Regulated DC Load Drive from a Single-Phase AC Source

University of Alaska Fairbanks

Thesis Department of Engineering Department