TRIAL COURSE OR NEW COURSE PROPOSAL

SUBMITTED BY:

<table>
<thead>
<tr>
<th>Department</th>
<th>Electrical Engineering</th>
<th>College/School</th>
<th>CEM</th>
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<tbody>
<tr>
<td>Prepared by</td>
<td>Richard Wies</td>
<td>Phone</td>
<td>907-347-4363</td>
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<tr>
<td>Email Contact</td>
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<td>Faculty Contact</td>
<td>Michael Golub</td>
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</table>

1. **ACTION DESIRED**
   (CHECK ONE):
   - [ ] Trial Course
   - [X] New Course

2. **COURSE IDENTIFICATION**
   - Dept: ES
   - Course #: 166
   - No. of Credits: 2
   - Justify upper/lower division status & number of credits: This course is designed to be a lower level undergraduate course with no prerequisites.

3. **PROPOSED COURSE TITLE:** Electric Car Conversion

4. **CROSS LISTED?**
   - YES/NO: No
   - If yes, Dept: 
   - Course #: 

   (Requires approval of both departments and deans involved. Add lines at end of form for such signatures.)

5. **STACKED?**
   - YES/NO: No
   - If yes, Dept: 
   - Course #: 

6. **FREQUENCY OF OFFERING:**
   - Summer Session / 2009 (1st 3-Week Session)
   - (Every or Alternate) Fall, Spring, Summer — or As Demand Warrants

7. **SEMESTER & YEAR OF FIRST OFFERING** (if approved): Summer 2009 (Maymester)

8. **COURSE FORMAT:**
   - COURSE FORMAT: (check one)
     - 1
     - 2
     - 3
     - 4
     - 5
     - 6 weeks to full semester
   - OTHER FORMAT (specify) Lecture, Labs

9. **CONTACT HOURS PER WEEK:**
   - 5 LECTURE hours/week
   - 15 LAB hours/week
   - 6 weeks to full semester

   Note: # of credits are based on contact hours. 800 minutes of lecture=1 credit. 2400 minutes of lab in a science course=1 credit. 1600 minutes in non-science lab=1 credit. 2400-4800 minutes of practicum=1 credit. 2400-8000 minutes of internship=1 credit. This must match with the syllabus. See http://www.uaf.edu/uafgov/faculty/cd/credits.html for more information on number of credits.

10. **COMPLETE CATALOG DESCRIPTION including dept., number, title and credits (50 words or less, if possible):**
    ES 166, Electric Car Conversion, 2 credits (1+3+0)
    An introduction to the principles of electrical vehicle propulsion systems. Fundamentals of electrical motors, electrical motor controls, electrical energy storage systems, and automotive power-train design. The student will conduct practical design projects culminating with a complete electric car conversion. Relevant codes and standards will be emphasized.
11. **COURSE CLASSIFICATIONS:** (undergraduate courses only. Use approved criteria found on Page 10 & 17 of the manual. If justification is needed, attach on separate sheet.)

| H = Humanities | N = Natural Science | S = Social Sciences |

Will this course be used to fulfill a requirement for the baccalaureate core? YES X NO

IF YES, check which core requirements it could be used to fulfill:

- O = Oral Intensive, Format 6
- W = Writing Intensive, Format 7
- Natural Science, Format 8

12. **COURSE REPEATABILITY:**

| Is this course repeatable for credit? | YES X NO |

Justification: Indicate why the course can be repeated (for example, the course follows a different theme each time).

How many times may the course be repeated for credit? TIMES

If the course can be repeated with variable credit, what is the maximum number of credit hours that may be earned for this course? CREDITS

13. **GRADING SYSTEM:**

| LETTER | PASS/FAIL: |

**RESTRICTIONS ON ENROLLMENT (if any)**

14. **PREREQUISITES**

| None | 

These will be **required** before the student is allowed to enroll in the course.

| RECOMMENDED | None | 

Classes, etc. that student is strongly encouraged to complete prior to this course.

15. **SPECIAL RESTRICTIONS, CONDITIONS**

16. **PROPOSED COURSE FEES**

| $50 |

Has a memo been submitted through your dean to the Provost & VCAS for fee approval? Yes/No 

Yes (see)

17. **PREVIOUS HISTORY**

| Has the course been offered as special topics or trial course previously? Yes/No |

Yes

| If yes, give semester, year, course #, etc.: |

ES 195: Maymester 2008, Fall 2008 (Bristol Bay Campus), Wintermester 2009

18. **ESTIMATED IMPACT**

**WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.**

We will be using an automotive repair classroom and shop which is available at Hutchinson Career Center (Room 147).

19. **LIBRARY COLLECTIONS**

Have you contacted the library collection development officer (ffkj@uaf.edu, 474-6695) with regard to the adequacy of library/media collections, equipment, and services available for the proposed course? If so, give date of contact and resolution. If not, explain why not.

20. **IMPACTS ON PROGRAMS/DEPTS**

What programs/departments will be affected by this proposed action?

Include information on the Programs/Departments contacted (e.g., email, memo)

| College of Engineering and Mines and Hutchinson Career Center |

21. **POSITIVE AND NEGATIVE IMPACTS**

Please specify positive and negative impacts on other courses, programs and departments resulting from the proposed action.

Since it will be a College of Engineering and Mines course, it will advertise and promote the college. We will be using an automotive repair classroom and shop which is available at Hutchinson Career Center (Room 147).
**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. Use as much space as needed to fully justify the proposed course.

This is a course designed to encourage the use of alternative transportation systems. It will continue to allow the Fairbanks community opportunities to learn about electric cars. Since it will be a College of Engineering and Mines course, it will also advertise and promote the college.

**APPROVALS:**

<table>
<thead>
<tr>
<th>Signature, Chair, Program/Department of:</th>
<th>Date</th>
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<tbody>
<tr>
<td>Signature, Chair, College/School Curriculum Council for:</td>
<td>Date</td>
</tr>
<tr>
<td>Signature, Dean, College/School of:</td>
<td>Date</td>
</tr>
<tr>
<td>Signature of Provost (if applicable)</td>
<td>Date</td>
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Offerings above the level of approved programs must be approved in advance by the Provost.

**ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE**

| Signature, Chair, UAF Faculty Senate Curriculum Review Committee | Date |

**ADDITIONAL SIGNATURES: (If required)**

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ATTACH COMPLETE SYLLABUS (as part of this application).
Note: syllabus must follow the guidelines discussed in the Faculty Senate Guide
http://www.uaf.edu/uafgov/faculty/cd/syllabus.html.

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 discipline):

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.

5. Course Goals (general) and Student Learning Outcomes (more specific)

6. Instructional methods:
   - Describe the teaching techniques (eg: lecture, case study, small group discussion, private instruction, studio instruction, values clarification, games, journal writing, use of Blackboard, audio/video conferencing, etc.).

7. Course calendar:
   - A schedule of class topics and assignments must be included. Be specific so that it is clear that the instructor has thought this through and will not be making it up on the fly (e.g. it is not adequate to say "lab". Instead, give each lab a title that describes its content). You may call the outline Tentative or Work in Progress to allow for modifications during the semester.

8. Course policies:
   - Specify course rules, including your policies on attendance, tardiness, class participation, make-up exams, and plagiarism/academic integrity.

9. Evaluation:
   - Specify how students will be evaluated, what factors will be included, their relative value, and how they will be tabulated into grades (on a curve, absolute scores, etc.)

10. Support Services:
    - Describe the student support services such as tutoring (local and/or regional) appropriate for the course.

11. Disabilities Services:
    The Office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials.
    - State that you will work with the Office of Disabilities Services (203 WHIT, 474-7043) to provide reasonable accommodation to students with disabilities.

1. Course information:
   ELECTRIC CAR CONVERSION  ES 166, 2 credits (1+2)
   Prerequisites: None
   Location: Hutchinson, 147, Meeting time: MTWHF 6pm-pm

2. Instructor
   Michael Golub, Office location: TBA, Office hours:TBA
   Telephone: 907-347-4363, email: ffmig@uaf.edu

3. Course readings/materials:
   Course Handouts will be provided.
4. **Course description:** An introduction to the principles of electrical vehicle propulsion systems. Fundamentals of electrical motors, electrical motor controls, electrical energy storage systems, and automotive power-train design. The student will conduct practical design projects culminating with a complete electric car conversion. Relevant codes and standards will be emphasized.

5. **Course Goals:** Students completing this course will have an improved understanding of how an automobile can be converted to run on battery power.

6. **Instructional methods:**
   - Lecture and Instructor-Interactive Lab

7. **Course calendar:**
   **Week 1**
   - Tues, May 26: Introductions and Shop Safety
    Lab: Introduction to Lab Techniques
   - Wed, May 27: History of Electric Cars and Construction Overview
    Lab: Internal Engine Preparation
   - Thurs, May 28: Removal of Internal Combustion Engine Explained
    Lab: Remove ICE
   - Fri, May 29: Preparations for Motor Installation, Quiz #1
    Lab: Install Electric Motor
   **Week 2**
   - Mon, Jun 1: Power and Energy Requirements
    Lab: Testing Battery Voltage, Data Analysis
   - Tues, Jun 2: Batteries and Installation
    Lab: Machine Shop Tour, Install Battery Box
   - Wed, Jun 3: Chassis modifications
    Lab: Install Batteries
   - Thurs, Jun 4: Controllers and Installation
    Lab: Install Controller
   - Fri, Jun 5: Charger installation, Quiz #2
    Lab: Install Battery Charger
   **Week 3**
   - Mon, Jun 6: Data Logging
    Lab: Demonstration Drive
   - Tues, Jun 7: Other Transportation Systems, HW3 Due
    Lab: Produce Specifications
   - Wed, Jun 8: Future Technologies
    Lab: Discuss Improvements to Project Car
   - Thurs, Jun 9: Review, Group Presentations
    Lab: Group Presentations
   - Fri, Jun 10: Final Exam, Group Presentations
    Lab: Overview of Engineering at UAF & Clean up

8. **Course policies:**
   You are expected to attend classes regularly. If an unforeseen circumstance prevents you from attending class you are expected to contact the instructor prior to the start of class. Tests must be taken when scheduled.

9. **Evaluation:**
   - Quiz 1  15%  A  >90%  C  >70%
   - Quiz 2  15%  A- >87%  C- >67%
10. Support Services:
   I am available (TBD) if you need further assistance with the course content.

11. Disabilities Services:
The Office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials. I will work with the Office of Disabilities Services (203 WHIT, 474-7043) to provide reasonable accommodation to students with disabilities.