

Submit original with signatures + 1 copy + electronic copy to UAF Governance.

See <http://www.uaf.edu/uafgov/faculty/cd> for a complete description of the rules governing curriculum & course changes.

TRIAL COURSE OR NEW COURSE PROPOSAL

SUBMITTED BY:

Department	Civil and Environmental Eng.	College/School	CEM
Prepared by	Robert Perkins	Phone	474 7694
Email Contact	raperkins@alaska.edu	Faculty Contact	Robert Perkins

1. ACTION DESIRED (CHECK ONE):	Trial Course		New Course	X
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2. COURSE IDENTIFICATION:	Dept	CE	Course #	F656H	No. of Credits	1
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Justify upper/lower division status & number of credits:

Course is intended for professional students who are college graduates. Credits are based on contact minutes and content. They are roughly one-third of a regular three-credit graduate course.

3. PROPOSED COURSE TITLE:	New Technology for Construction
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4. To be 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. To be STACKED? YES/NO	No	If yes, Dept.		Course #	
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6. FREQUENCY OF OFFERING:	As demand warrants
	Fall, Spring, Summer (Every, or Even-numbered Years, or Odd-numbered Years) – or As Demand Warrants

7. SEMESTER & YEAR OF FIRST OFFERING (if approved)	As demand warrants
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8. COURSE FORMAT:

NOTE: Course hours may not be compressed into fewer than three days per credit. Any course compressed into fewer than six weeks must be approved by the college or school's curriculum council. Furthermore, any core course compressed to less than six weeks must be approved by the core review committee.

COURSE FORMAT: (check all that apply)	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6 weeks to full semester
OTHER FORMAT (specify)	Two 2 hour and 15 minute lectures per week for three weeks delivered face-to-face or via video conferencing.					
Mode of delivery (specify lecture, field trips, labs, etc)	Lectures					

9. CONTACT HOURS PER WEEK:	4.5	LECTURE hours/weeks		LAB hours /week		PRACTICUM hours /week
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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.

OTHER HOURS (specify type)	N/A
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10. **COMPLETE CATALOG DESCRIPTION** including dept., number, title and credits (50 words or less, if possible):

CE F656H, New Technology for Construction, 1 credit

Students will learn the basic science of GIS and GPS, as well as their current application in construction, and be able to judge their applicability to construction projects within their specialty and geographic areas. Students will gain an overview of other new technology and be alert for beneficial applications of new technology as well as likely limitations. Students will practice making inquiries of vendors and users of new technology in order to make informed choices.

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

S = Social Sciences

Will this course be used to fulfill a requirement for the baccalaureate core?

YES

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

NO

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:** Specify only one.

LETTER:

X

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

Admission to the Graduate Certificate in Construction Management program

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

15. **SPECIAL RESTRICTIONS, CONDITIONS**

16. **PROPOSED COURSE FEES**

\$

Has a memo been submitted through your dean to the Provost & VCAS for fee approval?

Yes/No

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.:

March 2009, CE 693

18. **ESTIMATED IMPACT**

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

These courses were approved by the Board of Regents for special tuition and are expected to be self-supporting

19. **LIBRARY COLLECTIONS**

Have you contacted the library collection development officer (kljensen@alaska.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.

No	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No library involvement
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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)

The Graduate Certificate in Construction Management and its courses was approved by the CEE faculty and the CEM dean.

21. POSITIVE AND NEGATIVE IMPACTS

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

This course follows the New Degree Program Request which examined the growth in the CEE department. No additional positive or negative impacts from this course are likely.

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 course is part of a UAF CEE outreach to package our graduate classes in a way that is convenient to students and their employers. This outreach was formalized in a New Degree Program Request for a Graduate Certificate in Construction Management which was approved by the UA Board of Regents in September 2009. The courses in this program grew out of a needs assessment by UAF CEE of Alaska engineering employers, including governments, consultants, and contractors, that indicated that courses of about one credit's intensity were best. The classes are being taught by UAF faculty, emeritus faculty, or appropriate adjuncts approved by the CEE faculty and Chair. All classes feature an assessment process: tests, reports, presentations, and/or graded homework.

APPROVALS:

		Date	
Signature, Chair, Program/Department of:			
		Date	
Signature, Chair, College/School Curriculum Council for:			
		Date	
Signature, Dean, College/School of:			
		Date	
Signature of Provost (if applicable)			

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

	Date	
Signature, Chair, UAF Faculty Senate Curriculum Review Committee		

ADDITIONAL SIGNATURES: (As needed for cross-listing and/or stacking)

	Date	
Signature, Chair, Program/Department of:		

	Date	
Signature, Chair, College/School Curriculum Council for:		

	Date	
Signature, Dean, College/School of:		

Syllabus

New Technology for Construction CE 656H 1 Credit

Prerequisites: None. Recommended: College degree in engineering or science or any college degree with construction experience

Meets in the UAF Center for Distance Education conference room, corner of University and Davis Rd. 3PM to 5:15 PM.

Instructor: Dr. Robert Perkins, PE, 253 Duckering, 474 7694, ffrap@uaf.edu, Office Hours 9:30 to 12, Tues and Thurs or by appointment.

There is no required textbook. There will be paper handouts and/or electronic references. Students will be required to download course material from web.

Goals, Description, and Schedule

Goal: Students will learn the basic science of Geographic Information Systems (GIS) and Global Positioning Systems (GPS), as well as their current application in construction, and be able to judge their applicability to construction projects within their specialty and geographic areas. Students will gain an overview of other new technology and be alert for beneficial applications of new technology as well as likely limitations. Students will practice making inquiries of vendors and users of new technology in order to make informed choices.

Description

Review of new technology for construction, both recent advances in current use in some locations, and incipient technology, some of which will come on line in the near future. Recent advances include GIS in data management, GIS and GPS in surveying and mapping, GPS and laser guided construction. Other topics may include:

- Applications of (Intelligent Transportation Systems) ITS to workzones, such as cameras, sensors, input devices, automated data processing, and dynamic message signs (DMS), retroreflectivity, automating roadside dynamic message signs (DMS), collision warning for areas with roadside pedestrian workers, trailer-mounted attenuators, and the use of galvanized steel for barriers in lieu of traditional portable concrete barriers (PCB).
- New QA/QC methods, such as: Magnetic mapping of rebar placement, three dimensional analysis of soil and material samples using X-ray-computed tomography (X-ray CT), Automatic measurements of hot mix asphalt, various new technologies for measuring pavement quality
- Intelligent compaction and inspection
- Bridge inspection
- Environmental protections: dust control and noise control
- Locating and mapping subsurface utilities using Computer Assisted Radar Tomography (CART) and Arrayed Induction Receivers (AIR), Generation of Utility Mapping Data via Processing of Multichannel Signals Collected by Arrays of Ground-Penetrating Radar and EM Antennae
- Corrosion Protection for reinforced concrete bridges and structures
- Trenchless technology - methods by which underground utilities may be installed without damage to overlying pavement; horizontal boring.
- Materials: Fiber-reinforced polymer (FRP), others
- Laser scanning to acquire design and construction data.

Course outline

Classes 1

Introduction to class and administrative matters

Guest lecture on GIS

How it works, program, storage of data, limitations.

How to inquire about new technology: quality of literature, research, vendors, users

Class 2

Guest lecture on GPS

How it works, hardware, limitations

Discuss student project

Class 3

Laser guided construction and data

Guest lecture, LIDAR, other

Begin project presentations

Class 4

Critique

Project presentations

Class 5

Project presentations

Class 6

Finish project presentations

Discussion of applicability

Project

Each student will select an example of new technology and then: review the peer-reviewed, government, or technical literature, find example of advertisements and popular literature, query the developers of the technology and find users. Develop pros and cons, especially situations where the technology is likely or not likely to work. Costs. Will it work in Alaska? Students will give a oral PowerPoint report in class and submit a 5 to 7 page paper.

Instructional methods: Lecture in class or by video conferencing.

Course policies:

Attendance:	Attendance at all classes is recommended. Timely submission of assignments is encouraged, late work may be accepted, if prior arrangement are made.
Changes	Changes to this Syllabus and the above outline may be made by the instructor with reasonable notice.
Cheating	Accepting or giving unauthorized help on graded work is cheating. A student caught cheating will be given an "F" in the course. Discussing with other students "how to do" homework and project assignments is authorized. Copying or plagiarizing other students' homework or assignments is not authorized
Plagiarism	Plagiarism is stealing from the original author. Copying assignments and exams is stealing from fellow students, as well as misrepresenting (lying) to the instructor.

Evaluation: Grades will be awarded based on the instructor's subject evaluation of the student's attainment of the course goals. Input to that evaluation will include: Class attendance and participation, 10%, Oral project presentation 50%, written 40%.

Support Services: The instructor is available after class for consultations and by email at any time.

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."