

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	Electrical and Computer Eng.	College/School	CEM
Prepared by	Dejan Raskovic	Phone	474-5256
Email Contact	draskovic@alaska.edu	Faculty Contact	Dejan Raskovic

1. ACTION DESIRED

(CHECK ONE):

Trial Course ☐New Course ☒**2. COURSE IDENTIFICATION:**

Dept

EE

Course #

646

No. of Credits

3

Justify upper/lower division status & number of credits:

Graduate course, no laboratory, meets two times a week for 1.5 hour

3. PROPOSED COURSE TITLE:

Wireless Sensor Networks

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 #

6. FREQUENCY OF OFFERING:

Fall, even-numbered years

Fall, Spring, Summer (Every, or Even-numbered Years, or Odd-numbered Years) — or As Demand Warrants

7. SEMESTER & YEAR OF FIRST OFFERING (if approved)

Fall 2012

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)

☐

1

☐

2

☐

3

☐

4

☐

5

☒

6 weeks to full semester

OTHER FORMAT (specify)

Mode of delivery (specify

lecture, field trips, labs, etc)

lecture

9. CONTACT HOURS PER WEEK:

3

LECTURE

hours/weeks

0

LAB

hours/week

PRACTICUM

hours/week

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)

10. COMPLETE CATALOG DESCRIPTION including dept., number, title and credits (50 words or less, if possible):

EE 646 3 Credits

Wireless Sensor Networks

The course will survey the area of networked sensors, with a special focus on low-power wireless sensor networks. Topics covered will include communication standards and protocols for sensor networks, embedded operating systems, applications, collaborative processing, data fusion, and system architecture. Students will undertake a theoretical or practical research project. CS201 or ES201; EE343 or EE341; graduate standing; or permission of the instructor. (3+0)

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 ☒

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: ☒

PASS/FAIL: ☐

RESTRICTIONS ON ENROLLMENT (if any)

14. PREREQUISITES

CS201 or ES201; EE343 or EE341; graduate standing; or permission of the instructor.

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

RECOMMENDED

EE443; EE444; EE463 or EE464

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.:

Fall 2006: EE693, Fall 2008: EE693, Fall 2010: EE693

18. ESTIMATED IMPACT

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

None

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 ☒

Yes ☐

Additional reading material will be accessible from instructor's web page

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)

Electrical and Computer Engineering, Computer Science

21. POSITIVE AND NEGATIVE IMPACTS

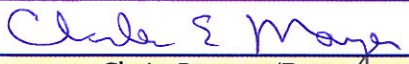
Please specify **positive and negative** impacts on other courses, programs and departments resulting from the proposed action.

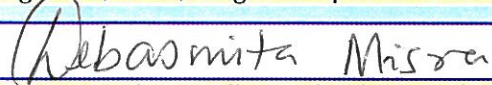
JUSTIFICATION FOR ACTION REQUESTED

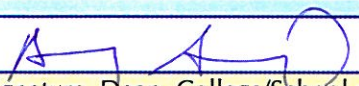
The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. Use as much space as needed to fully justify the proposed course.

The course was offered three times as a special topics course. A total of 20 students completed this course during that time. Graduate students in the Electrical and Computer Engineering department are facing the problem of having to take too many (more than allowed) Special Topics (693) courses. Approving Wireless Sensor Networks as a new course will alleviate this problem.

APPROVALS:

	Date	5/28/10
Signature, Chair, Program/Department of: <u>ECG</u>		

	Date	10/7/10
Signature, Chair, College/School Curriculum Council for: <u>CEM</u>		

	Date	10/11/10
Signature, Dean, College/School of: <u>CEM</u>		

	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:		

*Course syllabus***EE 646 –WIRELESS SENSOR NETWORKS*****TENTATIVE*****Course Information**

Instructor: Dr. Dejan Raskovic
Office: Duckering 225
Telephone: 474-5256
Email: draskovic@alaska.edu
Web: go.alaska.edu/draskovic

Lectures: Monday, Wednesday, 17:30 – 19:00, Duckering 210
Office Hours: Monday 3:00 – 5:00, Thursday 11:30 – 12:30, or by appointment

Course Description

The course will survey the area of networked sensors, with a special focus on low-power wireless sensor networks. Topics covered will include communication standards and protocols for sensor networks, embedded operating systems, applications, collaborative processing, data fusion, and system architecture. Students will be asked to read and discuss scientific papers and to undertake a theoretical or practical research project. (3+0)

Prerequisites: CS201/ES201; EE343/EE341; graduate standing; or permission of the instructor.

Recommended: EE443; EE444; EE463 or EE464

Text: No textbook will be used

Reference Books:

- F. Zhao, L. Guibas, Wireless Sensor Networks. Morgan Kaufmann Publishers/Elsevier available for free from UAF's Electronic Book Library (EBL), together with several other high-quality WSN books
- B. Krishnamachari, Networking Wireless Sensors. Cambridge University Press, January 2006

Other reading material consisting of selected scientific papers and datasheets will be assigned in class and posted on the Web.

Required reading material consisting of selected scientific papers, book excerpts and datasheet pages will be assigned in class and posted on Blackboard.

Students will be responsible for finding additional papers related to assigned topics.

Although the students are encouraged to use their favorite search engine, the UAF Library online collection of transaction, journal and conference papers should be used as the main source of scientific papers: http://library.uaf.edu/online_databases/ui/

Course Policies

Grading:

Assignments (reading, presentation and discussion, homework)	45%
Project	30%
Midterm	20%
Professionalism (class participation, conduct, punctuality)	5%

Plus/Minus grading will be used – see UAF catalog for numerical values

Students are strongly encouraged to attend every class and laboratory and participate in the classroom discussion in a manner that would benefit other students as well. Discussions that would require too much time, especially if not of interest to all the students, will be held during lab periods and/or office hours. Your questions should show that you came to class prepared, i.e. that you have read the suggested material.

Each student is required to establish a reliable email address (preferably a uaf.edu address) and to send it to the instructor (draskovic@alaska.edu) as soon as possible. This address will be used for class correspondence – announcements, clarifications, etc. The course page on Blackboard will contain useful information and will be updated throughout the course. The students will be notified by email when the content changes.

Tentative Course Schedule

WEEK	TOPIC
1	Introduction
2	Sensor network applications
3	Sensor network architectures
4, 5	Localization and tracking
6	Time synchronization
7	Sensor network topology
8	Energy-efficient routing
9, 10	Communication protocols for sensor networks
11	Signal processing and data fusion in distributed sensor networks
12	Designing for low power
13	Sensor networking security, societal implications
14	Project presentations

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. The instructor, the

teaching assistant, and the administrative assistant will work with the Office of Disabilities Services (208 WHIT, 474-5655) to provide reasonable accommodation to students with disabilities.

Plagiarism

As a UAF student, you are subject to UAF's Honor Code:

"Students will not collaborate on any quizzes, in-class exams, or take-home exams that will contribute to their grade in a course, unless permission is granted by the instructor of the course.

Only those materials permitted by the instructor may be used to assist in quizzes and examinations.

Students will not represent the work of others as their own. A student will attribute the source of information not original with himself or herself (direct quotes or paraphrases) in compositions, theses and other reports. No work submitted for one course may be submitted for credit in another course without the explicit approval of both instructors.

Violations of the Honor Code will result in a failing grade for the assignment and, ordinarily, for the course in which the violation occurred. Moreover, violation of the Honor Code may result in suspension or expulsion."