FORMAT 5

Submit originals and one copy and electronic copy to Governance/Faculty Senate Office (email electronic copy to jbharvie@alaska.edu)

PROGRAM/DEGREE REQUIREMENT CHANGE (MAJOR)

SUBMITTED BY:

Department	Computer Science	College/School	CEM
Prepared by	Orion Lawlor	Phone	474-7678
Email Contact	lawlor@alaska.edu	Faculty Contact	Same

See http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures-/ for a complete description of the rules governing curriculum & course changes.

PROGRAM IDENTIFICATION:

DEGREE PROGRAM	Computer Science
Degree Level: *(i.e., Certificate, A.A., A.A.S., B.A., B.S., M.A., M.S., Ph.D.)*	B.S. / M.S.

A. CHANGE IN DEGREE REQUIREMENTS: *(Brief statement of program/degree changes and objectives)*

The proposed changes bring the BS/MS degree in line with the changes to the BS program in the 2013-14 catalog and the proposed changes to the MS program for the 2015-16 catalog. The changes to the BS program were a result of external accreditation and our assessment process. The changes to the MS program are focused on bringing the curriculum up-to-date and creating a sustainable MS program. We also have an increasing number of BS/MS students and these changes will minimize duplications that occurred due to budget constraints and reduce the number of stacked courses they must take.

B. CURRENT REQUIREMENTS AS IT APPEARS IN THE CATALOG:

1. Complete the following admission requirements:

a. CS major (junior preferred) or senior standing.

b. GPA 3.25 or above based on a minimum of 24 credits. Students must maintain a cumulative GPA of 3.0 to remain in the program.

c. Submit GRE (general) scores.

d. Submit a study goal statement.

e. Submit a UAF graduate application for admission.

2. Complete the general university requirements. (See page 129. As part of the core curriculum requirements, complete: MATH F200X* and any approved ethics course.)

3. Complete the BS degree requirements. (See page 134. As part of the BS degree requirements, complete: MATH F201X*, PHYS F211X* and PHYS F212X*.)

4. Complete the following program (major) requirements:*

CS F201—Computer Science I...3

CS F202—Computer Science II..3

CS F301—Assembly Language Programming 3

CS F311—Data Structures and Algorithms 3

CS F321—Operating System...3

CS F331—Programming Languages.............................3

CS F441—Systems Architecture.............................3

CS F471W—Senior Capstone I 3

CS F472W,O—Senior Capstone II 3

EE F341—Digital and Computer Analysis and Design 4

ENGL F314W,O/2—Technical Writing 3

MATH elective at the F300/F400 level 3

MATH F307—Discrete Mathematics 3

STAT F300—Statistics 3

5. Complete the following:

CS F611—Complexity of Algorithms 3

CS F631—Programming Language Implementation.............3

CS F641—Advanced Systems Architecture 3

CS F671—Advanced Software Engineering.............................3

CS F690—Graduate Seminar and Project 3

CS F691—Graduate Seminar and Project 3

CS upper-division/graduate level electives.............................3

CS graduate level electives.............................6

6. Pass a written comprehensive exam in the areas of computer algorithms/theory/complexity, computer architecture, computer language and software engineering.

7. Minimum credits required 141

* *Students must earn a C- grade or better in each course required for the BS degree.*

Note: For the master's degree, a student must earn an A or B grade in F400-level courses. A grade of C will be accepted in F600-level courses provided a B grade point average is maintained.

Note: This degree program must be completed in seven years or the student will be disqualified from the program. If a student is disqualified, a BS in computer science will be awarded if: 1) completed in 10 years, and 2) the student meets the BS degree requirements for computer science with the option of substituting CS F411/F451 for CS F611/F651.

C. *PROPOSED REQUIREMENTS AS IT WILL APPEAR IN THE CATALOG WITH THESE CHANGES:*
(Underline new wording strike through old wording *and use complete catalog format)*

1. Complete the following admission requirements:

a. CS major (junior preferred) or senior standing.

b. GPA 3.25 or above based on a minimum of 24 credits. Students must maintain a cumulative GPA of 3.0 to remain in the program.

c. Submit GRE (general) scores.

d. Submit a study goal statement.

e. Submit a UAF graduate application for admission.

2. Complete the general university requirements. (See page 129. As part of the core curriculum requirements, complete: MATH F200X* and any approved ethics course.)

3. Complete the BS degree requirements. (See page 134. As part of the BS degree requirements, complete: MATH F201X*, PHYS F211X* and PHYS F212X*.)

4. Complete the following <u>BS</u> program (major) requirements:*

CS F201—Computer Science I...3

CS F202—Computer Science II..3

CS F301—Assembly Language Programming 3

CS F311—Data Structures and Algorithms 3

CS F321—Operating System...3

CS F331—Programming Languages...3

CS F371—Computer Ethics and Technical Communication...............3

CS F372—Software Construction...3

CS F411—Analysis of Algorithms..3

~~CS F441—Systems Architecture...3~~

CS F441—Systems Architecture (3)

  or EE F443—Computer Engineering (4) 3-4

CS F471W—Senior Capstone I 3

CS F472W,O—Senior Capstone II 3

EE F341—Digital and Computer Analysis and Design 4

~~ENGL F314W,O/2—Technical Writing...3~~

MATH elective at the F300/F400 level 3

MATH F202X—Calculus III 4

MATH F307—Discrete Mathematics 3

STAT F300—Statistics 3

5. Complete the following <u>MS</u> program (major) requirements:

~~CS F611—Complexity of Algorithms ....3~~

~~CS F631—Programming Language Implementation..............................3~~

~~CS F641—Advanced Systems Architecture..3~~

~~CS F671—Advanced Software Engineering..3~~

CS F600—Professional Software Development 4

CS F601—Algorithms, Architecture and Languages 4

CS F690—Graduate Seminar and Project 3

CS F691—Graduate Seminar and Project 3

CS upper-division/graduate level electives.............................3

CS graduate level electives...6

6. Pass a written comprehensive exam in ~~the areas of computer algorithms/theory/complexity, computer architecture, computer language and software engineering~~ computer science theory and practice.

7. Minimum credits required 141

* Students must earn a C- grade or better in each course required for the BS degree.

Note: For the master's degree, a student must earn an A or B grade in F400-level courses. A grade of C will be accepted in F600-level courses provided a B grade point average is maintained.

Note: This degree program must be completed in seven years or the student will be disqualified from the program. If a student is disqualified, a BS in computer science will be awarded if: 1) completed in 10 years, and 2) the student meets the BS degree requirements for computer science. ~~with the option of substituting CS F411/F451 for CS F611/F651~~

D. ESTIMATED IMPACT

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

No negative impact on budget or faculty. In fact, this will free up resources (which have been used for low-enrollment graduate classes) to offer 2 additional senior-level electives each year (stacked, so they can be used for the BS, MS or BS/MS degree programs.)

E. 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)

No impacts on other departments or programs.

F. IF MAJOR CHANGE - ASSESSMENT OF THE PROGRAM:

Description of the student learning outcomes assessment process.)

Our SLOA process, based on students in the MS program, showed acceptable performance. The trigger that started the degree review was several years of low enrollment in the MS and MSE programs. (There was also a concurrent UAF program review that shut down the MSE program, but found the MS program ok for now.) While enrollments in CS have always been cyclical, ours did not seem to be following the national CS enrollments trends, which were increasing, as they had in the past.

We also talked to several employers of our MS graduates (RDI in Alaska, IBM, and the NSA) to see what skills they found lacking in recent graduates. The main response was more experience in developing larger software systems – which resulted in the proposal for CS 600 – Professional Software Development.

We combined the necessary theory topics into CS 601, which allows a more sustainable MS program, syncs with the growing BS/MS enrollments better, and allows students to specialize more than before.
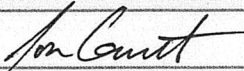
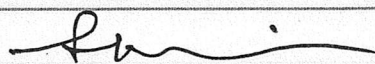## JUSTIFICATION FOR ACTION REQUESTED

The purpose of the department and campus-wide curriculum committees is to scrutinize program/degree change 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 drop a course, is it because the material is covered elsewhere? Use as much space as needed to fully justify the proposed change and explain what has been done to ensure that the quality of the program is not compromised as a result.
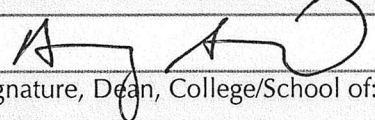
This update to the BS/MS program brings the BS/MS program up-to-date with the changes to the BS program effective in the 2013-14 catalog. We did not request changes to the BS/MS at the same time for two reasons. First, we needed to update the MS degree in a systematic way to create a sustainable program. Second, students are accepted into the BS/MS program at the end of their junior year, so there is a lag between changes to the BS program and when those students under the new program are accepted into the BS/MS program.

As a side effect, this update will also allow students to check their progress towards their BS degree, as DegreeWorks is not able to perform a degree audit on the previous BS/MS degree requirements.

APPROVALS: SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE

	Date	9/24/14
Signature, Chair, Program/Department of: CS		

	Date	9-25-14
Signature, Chair, College/School Curriculum Council for: CEM		

	Date	10/3/14
Signature, Dean, College/School of: CEM		

CHAIR SIGNATURE OBTAINED FOLLOWING APPROVAL BY FACULTY SENATE COMMITTEE

	Date	
Signature, Chair, UAF Faculty Senate		

___Curriculum Review Committee

___Graduate Academic and Advisory Committee