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

PROGRAM/DEGREE REQUIREMENT CHANGE (MAJOR/MINOR)

SUBMITTED BY:

<table>
<thead>
<tr>
<th>Department</th>
<th>DMS</th>
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<tbody>
<tr>
<td>College/School</td>
<td>CNSM</td>
</tr>
</tbody>
</table>

Prepared by

<table>
<thead>
<tr>
<th>Prepared by</th>
<th>Leah Berman</th>
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<tbody>
<tr>
<td>Phone</td>
<td>474-7123</td>
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Email Contact

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</tr>
</thead>
<tbody>
<tr>
<td>Faculty Contact</td>
<td>Leah Berman</td>
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</tbody>
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See [http://www.uaf.edu/uafgov/faculty/cd](http://www.uaf.edu/uafgov/faculty/cd) for a complete description of the rules governing curriculum & course changes.

PROGRAM IDENTIFICATION:

<table>
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<tr>
<th>DEGREE PROGRAM</th>
<th>Mathematics</th>
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Degree Level: (i.e., Certificate, A.A., A.A.S., B.A., B.S., M.A., M.S., Ph.D.)

| BA and BS |

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

Updating the elective program requirements under Option I -- Mathematics 5(b) Complete 21 additional credits of electives. … Following are some suggested elective packages.

We are updating the suggested elective packages to reflect deleted courses and to fix problems that were introduced into the catalog copy from previous catalog changes.
5. Complete one of the following options:

**Option I -- Mathematics**

1. Complete the following:
   - MATH F401W--Introduction to Real Analysis--3 credits
   - MATH F405W--Abstract Algebra--3 credits
   - MATH F490O--Senior Seminar--2 credits

2. Complete 21 additional credits of electives.* Acceptable elective courses include any math or statistics course at the 300-level or above, and CS F201. At least 15 credits must be math courses (for exceptions see below***). Following are some suggested elective packages.
   i. Pure math:
      - MATH F305--Geometry--3 credits
      - MATH F307--Discrete Mathematics--3 credits
      - MATH F402--Intermediate Real Analysis--3 credits
      - MATH F404--Topology--3 credits
      Additional elective credits--9 credits
   
   ii. Applied math:
      - MATH F302--Differential Equations--3 credits
      - MATH F421--Applied Analysis--4 credits
      - MATH F422--Introduction to Complex Analysis--3 credits
      - MATH F460--Mathematical Modeling--3 credits
      Complete two of the following:
      - MATH F307--Discrete Mathematics--3 credits
      - MATH F310--Numerical Analysis--3 credits
      - MATH F402--Intermediate Real Analysis--3 credits
      - STAT F300--Statistics--3 credits
      Additional elective credits--3 credits

   iii. Requirements for mathematics teachers (grades 7 - 12):****
      - CS F201--Computer Science I--3 credits
      - MATH F305--Geometry--3 credits
      - MATH F306--Introduction to the History and Philosophy of Mathematics--3 credits
      - STAT F300--Statistics (3)
      or MATH F371 Probability (3)
      and MATH F408 Mathematical Statistics (3)--3 - 6 credits
      Complete two of the following:
      - MATH F302--Differential Equations--3 credits
      - MATH F421--Applied Analysis--4 credits
      - MATH F422--Introduction to Complex Analysis--3 credits
      - MATH F460--Mathematical Modeling--3 credits
      Complete two of the following:
      - MATH F307--Discrete Mathematics--3 credits
      - MATH F310--Numerical Analysis--3 credits
      - MATH F402--Intermediate Real Analysis--3 credits
      - STAT F300--Statistics--3 credits
      Additional elective credits--0 -- 3 credits
5. Complete one of the following options:

**Option I -- Mathematics**

1. Complete the following:
   - MATH F401W -- Introduction to Real Analysis -- 3 credits
   - MATH F405W -- Abstract Algebra -- 3 credits
   - MATH F490O -- Senior Seminar -- 2 credits

2. Complete **at least 21** additional credits of electives.* Acceptable elective courses include any math or statistics course at the 300-level or above, and CS F201. At least 15 credits must be math courses (for exceptions see below****). Following are some suggested elective packages.
   - **Pure math:**
     - MATH F305 -- Geometry -- 3 credits
     - MATH F307 -- Discrete Mathematics -- 3 credits
     - MATH F402 -- Intermediate Real Analysis -- 3 credits
     - MATH F320 -- Topics in Combinatorics -- 3 credits or MATH F321 -- Number Theory -- 3 credits
     - MATH F422 -- Complex Analysis -- 3 credits
     - MATH F404 -- Topology -- 3 credits
     - Additional elective credits -- 9 credits
   - **Applied math:**
     - MATH F302 -- Differential Equations -- 3 credits
     - MATH F421 -- Applied Analysis -- 4 credits
     - MATH F422 -- Introduction to Complex Analysis -- 3 credits
     - MATH F460 -- Mathematical Modeling -- 3 credits
     - Complete two of the following:
       - MATH F307 -- Discrete Mathematics -- 3 credits
       - MATH F310 -- Numerical Analysis -- 3 credits
       - MATH F402 -- Intermediate Real Analysis -- 3 credits
       - STAT F300 -- Statistics -- 3 credits
     - Additional elective credits -- 3 credits
   - **Requirements for mathematics teachers (grades 7 - 12):****
     - CS F201 -- Computer Science I -- 3 credits
     - MATH F305 -- Geometry -- 3 credits
     - MATH F306 -- Introduction to the History and Philosophy of Mathematics -- 3 credits
     - STAT F300 -- Statistics (3) -- 3 credits
     - or both MATH F371 Probability (3) and MATH F408 Mathematical Statistics (3) -- 3 -- 6 credits
     - MATH F320 -- Topics in Combinatorics -- 3 credits or MATH F321 -- Number Theory -- 3 credits or MATH F307 -- Discrete Mathematics -- 3 credits
     - Complete two of the following:
       - MATH F302 -- Differential Equations -- 3 credits
       - MATH F421 -- Applied Analysis -- 4 credits
       - MATH F422 -- Introduction to Complex Analysis -- 3 credits
       - MATH F460 -- Mathematical Modeling -- 3 credits
     - Complete two of the following:
       - MATH F307 -- Discrete Mathematics -- 3 credits
       - MATH F310 -- Numerical Analysis -- 3 credits
       - MATH F402 -- Intermediate Real Analysis -- 3 credits
       - STAT F300 -- Statistics -- 3 credits
     - Additional elective credits -- 0 -- 3 credits

3. Complete a total of 39 upper-division credits, in any field, to satisfy the general university requirements for baccalaureate degrees.
### D. ESTIMATED IMPACT

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

None.

### 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)

Only math majors.

### F. IF MAJOR CHANGE - ASSESSMENT OF THE PROGRAM:

**Description of the student learning outcomes assessment process.**

Should not affect assessment as these elective packages are purely suggestions: any set of math courses at the 3- and 400 level summing to 21 credits is sufficient for the major.
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.

The catalog copy was not updated with the deletion of Math 402. This fixes that. In addition, Math 307 is now primarily a course for CS majors rather than math majors; the new suggested packages reflect this. Finally, errors had been introduced with a previous catalog change; this change fixes those errors, which we had not been able to fix through other means.

APPROVALS:

Signature, Chair, Program/Department of:

Date 9/26/2012

Signature, Chair, College/School Curriculum Council for:

Date 9/26/2012

Signature, Dean, College/School of:

CNSM