Washington State University
MAJOR CHANGE FORM - - REQUIREMENTS
(Submit original signed form and <u>TEN</u> copies to the Registrar's Office, zip 1035.)
See https://www.ronet.wsu.edu/ROPubs/Apps/HomePage.ASP for this form.

Submit an additional copy to the Faculty Senate Office, French Administration 338, zip 1038.

Department Name Mathematics

1. **CHECK PROPOSED CHANGES.**
   * ☐ Change department/program name *from*_____ *to*_____
   * ☐ New degree or program *in*_____
   * ☐ Change name of degree *from*_____ *to*_____
   * ☐ Drop degree or program *in*_____
   * ☐ Extend existing degree or program *to* _____ campus

   ☐ New Major *in*_____
   ☐ Change name of Major *from*_____ *to*_____
   ☑ Revise Major requirements *in* MS in Mathematics (Mathematics Teaching Option)
   ☐ Drop Major *in*_____
   ☐ Revise certification requirements for the Major *in*_____

   ☐ New Option *in*_____
   ☐ Revise requirements for the Option *in*_____
   ☐ Drop Option *in*_____

   ☐ New Minor *in*_____
   ☐ Revise Minor requirements *in*_____
   ☐ Drop Minor *in*_____

   ☐ New Undergraduate Certificate *in*_____
   ☐ Revise Undergraduate Certificate requirements *in*_____
   ☐ Drop Undergraduate Certificate *in*_____

   ☐ Other _____

Effective term/year Fall 2015

Michael Tsatsomeros	(509) 335-3144	tsat@wsu.edu
Contact Person	**Contact Phone No.**	**Contact email**

2. **GIVE REASONS FOR EACH REQUEST MARKED ABOVE.** *(Attach additional paper if necessary; see reverse side.)* Rationale attached separately

4. **SIGN AND DATE APPROVALS.**

Chirlos Moore 6/2/14   Anvin Raghuel 9/3/14 _____
Chair Signature/date   Dean Signature/date   General Education Com/date

_____   _____   _____   _____
Catalog Subcom/date   Academic Affairs Com/date   Graduate Studies Com/date   Senate/Date

Justification for the proposed change

The Graduate Faculty of Mathematics debated the issue of removing Math 502 (Introduction to Functional Analysis) as a required course for the MS in Mathematics and the MS in Mathematics (Mathematics Teaching Option) over two meetings. In April of 2014 the Graduate Faculty voted in favor of a relevant motion put forward by the Mathematics Graduate Studies Committee. The rationale for the motion and the faculty decision is two-fold:

(1) In both MS degrees mentioned above, preparation in theoretical mathematics is important. There are, however, several courses that serve this purpose beside a second course in Analysis. The Graduate Faculty feels it is important to allow students and their advisory committees more flexibility in course selection in order to set and fulfill their educational goals. Thus, it was decided to retain Math 501 as a required course but to remove the Math 502 requirement.

(2) Math 502 has been removed as a required course in the PhD in Mathematics since 2006, essentially for the reason mentioned in (1) above. Several of our PhD students end up pursuing the MS degree either on the way to the PhD or instead of a doctorate degree. Thus, under the proposed change, the MS and PhD in Mathematics degrees

    (i) will be better aligned, and

    (ii) changes and/or deviations from policy in the Programs of Study will be avoided.

The proposed changes pertain only to the description of the two MS degrees in the Mathematics Graduate Student Handbook (http://www.math.wsu.edu/info/hb.pdf) and do not apply to any entries in the Graduate Catalog. The editorial changes are minimal and are shown in the attached current and future pages of the handbook.

6 The MS in Mathematics (Mathematics Teaching Option)
(Current Handbook Content)

6.1 Description and Learning Outcomes

This is a two-year professional degree designed to prepare teachers of mathematics at the community college, four-year college, or secondary levels. The program combines advanced work in mathematics with coursework in education and practice teaching, providing a foundation in both mathematical content and teaching methodology.

This MS program is designed to lead the student to the following learning outcomes:

1. Critical thinking: Students will have developed the skills necessary to critically read and evaluate both practitioner and research articles in mathematics education journals.

2. Pedagogical content knowledge: Students will have the mathematical knowledge necessary to teach upper secondary and lower college level mathematics.

3. Effective communication: Students will be able to speak effectively about mathematics, and write scholarly contributions to practitioner journals.

Departmental requirements and regulations for the Mathematics Teaching Option of the MS degree are specified below. The regulations of the Graduate School for master's programs are available in the Graduate School Policies and Procedures Manual.

6.2 Prerequisites

Same as in §3.2.

6.3 Courses and Hours

A candidate must complete 35 semester hours of approved graduate work, both in mathematical content and teaching methods. This must include 26-semester hours of graded course work.

(a) Mathematics Content

Required Courses: Math 500, 501, <u>502</u>, and at least four credits of Math 702

Mathematics Electives: at least one course must be included from each of the following three areas:

Algebra/Discrete Mathematics/Geometry: Math 505, 507, 509, 550, 553, 555
Probability/Statistics: Math 443, Stat 510, 519, 533, 544, 548, 549, 573
Applied/Numerical: Math 464, 466, 508, 540, 541, 548, 563, 564, 565, 566, 567, 570, 571, 574, 586

(b) Mathematics Education

Required Courses: Math 531, 532, 533

Teaching Practicum: Math 497 (1 semester, 2 credits), Math 597 (2 semesters)

6.4 Transfer Credit

Up to six hours of transfer credit may be given for suitable course work done at another university. Transfer credit is requested by listing the courses on the Program of Study (see §3.5); approval of the Program of Study implies approval of transfer of credit. Other general regulations regarding Transfer Credit can be found in Chapter 6 of the Graduate School Policies and Procedures Manual.

6.5 The Program of Study

Same as in §3.5.

6.6 The MS Examination

Each Master's student must pass a final oral examination that will cover all of the student's course work plus the content of Math 401–402 (analysis) and 420–421 (linear and abstract algebra) and include an oral presentation on the results of the student's Math 702 project. The student's advisory committee will conduct this examination.

6.7 The Application for Degree

Same as in §3.7.

6.8 Thesis

There is no thesis requirement. However, the student must complete four hours of Math 702. This involves independent study under the guidance of a faculty member, normally the chair of the student's advisory committee. The topic of the study must pertain to curricular and pedagogical issues relevant to teaching mathematics. The results of the project are usually summarized in a paper, although this is not mandatory.

6 The MS in Mathematics (Mathematics Teaching Option)
(Proposed Handbook Contents)
6.1 Description and Learning Outcomes

This is a two-year professional degree designed to prepare teachers of mathematics at the community college, four-year college, or secondary levels. The program combines advanced work in mathematics with coursework in education and practice teaching, providing a foundation in both mathematical content and teaching methodology.

This MS program is designed to lead the student to the following learning outcomes:

1. Critical thinking: Students will have developed the skills necessary to critically read and evaluate both practitioner and research articles in mathematics education journals.

2. Pedagogical content knowledge: Students will have the mathematical knowledge necessary to teach upper secondary and lower college level mathematics.

3. Effective communication: Students will be able to speak effectively about mathematics, and write scholarly contributions to practitioner journals.

Departmental requirements and regulations for the Mathematics Teaching Option of the MS degree are specified below. The regulations of the Graduate School for master's programs are available in the Graduate School Policies and Procedures Manual.

6.2 Prerequisites

Same as in §3.2.

6.3 Courses and Hours

A candidate must complete 35 semester hours of approved graduate work, both in mathematical content and teaching methods. This must include 26-semester hours of graded course work.

(a) Mathematics Content

Required Courses: Math 500, 501, and at least four credits of Math 702

Mathematics Electives: at least one course must be included from each of the following three areas:

Algebra/Discrete Mathematics/Geometry: Math 505, 507, 509, 550, 553, 555
Probability/Statistics: Math 443, Stat 510, 519, 533, 544, 548, 549, 573
Applied/Numerical: Math 464, 466, 508, 540, 541, 548, 563, 564, 565, 566, 567, 570, 571, 574, 586

(b) Mathematics Education

Required Courses: Math 531, 532, 533

Teaching Practicum: Math 497 (1 semester, 2 credits), Math 597 (2 semesters)

6.4 Transfer Credit

Up to six hours of transfer credit may be given for suitable course work done at another university. Transfer credit is requested by listing the courses on the Program of Study (see §3.5); approval of the Program of Study implies approval of transfer of credit. Other general regulations regarding Transfer Credit can be found in Chapter 6 of the Graduate School Policies and Procedures Manual.

6.5 The Program of Study

Same as in §3.5.

6.6 The MS Examination

Each Master's student must pass a final oral examination that will cover all of the student's course work plus the content of Math 401–402 (analysis) and 420–421 (linear and abstract algebra) and include an oral presentation on the results of the student's Math 702 project. The student's advisory committee will conduct this examination.

6.7 The Application for Degree

Same as in §3.7.

6.8 Thesis

There is no thesis requirement. However, the student must complete four hours of Math 702. This involves independent study under the guidance of a faculty member, normally the chair of the student's advisory committee. The topic of the study must pertain to curricular and pedagogical issues relevant to teaching mathematics. The results of the project are usually summarized in a paper, although this is not mandatory.