

New Undergraduate Program (Majors, Minors, Sequences) Proposal
Illinois State University - University Curriculum Committee

Program Department Mathematics

Initiator Gaywalee Yamskulna

Phone 438-7989

Initiator Department Mathematics

Coauthor(s) Fusun Akman (akmanf@ilstu.edu), Sunil Chebolu (schebol@ilstu.edu), Mohammad Bahmanian (mbahman@ilstu.edu), Amy Hurd (arhurd@ilstu.edu)

Title of New Program Mathematics Accelerated Sequence

Submission Date Thursday, December 6, 2018

Email gyamsku@ilstu.edu

Campus Address 4520 Mathematics

Version 8 **ID** 208

Proposed Starting Catalog Year 2020-2021

1. Proposed Action

New Major

New Minor

✓ New Sequence

More than 50% of courses in this program are Distance Education

No Is this program an Integrated Bachelors/Masters degree program?

Sequence Major

Mathematics

2. Provide Undergraduate Catalog copy for new program.

Mathematics Accelerated Sequence: This sequence is designed to build a strong foundation for students who are interested either in pursuing a doctorate in mathematics, in vocations involving the applications of computational mathematics, or in teaching at the community college level. High-achieving students with a cumulative GPA and a major GPA of 3.20 or higher may request the Accelerated Sequence in the second semester of their junior year (75 credit hours). This sequence allows students to take up to 12 hours of approved graduate courses that will count for both the undergraduate and graduate programs in Mathematics. Students will then apply to the graduate program in the last semester of their senior year. Enrollment in the Accelerated Sequence does not guarantee admission into the Mathematics graduate program. Admission timing is very important to successful completion of the program, so students should regularly consult with their academic advisor and the Mathematics Department's Masters Director. Students in the Accelerated Mathematics Sequence must complete Option I or Option II as described in the graduate catalog.

Undergraduate degree requirement:

- A minimum of 45 hours in Mathematics required.
- Required courses with a grade of C or better: MAT 145, 146, 147, 175, 236, 247, 260, 350; ENG 145 or 249 or equivalent.
- One computer programming course from: IT 165, 168. **NOTE:** Hours taken in Information Technology do not count toward the required 45 hours in Mathematics.
- At least one course chosen from MAT 336*, 337*, 347*, 349.
- From the following groups, select three or more courses, not all in the same group:

Algebra group: MAT 330, 336*, 337*.

Analysis group: MAT 340, 341, 345, 347*, 349.

Discrete group: MAT 361, 362, 363.

Statistics group: MAT 351.

Research group: MAT 268.

- Submission of senior portfolio (see advisor).

* To graduate in the Accelerated Sequence, students must take at least one of MAT 336, MAT 337, or MAT 347 for graduate credit during their senior year, with a total limit of 12 hours of graduate credit during their senior year. Students must consult with their advisor prior to the start of each course to ensure approval and correct registration for graduate credit.

NEW Course Requirements Catalog Format effective starting with the 2019-2020 Catalog

**MAJOR IN MATHEMATICS (B.S.)
ACCELERATED SEQUENCE**

Major (45 credit hours in Mathematics required)

- _____ 4 MAT 145 Calculus I (P: C or better in MAT 144 or placement)
- _____ 4 MAT 146 Calculus II (P: C or better in MAT 145)
- _____ 4 MAT 147 Calculus III (P: C or better in MAT 146)
- _____ 4 MAT 175 Elementary Linear Algebra (P: C or better in MAT 146)
- _____ 4 MAT 236 Elementary Abstract Algebra (P: C or better in MAT 175 and 260 or conc. reg.)
- _____ 3 MAT 247 Elementary Real Analysis (P: C or better in MAT 175 and 260)
- _____ 4 MAT 260 Discrete Mathematics (P: C or better in MAT 146)
- _____ 4 MAT 350 Applied Probability Models (P: C or better in MAT 147)

Take one of the following courses:

- _____ 3 ENG 145 Writing in the Academic Disciplines (P: ENG 101)
 - _____ 3 ENG 249 Technical & Professional Writing I (P: ENG 101)
- Note: Hours taken in English do not count toward the required 45 hours in Mathematics.

Take one of the following courses:

- _____ 4 IT 165 Computer Programming for Scientists (P: C or better in MAT 145)
 - _____ 4 IT 168 Structured Problem-Solving Using the Computer (P: MAT 104)
- Note: Hours taken in Information Technology do not count toward the required 45 hours in Mathematics.

Take one of the following courses:

- _____ 3 MAT 336* Advanced Abstract Algebra (P: C or better in MAT 236)
- _____ 4 MAT 337* Advanced Linear Algebra (P: C or better in MAT 175; senior standing)
- _____ 4 MAT 347* Advanced Real Analysis (P: C or better in MAT 247 or 345)
- _____ 4 MAT 349 Introduction to Complex Analysis (P: MAT 147)

* To graduate in the Accelerated Sequence, students must take at least one of MAT 336, MAT 337, or MAT 347 for graduate credit during their senior year, with a total limit of 12 hours of graduate credit during their senior year. Students must consult with their advisor prior to the start of each course to ensure approval and correct registration for graduate credit.

Take three or more courses (10-11 credit hours) of additional Mathematics electives. All electives cannot be from same elective group. Please consult your academic advisor.

Algebra: MAT 330, 336*, 337*

Analysis: MAT 340, 341, 345, 347*, 349

Discrete: MAT 361, 362, 363

Statistics: MAT 351

Research: MAT 268

Submission of senior portfolio is required (see advisor).

Note: Hours taken in Information Technology do not count toward the required 45 hours in Mathematics.

Required courses with a grade of C or better: MAT 145,146, 147, 175, 236, 247, 260, 350; ENG 145 or 249 or equivalent.

General Education (39 credit hours)

Refer to the General Education section of the Undergraduate Catalog for a complete list of General Education requirements and courses.

Communication and Composition (2 courses required)

____ 3 COM 110 Communication as Critical Inquiry

____ 3 ENG 101 or ENG 101A10 Composition as Critical Inquiry

Mathematics (1 course required)

____ 4 MAT 145 Calculus I

Natural Science/Natural Science Alternatives (2 courses required)

Students must complete 1 course from 2 different sciences.

United States Traditions (1 course required)

Individuals & Civic Life (1 course required)

Fine Arts (1 course/3 credit hours required)***

Humanities (1 course required)***

Language in the Humanities (1 course required)***

Quantitative Reasoning (1 course required)

____ 4 MAT 146 Calculus II

Science, Math, & Technology (1 course required)

Exempt for Mathematics majors

Social Sciences (1 course required)***

Additional Graduation Requirements

____/120 minimum total credit hours

____/42 minimum senior college hours

____ College of Arts & Sciences language requirement

AMALI requirement

***certain courses in General Education fulfill the AMALI requirement

B.S. Science, Math, & Technology (1 course required)

____ 4 MAT 147 Calculus III

3. Provide a description for the proposed program.

Mathematics Accelerated Sequence 02/20/2019

This Accelerated Sequence in Mathematics offers motivated students the opportunity to complete their bachelor's and master's degrees within five years of study. Students are expected to take graduate courses during their senior year that meet the course requirements of both degree programs. These courses will be counted towards their master's degree. Students must take at least one graduate course in their final year with a limit of 12 credit hours. The master's degree will be rewarded upon completion of their graduate requirements.

4. Provide a rationale of proposed program.

1) The Accelerated Sequence in Mathematics offers high-achieving students the opportunity to complete their bachelor's and master's degrees with one additional year of study beyond their undergraduate work. Students will take both graduate and undergraduate classes during their senior year, will obtain a bachelor's degree, and can transition into their master's degree program for one additional year. This program will allow our students to efficiently move through two degrees and jump-start their professional careers. In addition, it also allows our department to retain more students through both degrees.

2) This Mathematics Accelerated Sequence will make our Mathematics programs more competitive with other universities and attract high-quality students.

3) This program will help us increase the numbers of master's degree students in Mathematics.

5. Describe the expected effects of the proposed program on existing campus programs (if applicable).

1) This Accelerated Sequence in Mathematics offers a great opportunity for students with strong motivation and high academic standing to complete both bachelor's and master's degrees within five years of study. In their final undergraduate year, students will have the option to take graduate courses that will count towards both degree programs. It also allows our program to retain high-quality students through both degrees.

2) This program will increase the number of Mathematics undergraduate majors.

3) This program will increase the number of Mathematics master's degree students.

6. Provide a sample four year plan of study demonstrating that a student could realistically complete the program requirements in a specific number of semesters.

Mathematics Accelerated Sequence 02/20/2019

We provide two sample plans in the attachment file. We also respond to CCC comments in the file.

7. Describe the expected curricular changes required, including new courses. If proposals for new courses have also been submitted, please reference those related proposals here:

The new sequence serves as an opportunity for ISU students to obtain two degrees in five years, while only requiring courses that are already in the curriculum. No changes are needed.

8. Anticipated funding needs and source of funds.

The new sequence enhances the opportunities offered to ISU students but does not require addition of courses or instructors. No additional funding is needed.

9. No Does this program count for teacher education?

Mathematics Accelerated Sequence 02/20/2019

10. No Is this an Interdisciplinary Studies program?

11. The following questions must be answered.

No Have you confirmed that Milner Library has sufficient resources for the proposed program?

Explain why Milner Library has not been contacted.

Since no new courses are needed, the new sequence does not require additional resources from Milner Library.

No Are more than 124 hours required to complete a degree with this major?

No Beyond General Education, does the major require more than 66 semester hours?

No Does this sequence (if in a major) require more than 55 semester hours of major courses?

No Does this program stipulate specific general education courses offered in the major department/school as a part of the major requirements only if such courses serve as prerequisites for other courses required by the major?

Yes Is the proposed program intended to be longer than four years (as indicated by the plan of study)?

N.A. Have letter(s) of concurrence from affected departments/schools been obtained?

A departments/school is affected if it has a program with significant overlap or if it teaches a required or elective course in the program.

Upload Provost Approval Memo. Must be in Adobe PDF format. PDF cannot exceed 4MB in size.

Choose File No file chosen

Upload File

12. Routing and action summary for New Program:**1. Mathematics Department Curriculum Committee Chair**

<u>David Barker (website)</u>	David Barker	11/13/2018 1:04:03 PM
Signature	Print	Date

2. Mathematics Department Chair/School Director

<u>George Seelinger (website)</u>	George Seelinger	11/13/2018 1:04:38 PM
Signature	Print	Date

3. College of Arts & Science College Curriculum Committee Chair

<u>Todd Stewart (website)</u>	Todd Stewart	12/6/2018 3:22:19 PM
Signature	Print	Date

4. College of Arts & Science College Dean

<u>Sally Parry (website)</u>	Sally Parry	12/6/2018 4:23:13 PM
Signature	Print	Date

5. University Curriculum Committee Chair

<u>Jean Standard (website)</u>	Jean Standard	2/14/2019 11:16:31 AM
Signature	Print	Date

All new programs (majors, minors, sequences) are routed by the U.C.C. to the Academic Senate

Comments
Comments from Version 1 from Gaywalee Yamskulna (Department Curriculum Committee Chair):

Initiator wants to change the name of this sequence.

Comments from Version 2 from David Barker (Department Curriculum Committee Chair):

Thank you for submitting a proposal for a new sequence in mathematics. The Committee has discussed your proposal and would like to see the following changes:

1) The first sentence of your description ends with "for students who are interested in pursuing Doctoral Study in either Pure or Applied Mathematics." Although you later clarify, we feel that this may give students the false impression that this is intended for only graduate students pursuing a doctoral degree. We suggest you revise the first two sentences to the following:

"This sequence is designed to build a strong foundation for students who are interested in pursuing a doctorate in mathematics, in vocations involving the applications of computational mathematics, or teaching at the community college level."

2) We suggest changing the cumulative GPA requirement to a major GPA of 3.20.

3) At the end of the description you provide an * that states, "To graduate in the Accelerated Sequence, students must take at least ..." We are unsure how this relates to the three courses that you have an asterisk by—MAT 336, 337, 347. Please clarify this for the reader.

4) See my written editorial suggestions.

Thanks,

Dave

Comments from Version 3 from Gaywalee Yamskulna (Department Curriculum Committee Chair):

Authors need to make changes that are suggested by Department Curriculum Committee.

Comments from Version 4 from Gaywalee Yamskulna (Department Curriculum Committee Chair):

Revise: change from a cumulative GPA of 3.2 or higher to "a cumulative GPA and a major GPA of 3.2 or higher".

Comments from Version 4 from Gaywalee Yamskulna (Rejected):

Revise: change from a cumulative GPA of 3.2 or higher to "a cumulative GPA and a major GPA of 3.2 or higher".

Comments from Version 5 from Jeri Ryburn (Department Curriculum Committee Chair):

Per Gail's instructions, I'm rejecting this duplicate proposal and will delete it: "I had problem with my internet connection at home and clicked submit twice. That is why there are two identical proposals. You can delete the one that is still at the MAT Curriculum Committee Status." Thanks! Jeri

Comments from Version 5 from George Seelinger (Department Chair/School Director):

The Department Council has asked for the following changes. The proposal should be approved pending these changes.

1.) Change the phrase "spring semester of their junior year." to "second semester of their junior year (75 credit hours)." Similarly, change the phrase "spring of their senior year" to "last semester of their senior year."

2.) Add the sentence "Admission timing is very important to successful completion of the program, so students should regularly consult with their academic advisor and the Mathematics Department's Masters Director." at the end of the initial paragraph.

3.) Change the statement under the asterisk to "*To graduate in the Accelerated Sequence, students must take at least one of MAT 336, 337, or 347 for graduate credit during their senior year, with a total limit of 12 hours of graduate credit during their senior year. Students must consult with their advisor prior to the start of each course to ensure approval and correct registration for graduate credit."

4.) Address minor editorial changes as per document to be emailed to you.

Let us know if you have any questions.

Comments from Version 6 from Todd Stewart (College Curriculum Committee Chair):

Hi. Sorry it took us so long to get to these proposals. We've just been overwhelmed with work this semester. We voted to reject this proposal. While we're sure with changes we will approve it, several important changes are needed. (1) All new sequences require a financial implication form. We're not aware of the existence of such a form for this program. I think these are available at the Provost's office. (2) As part of the copy, you have "From the following groups, select three or more courses, not all in the same group..." We just want to verify that you intend that a student could take 2 of the 3 courses from the same group. If you do mean this, mentioning it in the rationale would help, so we know it is your intention. (3) The sample plan of study is difficult to follow, and in several places the numbers don't add up. First off, we're not sure if you intend those earning a B.A. to be eligible for the accelerated degree, or only those pursuing the B.S. This should be made clearer, including in the copy, since students and advisors need to know. If you do intend for those earning a B.A. to be eligible, then we think there should be two sample plans of study, one for those in the B.S., and a second for those in the B.A. Please carefully check the math on the plan of study. Numbers are not adding up. E.g., third year spring semester, the total hours appear to be 16-19, not 16-17. And, some parentheses are missing, we think, in the total 2-year M.S. hours, and "-" is too easily read as "minus." You have: 12+9+6-12+12+8. This should at least be: 12+9+(6 through 12)+12+8. But doesn't this add to 47-53 instead of 27-32? In any event, we are struggling to see how the plan of study works, and how the numbers add up. (4) We do not understand the relation of the accelerated program to the two M.S. options on p. 103 of the grad catalog. Would students need to choose Option I Non-Thesis or Option II Thesis? Or is the accelerated program intended to be an entirely separate option, not falling under Option I or II? If the program does fall under I or II, then it would seem the minimum hours would be 30 or 32, which seems to go beyond the 27-32 you list in the plan of study (although I've pointed out we don't understand how you arrived at that calculation). This needs to be better addressed, including as part of the rationale. (5) Finally, we think you need to check "yes" to the question: "Are more than 124 hours required to complete a degree with this major?" You claim in the plan of study that the total 4 year-credit hours are 125-132. Please contact me with questions you might have about this matter. Thanks, Todd Stewart, Chair, CAS CC

Comments from Version 7 from Todd Stewart (College Curriculum Committee Chair):

Hi. This is much better. We voted to approve this proposal pending one small addition to the catalog copy. So, while I'm hitting the revise button now to allow changes in the system, I am empowered to approve a suitably updated proposal without seeking another vote. We think that it would be helpful to add a sentence somewhere to the copy, maybe right after "Admission timing is very important to successful completion of the program, so students should regularly consult with their academic advisor and the Mathematics Department's Masters Director." We suggest adding: "Students in the Accelerated Mathematics Sequence must complete Option I or Option II as described in the graduate catalog." This would be helpful for students to understand the full requirements of the sequence; many might not think to look in the graduate catalog for additional requirements that would apply to them and which might affect their choice of courses, etc. Thanks, Todd Stewart, Chair, CAS CC

