Proposed Change to the Mathematics (B.A) degree program

The Department of Mathematics and Computer Science currently offers two concentrations (pure, applied) for our B.A. in Mathematics degree. For several years (even prior to the recent drop in enrollment) many students would end up putting together a degree program by picking and choosing courses from among both concentrations. This was due to staffing, courses being offered, and interests of students. This resulted in a large number of course waivers and substitutions. Additionally, some students were able to graduate with a degree in both concentrations by double counting minimal coursework across possible electives.

In order to create a more coherent and cohesive program that better exposes students to and educates students in various branches of mathematics we are merging the two concentrations into one degree program. These changes will also allow us to be efficient with both staffing and course scheduling. Additionally, students who would have chosen the pure or applied concentration will still be able to complete courses in those areas which will both prepare for graduate school and the workforce.

Merging concentrations changes the required core set of course that now draw from both previous concentrations. The set of electives allow for a wide selection of interests. The resulting degree program makes clear that a certain number of hours at the 4000 level are needed and also places the seminar course (MAT 4700, previously titled MAT 3800) as a capstone type of experience. The new program does result in some prerequisite changes, which will be dealt with through executive action. Finally, the total number of required hours does not exceed the previous maximum of 55.

Current
Major

Semester Hours required for the Mathematics Major: 53-55 semester hours depending on Concentration
The Mathematics major comprises the following courses and one of the concentrations listed below. An upper division writing intensive course is required.
Required courses for both Mathematics Major Concentrations (30 Hours)

- ☐ MAT 1441G - Calculus and Analytic Geometry I. Credits: 5
- ☐ CSM 2170 - Computer Science I. Credits: 4
- ☐ MAT 2442 - Calculus and Analytic Geometry II. Credits: 5
- ☐ MAT 2443 - Calculus and Analytic Geometry III. Credits: 4
- ☐ MAT 2550 - Introduction to Linear Algebra. Credits: 3
- ☐ MAT 2800 - Foundations of Mathematics. Credits: 3
- ☐ MAT 3530 - Abstract Algebra. Credits: 4
- ☐ MAT 3800 - Seminar in Mathematics. Credits: 2

Pure Mathematics Concentration Requirements

Pure Mathematics Core (11 hours)

- ☐ MAT 4760 - Linear Algebra. Credits: 4
- ☐ MAT 4855 - Introduction to Topology. Credits: 3
- ☐ MAT 4860 - Mathematical Analysis. Credits: 4

Electives From: (12 Hours)

- ☐ MAT 3271 - College Geometry I. Credits: 3
- ☐ MAT 3272 - College Geometry II. Credits: 3
- ☐ MAT 3501 - Differential Equations I. Credits: 3
- ☐ MAT 3502 - Differential Equations II. Credits: 3
- ☐ MAT 3701 - Probability and Statistics I. Credits: 3
- ☐ MAT 3702 - Probability and Statistics II. Credits: 3
- ☐ CSM 3770 - Combinatorial Computing. Credits: 3
- ☐ MAT 4335 - Topics in Mathematics. Credits: 3
- ☐ MAT 4750 - Linear Programming. Credits: 3
- ☐ MAT 4830 - Introduction to Complex Analysis with Applications. Credits: 3
- ☐ CSM 4885 - Theory of Computation. Credits: 3
- ☐ MAT 4910 - Number Theory. Credits: 3

Applied Mathematics Concentration Requirements

Applied Mathematics Core (12 Hours)

- ☐ MAT 3501 - Differential Equations I. Credits: 3
- ☐ CSM 3570 - Numerical Analysis. Credits: 3
- ☐ MAT 3701 - Probability and Statistics I. Credits: 3
- ☐ MAT 3702 - Probability and Statistics II. Credits: 3

Electives From: (11-13 Hours)

- ☐ CSM 2670 - Computer Science II. Credits: 4
- ☐ MAT 3502 - Differential Equations II. Credits: 3
- ☐ CSM 3770 - Combinatorial Computing. Credits: 3
- ☐ MAT 4345 - Topics in Applied Mathematics. Credits: 3
- ☐ MAT 4750 - Linear Programming. Credits: 3
- ☐ MAT 4760 - Linear Algebra. Credits: 4
- ☐ MAT 4780 - Mathematics of Interest. Credits: 3
- ☐ MAT 4830 - Introduction to Complex Analysis with Applications. Credits: 3
- ☐ MAT 4860 - Mathematical Analysis. Credits: 4

Proposed

Major

Semester Hours required for the Mathematics Major: ~~53-55~~ 53 semester hours ~~depending on Concentration~~

The Mathematics major comprises the following courses ~~and one of the concentrations listed below. An upper division writing intensive course is required~~.

Required ~~courses for both Mathematics Major Concentrations~~ (~~30~~ 44 Hours)

- ☐ MAT 1441G - Calculus and Analytic Geometry I. Credits: 5
- ☐ CSM 2170 - Computer Science I. Credits: 4
- ☐ MAT 2442 - Calculus and Analytic Geometry II. Credits: 5
- ☐ MAT 2443 - Calculus and Analytic Geometry III. Credits: 4
- ☐ MAT 2800 - Foundations of Mathematics. Credits: 3
- MAT 3501 – Differential Equations I. Credits: 3
- ☐ MAT 3530 - Abstract Algebra. Credits: 4
- MAT 3701 – Probability and Statistics I. Credits. 3
- ☐ MAT 4700 - Seminar in Mathematics. Credits: 2
- ☐ MAT 4760 - Linear Algebra. Credits: 4
- ☐ MAT 4855 - Introduction to Topology. Credits: 3
- ☐ MAT 4860 - Mathematical Analysis. Credits: 4

~~**Pure Mathematics Concentration Requirements**~~

~~**Pure Mathematics Core (11 hours)**~~

- ~~☐ MAT 4760 - Linear Algebra. Credits: 4~~
- ~~☐ MAT 4855 - Introduction to Topology. Credits: 3~~
- ~~☐ MAT 4860 - Mathematical Analysis. Credits: 4~~

Electives From: (~~12~~ 9 Hours)

At least one course (3 credits) must be at the 4000 level. Below is a list of regularly offered courses, additional courses may be offered that are in the catalog that will count as electives. Note that some course may have additional prerequisites beyond the required set of course cores.

- ☐ MAT 3502 - Differential Equations II. Credits: 3
- ☐ MAT 3702 - Probability and Statistics II. Credits: 3
- CSM 3570 – Numerical Analysis. Credits: 3
- ☐ CSM 3770 - Combinatorial Computing. Credits: 3
- ☐ MAT 4335 - Topics in Mathematics. Credits: 3
- ☐ MAT 4750 - Linear Programming. Credits: 3
- ☐ MAT 4830 - Introduction to Complex Analysis with Applications. Credits: 3
- ☐ CSM 4885 - Theory of Computation. Credits: 3
- ☐ MAT 4910 - Number Theory. Credits: 3

Applied Mathematics Concentration Requirements

Applied Mathematics Core (12 Hours)

- ☐ MAT 3501 - Differential Equations I. Credits: 3
- ☐ CSM 3570 - Numerical Analysis. Credits: 3
- ☐ MAT 3701 - Probability and Statistics I. Credits: 3
- ☐ MAT 3702 - Probability and Statistics II. Credits: 3

Electives From: (11-13 Hours)

- ☐ CSM 2670 - Computer Science II. Credits: 4
- ☐ MAT 3502 - Differential Equations II. Credits: 3
- ☐ CSM 3770 - Combinatorial Computing. Credits: 3
- ☐ MAT 4345 - Topics in Applied Mathematics. Credits: 3
- ☐ MAT 4750 - Linear Programming. Credits: 3
- ☐ MAT 4760 - Linear Algebra. Credits: 4
- ☐ MAT 4780 - Mathematics of Interest. Credits: 3
- ☐ MAT 4830 - Introduction to Complex Analysis with Applications. Credits: 3
- ☐ MAT 4860 - Mathematical Analysis. Credits: 4

Date approved by the department or school: 1/11/2019
Date approved by the college curriculum committee:
Date approved by the Honors Council *(if this is an honors course):*
Date approved by CAA: CGS: