University Council

April 12, 2024

UNIVERSITY CURRICULUM COMMITTEE – 2023-2024
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Dear Colleagues:

The attached proposal from the Franklin College of Arts and Sciences for a new Area of Emphasis in Mathematics and Data Science under the major in Mathematics (B.S.) will be an agenda item for the April 19, 2024, Full University Curriculum Committee meeting.

Sincerely,

Susan Sanchez, Chair

cc: Provost S. Jack Hu
    Dr. Marisa Pagnattaro
PROPOSAL FOR AN AREA OF EMPHASIS

Date: March 6, 2024

School/College: Franklin College of Arts and Sciences

Department/Division: Mathematics

Program (Major and Degree): Mathematics (B.S.)

Area of Emphasis Title: Mathematics and Data Science

CIP: 30700101

Which campus(es) will offer this program? Athens

Proposed Effective Date: Fall 2025

1. Area of Emphasis Description:

The Area of Emphasis in Mathematics and Data Science combines core mathematics courses, mathematics courses related to data science, and courses from statistics and computing about data science practice. Completion of the area of emphasis requires 22 credit hours.

Required Courses (13 hours):
CSCI 3360, Data Science I (4 hours)
MATH 4500/6500, Numerical Analysis I (3 hours)
STAT 4230/6230, Applied Regression Analysis (3 hours)
STAT 4365/6365, Modern Statistical Programming (3 hours)

Choose one of the following courses (3 hours):
MATH 4600/6600, Probability (3 hours)
STAT 4510/6510, Mathematical Statistics I (3 hours)

Choose two of the following courses (6 hours):
MATH 4510/6510, Numerical Analysis II (3 hours)
MATH 4740/6740, Optimization and Data Analysis (3 hours)
MATH 4750/6750, Matrix and Integral Transforms with Applications (3 hours)
MATH(BINF) 4780/6780, Mathematical Biology (3 hours)
MATH 4790/6790, The Mathematics of Option Pricing (3 hours)
MATH 4802/6802, Industrial Mathematics (3 hours)

2. Major Requirements:
Attachments a list of requirements for the major. For undergraduate programs, attach a copy of the major requirements from the Bulletin. For graduate programs, provide a list of general requirements for the major.
Area VI

MATH 2260 or MATH 2310H or MATH 2410 or MATH 2410H
MATH 2270 or MATH 2500 (can be waived by MATH 3510 or MATH 3510H)
MATH 2700

Choose at least two courses from the following:*
PHYS 1211-1211L or PHYS 1251 or PHYS 1311-1311L
PHYS 1212-1212L or PHYS 1252 or PHYS 1312-1312L (or higher, except PHYS 1990)
CSCI 1301-1301L
CSCI 1302
CSCI 1360
CSCI 2670
CSCI 2720
STAT 2360-2360L*
STAT 4210*
STAT 4520/6520

*Students pursuing the Area of Emphasis in Mathematics and Data Science should take STAT 2360-2360L and STAT 4210.

Required Courses (24-28 hours)

(A minimum grade of "C" (2.0) or better must be earned in any upper-division MATH course.)

Required (9-10 hours)
MATH 3000 or MATH 3300 or MATH 3510 or MATH 3510H
MATH 3100
MATH 3200 (can be waived for students who complete MATH 3510 or MATH 3510H)

Students may either select an Area of Emphasis and complete the requirements corresponding to that area, or else complete the General Mathematics requirements listed below. [This is new phrasing, replacing a confusing paragraph in the current Bulletin.]

General Mathematics (15 hours)
MATH 4000/6000

Choose one of the following:
MATH 4100/6100
MATH 4150/6150
MATH 4250/6250

Three additional three-hour MATH courses at the 3000-level or above, subject to the advisor’s approval. STAT 4510/6510 may also satisfy this requirement, unless MATH 4600/6600 was taken. MATH 3220, MATH 4801, MATH 4950, MATH 4960R, MATH 4970R, MATH 4980R, MATH 4990R do not satisfy this requirement. No 5000-level MATH courses, except MATH 5200/7200 and MATH 5210/7210, satisfy this requirement.

Area of Emphasis in Applied Mathematics (15 hours)
MATH 4500/6500

Choose two of the following:
MATH 4600/6600 or STAT 4510/6510
MATH 4700/6700
MATH 4720/6720

Two additional three-hour MATH courses at the 3000-level or above, subject to the advisor's approval. STAT 4510/6510 may also satisfy this requirement, unless MATH 4600/6600 was taken. MATH 3220, MATH 4801, MATH 4950, MATH 4960R, MATH 4970R, MATH 4980R, MATH 4990R do not satisfy this requirement. No 5000-level MATH courses, except MATH 5200/7200 and MATH 5210/7210, satisfy this requirement.

**Area of Emphasis in Financial Mathematics (18 hours)**

FINA 3001
FINA 4310
MATH 4500/6500
MATH 4600/6600 or STAT 4510/6510
MATH 4790/6790

One additional three-hour MATH course at the 3000-level or above, subject to the advisor's approval. STAT 4510/6510 may also satisfy this requirement, unless MATH 4600/6600 was taken. MATH 3220, MATH 4801, MATH 4950, MATH 4960R, MATH 4970R, MATH 4980R, MATH 4990R do not satisfy this requirement. No 5000-level MATH courses, except MATH 5200/7200 and MATH 5210/7210, satisfy this requirement.

**Area of Emphasis in Mathematics and Data Science (22 hours)**

CSCI 3360
MATH 4500/6500
STAT 4230/6230
STAT 4365/6365

Choose one course from the following:
MATH 4600/6600
STAT 4510/6510

Choose two courses from the following:
MATH 4510/6510
MATH 4740/6740
MATH 4750/6750
MATH(BINF) 4780/6780
MATH 4790/6790
MATH 4802/6802

**General Electives (28-36 hours)**
(Refer to College-wide requirements when selecting general electives.)
Upper division (12 hours - Area of Emphasis in Financial Mathematics) or (15 hours -General Mathematics or Area of Emphasis in Applied Mathematics) or (8 hours – Area of Emphasis in Mathematics and Data Science)
Any level (21 hours)
Documentation of Approval and Notification

Proposal: Area of Emphasis in Mathematics and Data Science under Mathematics (B.S.)

College: Franklin College of Arts and Sciences

Department: Mathematics

Proposed Effective Term: Fall 2025

School/College:

- Mathematics Department Head, Dr. William Graham, 2/6/24
- Franklin College of Arts and Sciences Associate Dean, Dr. Jean Martin-Williams, 3/19/24