

8 February 2022

TO: Faculty Senate

FROM: Sarah Read, Chair, Graduate Council

RE: March 2022 Consent Agenda

The following proposals have been approved by the Graduate Council and are recommended for approval by the Faculty Senate.

You may read the full text for any course or program proposal, as well as Budget Committee comments on new and change-to-existing program proposals, at the [Online Curriculum Management System \(OCMS\) Curriculum Dashboard](#).

College of the Arts

Change to Existing Courses

E.1.a.1

- *Mus 528 Opera Production, 2 credits – change credits from 2 to 1-2

E.1.a.2

- *Mus 537 Keyboard Literature, 3 credits – change title to Keyboard Literature I, change description, and change prerequisite

E.1.a.3

- *Mus 538 Keyboard Literature, 3 credits – change title to Keyboard Literature II, change description, and change prerequisite

School of Business

New Course

E.1.a.4

- GSCM 575 Machine Learning in Business, 4 credits

Machine learning applies a computer algorithm to detect patterns from which it "learns" the relationships among a set of variables to generate predictions for a variable of interest, assesses the predictive accuracy of its outputs, and then modifies itself accordingly to improve the accuracy of future predictions. The profound effects of machine learning contribute not only to business analysis, but increasingly influence society as a whole such as Netflix recommendations, medical diagnostics, facial recognition on photographs stored on a smartphone, and self-driving cars.

Changes to Existing Courses

E.1.a.5

- RE 521 Real Estate Finance I, 4 credits – change description

E.1.a.6

- RE 522 Real Estate Finance II, 4 credits – change description

College of Education

Drop Existing Courses

E.1.a.7

- SpEd 588 Foundations of Applied Behavior Analysis, 3 credits

E.1.a.8

- SpEd 589 Behavioral Assessment, 5 credits

E.1.a.9

- SpEd 590 Positive Behavior Support, 5 credits

E.1.a.10

- SpEd 591 Single Subject Design, 5 credits

E.1.a.11

- SpEd 592 Ethics in Applied Behavior Analysis, 4 credits

E.1.a.12

- SpEd 593 Advanced Single Subject Design, 4 credits

Maseeh College of Engineering and Computer Science

Change to Existing Program

E.1.a.13

- M.S. in Electrical and Computer Engineering – change thesis option requirements and update core specialization requirements

New Courses

E.1.a.14

- ECE 530 Physical Design of Digital Integrated Circuits, 4 credits
Introduces physical design of low power and high performance digital integrated circuits including SoCs with the goal of delivering layout clean database for fabrication of ICs in foundries. Topics covered include all physical design steps such as floorplanning, placement, clock tree synthesis and routing, low power design with IEEE UPF (Unified Power Format), IP (Intellectual Property) design and integration, variation modeling for maximizing yield, implementation of testing circuits, multi-corner multi-mode performance, convergence, and manual fixing of design rules. Expected preparation: ECE 581.

E.1.a.15

- ECE 563 Grad School Essentials: A Crash Course in Scholarly Skills I, 1 credit
The purpose of the course is to make students better scholars. At the completion of the course, students should be familiar with the tasks and activities for successfully completing a M.S. or PhD thesis. Grad School Essentials I focuses on the foundations and on writing a thesis. May be repeated once for credit. Prerequisite: All students must be proficient in written and spoken English before taking this course.

E.1.a.16

- ECE 564 Grad School Essentials: A Crash Course in Scholarly Skills II, 1 credit

The purpose of the course is to make students better scholars. At the completion of the course, students should be familiar with the tasks and activities for successfully completing a M.S. or PhD thesis. Grad School Essentials II focuses on writing a paper. May be repeated once for credit. Prerequisite: ECE 563. All students must be proficient in written and spoken English before taking this course.

E.1.a.17

- EE 516 Mathematical Foundations of Machine Learning, 4 credits

The goal of this course is to move from familiarity to fluency with the use of linear algebra to solve problems in machine learning and signal processing. Topics covered include least squares, the singular value decomposition, eigenvalue decomposition, subspace methods, and optimization methods such as stochastic gradient descent, momentum methods, ADMM, and iteratively reweighted least squares. Programming experience in a high-level language (Matlab or Python) and familiarity with calculus is required. Prerequisite: Graduate standing or instructor permission.

E.1.a.18

- EE 518 Machine Learning Theory and Algorithms, 4 credits

The goal of this course is to provide a thorough understanding of the fundamental methodologies and algorithms used in machine learning. Students will learn to understand, implement, and innovate on algorithms for common tasks such as classification, regression, clustering, and dimensionality reduction. Topics covered include linear and nonlinear regression, bias-variance tradeoff, ensemble methods, support vector machines, K-means, hierarchical clustering, and Gaussian mixture models. Prerequisite: EE 516 or instructor permission.

E.1.a.19

- EE 519 Deep Learning Theory and Fundamentals, 4 credits

Provides an introduction to the theory and practice of deep learning, with an emphasis on deep neural network-based approaches. Topics covered include theoretical principles of learning, including the VC-dimension and model selection, and how these can be used to guide the design and deployment of neural networks. State-of-the-art approaches to current problems are also covered. Programming experience in a high-level language (Matlab or Python) and familiarity with calculus is required. Prerequisite: EE 516 or instructor permission.

Changes to Existing Courses

E.1.a.20

- CS 533 Concepts of Operating Systems, 3 credits – change prerequisite

E.1.a.21

- ECE 571 Introduction to System Verilog for Design and Verification, 4 credits – change description and prerequisite

E.1.a.22

- EE 522 Discrete Time Processing II, 4 credits – change title to Discrete Time Processing, change description and prerequisite

E.1.a.23

- EE 523 Estimation and Detection I, 4 credits – change title to Estimation and Detection and change description

E.1.a.24

- EE 525 Statistical Signal Processing I: Spectral Estimation, 4 credits – change title to Spectral Estimation and change prerequisite

E.1.a.25

- EE 526 Statistical Signal Processing II: Linear Estimation and Adaptive Filters, 4 credits – change title to Adaptive Filters and change prerequisite

E.1.a.26

- EE 528 State Space Tracking, 4 credits – change prerequisite

Drop Existing Courses

E.1.a.27

- *ECE 518 Linear System Analysis I, 4 credits

E.1.a.28

- *ECE 519 Linear System Analysis II, 4 credits

E.1.a.29

- *ECE 555 AI: Neural Networks I, 4 credits

E.1.a.30

- *ECE 556 AI: Neural Networks II, 4 credits

E.1.a.31

- EE 521 Discrete Time Processing I, 4 credits

E.1.a.32

- EE 524 Discrete Time Processing I, 4 credits

College of Liberal Arts and Sciences**Change to Existing Program**

E.1.a.33

- M.S. in Statistics – create three-option culminating experience (consistent with the M.A./M.S. in Mathematics)

School of Public Health**Changes to Existing Course**

E.1.a.34

- ESHH 530 Environmental Health Chemistry, 4 credits – change title to Environmental and Occupational Health Chemistry

School of Social Work

New Course

E.1.a.35

- SW 552 Applied Program Evaluation for Social Work, 3 credits

Carefully designed and implemented evaluation can answer critical questions for social work practitioners such as: What group of intended beneficiaries does a program actually reach? Did the intervention accomplish its goals? How can interventions or programs be improved? In this course, students will learn the foundations of program evaluation design in social work practice. Working with a community partner, students will construct a comprehensive evaluation design that engages community stakeholders and is responsive to the structural and sociocultural context. Prerequisite: SW 550 or SW 589.

Changes to Existing Course

E.1.a.36

- SW 511 Field Seminar and Field Placement, 1-4 credits – change description