

Memorandum

To: The College of Engineering Faculty

From: The Elmore Family School of Electrical and Computer Engineering

Re: revision to the Quantum Technology Concentration for BSEE

The faculty of the Elmore Family School of Electrical and Computer Engineering has approved the following revisions of the Quantum Technology Concentration for BSEE from the College of Engineering. This action is now submitted to the Engineering Faculty with a recommendation for approval.

FROM:

Concentration Courses (9-10 credits)

EE Advanced Selectives – Choose One (3-4 credits)

ECE 30412 - Electromagnetics II

ECE 44000 - Transmission Of Information

ECE 30500 - Semiconductor Devices or

ECE 50631 - Fundamentals Of Current Flow and

ECE 50632 - Introduction To Quantum Transport and

ECE 50633 - Boltzmann Law: Physics To Computing

Selectives (6 credits)

ECE 39595 - Selected Topics In Electrical And Computer Engineering Titles: Fundamentals of Quantum Technology; Introduction to Nanotechnology and Quantum Science and Technology

ECE 50631 - Fundamentals Of Current Flow and

ECE 50632 - Introduction To Quantum Transport and

ECE 50633 - Boltzmann Law: Physics To Computing

ECE 59500 - Selected Topics In Electrical Engineering Titles: Introduction to Quantum Science and Technology; Applied Quantum Computing I: Fundamentals; Applied Quantum Computing II: Hardware; Applied Quantum Computing III: Algorithm and Software; Quantum Optics

Can be used with prior approval - VIP (Vertically Integrated Projects) and ECE 49600 Undergraduate Projects may be taken for a maximum of 3 credits toward the concentration upon approval of the Associate Head of Undergraduate Programs or Associate Head of Teaching and Learning.

VIP 37920 - Junior Participation In Vertically Integrated Projects (VIP)

VIP 47920 - Senior Participation In Vertically Integrated Projects (VIP)

ECE 49600 - Electrical And Computer Engineering Projects

TO:

Concentration Courses (9-10 credits)

EE Advanced Selectives – Choose One (3-4 credits)

ECE 30412 - Electromagnetics II

ECE 44000 - Transmission Of Information

ECE 30500 - Semiconductor Devices or

ECE 50631 - Fundamentals Of Current Flow and

ECE 50632 - Introduction To Quantum Transport and

ECE 50633 - Boltzmann Law: Physics To Computing

Selectives (6 credits)

ECE 30653 - Introduction to Nanotechnology and Quantum Science and Technology

ECE 50631 - Fundamentals Of Current Flow and

ECE 50632 - Introduction To Quantum Transport and

ECE 50633 - Boltzmann Law: Physics To Computing

ECE 39595/[49595](#)/[59500](#) - Selected Topics In Electrical And Computer Engineering Titles:

ECE 39595 - Fundamentals of Quantum Technology

ECE 59500 – Introduction to Quantum Science and Technology

ECE 59500 – Applied Quantum Computing I: Fundamentals

ECE 59500 – Applied Quantum Computing II: Hardware

ECE 59500 – Applied Quantum Computing III: Algorithm and Software

If ECE 50631 +50632+ 50633 are used as an EE Advanced Selective, they may not be used below as an EE Elective

With approval of the Associate Head of Undergraduate Programs or Associate Head of Teaching and Learning, can include up to 3 hours of:

ECE 49600 – Electrical and Computer Engineering Projects

VIP 37920 - Junior Participation In Vertically Integrated Projects (VIP)

VIP 47920 - Senior Participation In Vertically Integrated Projects (VIP)

Reason: The area added/removed a few courses as well as some experimental courses have obtained permanent numbers.



Mithuna Thottethodi

Associate Head of Teaching and Learning

Professor of Electrical and Computer Engineering

Quantum Technology Concentration for Electrical Engineering

The Quantum Technology concentration will introduce students to the fundamental concepts and engineering challenges of various emerging technologies, including quantum computers, quantum communication systems, and quantum sensors. Students will also gain further training on classical engineering topics that will prepare them to understand and work with emerging quantum technologies.

Requirements (9-10 credits)

VIP (Vertically Integrated Projects) and ECE 49600 Undergraduate Projects may be taken for a maximum of 3 credits toward the concentration Selectives or Electives upon approval of the Associate Head of Undergraduate Programs or Associate Head of Teaching and Learning. If VIP or ECE 49600 are used to satisfy the selective requirement, they may not be used to meet the Elective credit below.

EE Advanced Selectives – Choose one (3-4 credits):

ECE 30412: Electromagnetics II
ECE 44000: Transmission of Information [4 credits]
ECE 30500: Semiconductor Devices [3 credits] **OR**
 ECE 50631: Fundamentals of Current Flow [1 credit] **AND**
 ECE 50632: Introduction to Quantum Transport [1 credit] **AND**
 ECE 50633: Boltzmann Law: Physics to Computing [1 credit]

Selectives (6 credits):

ECE 30653: Intro to Nanotechnology and Quantum Science and Technology [3 credits]
ECE 39595/49595/59500 – Selected Topics in Electrical Engineering Qualifying Titles:
 ECE 39595: Fundamentals of Quantum Technology [3 credits]
 ECE 59500: Introduction to Quantum Science and Technology [3 credits]
 ECE 59500: Applied Quantum Computing I: Fundamentals [1 credit]
 ECE 59500: Applied Quantum Computing II: Hardware [1 credit]
 ECE 59500: Applied Quantum Computing III: Algorithm and Software [1 credit]

If ECE 30500 or the below courses were not taken to meet the EE Advanced Selectives;
 ECE 50631: Fundamentals of Current Flow [1 credit] **AND**
 ECE 50632: Introduction to Quantum Transport [1 credit] **AND**
 ECE 50633: Boltzmann Law: Physics to Computing [1 credit]

With Approval of the Associate Head of Undergraduate Programs or Associate Head of Teaching and Learning, can include up to 3 hours of:

- VIP 37920 [2 credits]
- VIP 47920 [2 credits]
- ECE 49600 [1-3 credits]

