PURDUE UNIVERSITY | Elmore Family School of Electrical and Computer Engineering

Engineering Faculty Document No. EFD 14-24
February 29, 2024

Memorandum

To: The College of Engineering Faculty

From: The Elmore Family School of Electrical and Computer Engineering

Re: revision to the Wireless & Optical Engineering Concentration for BSEE

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

FROM:

Wireless & Optical Engineering Concentration for BSEE

Required: (10 credits):

Required Course (3 credits)
ECE 30412 - Electromagnetics II

Selective Lab – Choose One (1 credit)
ECE 30415 - Fiber Optics And Lasers Laboratory
ECE 30417 - Engineering Optics Laboratory
ECE 30700 - Electromagnetic Fields And Waves Laboratory

Selectives (6 credits)
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.
ECE 30414 - Elements Of Fiber Optics, Lasers And Optoelectronics
ECE 30416 - Basics Of Engineering Optics
ECE 30500 - Semiconductor Devices
ECE 44100 - Distributed Parameter Systems
ECE 49600 - Electrical And Computer Engineering Projects
ECE 50616 - Physics And Manufacturing Of Solar Cells
ECE 55200 - Introduction To Lasers
ECE 59500 - Selected Topics In Electrical Engineering Qualifying Title: Magnetic Resonance Imaging Theory (3 credits)
VIP 37920 - Junior Participation In Vertically Integrated Projects (VIP)
VIP 47920 - Senior Participation In Vertically Integrated Projects (VIP)

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TO:

RF & Optical Engineering Concentration for BSEE

Required: (10 credits):

Required Course (3 credits)
ECE 30412 - Electromagnetics II

Selective Lab – Choose One (1 credit)
ECE 30415 - Fiber Optics And Lasers Laboratory
ECE 30417 - Engineering Optics Laboratory
ECE 30700 - Electromagnetic Fields And Waves Laboratory

Selectives (6 credits)
ECE 30414 - Elements Of Fiber Optics, Lasers And Optoelectronics
ECE 30416 - Basics Of Engineering Optics
ECE 30500 - Semiconductor Devices or
ECE 50631 – Fundamentals of Current Flow
ECE 50632 – Introduction to Quantum Transport
ECE 50633 -Boltzmann Law: Physics to Computing
ECE 50616 - Physics And Manufacturing Of Solar Cells
ECE 55200 - Introduction To Lasers
ECE 39595/49595/59500 - Selected Topics In Electrical Engineering Qualifying Title:
ECE 59500 - Magnetic Resonance Imaging Theory

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.
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: In addition to changing the title to reflect more of the specialized area, the area added/removed a few courses as well as some experimental courses have obtained permanent numbers.

T. S. Mith

Mithuna Thottethodi
Associate Head of Teaching and Learning
Professor of Electrical and Computer Engineering

RF and Optical Engineering Concentration for Electrical Engineering

The RF and Optical Engineering Concentration introduces students to the fundamental concepts and engineering challenges associated with semiconductor manufacturing, renewable energy, military and defense needs. It prepares students for employment in both private industry and the government sector, fiber optics communications, imaging, display and virtual reality technologies, sensors, laser, and LIDAR, and RF security and wireless systems. In addition, completing this minor will provide students with a firm foundation to pursue a graduate education focused on fields and/or optics that may include theoretical, simulation, and experimentally-based research projects.

Requirements (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.

Required Course (3 credits)

ECE 30412: Electromagnetics II [3 credits]

Selective Lab – Choose one (1 credit):

ECE 30415: Fiber Optics and Lasers Laboratory [1 credit]
ECE 30417: Engineering Optics Laboratory [1 credit]
ECE 30700: Electromagnetic Fields & Waves Laboratory [1 credit]

Selectives (6 credits):

ECE 30414: Elements of Fiber Optics, Lasers and Optoelectronics [3 credits]
ECE 30416: Basics of Engineering Optics [3 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]
ECE 50616: Physics and Manufacturing of Solar Cells [3 credits]
ECE 55200: Introduction to Lasers [3 credits]
ECE 39595/49595/59500 – Selected Topics in Electrical Engineering Qualifying Titles:
ECE 59500: Magnetic Resonance Imaging Theory [3 credits]

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]