

TO: The Engineering Faculty

FROM: The Faculty of the Davidson School of Chemical Engineering

RE: New Engineering Undergraduate Concentration

The Faculty of the Davidson School of Chemical Engineering has approved the following new undergraduate concentration from the College of Engineering. This action is now submitted to the Engineering Faculty with a recommendation for approval.

TITLE:

Semiconductor Concentration for BS in Chemical Engineering

DESCRIPTION:

Semiconductors Concentration: (15 credits)

Foundational Courses (9 credits):

- (3 credits) ECE 20001 Electrical Engineering Fundamentals I
- (3 credits) ECE 20002 Electrical Engineering Fundamentals II
- (3 credits) ECE 30500 Semiconductors (*ECE 20001 & ECE 20002*)

Semiconductor Selectives (6 credits): 3 credits must be CHE; 3 credits must be ECE.

- (3 credits) CHE 41100 ChE Undergraduate Research (Semiconductor related research)
- (3 credits) CHE 56400: Organic Electronic Materials and Devices
- (3 credits) CHE 59700: Manufacturing Advanced Composites
- (3 credits) CHE 59700: Advanced Solar Energy Conversion
- (3 credits) CHE 59700: System Analysis of Energy Production
- (4 credits) ECE 27000: Introduction to Digital System Design
- (3 credits) ECE 36200: Microprocessor Systems and Interfacing (*ECE 27000, ENGR 11700/CS 15900*)
- (3 credits) ECE 55700: Integrated Circuit/MEMS Fabrication Laboratory
- (3 credits) ECE 55900: MOS VLSI Design (*ECE 30500 and ECE 43700*)
- (3 credits) ECE 59500: Introduction to Electronics Packaging and Heterogeneous Integration
- (3 credits) ECE 59500: Microfabrication Fundamentals
- (3 credits) ECE 59500: Semiconductor Manufacturing
- Additional Courses to be added

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RATIONALE:

As the College of Engineering continues to demonstrate unprecedented behavior associated with the Pinnacle of Excellence at Scale, a key objective has arisen. Specifically, many stakeholders, including some of the key current employers of our graduates, are eager to introduce a broad swath of engineering students to the semiconductor industry, especially chemical engineers. Educating our students in this area is vital in the ongoing development of advanced materials and the manufacturing processes required to produce them as they address challenges in sustainable manufacturing. Specifically, the concentration is envisioned that students opting to pursue this route, would take 9 Foundational credits listed above to provide the foundation for the concentration. The additional 6 credits would entail selecting Semiconductor Selectives; 3 credits must be CHE and an additional 3 credits must be ECE.



Head/Director of the Davidson School of Chemical Engineering