

TO: The Faculty of the College of Engineering

FROM: School of Electrical and Computer Engineering of the College of Engineering

RE: ECE 65800 Changes in Course Description and Terms Offered

The faculty of the School of Electrical and Computer Engineering has approved the following changes in ECE 65800. This action is now submitted to the Engineering Faculty with a recommendation for approval.

From: **ECE 65800 – Semiconductor Material and Device Characterization**
Sem. 2. Class 3, cr. 3. (offered in alternate years.)
Prerequisite: EE 606. Authorized equivalent courses or consent of instructor may be used in satisfying course pre- and co-requisites.

A comprehensive survey of modern characterization techniques routinely used to determine solid-state material and device parameters. Concepts and theory underlying the techniques are examined, and sample experimental results are presented. They coverage includes electrical, optical, chemical, and physical characterization methods.

To: **ECE 65800 – Semiconductor Material and Device Characterization**
Sem. 2, even years. Class 3, cr. 3.
Prerequisite: EE 606. Authorized equivalent courses or consent of instructor may be used in satisfying course pre- and co-requisites.

An examination of modern characterization techniques routinely employed to determine semiconductor material and device parameters. Concepts and theory underlying the techniques are reviewed, and sample experimental results are presented. Emphasis is on techniques employing electrical measurements.

Reason: The course description has been changed to reflect the increased emphasis on techniques employing electrical measurements. The terms offered has been changed to meet the needs of the school.

ECE 65800 – Semiconductor Material and Device Characterization

Required Text: D. K. Schroder, *Semiconductor Material and Device Characterization*, 3rd Edition, John Wiley & Sons, 2006: ISBN-13: 978-0-471-73906-7 and ISBN-10: 0-471-73906-5.

Weeks	Principle Topics
1	Resistivity and type measurements
2	Semiconductor doping measurements and profiling
1 2/3	Barrier height and contact resistance measurements
1	Series resistance and related measurements
1 1/3	Deep-level parameter measurements
1 1/3	Measurement of oxide and interface parameters in MOS devices
1 1/3	Measurement of MOSFET channel parameters
2 1/3	Carrier lifetime measurements
1	Carrier mobility measurements
2	Demonstrations and midterm exam


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