

**END OF SEMESTER COURSE OUTCOME ASSESSMENT REPORT
ELEG 3303-P01 – PHYSICAL PRINCIPLES OF SOLID STATE DEVICES
(COMPUTER ENGINEERING MAJORS)**

SPRING 2022 SEMESTER

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Outcome 7: “An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.”						
Semester	Analysis Type	# of Students	Expected Class Average	Expected Percent of students at or above average	Class Average	% Students meeting Expected Average
Spring 2021	Direct	4	70	70	72	70%
Spring 2022	Direct	9	70	70	70	45%
Implementa- tion Summary	Items implemented from previous report or after meeting previous instructor	Topics covered were mostly the same as in the prior semester, with the exception of a less detailed discussion of MOS structures. More time was spent on the details of p-n junction diodes, including explicit device applications. A novel item included for the first time is a Panel Discussion on Global Issues pertaining to solid state devices – industrial, economic, political and social issues, in addition to the engineering and scientific aspects. The book used was–Solid State Devices, 2 nd Edition, by B.S. Nair and S.R. Deepa. While the book has an excellent set of worked out examples in each chapter as well as a large set of problems at the end, it lacked adequate introduction to the quantum principles. Will be searching for a different book.				
Perceived Problems	Perceived problems are directly related to the PC and the sub items under them	Problems related to principles of physics and chemistry continue to plague this course, especially: inability to recall Bohr’s model, molecular formation, electronic structure of atoms, and basic quantum concepts such as quantization and spin. Reduced active participation during class as well as almost no show during office hours. More review sessions were conducted to compensate.				
Plans for Addressing Problems	Plans to address specific measures to address PC and their sub areas	Measures to be implemented: 1. Identified instructors in Chemistry and Physics teaching pre-requisites to work proactively address knowledge shortcoming. Make them aware of what is expected of EE majors to learn and retain. 2. Offer to cover 1-2 of their lectures on applications of concepts. 3. Seek another textbook to replace the current one.				
Overall Trend over Periods	Ascertain if there were improvements over previous semesters	A few improvements over the previous semester. The panel discussion on Global Issues relating to solid state devices was received with more enthusiasm. The session was more active and interactive. Political issues such as tariffs on China, reliance on global production of semiconductor chips, varied access to rare earth materials were among the topics discussed. Several relevant documents and videos were posted on the course website. However, since this course deals with non-intuitive quantum concepts, requiring a modern physics course as a prerequisite (ex. TAMU-CS) might make this course more approachable. The current practice of covering the quantum concepts and devices, all in one semester, results in an excess of cognitive load.				
Were Expectations Met?		YES				