ELEC2304: Unit Outline

Credit: 6 points. Availability: Semester 1.

Contact Details: NOTE: Email addresses have been obscured - remove the '[: and ']' to make real addresses.

Unit Coordinator

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Outcomes: Students are able to apply physical and mathematical models to understand the behaviour of solid-state electronic and photonic devices, including understanding physical processes that are not directly observable and at times exhibiting behaviour contradictory to everyday experience; extend knowledge to more complex device mechanics and so predict how external factors may affect device performance; understand innovations and advances in the field of electronic and photonic devices; communicate effectively with others; and undertake continuous learning, realising that understanding the fundamentals can help maintain currency.

Content: This unit provides an understanding of the electron and photon behaviour—as particles and as waves; properties and carrier dynamics of electrons in solids, particularly in semiconductors; the behaviour of metal/semiconductor (ohmic and Schottky) and pn junctions; and the operation, modelling and design of bipolar transistors and photonic devices. The laboratory work reinforces lectures and develops experimental and report-writing skills.

Assessment Mechanism Statement:

Class Quizzes 3 quizzes during the semester 15%
Laboratory Component 3 labs during the semester 15%
Examination End of Semester 1 70%

Applications for consideration, deferral of exams and missed quizzes or laboratories on medical, personal or other grounds must be lodged with the Faculty office no later than three working days after the date of the assessment in question. This rule will apply to all students, other than in exceptional circumstances

Other pages about this Unit


Supplementary assessment is not available in this unit except in the case of a bachelor’s pass degree student who has obtained a mark of 45 to 49 and is currently enrolled in this unit, and it is the only remaining unit that the student must pass in order to complete their course.

Pre-requisites and Co-requisites

Advisable prior study: PHYS1101 Advanced Physics A, MATH1010 Calculus and Linear Algebra, MATH1020 Calculus, Statistics and Probability

Recommended reading

Texts for recommended reading are available for 3-day loan from closed reserve (UPSL). They are listed on the CMO webpage: