TEACHING PLAN FOR SEMESTER 1 AY2022-23

EE3001 ENGINEERING ELECTROMAGNETICS

Acad Unit: 4
Co-requisite: EE2007 Engineering Maths II
Course Grade: Letter Grade

WEEKLY CLASS SCHEDULE

Week	Lecture	Activities
1	Introduction to EE3001; applications of electromagnetics Review of vector analysis -1 Coulomb's law	Introductory tutorial
2	Electric field intensity (E) Applications of charges and electric field Review of vector analysis -2	Tutorial #1: Static electric field
3	Electric flux and electric potential Ohm's Law; applications of magnetic field Static magnetic field (H)	Tutorial #2: Vector algebra
4	Ampere's Law Faraday's Law Applications of electromagnetic induction	Tutorial #3: Electric potential
5	Maxwell's equations Plane em-waves Relation between E and H	Tutorial #4: Static magnetic field
6	Applications of plane waves Plane waves in lossy media – 1 Plane waves in lossy media - 2	Tutorial #5: Electromagnetic induction
7	Review of Uniform Plane Wave (UPW) Wave Polarization (Linear, Circular and Elliptical) Poynting Theorem	Tutorial #6: Wave propagation
Recess		

8	Reflection and Transmission of UPW (normal Incidence) Reflection and Transmission Coefficients Standing Wave	Tutorial #7: Wave Polarization and Poynting Theorem
9	Reflection and Transmission of UPW (oblique Incidence) Parallel and perpendicular polarization Fresnel equations	Tutorial #8: Normal Incidence of Uniform Plane Wave
10	Power Conservation at the Interface, Brewster angle, Critical Angle, Introduction to Transmission Line.	Tutorial #9: Oblique Incidence of Uniform Plane Wave
11	Transmission Line equations, Voltage and Current waves, Reflection coefficient, Input impedance.	Tutorial #10: Brewster Angle, Critical; Angle.
12	Short- and Open- circuited Stubs. Introduction to Smith Chart Constant r and constant x circles Input impedance circle	Tutorial #11: Transmission Line Equations
13	Examples of using Smith Chart to analyze the performance of transmission line; to determine the unknown load impedance; to determine the length of transmission line; Impedance Transformation.	Tutorial #12: Use of Smith Chart to solve Transmission Line Problems

ASSESSMENT SCHEDULE

Type	Description	Venue	Date (Tentative)
CA – Quiz #1 (10%)	Topics of Tutorials 1-5 and the corresponding lecture video recordings will be tested. UPW will not be tested in this quiz. Format: OASIS based. 10 MCQs, each questions 10 marks Duration: 45 minutes Closed book.	Part-time (PT) and Full-time (FT) Students	**PT and FT Students:** **Week 7 Saturday 24 Sept** **Venue and Time to be confirmed by OASIS team.**

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CA – Quiz #2 (10%)	Topics of Tutorials 6-9 and the corresponding lecture video recordings will be tested. Brewster Angle, Critical Angle and Transmission line will not be tested in this quiz. Format: OASIS based. 10 MCQs, each question 10 marks Duration: 45 minutes Closed book.	PT and FT Students	**PT and FT students:** **Week 10 Saturday 22 Oct** **Venue and Time to be confirmed by OASIS team.**
CA – Participation (10%)	The teaching team will adopt one or more of the following methods to assess the students:- – Class discussion and presentation – Simple pop quiz, online LAMS/OASIS practice attempt – Individual and/or group assessments during tutorial/lab sessions	PT and FT Students	Semester 1: Week 1 to Week 13
CA – Laboratory Modules (5% + 5%)	L3001A - Wave Propagation L3001B - Microwave Circuits	Full time and Part-time Students	Sem 1
Final Exam (60%)	Testing on all the content introduced throughout the semester. Some questions may be based on the lab experiments attempted.	Full time and Part-time Students.	Duration: 2.5 Hours Format: 4 Questions, 25 marks each Answer all questions

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