ELEN422 16

Course Summary

Course : ELEN422 **Title :** RF/Microwave Engineering II
Length of Course : 16
Prerequisites : ELEN421 **Credit Hours :** 4

Description

Course Description: This course expands upon the knowledge gained in ELEN421 RF/Microwave Engineering I. It introduces active microwave components and the cascading of components to form microwave circuits, sub-systems, and systems. Topics include amplifiers, mixers, receivers, frequency synthesizers, modulators, wireless systems and typical figures of merit such as gain, noise figure and third order intercept point. At the end of this course, you will have an understanding of the key concepts and basic theories associated with microwave circuits and systems. NOTE: This course requires the student to purchase additional materials that are not covered by the book grant. Please refer to the Course Materials section for additional details. Prerequisites: ELEN421

Course Scope:

Objectives

1. Demonstrate an understanding of active RF/microwave components
2. Demonstrate an ability to calculate common figures of merit for a cascade of multiple RF/microwave elements
3. Demonstrate an understanding of common RF sub-systems such as antennas, transmitters, receivers, and signal generators.
4. Demonstrate an understanding of common RF systems such as radar, EW, and wireless communications.
5. Demonstrate an ability to design a basic RF/microwave system to solve a specific problem or requirement.
6. Prepare effective communication material using technical data

Outline

Week 1: Modeling & Simulation for RF/microwave

Learning Outcomes

CLO-2

Required Readings

As listed on the lesson page

Assignments

Forum 1-2: Initial Post

Quiz #1

Recommended Optional Reading
Recommended Media

Week 2: Review of Passives

Learning Outcomes

CLO-2

Required Readings

As listed on the lesson page

Assignments

Forum 1-2: Responsive Posts

Quiz #2

Recommended Optional Reading
Recommended Media

Week 3: Mixers

Learning Outcomes

CLO1, CLO2, CLO3

Required Readings

As listed on the lesson page

Assignments

Forum 3-4: Initial Post

Quiz #3

Recommended Optional Reading
Recommended Media

Week 4: Oscillators

Learning Outcomes

CLO-1

Required Readings

As listed on the lesson page

Assignments

Forum 3-4: Responsive Posts

Quiz #4

Recommended Optional Reading
Recommended Media

Week 5: Amplifiers

Learning Outcomes

CLO-1

Required Readings

As listed on the lesson page

Assignments

Forum 5-6: Initial Post

Quiz #5

Recommended Optional Reading
Recommended Media

Week 6: Amplifier Matching

Learning Outcomes

CLO-1

Required Readings

As listed on the lesson page

Assignments

Forum 5-6: Responsive Posts

Quiz #6

Recommended Optional Reading
Recommended Media

Week 7: Microwave Applications

Learning Outcomes

CLO-4

Required Readings

As listed on the lesson page

Assignments

Forum 7-8: Initial Post

Quiz #7

Recommended Optional Reading
Recommended Media

Week 8: Part I Review

Learning Outcomes

CLO-1, CLO-2, CLO-3, CLO-4

Required Readings

As listed on the lesson page

Assignments

Forum 7-8: Responsive Posts

Test #1

Recommended Optional Reading
Recommended Media

Week 9: System Architecture

Learning Outcomes

CLO-3

Required Readings

As listed on the lesson page

Assignments

Forum 9-10: Initial Post

Quiz #9

Recommended Optional Reading
Recommended Media

Week 10: System-level Design Considerations

Learning Outcomes

CLO-2

Required Readings

As listed on the lesson page

Assignments

Forum 9-10: Responsive Posts

Quiz #10

Recommended Optional Reading
Recommended Media

Week 11: Design Examples

Learning Outcomes

CLO-4

Required Readings

As listed on the lesson page

Assignments

Forum 11-12: Initial Post

Quiz #11

Recommended Optional Reading
Recommended Media

Week 12: Part II Review

Learning Outcomes

CLO-2, CLO-3, CLO-4

Required Readings

As listed on the lesson page

Assignments

Forum 11-12: Responsive Posts

Quiz #12

Recommended Optional Reading
Recommended Media

Week 13: Project Kickoff

Learning Outcomes

CLO-1, CLO_3

Required Readings

As listed on the lesson page

Assignments

Forum 13-14: Initial Post

Assignment #13

Recommended Optional Reading
Recommended Media

Week 14: Manufacturing

Learning Outcomes

CLO-1, CLO_3

Required Readings

As listed on the lesson page

Assignments

Forum 13-14: Responsive Posts

Assignment #14

Recommended Optional Reading
Recommended Media

Week 15: Test and Measurement

Learning Outcomes

CLO-1, CLO_3

Required Readings

As listed on the lesson page

Assignments

Forum 15-16: Initial Post

Assignment #15
(Final Project)

Recommended Optional Reading
Recommended Media

Week 16: Course Review & Wrap-up

Learning Outcomes

CLO-5, CLO-6

Required Readings

As listed on the lesson page

Assignments

Forum 15-16: Responsive Posts

Final Project Report

Recommended Optional Reading
Recommended Media

Evaluation

Grading:

Name	Grade %

Materials

Book Title: Microwave and RF Engineering, 1st ed - the e-book is provided in the APUS Online Library

Author: Sorrentino

Publication Info: Wiley Lib

ISBN: 9780470758625

Book Title: To find the library e-book(s) req'd for your course, please visit http://apus.libguides.com/er.php to locate the eReserve by course #. You must be logged in to eCampus first to access the links.

Author: N/A

Publication Info: N/A

ISBN: N/A

Course Guidelines

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University Policies

Student Handbook

- Drop/Withdrawal policy
- Extension Requests
- Academic Probation
- Appeals
- Disability Accommodations

The mission of American Public University System is to provide high quality higher education with emphasis on educating the nation's military and public service communities by offering respected, relevant, accessible, affordable, and student-focused online programs that prepare students for service and leadership in a diverse, global society.