ECE 522 – Antennas and Propagation

Term – SPRING 2021 (202101)

Instructor
Dr. Jens Bornemann
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Office Hours
Days: Mondays, Thursdays
Time: 14:30 – 15:30

Location/Platform/link:
https://uvic.zoom.us/j/87829400180?pwd=bDBJczVvUlIQQVVTNTBYbHVwclordz09

Course Objectives
- To introduce students to fundamental radiation, propagation and antenna concepts
- To familiarize students with the terminology used in antenna engineering
- To expose students to basic analysis and design aspects

Learning Outcomes
At the end of the course, students will be able to ...
1. evaluate the influences of reflection, diffraction, fading, scattering, absorption
2. examine link budget calculations in the presence of a variety of losses and obstacles
3. design straight wire antennas, loop antennas and helical antennas
4. design broadside, endfire and phased-array antennas
5. design sectoral, pyramidal and conical horn antennas
6. design rectangular and circular patch antennas including their feeding networks
7. design simple reflector antennas
8. understand the fundamental electromagnetic principles (and their limitations) as applied to the course material

Syllabus

Approx. No. Classes
1. Introduction 1
2. Fundamental Parameters of Antennas and Propagation 3
3. Propagation 2
4. Potential Functions 1
5. Wire Antennas 3
6. Antenna Arrays 2
7. Aperture and Horn Antennas 3
8. Microstrip Antennas 3
9. Reflector Antennas 1
10. Ultra-Wideband Antennas 1
11. Corrugated Horns 1
12. Antenna Measurements 1
Mid-term test 1
Review 1
Total 24
A-Section(s): A01 / CRN 20941  A02 / CRN 20942
Days: Mondays & Thursdays
Time: 13:00-14:20
Location/Platform/link: https://uvic.zoom.us/j/81768675436?pwd=OVBlVQkVUmVZekG2JlZ2J2eG9WcWc7QT09

Required Textbook
Title: Antenna Theory: Analysis and Design, 2nd, 3rd or 4th Ed.
Author: C.A. Balanis
Publisher: J. Wiley & Sons
Year: 1997, 2005 or 2016

Optional Textbook
Title: Antenna Theory and Design 2nd or 3rd Ed.
Author: W.L. Strutzman and G.A. Thiele
Publisher: J. Wiley & Sons
Year: 1998 or 2012

Online Course Delivery:
As this course will be conducted online during this term, students will need to submit assignments online.

References: Course Website: Brightspace

Assessment:
Assignments: 10 % Due Dates: TBA Marker: Alireza Seyfollahi <aliseyf(at)uvic(dot)ca>
Mid-term 30 % Date: 25 Feb 2021
Project 10 % Due Dates: TBA
Final Exam 50 %

Important: All deadlines and schedules for this course will reference Pacific Standard Time until March 14, 2021 and then Pacific Daylight Time.

Note: Failure to complete all project requirements will result in a grade of N being awarded for the course.

The final grade obtained from the above marking scheme for the purpose of GPA calculation will be based on the percentage-to-grade point conversion table as listed in the current Graduate Calendar.


Note to Students:
Students who have issues with the conduct of the course should discuss them with the instructor first. If these discussions do not resolve the issue, then students should feel free to contact the Chair of the Department by email or the Chair's Secretary to set up an appointment.

Course Withdrawal Deadlines:
• January 19, 2021: Withdrawal with 100% reduction of tuition fees (under review)
• February 9, 2021: Withdrawal with 50% reduction of tuition fees (under review)
• February 28, 2021: Last day for withdrawal (no fees returned) (under review)

Accommodation of Religious Observance:

Policy on Inclusivity and Diversity:
Engineering: https://www.uvic.ca/engineering/about/equity/index.php
Academic Calendar:
https://www.uvic.ca/calendar/archives/202101/grad/index.php#/policy/HkQ0pzdAN?bc=true&bcCurrent=%20Gene
ral%20University%20Policies&bcGroup=General%20University%20Policies&bcItemType=policies

Standards of Professional Behaviour:
You are advised to read the Faculty of Engineering document Standards for Professional Behaviour, which contains important information regarding conduct in courses, labs, and in the general use of facilities.
http://www.uvic.ca/engineering/assets/docs/professional-behaviour.pdf

Academic Integrity:
Cheating, plagiarism and other forms of academic fraud are taken very seriously by both the University and the Department. You should consult the entry in the current Graduate Calendar for the UVic policy on academic integrity.
20Policy%20on%20Academic%20Integrity&bcItemType=policies

Equality:
This course aims to provide equal opportunities and access for all students to enjoy the benefits and privileges of the class and its curriculum and to meet the syllabus requirements. Reasonable and appropriate accommodation will be made available to students with documented disabilities (physical, mental, learning) in order to give them the opportunity to successfully meet the essential requirements of the course. The accommodation will not alter academic standards or learning outcomes, although the student may be allowed to demonstrate knowledge and skills in a different way. It is not necessary for you to reveal your disability and/or confidential medical information to the course instructor. If you believe that you may require accommodation, the course instructor can provide you with information about confidential resources on campus that can assist you in arranging for appropriate accommodation. Alternatively, you may want to contact the Centre for Accessible Learning located in the Campus Services Building: https://www.uvic.ca/services/cal/.
The University of Victoria is committed to promoting, providing, and protecting a positive, and supportive and safe learning and working environment for all its members.

Course Lecture Notes:
Unless otherwise noted, all course materials supplied to students in this course have been prepared by the instructor and are intended for use in this course only. These materials are NOT to be re-circulated digitally, whether by email or by uploading or copying to websites, or to others not enrolled in this course. Violation of this policy may in some cases constitute a breach of academic integrity as defined in the UVic Calendar.

Sexualized Violence Prevention and Response at Uvic:
UVic takes sexualized violence seriously, and has raised the bar for what is considered acceptable behaviour. We encourage students to learn more about how the university defines sexualized violence and its overall approach by visiting www.uvic.ca/svp. If you or someone you know has been impacted by sexualized violence and needs information, advice, and/or support, please contact the sexualized violence resource office in Equity and Human Rights (EQHR). Whether or not you have been directly impacted, if you want to take part in the important prevention work taking place on campus, you can also reach out:

Where: Sexualized violence resource office in EQHR; Sedgewick C119
Phone: 250.721.8021
Email: sypcoordinator@uvic.ca
Web: www.uvic.ca/svp

Office of the Ombudsperson:
The Office of the Ombudsperson is an independent and impartial resource to assist with the fair resolution of student issues. A confidential consultation can help you understand your rights and responsibilities. The Ombudsperson can also clarify information, help navigate procedures, assist with problem-solving, facilitate communication, provide feedback on an appeal, investigate and make recommendations. Phone: 250-721-8357; Email: ombuddy@uvic.ca, Website: https://uvicombudsperson.ca/