



## Microwave Communications – AUST 206 Autonomous Systems Technician Program

### Course Outline

COURSE IMPLEMENTATION DATE: September 2020  
OUTLINE EFFECTIVE DATE: September 2020  
COURSE OUTLINE REVIEW DATE: March 2025

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#### GENERAL COURSE DESCRIPTION:

This course introduces the student to fundamentals of waveguide and microwave device theory. Health hazards and safe working/testing conditions are stressed at the start. The course explores the principles of Point-to-Point land microwave fade margins and link budgets. Satellite communications and various orbits are covered. Common navigation/tracking satellite families are discussed. Fundamentals of radar are covered with a focus on pulsed radar system basics. Advanced systems such as phased array and marine radar are also introduced.

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**Program Information:** This course is required for successful completion of the Autonomous Systems Technician Diploma program.

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**Delivery:** This course is delivered face to face.

**COTR Credits:** 2

**Hours for this course:** 60 hours

**Typical Structure of Instructional Hours:**

Instructional Activity	Duration
Lecture Hours	30
Seminars / Tutorials	
Laboratory / Studio Hours	30
Practicum / Field Experience	
Other Contact Hours	
<b>Total</b>	<b>60</b>

**Practicum Hours (if applicable):**

Type of Practicum	Duration
On-the-Job Experience	
Formal Work Experience	
Other	
<b>Total</b>	<b>N/A</b>

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**Course Outline Author or Contact:**

Joy Brown, BEd

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Signature

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**APPROVAL SIGNATURES:**

Department Head  
Joy Brown  
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Dean of Trades and Technology  
Dr. Jack Moes  
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Department Head Signature

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Dean Signature

EDCO

Valid from: September 2020 – March 2025

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Education Council Approval Date

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**COURSE PREREQUISITES AND TRANSFER CREDIT:**

**Prerequisites:** AUST 202 with a minimum grade of C- (55%) or higher.

**Corequisites:** N/A

**Flexible Assessment (FA):**

Credit can be awarded for this course through FA  Yes  No

Learners may request formal recognition for flexible assessment at the College of the Rockies through one or more of the following processes: External Evaluation, Worksite Assessment, Demonstration, Standardized Test, Self-assessment, Interview, Products/Portfolio, Challenge Exam. Contact an Education Advisor for more information.

**Transfer Credit:** For transfer information within British Columbia, Alberta and other institutions, please visit <http://www.cotr.bc.ca/Transfer>.

Student should also contact an academic advisor at the institution where they want transfer credit.

**Prior Course Number:** N/A

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## **Textbooks and Required Resources:**

Textbook selection varies by instructor and may change from year to year. At the Course Outline Effective Date the following textbooks were in use:

Miller, Gary, Beasley, Jeffery and Hymers, Jonathan. *Electronic Communications: A Systems Approach*.

Autonomous Systems Technician Level 2 Lab Manual

Autonomous Systems Technician Level 2 Package

*Please see the instructor's syllabus or check COTR's online text calculator <http://go.cotr.bc.ca/tuition/tCalc.asp> for a complete list of the currently required textbooks.*

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## **LEARNING OUTCOMES:**

Upon the successful completion of this course, students will be able to

- demonstrate safe testing and operating procedures when working with microwave equipment;
  - review the operating principles of microwave devices;
  - discuss the propagation of an RF signal within a waveguide and in free space with respect to fade margins;
  - describe the operation of a microwave repeater;
  - perform a point-to-point microwave link budget;
  - define the operating parameters of a satellite communications system;
  - explain the fundamental theory behind radar tracking;
  - describe the operation of a pulsed radar transceiver; and
  - define the specialized radar applications for in air, land, marine and space use.
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## **COURSE TOPICS:**

- Waveguides
- Microwave Systems and Devices
- Satellite Communication Systems
- Radar Tracking
- Pulsed Radar Transceivers
- Radar Applications

*See instructor's syllabus for the detailed outline of weekly readings, activities and assignments.*

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## EVALUATION AND ASSESSMENT (Face-to-Face Delivery):

Assignments	% of Total Grade
Exams (x2)	70%
Labs	<u>30%</u>
Total	100%

Please see the instructor's syllabus for specific classroom policies related to this course, such as details of evaluation, penalties for late assignments and use of electronic aids.

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### EXAM POLICY:

Students must attend all required scheduled exams that make up a final grade at the appointed time and place.

Individual instructors may accommodate for illness or personal crisis. Additional accommodation will not be made unless a written request is sent to and approved by the appropriate Department Head prior to the scheduled exam.

Any student who misses a scheduled exam without approval will be given a grade of "0" for the exam.

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### COURSE GRADE:

Course grades are assigned as follows:

Grade	A+	A	A-	B+	B	B-	C+	C	C-	D	F
Mark (Percent)	≥ 90	89-85	84-80	79-76	75-72	71-68	67-64	63-60	59-55	54-50	< 50

A grade of "D" grants credit but may not be sufficient as a prerequisite for sequential courses.

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### ACADEMIC POLICIES:

See [www.cotr.bc.ca/policies](http://www.cotr.bc.ca/policies) for general college policies related to course activities, including grade appeals, cheating and plagiarism.

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### COURSE CHANGES:

Information contained in course outlines is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational, employment and marketing needs. The instructor endeavours to provide notice of changes to students as soon as possible. The instructor reserves the right to add or delete material from courses.