



## **ETR241 – Electronic Communications I**

**Spring 2019**

### **Online**

Studies noise, information and bandwidth, modulation and demodulation, transmitters and receivers, wave propagation, antennas and transmission lines. Includes broad band communication systems, microwave, both terrestrial and satellite, fiber optics, multiplexing and associated hardware.

<http://www.ebredder.org/SP19ETR241.html>

**Eric Bredder**

**Office – 266 Hours:** M 12-4 | T 12-3 | W 12-3

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**Business, Mathematics, and Technology**

### **Required Materials:**

[Adafruit Software-Defined Radio USB](#)

[SparkFun Pro RF - LoRa, 915MHz \(SAMD21\)](#)

[Assembled Feather HUZZAH w/ ESP8266 WiFi With Stacking Headers](#)

[Bluefruit LE Friend - Bluetooth Low Energy \(BLE 4.0\) - nRF51822 - v3.0](#)

[AM2320 Digital Temperature and Humidity Sensor](#)

[Jumper Wires](#)

[830 Tie Point Plug In Breadboard](#)

[Monoprice USB-A to Micro B 2.0 Cable](#)

[10K ohm 5% 1/4W - 25 THT](#)

**Learning Objectives:** Upon completion of ETR241, students will:

- build a practical understanding of signal transmission and reception through electronic systems
- experience a variety of communication protocols
- analyze and troubleshoot using modulation techniques and effects of noise on a system

**Grading and Evaluation:** Students will be evaluated upon completion of assignments, documentation, and presentations. Grades are based on a 10-point scale.

	Percentage
Participation	20%
Documentation	25%
Labs/Projects	40%
Final Project	15%
TOTAL	100%

**Documentation:** Students are required to document labs and projects throughout the semester. Documentation will include videos, pictures, written content that is professional and able to be published in a web format. Documentation guidelines are discussed regularly. Documentation includes theory, design, design, drawings, schematics, and reflection about thought process and decision making.

**Policy for Assignments, Papers and Projects:** Students must complete assignments by due dates. Failure to do so will result in a lower grade. If you have a reason for not submitting an assignment, let the instructor know so that the situation can be handled on an individual basis.

**Course Expectations Student and / or Instructor Responsibilities:** Class topics will be introduced each Thursday with a lab or project. The lab or project will be checked on Tuesday and the solutions will be posted then, along with any additional content. Much of the content will be posted on the above website, discussions will be held in Google Groups, and labs and projects will be submitted using forms posted. Students are expected to complete all assignments to show an understanding of the material and concepts. Students agree to safely conduct themselves throughout the entirety of the course and respect the materials and tools used. Students will respect the community of learners – failure to do so will result in dismissal from class. There is zero tolerance for any negative behavior, actions, comments, or influences on learning environment.

**Course Schedule:**

Week	Topic
1/14	Introduction
1/21	Tools for Class
1/28	Systems
2/4	AM & FM
2/11	Transmitters
2/18	SSB Modulation
2/25	Antennas
3/4	Radio Wave Propagation
3/11	Project 1
3/18	SPRING BREAK
3/25	LoRa
4/1	Networks
4/8	Noise Effects
4/15	Bluetooth
4/22	Wifi
4/29	Wifi Network
5/6	Final Project
5/13	FINAL EXAM

**Final Exams:** 5/13/19, 5:30 – 8 :15 PM

<https://www.pvcc.edu/academics/exam-schedule>

## **Attendance, Withdraw and Participation Policy:**

Students are expected to attend all class sessions. Please contact the professor with any concerns or issues with minimum of 24-hour notice if something arises. Be prepared to stay the entirety of the class time. Participation is a graded component of the course and more details can be found under Grading and Evaluation.

<https://www.pvcc.edu/academics/academic-calendar>

**Drop with Refund Date:** 1/31/19

**Withdraw without Grade Penalty Date:** 4/1/19

It is the student's responsibility to drop a course. This may be done electronically by logging into MyPVCC. To obtain a refund, the course must be done by the last day to drop and qualify for a refund. To obtain a "W" grade this must be done prior to the last date to withdraw without a grade penalty. Please consult the academic calendar for these dates. <http://www.pvcc.edu/academics/academic-calendar>

Per VCCS policy, a grade of "incomplete" (I) is to be used only for verifiable unavoidable reasons when a student is unable to complete a course within the normal course time. To be eligible to receive an "I" grade, the student must (1) have satisfactorily completed more than 60% of the course requirements and (2) must request the faculty member assign the "I" grade and indicate why it is warranted.

It is the student's responsibility to request a grade of "incomplete" and initiate the process by scheduling an appointment with the faculty to discuss requirements for satisfactory course completion and consequences of failing to meet established deadlines. The official written request must be completed prior to the "grade due date" for the course. **Students who fail to complete coursework and do not request a grade of "incomplete" will receive 0 for the missed assignments and awarded a final course grade based on these calculations.**

## **Code of Conduct**

All students are expected to abide by the Code of Conduct. Students can access the Code of Conduct and download a copy by clicking on the following link: [http://www.pvcc.edu/files/media/code\\_of\\_conduct.pdf](http://www.pvcc.edu/files/media/code_of_conduct.pdf)

**ADA Statement (*American's with Disabilities Act*)** If you are a student with a disability who needs classroom accommodations under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act, you are required to meet with the Disability Services Counselor, Susan Hannifan to request accommodations.

Her office is located in room M125. Phone: 961-5281, Email: [shannifan@pvcc.edu](mailto:shannifan@pvcc.edu)  
To receive academic accommodations in a timely manner for this class, please obtain the proper forms and meet with her at the beginning of the semester.

### **Information Technology (IT) Help Desk and Open Computer Lab**

<http://www.pvcc.edu/it/>

Email: [help@pvcc.edu](mailto:help@pvcc.edu)

Tel: (434) 961-5261, room 832 [assist with SIS (Student Information System) and student email & basic computer problems]

### **Blackboard Support**

<http://www.pvcc.edu/bbsupport>

Email: [bbsupport@pvcc.edu](mailto:bbsupport@pvcc.edu)

### **Academic Support Services**

Tutoring, in most courses, and academic coaching are offered to all students at no additional cost.

***The First Quadrant Math Center*** (434.961.5284) assists students in business, mathematics, sciences, and technologies.

***The Writing Center*** (434.961-5499) aids students in humanities and social sciences, and it helps all students, regardless of subject area, with written assignments. Tutors are available on a first-come, first-served basis and by appointment.

***Online tutoring*** is available through Smarthinking which provides on-demand, online tutoring 24 hours a day, 7 days a week, and it provides detailed, personalized critiques of written assignments within 24 hours of submission.

***Academic coaching***, available in the Writing Center, promotes deep learning and facilitates student success for the long haul, during and after college. Coaches help students access resources, manage priorities, prepare for exams and set goals, master active study skills.

The First Quadrant Math Center is located in M253 Main Building and The Writing Center is located in M607 Main Building. Visit

<http://www.pvcc.edu/student-services/academic-support> for more information about academic support services.

### **Student Success Office**

The Student Success Office is deeply committed to providing academic and personal support to students as they identify and achieve their educational and personal goals. When students experience difficulty in college it is often because of feeling stressed, overwhelmed, or not knowing where to turn for help. Personal issues may derail academic objectives. Please call 434.961.6581 to schedule an appointment or visit our office in room M132.

**Academic Honesty Policy:** [as stated in the PVCC student handbook]  
Piedmont Virginia Community College sets high standards for academic integrity, and takes academic dishonesty very seriously. The following misconduct is considered an honor offense and is subject to disciplinary action: cheating, plagiarism, knowingly furnishing false information to the college or instructors, and the forgery, alteration or use of college documents or instruments of identification with the intent to defraud. Students are advised that a written summary of this violation and the resulting penalty will be placed in the student's official college record. After one year of no further occurrences, the student may request that the Dean of Student Services remove the statement from the official record.

### **College Policies as stated in the PVCC Student Handbook**

**Children on Campus** College facilities, including the library, cannot accommodate the care of children while parents are working or attending class. Since the college and its staff cannot be responsible for the safety and welfare of your children, you must make arrangements for them off-campus. Children may not be brought into classrooms or laboratories without permission of the instructor.

## **Inclement Weather Policy**

PVCC remains open when primary and most secondary roads are passable. When travel to the campus is unreasonably dangerous the entire college closes. The website is the first method of notification, followed by local television stations, then local radio stations (both FM and AM).

The following phone numbers will also have delay/closing information: PVCC main phone: 434.977.3900 PVCC Inclement weather/emergency message line: 434.971.6673

Due to the unpredictable nature of Virginia's weather, PVCC may be required to close or delay opening. If a delay announcement is made, that delay is based on an 8 a.m. opening time. In the event of a delay, you should attend the class that is in progress at the time you arrive at the campus. For example, if the college is on a 2-hour delay, you would arrive at the campus at 10 a.m. to attend your 10 a.m. class (not your 8 a.m. class.)

Television Stations WVIR-TV [www.nbc29.com](http://www.nbc29.com) WVAW 16 WCVA 19 WAHU 27 [www.charlottesvillenevnewsplex.tv/closings](http://www.charlottesvillenevnewsplex.tv/closings) Radio Stations All local Charlottesville stations WKCI/WKDW/WSVO in Staunton/Waynesboro WFLO in Farmville WVTf in Roanoke

**Emergency Notification** PVCC uses the e2Campus emergency text and email notification system to provide quick notification in the event of an emergency, including college closings and weather related events. Users can have an emergency message sent to their cell phone or email address.

PVCC's emergency notification system will be used only for emergency messaging, college closings and class cancellations. It will not be used for general communications, and users will not be bombarded with extraneous text or email messages. There will be an occasional test of the system to ensure that it is working properly.

### ***Register for text alerts***

At: [http://www.pvcc.edu/security\\_safety/register\\_for\\_alerts.php](http://www.pvcc.edu/security_safety/register_for_alerts.php). (A link is also located on the PVCC home page.) This is an "opt-in" system and you can also "opt-out" of the system at any time.

**Academic Disaster Planning** In the event of a College-wide emergency, course requirements, classes, deadlines, and grading schemes are subject to changes that may include alternative delivery methods, alternative methods of interaction with the instructor, class materials, and/or classmates, a revised attendance policy, and a revised semester calendar and/or grading scheme.