EEM 261
ELECTRONIC COMMUNICATIONS

COURSE DESCRIPTION
This course is an introduction to the electronic circuits used in radio frequency applications. Basic modulation, detection methods, antennas and transmission cables are covered. Prerequisite: EEM 201, RDG 100, MAT 101

3 Credits

COURSE FOCUS
The course examines traditional and current Communications techniques, ranging from AM radio to Wi-Fi.

TEXT AND REFERENCES
None required

COURSE GOALS
The following list of course goals will be addressed in the course. Upon completion of Electronic Communications, the student will be able to:

1. Explain the purpose of an oscillator in a transmitter
2. Do the support mathematics to design simple transmitters and receivers.
3. Display an understanding of how RF waveforms are propagated.
4. Explain how Cellular telephone systems work.
5. Understand the basics of GPS systems
6. Explain the basics of a wireless LAN and PAN.
7. Explore various specialized applications of Wireless transmission systems.
8. Understand Wi-Fi theory
9. Understand Modulation techniques
10. Use an Oscilloscope to read voltage and frequency
11. Understand Techniques of Amplitude Modulation
12. Successfully perform Amplitude Modulation calculations
13. Successfully perform Frequency Modulation calculations
14. Understand Techniques of Frequency Modulation
15. Understand Techniques of Phase Modulation
16. Successfully perform Phase Modulation calculations
17. Successfully calculate Impedance
18. Successfully measure Impedance
19. Define capacitive reactance
20. Explain the construction of a simple receiver
21. Define Inductive reactance
22. Understand the role of a carrier frequency
23. Understand the role of program intelligence
24. Successfully calculate Capacitive reactance
25. Successfully calculate Inductive reactance
26. Define harmonics
27. Define sub-harmonics
28. Understand Transformer theory
29. Calculate the turns ratio of a transformer
30. Understand the characteristics of a center tap Transformer
31. Understand basic antenna construction
32. Successfully calculate Lambda
33. Understand Lambda
34. Explain the importance of Lambda to antenna design
35. Understand the function of a Modulator in a transmitter
36. Successfully calculate Modulation index.
37. Understand the characteristics of a moving-coil microphone
38. Understand the characteristics of powered microphones
39. Design a series resonant circuit
40. Design a parallel resonant circuit
41. Understand NPN junction transistor operating characteristics.
42. Understand PNP junction transistor operating characteristics.
43. Understand FET operating characteristics
44. Successfully calculate Bandwidth
45. Understand the magnetic effect of a current

**Course Evaluation**
There will be two exams and a Final examination. The exams are cumulative and worth 100 points. The Final Exam is worth 200 points.

**Grading:**
- 90 - 100 A
- 80 - 89 B
- 70 - 79 C
- 60 - 69 D
- 0 - 59 F

**Course Schedule**
The class meets for 3 lecture/presentation hours per week on Tuesday evening from 5:30 PM to 8:00 PM.

Approved by:  **Kenneth Flick**  
Ken Flick, Division Dean for Business/Industrial Division

Developed/Revised: 8/15/2012
ADA STATEMENT
The Technical College of the Lowcountry provides access, equal opportunity and reasonable accommodation in its services, programs, activities, education and employment for individuals with disabilities. To request disability accommodation, contact the counselor for students with disabilities at (843) 525-8228 during the first ten business days of the academic term.

ACADEMIC MISCONDUCT
There is no tolerance at TCL for academic dishonesty and misconduct. The College expects all students to conduct themselves with dignity and to maintain high standards of responsible citizenship.

It is the student’s responsibility to address any questions regarding what might constitute academic misconduct to the course instructor for further clarification.

The College adheres to the Student Code for the South Carolina Technical College System. Copies of the Student Code and Grievance Procedure are provided in the TCL Student Handbook, the Division Office, and the Learning Resources Center.

ATTENDANCE
The College’s statement of policy indicates that students must attend ninety percent of total class hours or they will be in violation of the attendance policy.

Students not physically attending class during the first ten calendar days from the start of the semester must be dropped from the class for NOT ATTENDING.

Students taking an online/internet class must sign in and communicate with the instructor within the first ten calendar days from the start of the semester to indicate attendance in the class. Students not attending class during the first ten calendar days from the start of the semester must be dropped from the class for NOT ATTENDING.

Reinstatement requires the signature of the division dean.

In the event it becomes necessary for a student to withdraw from the course OR if a student stops attending class, it is the student’s responsibility to initiate and complete the necessary paperwork. Withdrawing from class may have consequences associated with financial aid and time to completion.

When a student exceeds the allowed absences; the student is in violation of the attendance policy. The instructor MUST withdrawal the student with a grade of “W”, “WP”, or “WF” depending on the date the student exceeded the allowed absences and the student’s progress up to the last date of attendance or under extenuating circumstances and at the discretion of the faculty member teaching the class, allow the student to continue in the class and make-up the work. This exception must be documented at the time the allowed absences are exceeded.

Absences are counted from the first day of class. There are no "excused" absences. All absences are counted, regardless of the reason for the absence.
- A student must take the final exam or be excused from the final exam in order to earn a non-withdrawal grade.

A copy of TCL’s STATEMENT OF POLICY NUMBER: 3-1-307 CLASS ATTENDANCE (WITHDRAWAL) is on file in the Division Office and in the Learning Resources Center.

HAZARDOUS WEATHER
In case weather conditions are so severe that operation of the College may clearly pose a hardship on students and staff traveling to the College, notification of closing will be made through the following radio and television stations: WYKZ 98.7, WGCQ 98.3, WGZO 103.1, WFXH 106.1, WWVV 106.9, WLOW 107.9, WGZR 104.9, WFXH 1130 AM, WLVH 101.1, WSOK 1230 AM, WAEV 97.3, WTOC TV, WTGS TV, WJW TV, and WSAV TV. Students, faculty and staff are highly encouraged to opt in to the Emergency Text Message Alert System. www.tcl.edu/textalert.asp

Emergency Text Message Alert
Students, faculty and staff are highly encouraged to opt in to the Emergency Text Message Alert System. Participants receive immediate notification of emergency events and weather cancelations via text messaging on their cell phones. Participants can also opt in to receive non-emergency news and announcements. Go to www.tcl.edu. On the homepage, click on “emergency TextAlert at TCL” and fill out the form or go to www.tcl.edu/textalert.asp