



Technical College of the Lowcountry  
921 Ribaut Road, PO Box 1288  
Beaufort, SC 29901-1288

Rock Hudson CWO4 (Ret. US Navy)  
Industrial Technology Division  
Building 14, Room 107  
843-470-6033  
[rhudson@tcl.edu](mailto:rhudson@tcl.edu)

**AVT 105  
AIRCRAFT ELECTRICITY FOR AVIONICS**

**COURSE DESCRIPTION**

This course covers the universal theory of basic aircraft repair and maintenance to various electronic and electrical components that make-up most of the avionics systems found on today's aircrafts. Study topics include the concepts and the introductions to basic electronic components, storage devices, DC and AC fundamentals, frequency generators, digital concepts, theory of flight, corrosion control, aircraft manuals, aircraft safety and test equipment.

3 Credits (4 Lec, 0 lab, 4 Cr. other)

Prerequisites: RDG 100, ENG 100, MAT 100 or Instructor Approval

**COURSE FOCUS**

This course focuses on the Students learning the basic building blocks needed to understand how electricity is use to operate and control Avionics and Electronics system on aircraft.

**TEXT AND REFERENCES**

Avionics: Fundamentals of Aircraft Electronics  
The Guide to Aviation Electronics Technician Certification  
Avotek Information Resources, LLC First Edition  
200 Packaging Drive, Weyers Cave, VA 24486  
ISBN: 978-1-933189-28-4

## **COURSE GOALS**

The following list of course goals are address in the course. These goals related directly to the performance objectives (Addendum A). (\*designates a CRUCIAL goal)

- \*1. Understanding Fundamentals of Direct Current
2. Recognizing the Basic Components used in Avionics
- \*3. Comprehending the Concepts of Alternating Current
4. Identify how Electricity is Generated and Stored
- \*5. Describe to uses of various Solid–State Components
- \*6. Describe to uses of various Advanced Solid–State Components
7. Define the different classifications of Alternators and Generators
- \*8. Grasp the basics understanding of Digital Theory
9. Comprehend the Fundamentals of Aircraft Flight
- \*10. Define how the different types of Corrosion that impact Avionics and Electronics on Aircrafts
- \*11. Clarify and explain the critical use of Aircraft Manuals and Schematics to Troubleshoot and Repair Aircraft.
- \*12. Learn the important of Aircraft Safety around the Aircraft and the Workplace
- \*13. Explain Tool Usage and Tool Control

## **STUDENT CONTRIBUTION**

Each student need to spend at least 6 hours per week preparing and completing their classwork or on-line assignments to turn in weekly. Attendance is critical in this class.

Student Attendance Policy: See student handbook within course catalog.

## **COURSE EVALUATION**

Each week's assignments are worth 100 points and averaged over the semester. Chapter tests are also worth 100 points and averaged at the end of the semester. The final will be 100 points.

Tests: 50% Assignments: 45%

Timeliness/Attendance/Participation: 5%

## **COURSE SCHEDULE**

The schedule for this course is provided in Blackboard on the Assignments page. It is important that all instructions in Blackboard be followed carefully as some assignments are completed and turn-in to the instructor and some are uploaded in Blackboard for grading

**Approved by:** Kelli Boniecki **Developed/Revised:** July 7, 2019

Division Dean for Business & Industrial Divisions

## **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** withdraw 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.

## **ONLINE ATTENDANCE PROCEDURE**

For all online courses, students must complete an assignment designated by the instructor during the first week of classes. The instructor will drop the student from the course if the initial assignment is not completed.

Instructors will withdraw students from the class when 90% attendance is not maintained. Attendance in an online course is defined by regular course access and by timely completion of assignments as required by the instructor. Each student will be expected to access the web class at least once a week and complete 90% of assignments on time. Additional access is encouraged and may be necessary for successful completion of classes.

Failure to log in and complete assignments will result in the student being withdrawn from the course. The instructor will assign a grade of "W," "WP," or "WF" based upon the student's academic standing as of the last date of attendance, which is the last login. Students are responsible for any financial matters associated with an administrative withdrawal. If a student fails to email the instructor (using the my.tcl.edu email account) requesting to be dropped from the course and has not submitted the initial assignment required during the first week of class, the instructor will assign a "Never Attended" code in the student information system (Self-Service) no later than ten calendar days after the first day of the class. Students who are dropped as a result of never attending the course are still responsible for all fees associated with the course.

## **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, WGCO 98.3, WGZO 103.1, WFXH 106.1, WWVW 106.9, WLOW 107.9, WGZR 104.9, WFXH 1130 AM, WLVH 101.1, WSOK 1230 AM, WAEV 97.3, WTOC TV, WTGS TV, WJWJ 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](http://www.tcl.edu/textalert.asp).

## **EMERGENCY TEXT 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](http://www.tcl.edu). On the homepage, click on "emergency Text Alert at TCL" and fill out the form or go to [www.tcl.edu/textalert.asp](http://www.tcl.edu/textalert.asp)

### Syllabus Safety Addendum

#### **Purpose**

The purpose of this safety addendum is to provide each student with safety guidelines during an incident, emergency, or disaster at TCL. In addition, it provides students guidelines for lockdown procedures, evacuation procedures, and active shooter.

## Definition

**An incident** is any event, potential or actual, that may impact normal operations but has no immediate health or life threatening consideration or serious effect on the overall functional capacity of the College. An event of this nature should be reported to the Office of the Vice President for Administrative Services. Also, notify the off-site campus administrator if applicable.

**An emergency** is any incident, potential or actual, which may endanger life or health or which affects an entire building or buildings, and will disrupt the overall operations of the College. Outside emergency services will probably be required, as well as major efforts from campus support services. Major policy considerations and decisions will usually be required from the college administration during times of crises. An emergency should be reported immediately by directly using **911** if life or health/injury considerations exist and then to the Office of the President or Vice President for Administrative Services as quickly as possible. Also, notify the off-site campus administrator if applicable.

**A disaster** is any event or occurrence that has taken place and has seriously impaired or halted the operations of the College. In some cases, mass personnel casualties and severe property damage may be sustained. A coordinated effort of all campus-wide resources is required to effectively control the situation. Outside emergency services will be essential. In all cases of disaster, an Emergency Control Center will be activated, and the appropriate support and operational plans will be executed. The disaster should be immediately reported, first by calling **911** and then to the Office of the President or Vice President for Administrative Services. Also, notify the off-site campus administrator if applicable.

## Types of Emergencies

- Hurricane
- Tornado
- Fire
- Biochemical or Radiation Spill
- Explosion/Bomb
- Downed Aircraft (crash which directly impacts campus operations)
- Utility Failures
- Violent or criminal behavior
- Psychological Crisis

## Procedures

**Active Shooter** Run/hide/fight video at (<http://www.fbi.gov/about-us/cirg/active-shooter-and-mass-casualty-incidents/run-hide-fight-video> )

### **Building Evacuation**

1. Building evacuations occur when an alarm sounds and/or upon notification by Security or the Emergency Director.
2. When the building evacuation alarm is activated during an emergency, individuals should exit according to the building evacuation plan and alert others to do the same.
3. Once outside, individuals should proceed to a clear area that is at least 500 feet away from the affected building. Streets, fire lanes, hydrant areas and walkways should be kept clear for emergency vehicles and personnel.
4. Individuals should not return to an evacuated building unless told to do so by Security or the Emergency Director.
5. Individuals should assist persons with disabilities in exiting the building. Elevators are reserved for disabled persons

### **Campus Evacuation**

1. A uniformed Security Guard, the Emergency Director, or an Emergency Resource Team member will announce evacuation of all or part of the campus grounds.
2. All persons (students and staff) are to immediately vacate the campus, or in the case of a partial evacuation relocate to another part of the campus grounds as directed.

### **Lockdown**

1. Clear the halls
2. Report to the nearest classroom/office
3. Assist those needing special assistance
4. Ensure classroom/office doors are closed and locked
5. Turn off lights
6. Stay away from doors and windows (out of the line of sight)
7. BE QUIET and follow instructor's directions
8. Silence cell phones
9. Wait for the "All Clear" before leaving