

Technical College of the Lowcountry
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EEM 231
DIGITAL CIRCUITS I

Course Description

This course is a study of the logic elements, mathematics, components and circuits utilized in digital equipment. Emphasis is placed on the function and operation of digital integrated circuit devices.

There are no prerequisites.

3 Credits

Text and References

http://www.allaboutcircuits.com/vol_4/index.html

Course Goals

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

1. Convert Octal numbers to Hexadecimal numbers
2. Define Digital Electronics term
3. Learn the XNOR logic function
4. Learn the XOR logic function
5. Learn the NOR logic function
6. Learn the OR logic function
7. Learn the NAND logic function
8. Learn the AND logic function
9. Construct NOT logic circuit
10. Convert Hexadecimal numbers to Octal numbers
11. Construct OR logic circuit
12. Convert Binary numbers to Octal numbers
13. Learn Octal Number system
14. Convert Binary numbers to Hexadecimal numbers
15. Learn Transistor-to- Transistor logic
16. Learn Hexadecimal number system
17. Convert Binary numbers to Decimal numbers
18. Convert Decimal numbers to Binary numbers
19. Learn Binary number system
20. Learn Number Systems' structure
21. Compare Analog to Digital electronics
22. Learn the NOT logic function
23. Learn digital clock construction

24. Learn CD and DVD creation techniques
25. Evaluate commercial Analog-to-Digital conversion systems
26. Construct 8-Bit Analog-to-Digital circuit
27. Learn Successive Approximation Analog-to-Digital technique
28. Construct Multiplexer circuit
29. Learn the operating characteristics of a Multiplexer
30. Construct a combination Clock, Counter, and Encoder circuit
31. Construct a clock and Counter circuit
32. Construct AND logic circuit
33. Construct a digital clock circuit
34. Learn MP3 format specifications
35. Construct sequential logic circuits
36. Construct Encoding circuits
37. Construct 4-bit counter circuits
38. Construct Data lockout circuit
39. Learn Synchronous counter theory
40. Learn J-K Flip-Flop Latch theory
41. Learn Data Lockout Latch theory
42. Learn Set-Reset Latch theory
43. Construct Combination logic circuit
44. Construct NOR logic circuit
45. Analyze digital clock circuit

Course Evaluation

There will be two examinations (100 points each), four labs (50 points each), and a Final Examination (200 points).

Course Schedule

The class meets for 3 lecture/presentation hours per week on Tuesday evenings 5:20-7:50pm.

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. Reinstatement requires the signature of the division dean.
- 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.

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

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 Text Alert at TCL” and fill out the form or go to www.tcl.edu/textalert.asp

