CPT 168
Programming Logic and Design

Course Description
This course examines problem-solving techniques applied to program design. Topics include a variety of documentation techniques as means of solution presentation. This course also includes a general introduction to computer concepts.

Course Focus
Through instruction and application, this course provides the student with basic knowledge of algorithms, flowcharts, and other programming design concepts. In this course, students will write code to implement designs.

Text and References
Gaddis (author), Pearson (publisher)
ISBN: 9780134801155

Course Outcomes/Learning Outcomes
This course will use various techniques to design programs, which will be written using Python. During the course, the student will learn to do the following:

- Explain how a computer works.
- Discuss data storage and manipulation.
- Execute conversions between decimal, binary, and hexadecimal number systems.
- Explain the ASCII character set.
- Discuss high-level programming languages.
- Explain the program development cycle (input, processing, and output).
- Write and use algorithms, pseudocode, and flowcharts to design programs.
- Use mathematical operations.
- Use variables and data types.
- Implement top-down design.
- Identify the benefits of modules.
- Use modules (call and definition).
- Differentiate between parameters and arguments.
- Explain and use local variables.
- Use relational operators with Boolean expressions.
- Explain and use decision structures (if-then, if, and case).
- Explain and use repetitive structures (While, Do-While, Do-Until, and For loops).
• Discuss and use functions (call and definition).
• Explain and use input validation.
• Define and use arrays.
• Implement sorting and searching algorithms.
• Discuss how file input and output work.
• Discuss menu-driven programs.
• Discuss string processing.
• Discuss recursion.
• Discuss object-oriented programming.
• Discuss GUI applications.
• Discuss event-driven programming.

Course Goals

The following list of course goals will be addressed in the course:

• Students will answer questions to define and discuss programming logic and design concepts.
• Students will use algorithms, pseudocode, and flowcharts to design programs featuring the following:
  o Input
  o Output
  o Variables
  o Data types
  o Assignment statements
  o Mathematical operations
  o Constants
  o Module calls (invocations)
  o Module definitions
  o Functions
  o Parameters and arguments
  o Decision (selection) statements
  o Repetitive statements (loops)
  o Arrays
  o Sorting algorithms
  o Searching algorithms
  o Input validation
  o File input and file output
• Students will use Python to write programs featuring the following:
  o Input
  o Output
  o Variables
  o Data types
  o Assignment statements
  o Mathematical operations
  o Constants
  o Module calls (invocations)
  o Module definitions
  o Functions
  o Parameters and arguments
Decision (selection) statements
- Repetitive statements (loops)
- Arrays
- Sorting algorithms
- Searching algorithms
- Input validation
- File input and file output

Student Contributions
Each student will spend approximately 3.0 hours per week in class and possibly another 2 to 3 hours preparing for class and completing assignments to submit weekly.

Course Evaluation
The final grade for this course is calculated using the following weights:
- Assignments 40%
- Quizzes 20%
- Exams 20%
- Final Exam 20%

Course Schedule
This class is offered as a traditional class, which meets on Tuesdays and Thursdays from 11:20 am until 12:41 pm.

The schedule for this course will be provided as a Class Calendar document upon completion of the first day of in-class instruction. This Class Calendar document will provide due dates for assignments and assessments.

Instructions for assignments will indicate what is to occur with each assignment and when each assignment is due. Similarly, material to be covered on assessments will be identified during class or via Blackboard.

Approved by: Kelli Boniecki
Division Dean for Business & Industrial Divisions

Developed/Revised: 08/23/2019

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
1. 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.
2. 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.

3. 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.

4. Reinstatement requires the signature of the division dean.
   a. 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.
   b. 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
   c. 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.
   d. 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.
   e. 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, WZGO 103.1, WFXH 106.1, WWVV 106.9, WLOW 107.9, WGZR 104.9, WFXH 1130 AM, WLWH 101.1, WSOHK 1230 AM, WAVE 97.3, WTOC TV, WTGS TV, WJWJ TV, and WSAV TV. Students will also receive text alerts and are highly encouraged to verify and/or update contact information at https://www.tcl.edu/campus-life/campus-security/text-alert/.
EMERGENCY TEXT ALERT

Students are automatically opted in to the Emergency Text Message Alert System based on the information on file for you. Students will receive immediate notification of emergency events via text messaging on cell phones. If you would like to verify and/or update your contact information, go to https://www.tcl.edu/campus-life/campus-security/text-alert/.

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


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