

COMPUTER TECHNOLOGY DEPARTMENT

GREENVILLE TECHNICAL COLLEGE Greenville, South Carolina

COURSE SYLLABUS

Course Number: CPT 234

Course Title: C Programming I

Lecture hours per week: 3.0 **Semester credit hours:** 3.0

Prerequisites: MAT 110 or MAT 109 and CPT 113 or CPT 101

Catalog Course Description: This introductory course in C programming emphasizes the designing, coding, testing and debugging of C programs involving input/output operations, data types, storage classes, decision structures, looping, functions, preprocessor directives, arrays, and simple pointers.

Purpose of the Course: To teach the student how to program using the C++ language. The course teaches a disciplined approach to solving problems and to applying widely accepted software engineering methods to design program solutions as cohesive, readable, and reusable modules. The goal is to teach not only an introduction to the C++ language but to teach a rational approach to program development by providing examples of each technique along with applicable programming assignments.

Required Text(s):

1. A First Book of C++ - From Here to There; Third Edition; Gary Bronson; Thompson Learning; bundled with C++.NET Compiler; ISBN: 1-428-333096
2. A USB portable storage device such as a flash drive will be needed for coursework storage.
3. All students must access CampusCruiser regarding final course grades/transcripts, information postings, financial records, etc. Students in traditional classes must access CampusCruiser for postings regarding assignments, grades, and e-mail. Students in online classes must access WebCT for specific course information regarding assignments and due dates, test dates, and e-mail correspondence; online courses require weekly participation.

SPECIAL NOTE TO ONLINE STUDENTS: The final exam for online students will be administered on the Barton Campus and will be scheduled at a time determined by the department.

Students for Whom the Course Is Intended: This course is intended for students who desire an initial course in C++ programming.

Instructor: _____

Telephone Ext: _____

Office Location: _____

Office Hours: _____

Approved by: *Kim Cannon*

Date: August 18, 2008

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Approved by: *Susan McDonald*

Date: August 18, 2008

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COLLEGE OF TECHNICAL BUSINESS STUDENT/INSTRUCTION POLICY AGREEMENT

The following policy information is provided in expanded text in the document entitled *College of Technical Business Policies and Procedures* provided to you in a separate document via *CampusCruiser*. Although the following information is in an abbreviated form, students are responsible for knowing the policies and any procedures related to the policies in their entirety. The policies and procedures are also provided in the current *College Catalog and Student Handbook* as indicated, and additional information may also be found on the College's website, www.gvltec.edu.

TECHNICAL BUSINESS DIVISION ATTENDANCE POLICIES

TRADITIONAL CLASSES: It is the student's responsibility to be present for all scheduled classes and labs and to communicate with instructors regarding absences. Any student missing more than 10 percent of the class meetings may be administratively withdrawn by the instructor.

ONLINE CLASSES: It is the student's responsibility to commit themselves to online classes and participate regularly, i.e., continuous communication with the instructor by e-mail, bulletin board postings, and turning in assignments. Students who stop sending weekly e-mails, or bulletin board postings and/or stop submitting work will be assumed as not "attending" class and will be marked absent. Consistent absences will make a student eligible for being withdrawn from the course or denied access to the course. Students who find him/herself falling behind should contact the instructor. In other words, if a student simply accesses the course but doesn't communicate, then it doesn't count as "attendance;" and if the student does not withdraw, he/she may receive a final grade of "FA," meaning "failed due to lack of attendance." Such a grade can affect a student's financial aid status.

WITHDRAWAL FROM CLASSES

It is the student's responsibility to complete the required paperwork and process it at the Office of Student Records located at the McAlister Square facility. Instructors or staff members will not process course withdrawal requests.

CLASSROOM CONDUCT Refer to the *College Catalog/Student Handbook*, pages 63-73, for additional information.

Classroom conduct and manners are founded in courtesy and respect for others. Conduct that interferes with the freedom of instructors to teach and the rights of other students to learn is not acceptable and could result in dismissal from the class.

CELL PHONES AND OTHER PERSONAL ELECTRONIC DEVICES

To avoid any unnecessary disruption of College functions, these devices must be turned off and placed out of sight in all academic settings including classrooms, laboratories, clinical / externship settings, study spaces, and computer labs and should not be used near classroom doors or hallways while classes are in session. If a circumstance exists that makes a device required, the student must seek the instructor's permission in advance and it must be set to silent/vibrate mode. Disruption of class from electronic devices may result in the student's dismissal from the class. Issues related to academic dishonesty using these devices will follow the Academic Honesty Policy.

ACADEMIC HONESTY Refer to the *College Catalog/Student Handbook*, pages 12 and 66, for additional information.

Students should know what activities constitute cheating, plagiarism, and collusion as defined in the Student Code for South Carolina Technical Colleges. A student involved in any of these activities will, at a minimum, receive a grade of "0" for that portion of the course. This grade will be computed in the final course grade. **Note: Refer to the Department Academic Honesty Policy under the Grading Information for specific information.**

POLICY FOR REPEATING A COURSE Refer to the *College Catalog/Student Handbook*, page 17, for additional information.

A student may register for a class a maximum of three times including withdrawals. There is an appeal process for extenuating circumstances.

COUNSELING SERVICES Refer to the *College Catalog/Student Handbook*, page 48, for additional information.

Counselors are available to assist Technical Business students with personal, academic, or career counseling. Counselor information is posted at the Barton Campus in the Engineering Technology Building (#103), Room 119. If you are not on the Barton Campus, you may call the Technical Business Dean's Office at 250-8196 or e-mail ginamarie.thomas@gvltec.edu for counselor information and assistance. In addition the College has an Intervention Counseling Office which offers confidential professional counseling as well as resources and referrals to agencies. This office is located at the Barton Campus in the Student Center (Building 105), Room 140. Jackie Bradham, counseling, can be reached by phone at 250-8176 or 250-8318 or by e-mail at jackie.bradham@gvltec.edu. Appointments can be scheduled as needed.

STUDENT WITH DISABILITIES Refer to the *College Catalog/Student Handbook*, page 48, for additional information.

All students who have a disability and need accommodations should visit, call, or e-mail the Student Disability Services Office at the beginning of each semester. Students are strongly encouraged to obtain their accommodation forms within the first 2 weeks of class to ensure appropriate services. The office is located at the Barton Campus in the Student Center (Building 105), Room 124, and can be reached by phone at 250-8202 or 250-8408 or by e-mail at sharon.bellwood@gvltec.edu. The Disability Service Counselor is available to meet with students on satellite campuses by appointment.

The above information is only a portion of the College's policies and procedures for which each student is responsible. For the most current information, please direct your attention to www.gvltec.edu for the most current student handbook information. The information is listed under *Current Student* and then under *Student Resources*.

CPT/PROGRAMMING PROGRAM COMPETENCIES

Upon successful completion of the CPT/Programming program, the graduate will be able to:

1. Analyze, design, develop, and document system solutions that will satisfy the information needs of business users using structured design methodologies and established standards.
2. Design, create, test, and document logical programming solutions to prescribed specifications following established standards and using current development environments and languages for application development and database management.
3. Demonstrate the knowledge and ability to evaluate, configure, maintain, and troubleshoot microcomputer hardware and software.
4. Demonstrate the knowledge and skills necessary to install, configure, and maintain network operating systems such as Windows and Unix.
5. Demonstrate the use of a minimum of three business application software packages.
6. Demonstrate fundamental team building, project management, and presentation skills by participating in team projects that include team goals and values, a development methodology for documentation and coding, group presentations, and exposure to topics such as diversity, time management, and goal setting.
7. Demonstrate the ability to take initiative, assume responsibility, and work under pressure with minimum supervision by successfully completing "hands-on" computer lab assignments.

CPT 234 TERMINAL OBJECTIVES

Students who successfully complete the above course will have demonstrated the skills necessary to accomplish the following objectives with a minimum competency level of 70 percent.

1. Complete all of the steps in the program development life cycle when creating a program.
2. Write, compile, execute, and debug C++ programs illustrating top-down problem solving and the process of stepwise refinement.
3. Demonstrate the proper use of variables, constants, and arithmetic operators.
4. Demonstrate proper usage of primitive data types.
5. Demonstrate the usage of standard input/output functions within C++ programs including the character, string, and numeric I/O.
6. Demonstrate the ability to construct and analyze mathematical expressions and assignments statements.
7. Develop programs that utilize pre-defined functions.
8. Demonstrate the use of single level and nested decision structures within a program using the *if*, *if-else*, and *switch* structures.
9. Use relational operators and compound conditions to evaluate mathematical expressions in decision and looping structures.
10. Develop programs that utilize the *while*, *do*, and *for* looping structures.
11. Demonstrate a knowledge of C++ functions through program modules that return values and those that pass arguments by value and by reference.
12. Demonstrate the skill to create, populate, and manipulate one-dimensional arrays.
13. Demonstrate the skill to create, populate, and manipulate multidimensional arrays.
14. Develop array based applications.
15. Develop programs to input, manipulate, and output strings.
16. Develop string based applications.

The objectives of the CPT 234 course are intended to meet the CPT/Programming program competencies numbered 2 and 7 above.

Business Division Student Lab Rules

The following lab rules are in addition to those mandated by the College as outlined in the Computing Facilities Use Policy (*College Catalog/Student Handbook, pages 62-63*). By signing the Syllabus Acknowledgement Form for this course, you agree to follow all of the guidelines specified by both the College and the Division. Failure to comply with all computer policies will result in the loss of privileges involving campus computer facilities.

- Children are **not** allowed in labs and classrooms nor left in hallways (*College Catalog/Student Handbook, page 62*).
- Food and drinks are **not** allowed in computer labs.
- Labs are to be used only for students enrolled in Computer/Business Program courses and for educational purposes only and may not be used for commercial or personal purposes.
- A Student ID is required. You may be asked to show your student ID and also a copy of your current class schedule.
- **You must log into the computer when you arrive. You will enter your first and last names and your CampusCruiser ID. You will then receive a listing of courses for the current semester, and you will need to select the course for which you are completing work. Remember to log out of the computer before you leave the computer and the lab.**
- Inappropriate or unethical use of the Internet is strictly prohibited (i.e., chat rooms, pornographic web site access, etc.) On the first offense, a written warning will be issued. Lab privileges will be revoked upon the second offense.
- **Internet downloading is prohibited!**
- **Printing in the Business Division Student Lab is now available.** Students will need to purchase a pay-to-print card (a machine is located in the lab), and the student will be charged per page for printing. Printing from the Internet is allowed; however, all regulations regarding the use of the Internet also apply to printing from the Internet.
- Printing in the lab classrooms may only be done at the request of the instructor during class time. Then only one copy of the final assignment may be printed for submission. No other printing is permitted in these labs.
- Lab assistants are on duty to handle hardware/software problems; they do not provide tutoring.
- The Lab Assistant's office and telephone are not to be used by students; a pay phone is located in the canteen.
- All equipment malfunctions are to be reported to the lab assistant; do not attempt repairs.
- Labs are **closed** to all students **during exam days** (except for scheduled exam use), **holiday breaks**, and **between semesters**.
- **Loading of ANY software onto campus computers is prohibited.**
- Copying of any software programs and applications which are licensed or protected by copyright is theft.
- Copying of computer programs, documents, spreadsheets, databases, presentations, computer codes, etc. is not tolerated.
- You must keep the labs neat and clean by picking up after yourself.
- Labs are occasionally reserved for classes; adhere to posted signs.
- **You must leave the lab and/or classroom to answer or return cell phone calls. Please put your cell phone on manner-mode or vibrate when in the lab and/or classroom; disruptive and loud ring tones are not acceptable. Students may be asked to change inappropriate ring tones that are disruptive to the learning environment in the lab and/or classroom.**
- **Use of personal laptops is not permitted in the lab.** Only computers owned by the College may be plugged into any College network.
- Instant messaging is prohibited.
- All students must use the Business Division Student Lab to complete work outside of the scheduled course times. Students will not be allowed to remain in the classroom to complete work after the class is over. Instructors will ask all students to leave the classroom and report to the Student Lab if they desire to continue working on a computer.

The Business Division Student Lab is located on the Barton Campus in the Engineering Building (103), Rooms 113 and 115.

Be sure to keep your student ID and class schedule with you; you may be asked to show your current student ID and/or your current class schedule.

***Lab Hours: Monday – Friday 8:00 am to 9:30 pm ▪ Saturday 8:00 am to 1:00 pm ▪ Sunday Closed**

CPT 234 – C PROGRAMMING I

GRADING POLICY

Emphasis will be placed on tests, project work (labs), and a cumulative final exam with the following weights:

- **Fifteen (15) percent** of the final grade will be based on successful completion of programming assignments as well as a one page essay that compares one foreign university/educational institution's coverage of C++ as compared with this course. **Penalties for inaccurate results will be assessed per assignment.**
- **Sixty (60) percent** of the final grade will be based on Lecture/Lab quiz/test grade averages.
- **Twenty-five (25) percent** of the final grade will be based on the comprehensive final examination.

NOTE: ALL TESTS AND EXAMS ARE RETAINED BY THE INSTRUCTOR.

LAB ASSIGNMENTS

1. A minimum of 8 programming assignments are required for the course.
2. Programming assignments will be assigned from selected chapters.
3. The following factors will also be considered in grading programs:
 - a. The program must work correctly and produce the desired results.
 - b. The program must be written in the style described in the text or described in class.
 - c. Write with compactness in mind.
 - d. Documentation should be clear and meaningful.

Departmental Policy for the Submission and Grading of Assignments

- All assignments (i.e., labs, projects, research papers, etc.) for this course must be completed and submitted to the instructor by the due date established in order to receive full credit for the assignment.
- Assignments not submitted by the due date can receive up to a maximum of 80 percent credit if it is submitted within one week of the due date.
- Assignments submitted after one week of the due date will have a zero (0) grade recorded for the assignment.
- In the event that an assignment is made less than one week prior to the end of the course, the assignment must be submitted by the last day of class prior to the beginning of the final exam period and will not be accepted late.

Departmental Test Policy for Computer Technology Courses

- A minimum of three (3) tests and a Comprehensive Final Exam will be given.
- Test dates will be announced in class and posted on *CampusCruiser*.
- Periodic announced and unannounced quizzes may be given to encourage attendance; make-ups are not allowed.
- The student assumes responsibility for materials and announcements missed when absent.
- **Tests must be taken on the announced day. Early tests may be arranged at the instructor's discretion.**
- **Each student will only be granted one make-up test for the course. The date and time of the make-up test will be at instructor's discretion. If the first missed test is prior to the last date to withdraw for the course, the test must be completed prior to the withdrawal date. Bonus options will not be allowed on the make-up test. If a second test is missed, the student will automatically receive a failing grade for the course.**
- A comprehensive final exam must be taken as scheduled with no exemptions or exceptions.

Exceptions to the Departmental Test Policy will be made on an individual basis as a result of a decision involving the department head, instructor, student, and/or the Dean of Technical Business.

Departmental Academic Honesty Policy for Cheating and Plagiarism

Cheating and Plagiarism will not be tolerated in any Computer Technology course. If cheating and/or plagiarism are found, the following grading penalty will be assessed:

1st Offense – A grade of zero (0) will be assessed for the assignment/test on which the incident occurred.

2nd Offense – A grade of zero (0) will be assessed for the entire assignment/test portion for the course in which the incident occurred. For this course the penalty would be 15 percent of the final grade for assignments and 60 percent of the final grade for tests.

Departmental Grading Scale

Final letter grades will be issued as follows:

A	=	90 - 100 points
B	=	80 - 89 points
C	=	70 - 79 points
D	=	60 - 69 points
F	=	0 - 59 points

INCOMPLETES: An INCOMPLETE ("I") will only be approved if ALL of the following conditions exist:

- The student must have no more than 3 weeks (15-week term) or 1.5 weeks (8-week/10-week term) remaining to complete the course.
- The student must have a validated, documented reason why he/she cannot complete the course by the prescribed end date (illness, work situation, death, etc.).
- The student must be up to date with all work up to the point of the request for an Incomplete (no untaken tests or un-submitted labs, homework, etc.), and the student must have a passing grade average (C or higher) for all work submitted.

CPT 234 – C PROGRAMMING I
Tentative Schedule of Topics and Class/Lab Meetings

Tutoring is now available in the Business Division Student Lab located on the Barton Campus in the Engineering Building (#103), Room 115. The hours for tutoring are posted in the lab (ET 115); no appointment is necessary. There are no fees required for this service.

Chapter 1 – Getting Started

- 1.1 Introduction to Programming
- 1.2 Function and Class Names
- 1.3 The *cout* Object
- 1.4 Programming Styles

Chapter 2 – Data Types, Declarations, and Displays

- 2.1 Data Types
- 2.2 Arithmetic Operators
- 2.3 Numerical Output Using *cout*
- 2.4 Variables and Declarations

Chapter 3 – Assignment and Interactive Input

- 3.1 Assignment Operations
- 3.2 Mathematical Library Functions
- 3.3 Program Input Using the *cin* Object
- 3.4 Symbolic Constants

TEST #1

Chapter 4 – Selection

- 4.1 Relational Expressions
- 4.2 The *if-else* Statement
- 4.3 Nested *if* Statements
- 4.4 The *switch* Statement

Chapter 5 – Repetition

- 5.1 The *while* Statement
- 5.2 *Cin* Within a *while* Loop
- 5.3 The *for* Statement
- 5.4 The *do* Statement
- 5.5 Research Paper – Demonstrating the Ability to Gain Knowledge from a Foreign/International Source

TEST #2

Chapter 6 – Modularity Using Functions

- 6.1 Function and Parameter Declaration
- 6.2 Returning a Single Value
- 6.3 Variable Scope
- 6.4 Variable Storage Class

Chapter 7 – Completing the Basics

- The String Class
- Character Manipulation Methods

TEST #3

Chapter 8 – Arrays

- 8.1 One-Dimensional Arrays
- 8.2 Array Initialization
- 8.3 Arrays as Arguments
- 8.4 Two-Dimensional Arrays

FINAL EXAM