**B O W I E S T A T E UN I V E R S I T Y**

*Department of Computer Science*

COSC 112 Computer Science I

**Instructor:** Dr. Frank Xu

**Office:** Computer Science Building #216

**Office Hours:** TTH: 10:00-12:00 am& 1-2pm

**Phone: 2-**3965

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**Classroom:** Computer science building # 309

**Class Times:** TR: 2:00-4:00 pm

**COURSE DESCRIPTION**:

The study of the formal syntax and semantics of a programming language. Topics include expressions, assignments, declarations, control structures, arrays, data abstractions, subprograms, user interfaces, error handling, end of file handling, string handling. Aspects of Software Engineering include top down design, structured programming, and style in programming conducted in a block structured language, such as Pascal, C, or C++. Ethical and social issues include information privacy, data reliability, data security, including wiretapping and encryption, and ergonomics. This course may be used to satisfy the *General Education Requirement in the Technology category*

**Prerequisite: -** None. Mathematics used in the course will be reviewed when needed.

**Required Textbook:**

[*C++ Programming: From Problem Analysis to Program Design*](http://www.cengage.com/search/productOverview.do?Ntt=C+++Programming%3A+From+Problem+Analysis+to+Program+DesignC+++Programming%3A+From+Problem+Analysis+to+Program+Design|503253911164163661216454111742067825740&N=16&Nr=16&Ntk=APG%7CP_EPI&Ntx=mode+matchallpartial), 7th Edition, by D. S. Malik, CENGAGE Learning.

**Emerging Issues:**

This course will take a look at how human activities affect the environment and how technology has taken a role in green information technology.

**General Education Competencies supported by COSC 112: (GED)**

I. Written and Oral Communications

a. Analyze and discuss critical issues and recurring themes in the discipline

b. Conduct research and evaluate information using the appropriate methods of the discipline.

II. Scientific and Quantitative Reasoning:

1. Analyze and understand the physical and biological world

III. Critical Analysis and Reasoning:

a. Apply skill in analysis, synthesis and problem solving

b. Apply logical reasoning in the examination and resolution of tasks

IV. Technological Competency:

a. Create a document using word processing software

c. Construct a presentation using presentation software

d. Manipulate large amounts of data

V. Information Literacy:

a. Identification of key concepts and terms that describe the information needed

**Program Outcomes (PO)**

*COSC 112 supports Program Outcomes a, b, c, e, f, g, j, and k.*

a) An ability to apply knowledge of computing and mathematics appropriate to the discipline

b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

d) An ability to function effectively on teams to accomplish a common goal

e) An understanding of professional, ethical, legal, security and social issues and responsibilities

f) An ability to communicate effectively with a range of audiences

g) An ability to analyze the local and global impact of computing on individuals, organizations, and society

h) Recognition of the need for and an ability to engage in continuing professional development

i) An ability to use current techniques, skills, and tools necessary for computing practice.

j) An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.

k) An ability to apply design and development principles in the construction of software systems of varying complexity.

**STUDENT LEARNING OBJECTIVES (SLO)**

Students are expected to learn to:

1. Use, understand and distinguish the difference between the data types offered in C++.
2. Use, understand and distinguish the difference between the control structures offered in C++.
3. Use and manipulate character strings.
4. Define and use functions.
5. Write a complete program in C++ using the concepts described in course objectives 1-4.
6. Understand and discuss professional ethics and several social issues in computing.

**Student Expected Outcomes**

Upon completion of this course, the student will be able to:

1. Write a research paper and presentation containing key concepts and terms that examines computer ethics (GED *Ia, Ib, IVa, IVc, Va*) (*SLO 6, PO e, f*)
2. Write a summary paper and presentation on current emerging greening technological issues in the global society using printed and online references for support (GED *Ia, IIa, Ib, IVa, IVc, Va*) (*SLO 6, PO f, g*)
3. Write one final program covering all concepts using C++ (GED *IIIa, IIIb, IVd*) (*SLO 1 – 5, PO a, b, c, j ,k*)

**Specific Student Requirements:**

Students are expected to maintain regular attendance at class and examination periods. Active, regular participation is essential for success in this class. Introductory material must be well known in order to grasp the topics that follow. If a student misses a test (with an excused absence), it is the responsibility of the student to make arrangements with the instructor for the make-up exam within 1 week of the original examination date.

Students are expected to adhere to the high standards of the Bowie State University Code of Student Conduct.

**Grading Policies**

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| --- | --- |
| **Item** | **Points** |
| Lab/Projects/homework/Quizzes | 200 |
| Midterm | 100 |
| Final | 100 |
| Total | 400 |

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| --- | --- | --- |
| **Grade** | **Grade Scale** | **Points** |
| A | 90% | 360+ |
| B | 80% | 320+ |
| C | 70% | 280+ |
| F | 59% and below | below 275 |

COURSE OUTLINE

* An Overview of Computers and Programming Languages
* Basic Elements of C++
* Input/Output
* Control Structures
* User-Defined Functions
* User-Defined Simple Data Types, Namespaces, and the string Type
* Arrays and Strings
* Records (structs)
* Overloading and Templates
* Exception Handling

**Course Policies:**

1. Late homework will be given zero.
2. No make-up quizzes/exams will be allowed without prior arrangements being made.
3. Do not ask questions such as "How do you solve Problem X?" Explain what you have done and ask a specific question in that context.
4. To appeal a grade, send an e-mail to your instructor's e-mail address within two weeks of the grade having been received. Overdue appeals will not be considered.

**Important Reminders from the Bowie State University Administration**

Students who have a disability and want accommodations should report immediately to **Disability Support Services** (DSS), located in Room 079 in Thurgood Marshall Library or call Dr. Michael S. Hughes, DSS Coordinator, at 301-860-4067.

Please take your **English Proficiency Examination** as early as possible! After completing ENGL 101 and ENGL 102, students must take and successfully pass the Bowie State University English Proficiency Examination. Transfer students who completed their English composition requirements at another university should take the English Proficiency Examination during their first semester of enrollment at the University.

In case of **inclement weather conditions**, call the following number regarding cancellations:

(301) 860-4000 or check online at www.bowiestate.edu.

Students who are not registered for this course will not receive a grade.

**Academic Dishonesty**: Academic dishonesty includes plagiarism, cheating, and other illegal or unethical behaviors in doing the work of the course. Plagiarism is the act of representing another’s ideas, words or information as one’s own. If you receive assistance on an assignment from someone else, you must avoid plagiarism by giving proper credit for this assistance. Include in your assignment a comment naming the person who assisted you and stating what the assistance was. Students who are guilty of academic dishonesty are subject to severe penalties ranging from a reduction in points (and possible failure) for the assignment/project, to failing the course, or in extreme cases, dismissal from the University. Do not copy other student’s projects, codes, and design. A group of students working together on a project must change their forms and codes to differentiate from others.