COSC 112   **Computer Science I**   **4 credits**   **Fall 2018**

Section	Instructor	Office	Phone
COSC 112.001 (MW 12:30 pm – 2:40 pm)	K. Yoon	CSB 216	301-860-3965
COSC 112.002 (MW 10:00 am – 12:10 pm)	K. Yoon	CSB 216	301-860-3965
COSC 112.003 (MW 2:00 pm – 4:10 pm)	S. Ji	CSB 321	301-860-4458
COSC 112.004 (TuTh 12:30 pm – 2:40 pm)	J. Yan	CSB 324	301-860-3966
COSC 112.005 (TuTh 12:30 pm – 2:40 pm)	**S. Sharma**	**CSB 317**	**301-860-4502**
COSC 112.006 (MW 2:00 pm – 4:10 pm)	T. Akinlaja	CSB 208A	301-860-3883
COSC 112.007 (TuTh 2:00 pm – 4:10 pm)	T. Akinlaja	CSB 208A	301-860-3883
COSC 112.101 (TuTh 4:55 pm – 7:25 pm)	M. Sunmola	CSB 207	301-860-3960
COSC 112.103 (TuTh 4:55 pm – 7:25 pm)	S. Chilaka	CSB 213C	301-860-3960

Office Hours: Tuesday 2:55 – 4:55 PM, Wednesday: 12:55 – 4:55 PM or by appointment
Course website: http://www.cs.bowiestate.edu/sharad/cs112/index.html
Email: ssharma@bowiestate.edu

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

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*.

Required Text:
C++ Programming: From Problem Analysis to Program Design, 8th Edition, by D. S. Malik
Cengage Learning, 2018, ISBN-13: 978-1-337-10208-7
Required Supplies: Mobile storage media that plug in to a USB port

Emerging Issues:
This course supports Bowie State University's efforts in sustainability. Green computing, the impact of computer use on the environment, and efforts to become sustainable are a focus. A LibGuide (library guide) named "Sustainability and Green Computing" is available on the Library website. A direct link to it is http://bowiestate.libguides.com/sustainability.

General Education Competencies supported by COSC 112:
    I. Written and Oral Communications
        a. Analyze and discuss critical issues and recurring themes in the discipline
        f. Conduct research and evaluate information using the appropriate methods of the
        discipline.
    II. Scientific and Quantitative Reasoning:

a. Analyze and understand the physical and biological world
III. Critical Analysis and Reasoning:
    b. Apply skills in analysis, synthesis and problem solving
    c. 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

Student Outcomes (SO)

COSC 112 supports ABET Student Outcomes 1, 2, 3, and 4.
Students will have ability to:
1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3. Communicate effectively in a variety of professional contexts.
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
6. Apply computer science theory and software development fundamentals to produce computing-based solutions.

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 one-dimensional arrays and character strings.
4. Define and use functions.
5. Write a complete program in C++ using the concepts described in student learning objectives 1 to 4 above.
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, If, IVa, IVc, Va*) (*SLO 6, SO 3, 4*)
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, If, IVa, IVc, Va*) (*SLO 6, SO 3*)

3. Write one final program covering all concepts using C++ (GED *IIIb, IIIc, IVd*) (*SLO 1 – 5, SO 1, 2*)

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.

Assignments:
1.   Lab & Homework Assignments:
 -    Solve assigned problems from the text or elsewhere
 -    Study assigned chapters of the text and **work through** relevant examples.
 -    Laboratory **Portfolio**: Compile the printouts of programs and homework in an organized loose-leaf notebook or folder. Highlight interesting problems and their resolution. Practice writing explanations using the terminology of the course.

2.   Tests:
 -    Problems are based on homework assignments, text book readings and class discussions; at least one problem will require writing a complete program. Tests are handwritten, and completed in class.

3.   Programming Assignments:
 -    Programs are to be sent to the instructor prior to the time of class. Any program received after the time of the class is considered late **(NO EXCUSES)** and will receive a reduced score.

4.   Tutoring:
 -    Once a week, attend a tutoring session, for math and/or computing.
 -    Maintain the tutoring log sheet, and keep it in the Laboratory Portfolio.
 -    Show the log to your instructor as required. It will be collected at the end of the semester.

Course Grade Derivation

Lab & Homework Assignments	10 %
Major Programming Assignments (7-10)	20 %
Mandatory Tutoring & Attendance	5 %
Ethics/Global Warming paper/presentation	10%
3 Tests	30 %
Final Exam	25%

Bibliography

Elliott, Rebecca. (2016). *Painless Grammar* (4th ed.). New York: Barron's Educational Series, Inc.
Hacker, Diana and Nancy Sommers (2014). *A Writer's Reference* (8th ed.). Massachusetts: Bedford/St.
    Martin's.
Kernighan, Brian and Rob Pike (1999). *The Practice of Programming.* Massachusetts: Addison-Wesley
    Longman, Inc.

THE FINAL EXAM WILL COVER THE ENTIRE SEMESTER
The final exam will be held at _____, on
_____day, December ___, 2018.

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.

Attention students who entered BSU before Fall 2017: 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.

Important Dates:

Classes Begin	8/27/2018
Late Registration (fees assessed)	8/27 – 8/31
Last Day for (late) registration; Add; Drop w/out W	8/31
Labor Day	9/3
Fall Convocation, 10 am – 12 noon	9/12
English Proficiency Examination	9/13 - 9/15
Last Day to Remove Spring 2018 Incomplete Grade	10/5
Deadline to Apply for December 2018 Graduation	10/12
Mid-Semester Evaluation	10/15 – 10/19
Fall Career Expo (1:00 – 4:00 pm, James Gym)	10/24 (Career Development Center)
English Proficiency Examination	11/1, 11/2
Advisement Week for Undergraduate Students	11/5 – 11/9
Registration Begins: Winter, Spring 2019	11/12
Last day to Change to Audit or Drop with a 'W'	11/16
Thanksgiving Recess	11/22 – 11/23
Classes Resume	11/26
Final Examinations for Graduating Seniors only	11/30 – 12/5
Last Day of Classes	12/10
Reading Day	12/11
Final Examination Period, non-graduating students	12/12 – 12/19

Final Exam: December   , 2018 at

Fall 2018 Graduation	12/14

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.

COSC 112   Proposed Course Outline and Schedule   Fall 2018

WEEK	DATES	CHAPTER	TOPIC
Week 1	**8/27 – 8/31**	**Chapters 1, 2**	Overview; Algorithms; Basic Elements of C++
Week 2	**9/3 – 9/7**	**Chapter 2**	Basic Elements of C++ Data types; variables; Basic programs
Week 3	**9/10 – 9/14**	**Chapter 3**	Input/Output (Functions for I/O)
Week 4	**9/17 – 9/21**	**Chapter 3**	Input/Output (File I/O) **** Test #1 on Chapters 1, 2, 3**
Week 5	**9/24 – 9/28**	**Chapter 6**	User-Defined Functions (Part I) Value-returning functions, Pass-by-Value Parameters
Week 6	**10/1 – 10/5**	**Chapter 6** **Chapter 4**	User-Defined Functions (Part I) Control Structures I
Week 7	**10/8 – 10/12** (BSU is open on 10/8)	**Chapter 4**	Control Structures I (if, if…else, switch)
Week 8	**10/15 – 10/19**	**Chapter 5**	Control Structures II (while) **** *Global Warming and Greening Summary Paper Due* ****
Week 9	**10/22 – 10/26**	**Chapter 5**	Control Structures II (for, do…while) **** Test #2 on Chapters 4, 5, 6**
Week 10	**10/29 – 11/2**	**Chapter 6**	User-Defined Functions (Part II) Void Functions, Pass-by-Reference Parameters
Week 11	**11/5 – 11/9**	**Chapter 6**	User-Defined Functions (Part II) Void Functions, Pass-by-Reference Parameters
Week 12	**11/12 – 11/16**	**Chapter 7**	User-Defined Simple Data Types; Namespaces; String Type **** Test #3 on Chapters 6, 7**
Week 13	**11/19 – 11/21** 11/22 Thanks-giving Recess	**Chapter 8**	Arrays and Strings One-dimensional arrays
Week 14	**11/26 – 11/30**	**Chapter 8**	Arrays and Strings One-dimensional arrays
Week 15	**12/3 – 12/10**	**Review, Presentations**	***Ethics Paper Due; Presentations*
Exam Week	**12/12 – 12/19**	**Final Exam**	**Final Exam on _____**