COURSE SYLLABUS

2019-2020

***Programming Applications for Engineers***

***CS 159***

**Online Summer**

***CS 159 Syllabus***

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***American University of the Middle East (AUM)***

***COURSE SYLLABUS***

# General Course Information

***Title and Code of the course:*** *Programming Applications for Engineering (CS 159)*

***Meeting Times:***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Section* | *Sunday* | *Monday* | *Tuesday* | *Wednesday* | *Thursday* |
| *O6* | *03:55 PM - 05:10 PM (Class)*  *10:05 AM - 12:09 PM (Lab)* | *03:55 PM - 05:10 PM (Class)* | *03:55 PM - 05:10 PM (Class)* | *03:55 PM - 05:10 PM (Class)*  *10:05 AM - 12:09 PM (Lab)* | *03:55 PM - 05:10 PM (Class)* |

***Instructor’s name and title:*** *Dr. Muhammad Nadeem, Bauyrzhan Aubakir*

***Office Hours:*** *by appointment via email*

***Number of credits:*** *3 credits*

***Prerequisites:*** *ENGR131*

***Contact Hours:*** *3 hrs Lecture and 2 hrs lab*

***Email:*** [*Muhammad.Nadeem @aum.edu.kw*](mailto:Muhammad.Nadeem%20@aum.edu.kw)*,*  [*Bauyrzhan.Aubakir@aum.edu.kw*](mailto:%20Bauyrzhan.Aubakir@aum.edu.kw)

***Textbook/material required:*** *Computer Science, A Structured Programming Approach Using C, Forouzan and Gilberg, THIRD EDITION, ISBN: 0-534-49132-4*

*AUM-E-Learning System: ANSI C Language Fundamentals, Programming in C++: Arrays, Pointers, and STL*

# Course Description

*Fundamental principles, concepts, and methods of programming in C, with emphasis on applications in the physical sciences and engineering. Basic problem solving and programming techniques; fundamental algorithms and data structures; and use of programming logic in solving engineering problems. Students are expected to complete assignments in a collaborative learning environment.*

# Course Objectives

*CS159 introduces the tools of software development that have become essential for creative problem solving in Engineering. Educators and employers agree that it is important for future Engineering professionals to be able to function as part of a technical team and CS159 will require students to work in assigned teams for lab assignments. Educational research informs us that structured collaboration leads to increased learning gains for students participating in an introductory programming course. Collaboration is a requirement of the course. You will be assigned to your teams by your lab instructor.*

*CS159 explores programming concepts in computing environments that are new to most students and will require implementation of solutions in more than one programming language. Our goals are for you to recognize how programming concepts are common to a variety of programming languages and how those concepts can be used to solve a problem.*

# Learning Outcomes

*By the end of this course, the student should be able to:*

1. *Edit, compile, and execute computer programs. (2, 6)*
2. *Debug computer programs. (6)*
3. *Write readable programs using coding conventions such as comments, indentation, and naming. (2, 6)*
4. *Solve problems by writing and using functions. (2, 6)*
5. *Solve problems by using structured programming techniques such as selection. (2, 6)*
6. *Solve problems by using structured programming techniques such as repetition. (2, 6)*
7. *Solve problems by using appropriate fundamental data types and data structures (arrays). (2, 6)*
8. *Solve problems by using structured programming techniques in text input/output. (2, 6)*
9. *Solve problems by using appropriate fundamental data types and data structures (pointers). (2, 6)*
10. *Understand the concept of strings and the way to manipulate them using string library. (2, 6)*

*ABET Student Outcomes:*

1. *An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.*
2. *An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.*
3. *An ability to communicate effectively with a range of audiences.*
4. *An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.*
5. *An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.*
6. *An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.*
7. *An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

# Topics

|  |  |
| --- | --- |
| **Topics** | **Reference in the textbook** |
| Introduction to the C Language, Expression | Chapter 2, 3 |
| Functions | Chapter 4 |
| Selection | Chapter 5 |
| Loops | Chapter 6 |
| Array 1D | Chapter 8 |
| Array 2D | Chapter 8 |
| Pointer/Pointer application | Chapter 9, 10 |
| Text Input/output | Chapter 7 |
| Strings | Chapter 11 |

# Course Evaluation

|  |  |
| --- | --- |
| **Grade distribution** | |
| Individual Homework | 15% |
| 4 Online weekly assessments | 15% each |
| Final week assessment | 20% |
| Attendance | 5% |
| **TOTAL** | **100%** |
|  |  |
| Bonus | 5 points |

**Notes:**

1. Weekly assessment submission deadline is 5 days. A delay in assessment submission will result in the following grade deduction:

* Delay of 1 Day: 10% Deduction
* Delay of 2 Days: 20% Deduction
* Delay of 3 Days: 40% Deduction
* Delay of 4 Days: 50% Deduction
* Delay of 5 Days: 100% Deduction

1. Please check Banner for your Gradebook and Attendance.
2. AUM rules and regulations apply.

# Turnitin

*Turnitin is a web-based solution that lets AUM faculty and AUM students check written work for improper citation or misappropriated content. You may be assigned a username and a password to be able to upload your assignments online, when and if requested. If you face any technical problem, please contact IT at AUM.*

# Use of textbook and other course material

*It is the responsibility of the student to refer to the textbook and other course material. The use of the textbook is mandatory.*

# APA Style

*AUM adopts the APA writing style for all its academic programs. AUM students need to use this style for their assignments. The following web site is of value for students:* [*http://owl.english.purdue.edu/owl/resource/560/01/*](http://owl.english.purdue.edu/owl/resource/560/01/).Students are also encouraged to visit the AUM Writing Lab to receive help and guidance on all APA-related questions.

# Lab Reports

*It is expected of students to follow and abide with lab procedures and guidelines. Lab report format must be strictly followed by the student.*

# Academic Honesty and Integrity Assurance

*One of the signs that the course material has been properly understood is honesty when accomplishing the assignments. Lack of academic integrity (e.g. plagiarism, copying another person’s work, the use of unauthorized aids on examinations, cheating, facilitating acts of academic dishonesty by others) will not be tolerated. Therefore, if students include ideas, sentences, or other material that are not theirs in their work, they must properly quote the source(s). Students are encouraged to consult with the instructor if they have any questions on the issues of academic integrity or technical formatting of the references.*

*Upon suspicion and doubt of the authenticity of the work submitted, the Instructor has the right to ask the student to verify her/his work. This can be done through, but not limited to, repeating the work, oral examination or discussion, alternative or similar on spot class assignment, pop quiz, or any other action deemed necessary. If the student fails to prove the authenticity of the work, then the Instructor will apply the academic misconduct rules as mentioned in the AUM Student Handbook which may include awarding the work a zero grade.*

***In case of plagiarized submission, a penalty will be applied starting the date of the email sent by the faculty as follows:***

* + ***Resubmission on the first day (within 24 hours after notification): 20% deduction***
  + ***Resubmission on the second day after notification: 30% deduction***
  + ***Resubmission on the third day after notification: 50% deduction***
  + ***Failing to resubmit within three days after notification, the assessment will be graded with zero***

*Students are expected and encouraged to be honest and to maintain the highest standards of academic integrity in their academic work and assignments at the University. Any act of Academic Dishonesty may result in severe consequences for violations range from zero grades given for the assignments, failing the course, and suspension from the University. Students will refrain from any academic dishonesty or misconduct including, but not limited to:*

* *Plagiarism: the presentation of someone else’s ideas, words, or artistic, scientific, or technical work as one’s own creation. In addition, paraphrasing, summarizing, direct quotations are considered as plagiarism, if the original source is not properly cited.*
* *Cheating: is an act of lying, deception, trickery, imposture, or imposition. Cheating characteristically is employed to create an unfair advantage, usually in one’s own interest, and often at the expense of others. The person who is sending or receiving assistance is considered cheating.*
* *Assisting in cheating*
* *Substituting for another student in the taking of an examination*
* *Substituting examination booklets/papers*
* *Submitting the same work for more than one course*
* *Submitting papers and other work written by others*
* *Receiving or providing unauthorized help or assistance in any academic work or assignment*
* *Intentional violation of program and degree requirements and regulations as established by the University*
* *Dishonest reporting of computational, statistical, experimental, and research results, or the like*
* *Using any format of smart or electronic devices as a tool of cheating*

***For a detailed description of academic misconduct please refer to the AUM Student Handbook.***

# Copyrights

*Students are expected to adhere to copyright practices,* ***refer to the undergraduate AUM Student Handbook.***

# The need to study!

*AUM students need to be well prepared for the rigorous curriculum at AUM and its applications. This means the student needs to apply more quality for addressing the requirements of the courses in a semester. AUM students need to be effective in time management.*

# Assessments

* *Midterms and final exams are replaced by weekly assessments.*
* *Weekly assessments can be in the form of assignment, case study, individual project, online test, etc.*
* *Each weekly assessment can be submitted twice within the deadline.*
* *Group projects will be replaced by individual projects / assignments.*
* *Weekly assessment submission deadline is 5 days. A delay in assessment submission will result in the following grade deduction:*
  + *Delay of 1 Day: 10% Deduction*
  + *Delay of 2 Days: 20% Deduction*
  + *Delay of 3 Days: 40% Deduction*
  + *Delay of 4 Days: 50% Deduction*
  + *Delay of 5 Days: 100% Deduction*

# Specific Notes