University of Houston

HPE Data Science Institute

Syllabus: Scientific Computing With C++

Instructor: Jerry Ebalunode, Ph.D., MBA.

Email: jebalunode@uh.edu

Learning interface: Microsoft Teams

Office Hours: By appointment

Location: TEAMS Online

Website: https://secure.hpedsi.uh.edu/training

Course description: C++ is one of the most widely used programming languages, particularly in the STEM fields. Various C++ compilers are available for most computer architectures and operating systems. This tutorial will provide skills to understand and write C++ code starting with the basics. There will be many hands-on time sessions to write code. You will learn how to write, compile and debug some C++ code comfortably. You will understand and use the basic constructs of C++; manipulate C++ datatypes, such as arrays, strings, containers, and pointers; isolate and fix common errors in C++ programs; use memory appropriately, including proper allocation/deallocation procedures; apply object-oriented approaches to software problems in C++, making use of structs, classes and objects. Several C++ problems will be presented and solved. Some of the newest feature of C++ will also mentioned/looked at.

Attendance

Attendance is mandatory. Grades (Pass/Fail) will not be assigned to students who fail to attend at least 12 hours of synchronous instruction.

Materials

Course notes: Some of the Slides and sample codes and other materials will be made available on Moodle course page, or Microsoft Teams. After the first week of lectures, an attendance mark(score) of **50% or higher will be required to get access new materials (slides, notebooks, quizzes, assignments etc).**

University of Houston

HPE Data Science Institute

Training Platform: Linux/Unix cluster

Prerequisites: Participants are expected to have a working knowledge of the UNIX/Linux environment or should have taken Cluster computing course from HPEDSI dept.
*Note for HPC certificate – you should have completed the Linux/cluster computing course or passed the placement test to get credit for this course towards HPC certificate.

Textbook: None Required, but for those interested.

(1) Absolute C++: Walter Savitch and Kenrick Mock

Lecture notes would be provided through course website.

Evaluation (tentative): Attendance: 20%, In-class/HW assignments: 40%, final exam: 40% (last day of class)

Attendance Requirement:
Good standing on Attendance grade (50%) or higher would be required to see new course materials, homework assignments, and exams/projects as the course proceeds.
Also, for participants interested in getting a badge or certificate for completing this course, an attendance grade of at least 75% of the class meeting sessions is required, to be qualified for passing the course and getting the badge.

Tentative Course Schedule:

Week 1	**C++ Basics, Algorithmic Thinking**	**~3 hours**
Week 1, 2	**Imperative Programming, Strings, Files**	**~3 hours**
Week 2, 3	**Arrays, Pointers**	**~4.5 hours**
Week 3, 4, 5	**Classes, Objects, STL**	**~4.5 hours**
Week 5	**Final Exam**	

Copyright protection:
The course materials and online lecture videos posted on Blackboard/Moodle are only meant to be used within this course and should not be distributed.
The University of Houston Academic Honesty Policy applies:
http://www.uh.edu/provost/policies/honesty
Students in need of counseling:
Counseling and Psychological Services (CAPS) can help students who are having difficulties managing stress, adjusting to the demands of a professional program, or feeling sad and hopeless. You can reach CAPS (www.uh.edu/caps) by calling 713-743-5454 during and after

business hours for routine appointments or if you or someone you know is in crisis. No appointment is necessary for the “Let's Talk” program, a drop-in consultation service at convenient locations and hours around campus.
http://www.uh.edu/caps/outreach/lets_talk.html