Technical Elective: Programming Language (Fall 2023)

Department of Computer Science, SCUPI

Course Reference Number: 312227030

When: Fall 2023

What & Where:

Lectures: Tuesday, 7:20PM-9:55PM @ SCUPI 4-212 (Liberal Arts Building), Jiang'an Campus

Instructor: Dr. Guangwu Qian

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Office: Room 319B, 3rd Floor, Zone 3, SCUPI

Web: https://scupi.scu.edu.cn/en/faculty-staff-en/faculty-en/guangwu-qian

Office hours: Monday, 10:00-11:45AM, 2:00PM-6:00PM

Thursday, 4:45-5:45PM

Course Description: This course will expose you to the syntax, semantics, and standard libraries of the C++ language; to common C++ design and implementation idioms; and to many opportunities to apply the knowledge and idioms you learn through hands-on studio exercises and projects in C++. All programming in this course will be done in C++, a language in which you can combine the object-oriented, procedural, and generic programming ideas with which you'll gain experience throughout the semester. Since many students enter this course with experience in Java but not C++, the early portion of the course is designed to give you a breadth-first experience of the major capabilities and features of C++ and to assist your progress up the rest of the C++ learning curve. In addition to providing a reasonable coverage of the C++ language overall, this course also will focus on new features recently introduced to C++ and its libraries, particularly those from the C++11 standard.

Prerequisites: Proficiency with any general-purpose programming language.

Blackboard: https://pibb.scu.edu.cn

All handouts, class notes and assignments will be published on Blackboard. You are expected to check this website frequently. If applicable, an OJ system may be used to evaluate your program.

Textbook: *C++ Primer, Fifth Edition.* Stanley B. Lippman, Josée Lajoie and Barbara E. Moo

Note on Email & Communication: The instructor and TA will periodically post announcements to the Blackboard website. It is every student's responsibility to regularly monitor these announcements. The instructor and TA will periodically email enrolled students with announcements. Students must check their SCUPI email at least once per day to ensure these announcements are received. When contacting the course staff via email, messages must be addressed to (or CC) both the instructor and the TA. Email subject should be prefaced with the appropriate prefix (e.g., "[TE_C++]").

Course Grading:

Ordinary Grade (Attendance, Questions, Assignments)	30%
Midterm Exam / Mini Project	20%
Final Exam	50%

Grading Policy:

Attendance and participation in lecture may be used to decide borderline grades.

Unless explicitly noted otherwise, the work in this course is to be done independently. Discussions with other students on the assignments should be limited to understanding the statement of the problems. Cheating in any way, including giving your work to someone else will result in a low grade for the course and a report to the appropriate University authority.

Submission & Late Policy: All written assignments must be submitted electronically and required to submit on time. An assignment which is late will be accepted *but* the instructor will determine any penalty in a fair manner.

Make-up Policy: Students are expected to take both midterm and final exams. Make-up exams will only be given in the event of a medical situation, an emergency or a failure for the final exam, and only if this is documented and the instructor is notified *immediately if in advance is not possible*. Note that the make-up exam is *only* available for the final exam (50% of the overall score).

Students with Disabilities: If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and TA as early as possible in the term.

Religious Observance: In order to accommodate the observance of religious holidays, students should inform the instructor of any such days as early as possible in the term by email.

Audio/Video Recording To ensure the free & open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use.

Copyrighted Material All material provided through this web site is subject to copyright. This applies to class notes, slides, assignments, solutions, project descriptions, etc.

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Outline: Tentative Syllabus

- C++ program basics

  Variables, types, control statements, development environments

- C++ functions

  Parameters, call stack, exceptions

- C++ memory

  Addressing, layout, management

- C++ classes

  Encapsulation, abstraction, inheritance polymorphism

- C++ generics

Overloading, templates, interface polymorphism , associated types

- C++ STL

  Iterators, algorithms, containers, functors

References:

《C++ Primer 英文版（第5版）》，ISBN：9787121200380，出版社：电子工业出版社，作者：Stanley B. Lippman, Josée Lajoie and Barbara E. Moo

《C++ Primer 中文版（第5版）》，ISBN：9787121155352，出版社：电子工业出版社，作者：Stanley B. Lippman, Josée Lajoie and Barbara E. Moo，译者：王刚，杨巨峰