CMSC 195 Special Topics in Modern C++ Programming Syllabus

Spring 2020

Course Information

Instructor Information

Instructor:	Jory Denny
Email:	jdenny@richmond.edu
url:	`http://www.mathcs.richmond.edu/~jdenny`
Office:	Jepson Hall 226
Office Hours:	MF 10:00am–12:00pm; TR 4:00pm–6:00pm;
Demonstration Days:	MF 9:00am–5:00pm
Other times by appointment	

I am happy to meet over lunch any day with individual or groups of students between 12:00pm and 1:00pm, simply schedule it with me.

Brief Teaching Philosophy: I believe in learning practical skills and attempting to solve challenging real world problems. I appreciate how difficult this mission can be, and therefore I do not expect perfection as we progress throughout this class.

Section Information

CMSC 195-02

Lecture:	W	4:30pm-6:00pm	Jepson Hall G24

Requirements

Prerequisite: CMSC 240 Software Systems Development

Textbook

Recommended:	*Effective C++*, Scott Meyers, Addison Wesley, Third Edition, 2005.
Effective Modern C++, Scott Meyers, O'Reilly, First Edition, 2014.	

Course Website

`http://www.mathcs.richmond.edu/~jdenny/Courses/195`

Course Outcomes

After taking this course a student will be able to:

- Understand the nuances to the following groups of C++ features and specifications:

    - rvalue references and move semantics,
    - template programming and type deduction,
    - resource acquisition is initialization,
    - encapsulation, inheritance, and polymorphism,
    - compiler generated methods and optimizations,
    - smart pointers,
    - constants and constant expressions,
    - lambda expressions, and
    - threading and parallel programming.

- Write and analyze simple example programs demonstrating the aforementioned features and concepts.

Course Content and ***Tentative*** Schedule

In order to accomplish the course outcomes, we will generally follow this schedule of topics and readings:

Week	Topic
1	Move Semantics
2	Template programming
3-6	Object oriented programming
7-8	Type deduction and reference collapsing
9-11	Type aliasing and metaprogramming
12	Lambda expressions
13	Variadic templates and initializer lists
14	Threading, Parallel programming, and C++17/20 preview

Note the schedule is subject to change.

Assignments and Grading

All assignments will be announced in class and details will be posted on the course web page. This class is pass/fail. A passing grade is based on completing these two requirements:

1. **Attendance** — You are required to attend 10 classes.

2. **Programming Challenges** — You are required to complete 6 programming questions. These will be turned in through a soft copy.

Policies

Course Conduct

Students are expected to be respectful to the instructor, lab assistants, and other students. Misconduct will not be accepted. This includes, but is not limited to, excessive phone usage, napping, rude commentary, etc.

Attendance and Late/Missed Assignments

Attendance at all lecture and lab sessions is advised. If you miss class for any reason, it is your responsibility to find out what you missed.

No late assignments will be accepted unless permission from the instructor is sought *in advance*, when possible. Typically, exceptions are only given for medical reasons. "Late" is defined as one second past the start of the class period. Printer errors are not a valid excuse. *Please discuss late turn-ins after the class period.*

There will be no makeup options for quizzes or exams. Depending on the circumstance, either a 0 will be given, or the next quiz/exam will count twice. This will be determined by the instructor's discretion.

Academic Integrity

All students are expected to be in accordance with the student honor code. `http://studentdevelopment.richmond.edu/student-handbook/honor/the-honor-code.html`. Note, cheating, lying, plagiarism, academic theft, etc. are not acceptable and will be reported to the Honors Council accordingly. If you know another student is breaking the code, then it is your responsibility to report them to me and the university.

Collaboration and Using Resources

For the assignments in this class, white-board/verbal discussion of concepts with others is allowed and encouraged, however the programming and write-up must be your own.

Plagiarism, *the practice of taking someone else's work and passing it off as your own*, is strictly forbidden. Reference every source you use, whether it is a person, a book, a paper, a solution set, a web page, etc. You are not required to cite the instructor or the course textbook — these sources are assumed to be used.

Specifically to cite source material — on assignment coverpages list people you collaborated with on the assignment. Then, in the assignment body (code or paper) cite sources in APA format, e.g., the specific stack overflow post. In source code this information can be placed in a comment line/block. For homework and culture assignments, use proper quotation and cite sources at the end in a bibliography section.

For any assignments, you should be able to explain every part of every answer. If I suspect the work is not your own, I will meet with you to discuss any questionable material. After discussion, the problem may be re-graded accordingly.

Americans with Disabilities Act (ADA)

The Americans with Disabilities Act (ADA) is a federal antidiscrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities.

If you believe you have a disability requiring an accommodation, please follow the procedures listed on the University of Richmond Disability Services website `http://disability.richmond.edu` to begin the accommodations process as soon as possible. *Please provide the main instructor with a University of Richmond Disability Accommodation Notice (DAN) by the second week of class. No student will receive accommodations of any kind without a DAN.*

Services

If you experience difficulties in this course, please reach out to the instructor, he is here to help you excel in this class. Also, there are resources at the University of Richmond that can support you in various ways to meet course requirements.

Academic Skills Center

Academic Skills Center (`http://asc.richmond.edu`, 289-8626 or 289-8956) assists students in assessing their academic strengths and weaknesses; honing their academic skills through teaching effective test preparation, critical reading and thinking, information conceptualization, concentration, and related techniques; working on specific subject areas (e.g., calculus, chemistry, accounting, etc.); and encouraging campus and community involvement. Hours at the Center are: Sunday through Wednesday 3:00-9:00 p.m. and Thursday 3:00-7:00 p.m. On-call tutors are also available.

Career Services

Career Services (`http://careerservices.richmond.edu` or 289-8547) can assist you in exploring your interests and abilities, choosing a major or course of study, connecting with internships and jobs, and investigating graduate and professional school options. We encourage you to schedule an appointment with a career advisor early in your time at UR.

Counseling and Psychological Services

Counseling and Psychological Services (`http://wellness.richmond.edu/offices/caps` or 289-8119) assists currently enrolled, full-time, degree-seeking students in improving their mental health and well-being, and in handling challenges that may impede their growth and development. Services include short-term counseling and psychotherapy, crisis intervention, psychiatric consultation, and related services.

Speech Center

Speech Center (`http://speech.richmond.edu` or 289-6409) assists with preparation and practice in the pursuit of excellence in public expression. Recording, playback, coaching and critique sessions offered by teams of student onsultants trained to assist in developing ideas, arranging key points for more effective organization, improving style and delivery, and handling multimedia aids for individual and group presentations.

Writing Center

Writing Center (`http://writing.richmond.edu` or 289-8263) assists writers at all levels of experience, across all majors. Students can schedule appointments with trained writing consultants who offer friendly critiques of written work.