Course Syllabus

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CS 5744 Fall 2022

Instructor: Dr. Bob Edmison

Office: 1220A Torgersen Hall and on zoom: **https://virginiatech.zoom.us/my/bedmison**

Office hours: Tuesday 12:00-1:00 PM ET, Thursday 1:00-2:00 PM ET, or by Appointment (email me to set a time).

Phone: 540-231-3957

TAs Jaitun Patel (**jaitunvijaybhai@vt.edu**) Tianjia Wang (wangt7@vt.edu)

Office hours Monday 6:00 - 7:30 PM ET, Friday 9:00-10:30 AM ET **https://virginiatech.zoom.us/j/85286103254**

E-mail: **bedmison@vt.edu**

Full Syllabus: **[See the Full Course Syllabus for a complete description of the course, including policies.](#)**

Textbook: ᴼᵖᵗⁱᵒⁿᵃˡ George Fairbanks, ***Just Enough Software Architecture: A Risk-driven Approach*** **[(https://www.amazon.com/Just-Enough-Software-Architecture-Risk-Driven/dp/0984618104/)](https://www.amazon.com/Just-Enough-Software-Architecture-Risk-Driven/dp/0984618104/)** , Marshall & Brainerd, 2010, ISBN 0984618104.

ᴼᵖᵗⁱᵒⁿᵃˡ Len Bass, Paul Clements, and Rick Kazman, ***Software Architecture in Practice, 3rd Ed.*** **[(https://www.amazon.com/Software-Architecture-Practice-3rd-Engineering/dp/0321815734/)](https://www.amazon.com/Software-Architecture-Practice-3rd-Engineering/dp/0321815734/)** , Addison-Wesley, 2012 ISBN 0321815734. (**[Link to E-book version](https://learning.oreilly.com/library/view/software-architecture-in/9780136885979/)** **[(https://learning.oreilly.com/library/view/software-architecture-in/9780136885979/)](https://learning.oreilly.com/library/view/software-architecture-in/9780136885979/)**)

Weekly Zoom Link: **[https://virginiatech.zoom.us/j/81526131509](https://virginiatech.zoom.us/j/81526131509?pwd=VFdSU2tzaFhWc0NiZUIsdHF0djZDQT09)**

[(https://virginiatech.zoom.us/j/81526131509?pwd=VFdSU2tzaFhWc0NiZUIsdHF0djZDQT09)](https://virginiatech.zoom.us/j/81526131509?pwd=VFdSU2tzaFhWc0NiZUIsdHF0djZDQT09)

(see **[Zoom Meeting Info](#)** for more info)

Course description

This course focuses on critical aspects of the software lifecycle that have significant influence on the overall quality of the software system including techniques and approaches to software design, quantitative measurement and assessment of the system during implementation, testing, and maintenance, and the role of verification and validation in assuring software quality.

Course learning objectives

Upon successful completion of this course, a student will be able to

1. Create a high-level software design based on a case study
2. Write a design rationale that justifies the design choices in a high-level software design
3. Evaluate software designs using a rubric
4. Critique the strengths and weaknesses of a software design
5. Interpret software metrics
6. Develop and evaluate test plans
7. Apply traceability between design documents

Course Summary:

Date	Details	Due
Tue Aug 23, 2022	📅 **CS 5744: Software Design and Quality** **(https://canvas.vt.edu/calendar? event_id=1035928&include_contexts=course_156121)**	8pm to 9pm
	📅 **CS 5744: Software Design and Quality Weekly Q&A** **(https://canvas.vt.edu/calendar? event_id=1035895&include_contexts=course_156121)**	8pm to 9pm
	📝 **Q&A with Instructor (Zoom)** **(https://canvas.vt.edu/courses/156121/assignments/1540805)**	due by 8pm
Thu Aug 25, 2022	📝 **Reading 01** **(https://canvas.vt.edu/courses/156121/assignments/1540821)**	due by 11:59pm
Sun Aug 28, 2022	📝 **Piazza: Lesson 01 discussion** **(https://canvas.vt.edu/courses/156121/assignments/1540790)**	due by 11:59pm

Date	Details	Due
Tue Aug 30, 2022	🗓 **CS 5744: Software Design and Quality** **(https://canvas.vt.edu/calendar?** **event_id=1035929&include_contexts=course_156121)**	8pm to 9pm
	🗓 **CS 5744: Software Design and Quality Weekly Q&A** **(https://canvas.vt.edu/calendar?** **event_id=1035896&include_contexts=course_156121)**	8pm to 9pm
	📝 **Q&A with Instructor (Zoom)** **(https://canvas.vt.edu/courses/156121/assignments/1540806)**	due by 8pm
Thu Sep 1, 2022	📝 **Reading 02** **(https://canvas.vt.edu/courses/156121/assignments/1540822)**	due by 11:59pm
Sun Sep 4, 2022	📝 **Piazza: Lesson 02 discussion** **(https://canvas.vt.edu/courses/156121/assignments/1540791)**	due by 11:59pm
Tue Sep 6, 2022	🗓 **CS 5744: Software Design and Quality** **(https://canvas.vt.edu/calendar?** **event_id=1035930&include_contexts=course_156121)**	8pm to 9pm
	🗓 **CS 5744: Software Design and Quality Weekly Q&A** **(https://canvas.vt.edu/calendar?** **event_id=1035897&include_contexts=course_156121)**	8pm to 9pm
	📝 **Q&A with Instructor (Zoom)** **(https://canvas.vt.edu/courses/156121/assignments/1540807)**	due by 8pm
Thu Sep 8, 2022	📝 **Reading 03** **(https://canvas.vt.edu/courses/156121/assignments/1540823)**	due by 11:59pm
Sun Sep 11, 2022	📝 **Piazza: Lesson 03 discussion** **(https://canvas.vt.edu/courses/156121/assignments/1540792)**	due by 11:59pm
Tue Sep 13, 2022	🗓 **CS 5744: Software Design and Quality** **(https://canvas.vt.edu/calendar?** **event_id=1035931&include_contexts=course_156121)**	8pm to 9pm

Date	Details	Due
	🗓 **CS 5744: Software Design and Quality Weekly Q&A** **(https://canvas.vt.edu/calendar? event_id=1035898&include_contexts=course_156121)**	8pm to 9pm
	📝 **Q&A with Instructor (Zoom)** **(https://canvas.vt.edu/courses/156121/assignments/1540808)**	due by 8pm
Thu Sep 15, 2022	📝 **Reading 04** **(https://canvas.vt.edu/courses/156121/assignments/1540824)**	due by 11:59pm
Sun Sep 18, 2022	📝 **Piazza: Lesson 04 discussion** **(https://canvas.vt.edu/courses/156121/assignments/1540793)**	due by 11:59pm
Tue Sep 20, 2022	🗓 **CS 5744: Software Design and Quality** **(https://canvas.vt.edu/calendar? event_id=1035932&include_contexts=course_156121)**	8pm to 9pm
	🗓 **CS 5744: Software Design and Quality Weekly Q&A** **(https://canvas.vt.edu/calendar? event_id=1035899&include_contexts=course_156121)**	8pm to 9pm
	📝 **Q&A with Instructor (Zoom)** **(https://canvas.vt.edu/courses/156121/assignments/1540809)**	due by 8pm
Fri Sep 23, 2022	📝 **Homework 1** **(https://canvas.vt.edu/courses/156121/assignments/1540785)**	due by 11:59pm
Tue Sep 27, 2022	🗓 **CS 5744: Software Design and Quality** **(https://canvas.vt.edu/calendar? event_id=1035933&include_contexts=course_156121)**	8pm to 9pm
	🗓 **CS 5744: Software Design and Quality Weekly Q&A** **(https://canvas.vt.edu/calendar? event_id=1035900&include_contexts=course_156121)**	8pm to 9pm
	📝 **Q&A with Instructor (Zoom)** **(https://canvas.vt.edu/courses/156121/assignments/1540810)**	due by 8pm

Date	Details	Due
Thu Sep 29, 2022	📝 **Reading 05** **(https://canvas.vt.edu/courses/156121/assignments/1540825)**	due by 11:59pm
Fri Sep 30, 2022	📝 **Homework 2** **(https://canvas.vt.edu/courses/156121/assignments/1540786)**	due by 11:59pm
Sun Oct 2, 2022	📝 **Piazza: Lesson 05 discussion** **(https://canvas.vt.edu/courses/156121/assignments/1540794)**	due by 11:59pm
Tue Oct 4, 2022	📅 **CS 5744: Software Design and Quality** **(https://canvas.vt.edu/calendar? event_id=1035934&include_contexts=course_156121)**	8pm to 9pm
	📅 **CS 5744: Software Design and Quality Weekly Q&A** **(https://canvas.vt.edu/calendar? event_id=1035901&include_contexts=course_156121)**	8pm to 9pm
	📝 **Q&A with Instructor (Zoom)** **(https://canvas.vt.edu/courses/156121/assignments/1540811)**	due by 8pm
Thu Oct 6, 2022	📝 **Reading 06** **(https://canvas.vt.edu/courses/156121/assignments/1540826)**	due by 11:59pm
Sun Oct 9, 2022	📝 **Piazza: Lesson 06 discussion** **(https://canvas.vt.edu/courses/156121/assignments/1540795)**	due by 11:59pm
Tue Oct 11, 2022	📅 **CS 5744: Software Design and Quality** **(https://canvas.vt.edu/calendar? event_id=1035935&include_contexts=course_156121)**	8pm to 9pm
	📅 **CS 5744: Software Design and Quality Weekly Q&A** **(https://canvas.vt.edu/calendar? event_id=1035902&include_contexts=course_156121)**	8pm to 9pm
	📝 **Q&A with Instructor (Zoom)** **(https://canvas.vt.edu/courses/156121/assignments/1540812)**	due by 8pm

| Date	Details	Due
Thu Oct 13, 2022	📝 **Reading 07** [(https://canvas.vt.edu/courses/156121/assignments/1540827)](https://canvas.vt.edu/courses/156121/assignments/1540827)	due by 11:59pm
Fri Oct 14, 2022	📝 **Homework 3** [(https://canvas.vt.edu/courses/156121/assignments/1540787)](https://canvas.vt.edu/courses/156121/assignments/1540787)	due by 11:59pm
Sun Oct 16, 2022	📝 **Piazza: Lesson 07 discussion** [(https://canvas.vt.edu/courses/156121/assignments/1540796)](https://canvas.vt.edu/courses/156121/assignments/1540796)	due by 11:59pm
Tue Oct 18, 2022	📅 **CS 5744: Software Design and Quality** [(https://canvas.vt.edu/calendar? event_id=1035936&include_contexts=course_156121)](https://canvas.vt.edu/calendar?event_id=1035936&include_contexts=course_156121)	8pm to 9pm
	📅 **CS 5744: Software Design and Quality Weekly Q&A** [(https://canvas.vt.edu/calendar? event_id=1035903&include_contexts=course_156121)](https://canvas.vt.edu/calendar?event_id=1035903&include_contexts=course_156121)	8pm to 9pm
	📝 **Q&A with Instructor (Zoom)** [(https://canvas.vt.edu/courses/156121/assignments/1540813)](https://canvas.vt.edu/courses/156121/assignments/1540813)	due by 11:59pm
Thu Oct 20, 2022	📝 **Reading 08** [(https://canvas.vt.edu/courses/156121/assignments/1540828)](https://canvas.vt.edu/courses/156121/assignments/1540828)	due by 11:59pm
Sun Oct 23, 2022	📝 **Piazza: Lesson 08 discussion** [(https://canvas.vt.edu/courses/156121/assignments/1540797)](https://canvas.vt.edu/courses/156121/assignments/1540797)	due by 11:59pm
Tue Oct 25, 2022	📅 **CS 5744: Software Design and Quality** [(https://canvas.vt.edu/calendar? event_id=1035937&include_contexts=course_156121)](https://canvas.vt.edu/calendar?event_id=1035937&include_contexts=course_156121)	8pm to 9pm
	📅 **CS 5744: Software Design and Quality Weekly Q&A** [(https://canvas.vt.edu/calendar? event_id=1035904&include_contexts=course_156121)](https://canvas.vt.edu/calendar?event_id=1035904&include_contexts=course_156121)	8pm to 9pm
	📝 **Q&A with Instructor (Zoom)** [(https://canvas.vt.edu/courses/156121/assignments/1540814)](https://canvas.vt.edu/courses/156121/assignments/1540814)	due by 11:59pm

Date	Details	Due
Tue Nov 1, 2022	📅 **CS 5744: Software Design and Quality** [(https://canvas.vt.edu/calendar? event_id=1035938&include_contexts=course_156121)](https://canvas.vt.edu/calendar?event_id=1035938&include_contexts=course_156121)	8pm to 9pm
	📅 **CS 5744: Software Design and Quality Weekly Q&A** [(https://canvas.vt.edu/calendar? event_id=1035905&include_contexts=course_156121)](https://canvas.vt.edu/calendar?event_id=1035905&include_contexts=course_156121)	8pm to 9pm
	📝 **Project 1: Design of a Software System** [(https://canvas.vt.edu/courses/156121/assignments/1540802)](https://canvas.vt.edu/courses/156121/assignments/1540802)	due by 11:59pm
	📝 **Q&A with Instructor (Zoom)** [(https://canvas.vt.edu/courses/156121/assignments/1540815)](https://canvas.vt.edu/courses/156121/assignments/1540815)	due by 11:59pm
Tue Nov 8, 2022	📅 **CS 5744: Software Design and Quality** [(https://canvas.vt.edu/calendar? event_id=1035939&include_contexts=course_156121)](https://canvas.vt.edu/calendar?event_id=1035939&include_contexts=course_156121)	8pm to 9pm
	📅 **CS 5744: Software Design and Quality Weekly Q&A** [(https://canvas.vt.edu/calendar? event_id=1035906&include_contexts=course_156121)](https://canvas.vt.edu/calendar?event_id=1035906&include_contexts=course_156121)	8pm to 9pm
	📝 **Project 2: Pick Your Project** [(https://canvas.vt.edu/courses/156121/assignments/1540803)](https://canvas.vt.edu/courses/156121/assignments/1540803)	due by 11:59pm
	📝 **Q&A with Instructor (Zoom)** [(https://canvas.vt.edu/courses/156121/assignments/1540816)](https://canvas.vt.edu/courses/156121/assignments/1540816)	due by 11:59pm
Thu Nov 10, 2022	📝 **Reading 09** [(https://canvas.vt.edu/courses/156121/assignments/1540829)](https://canvas.vt.edu/courses/156121/assignments/1540829)	due by 11:59pm
Sun Nov 13, 2022	📝 **Piazza: Lesson 09 discussion** [(https://canvas.vt.edu/courses/156121/assignments/1540798)](https://canvas.vt.edu/courses/156121/assignments/1540798)	due by 11:59pm
Tue Nov 15, 2022	📅 **CS 5744: Software Design and Quality** [(https://canvas.vt.edu/calendar? event_id=1035940&include_contexts=course_156121)](https://canvas.vt.edu/calendar?event_id=1035940&include_contexts=course_156121)	8pm to 9pm

Date	Details	Due
	📅 **CS 5744: Software Design and Quality Weekly Q&A (https://canvas.vt.edu/calendar?event_id=1035907&include_contexts=course_156121)**	8pm to 9pm
	📝 **Q&A with Instructor (Zoom) (https://canvas.vt.edu/courses/156121/assignments/1540817)**	due by 8pm
Thu Nov 17, 2022	📝 **Reading 10 (https://canvas.vt.edu/courses/156121/assignments/1540830)**	due by 11:59pm
Fri Nov 18, 2022	📝 **Homework 4 (https://canvas.vt.edu/courses/156121/assignments/1540788)**	due by 11:59pm
Sun Nov 20, 2022	📝 **Piazza: Lesson 10 discussion (https://canvas.vt.edu/courses/156121/assignments/1540799)**	due by 11:59pm
Tue Nov 22, 2022	📅 **CS 5744: Software Design and Quality (https://canvas.vt.edu/calendar?event_id=1035941&include_contexts=course_156121)**	8pm to 9pm
Fri Nov 25, 2022	📅 **VT SPOT (https://canvas.vt.edu/calendar?event_id=1035910&include_contexts=course_156121)**	12am
Tue Nov 29, 2022	📅 **CS 5744: Software Design and Quality (https://canvas.vt.edu/calendar?event_id=1035942&include_contexts=course_156121)**	8pm to 9pm
	📅 **CS 5744: Software Design and Quality Weekly Q&A (https://canvas.vt.edu/calendar?event_id=1035908&include_contexts=course_156121)**	8pm to 9pm
	📝 **Q&A with Instructor (Zoom) (https://canvas.vt.edu/courses/156121/assignments/1540818)**	due by 8pm
Fri Dec 2, 2022	📝 **Project 2: Testing a Software System (https://canvas.vt.edu/courses/156121/assignments/1540804)**	due by 11:59pm

Date	Details	Due
Tue Dec 6, 2022	🗓 **CS 5744: Software Design and Quality** **(https://canvas.vt.edu/calendar? event_id=1035943&include_contexts=course_156121)**	8pm to 9pm
	🗓 **CS 5744: Software Design and Quality Weekly Q&A** **(https://canvas.vt.edu/calendar? event_id=1035909&include_contexts=course_156121)**	8pm to 9pm
	📝 **Q&A with Instructor (Zoom)** **(https://canvas.vt.edu/courses/156121/assignments/1540819)**	due by 8pm
Mon Dec 12, 2022	📝 **Final Exam** **(https://canvas.vt.edu/courses/156121/assignments/1540783)**	due by 11:59pm