Graduate Certificate: Software Development Engineering (GC-SDE)

TACOMA
ENGINEERING
& TECHNOLOGY

Student Orientation

September 26, 2020

GC-SDE Student Orientation Outline

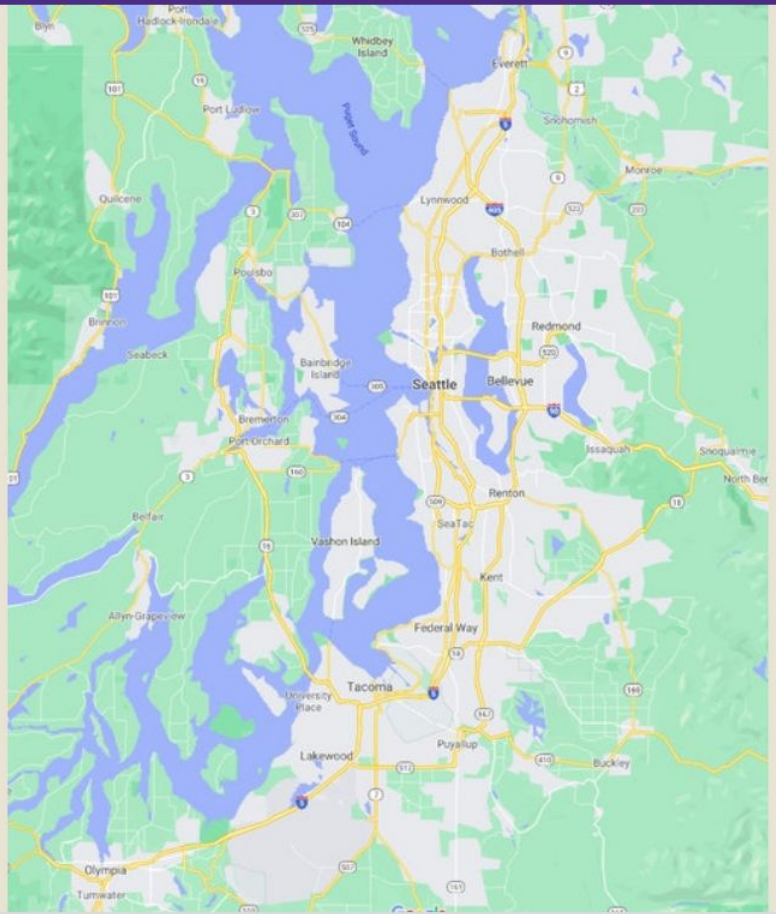
- Introductions
- Course Overview and Expectations
- Obtaining your UW student / UW NETID
- Learning Resources
- Grading / Evaluation
- Career Development Support
- Activities / Enrichment
- Frequently Asked Questions (FAQ) / Panel

Session Notes

Logistics: Please note that this Zoom meeting is being recorded.
The presentation will be made available on the GC-SDE Canvas page.

Please ask questions via “chat” to Curtis Black any time.
Curtis will monitor questions, and we will later answer questions.

Where are you joining us from?



Introductions

We will go around and each answer the following:

- **What is your name?**
- **How would you like to be addressed?**
- **<u>Pick a question:</u>**
  Which is a favorite breakfast food?

  - OR -
- **What would you first like to do after the COVID-19 quarantine ends?**

Raj Katti

Professor and Dean
School of Engineering and Technology (SET)

- B.Tech. Indian Institute of Technology, 1983
- M.S. University of Idaho 1985
- M.S. Washington State University 1987
- Ph.D. Washington State University 1991

- Joined UW Tacoma in 2014

Email: rajkatti@uw.edu

Donald Chinn

Associate Professor and Chair
Computer Science and Systems @ SET

- BA University of California, Berkeley, 1988
- MS University of Washington Seattle, 1991
- PhD University of Washington Seattle, 1995
- Worked at Microsoft (Windows 2000 team)

- Joined UW Tacoma in 2002

Email: dchinn@uw.edu

Thomas Capaul

Instructor TCSS 502, Fall 2020

- BS Computer Science 1994
  MS Computer Science 1997
  Eastern Washington University
- 20+ years teaching experience from freshman through graduate level
- 20+ years consulting/industry experience

Email: tcapaul@uw.edu

Kevin Anderson

Instructor TCSS 501, Fall 2020

- BS Computer Science & Systems 2013
- MS Computer Science & Systems 2016 University of Washington Tacoma
- ~20 years of experience in technology, spanning education, healthcare, manufacturing, and aerospace

Email: k3a@uw.edu

Ling-Hong Hung

Instructor TCSS 506, Spring 2021

- BS Molecular Biology 1985
  MS Medical Genetics 1993
  University of Toronto
- PhD Biochemistry 2001
  University of Western Ontario
- 20+ years experience in scientific software development (nuclear magnetic resonance, protein folding, bioinformatics)

Email: lhhung@uw.edu

Introductions

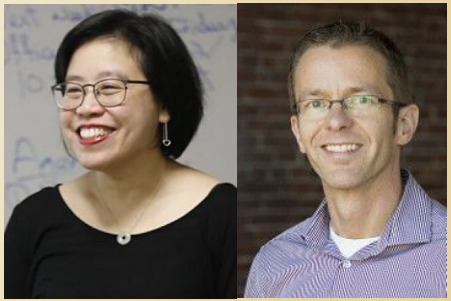
Curtis Black, Graduate Advisor (uwtcurt@uw.edu)

Varik Hoang, GC-SDE Mentor/Facilitator (varikmp@uw.edu)

GC-SDE Program Coordinators

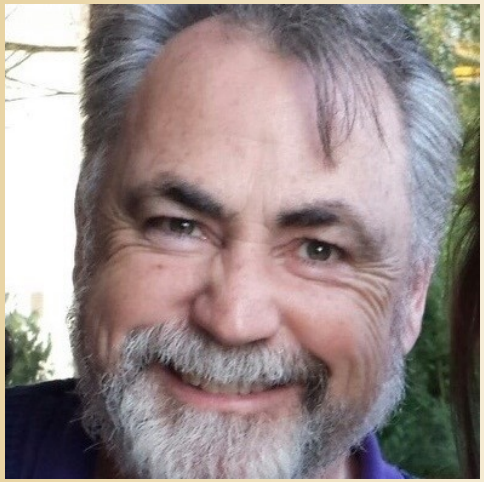
Ka Yee Yeung†, Professor (kayee@uw.edu)

Wes Lloyd, Assistant Professor (wlloyd@uw.edu)



†- on sabbatical 2020-21

Andrew Fry



Director of Industry Partners/Lecturer

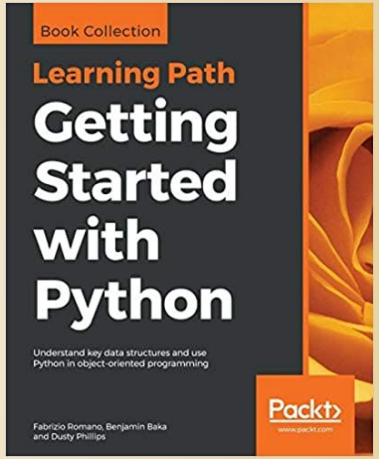
- Informal Career Support
- Resume Reviews
- Industry Introductions
- Events
- Entrepreneurship

Email: andfry@uw.edu

GC-SDE Preparation and Resources

Book: *"Getting started with Python"*

- **eBook available at no cost to you via UW Library**



SET Virtual Lab: Windows 10 Virtual Machine access instructions: https://tinyurl.com/k9aft2t

Python: 3.8.5 (latest stable version)

- https://www.python.org/downloads/

PyCharm IDE: Community Edition

- https://www.jetbrains.com/pycharm/download

GC-SDE Program Structure

- Six integrated, focused courses to help build programming and software engineering skills
- Each quarter features a **balanced curriculum**
- Lecture-based course: devoted to computer science theory and practical aspects of software development
  TCSS 501, 503, 505
- Companion lab course: accompanies the lecture course to provide students with hands-on practice writing programs and applying concepts
  TCSS 502, 504, 506

Courses

Autumn	Winter	Spring
TCSS 501 Analysis of Algorithms and Data Structures	TCSS 503 Algorithms and Problem Solving for Software Engineers	TCSS 505 Systems Programming
TCSS 502 Object Oriented Programming (OOP)	TCSS 504 Software Engineering and Development Techniques	TCSS 506 Practical Full Stack Development

TCSS 501 Analysis of Algorithms and Data Structures

Introduces techniques used in algorithm analysis and data structures. Includes review of basic algebra, time space complexity, big O notation. Covers fundamental data structures and algorithms with an emphasis on implementing them in high-level programming languages. Emphasis on data structures such as array lists, linked lists, queues, stacks, trees, and hash tables, and algorithms such as sorting, selection, binary search, and application of recursion in data structures.

Prerequisites: TCSS 142 and TCSS 143 or equivalent.

Instructor: Kevin Anderson

Class time: Saturdays 9:30 - noon

TCSS 502 Object Oriented Programming (OOP)

Introduces object-oriented programming (OOP) skills and best practices in software design including concepts of inheritance, encapsulation, abstraction, polymorphism, and software design patterns. Algorithm analysis techniques and data structures from TCSS 501 will be leveraged in projects. An introduction to Python (the core language for the GC-SDE) will also be given.

Prerequisites: TCSS 142 and TCSS 143 or equivalent.
Instructor: Tom Capaul
Class time: Saturdays 1:30 - 4:00pm via Zoom (classes will be recorded as will additional lecture material -- links will be available on 502 Canvas page)

Courses

Autumn	Winter	Spring
TCSS 501 Analysis of Algorithms and Data Structures	TCSS 503 Algorithms and Problem Solving for Software Engineers	TCSS 505 Systems Programming
TCSS 502 Object Oriented Programming (OOP)	TCSS 504 Software Engineering and Development Techniques	TCSS 506 Practical Full Stack Development

TCSS 503 Algorithms and Problem Solving for Software Developers

Introduces advanced data structures and key algorithmic techniques used in solving software engineering problems, such as trees, graphs, breadth/depth first searches, divide and conquer, greedy algorithms and dynamic programming. Learn how to analyze a problem and incorporate advanced data structures into the software implementations.

Prerequisites: TCSS 501 and TCSS 502
Instructor: TBD
Class time*: Saturdays 9:30 - noon, Winter Quarter 2021

**** - subject to change***

TCSS 504 Software Engineering and Development Techniques

Presents the principles and theory of software engineering and development including: requirements analysis, design and prototyping, system analysis, testing, project and version management, software and system metrics, and software development processes and lifecycles. Group projects will be assigned. Prerequisite: TCSS 501 and TCSS 502.

Prerequisites: TCSS 501 and TCSS 502
Instructor*: Tom Capaul
Class time*: Saturdays 1:30 - 4:00pm, Winter Quarter 2021

**** - subject to change***

Courses

Autumn	Winter	Spring
TCSS 501 Analysis of Algorithms and Data Structures	TCSS 503 Algorithms and Problem Solving for Software Engineers	TCSS 505 Systems Programming
TCSS 502 Object Oriented Programming (OOP)	TCSS 504 Software Engineering and Development Techniques	TCSS 506 Practical Full Stack Development

TCSS 505 Systems Programming

Examines the fundamental concepts of modern operating systems and how they function. Topics covered include processes, threads, memory management, process scheduling, file systems, virtual machines and software containers. Covers the basics of the Linux operating system, bash commands, scripting, and systems programming.

Prerequisites: TCSS 503 and TCSS 504
Instructor: TBD
Class time*: Saturdays 9:30 - noon, Spring Quarter 2021

**** - subject to change***

TCSS 506 Practical Full Stack Development

Features an extended software engineering team project creating a web-based or service-oriented application. Includes topics such as databases, cloud computing, web services architectures and development.

Prerequisites: TCSS 503 and TCSS 504
Instructor: Ling-Hong Hung
Class time*: Saturdays 1:30 - 4:00p, Spring Quarter 2021

**** - subject to change***

UW Husky Card

Benefits:

- proof of student status
- football tickets
- student discounts
- building access

Obtaining your Student ID - Husky Card

Current: online request process

- **Visit portal to request student ID: https://www.tacoma.uw.edu/office-registrar/registration-resources-help-0**
- **Submit:**
  - **Image of a valid official government issued ID (e.g. driver's license or passport)**
    - **Used to verify student identity**
  - **Current photo**
- **Requests in queue are validated, printed, and mailed weekly**

Obtaining your UW NETID

Provides access to UW IT resources
(e.g. email, Google Drive / GSuite, MS Office 365, etc.)

Visit:
https://www.tacoma.uw.edu/admissions/setting-your-uw-netid

Learning Resources

UWT Library: https://www.lib.washington.edu/

- Access to library resources, online books
- Canvas sites for GC-SDE and TCSS 502 have a page/tutorial showing how to search for a book

SET Labs: Windows 10 virtual machines hosted by SET

- Connectivity tutorial: http://css.insttech.washington.edu/~lab/Support/HowtoUse/UsingVCLQS.html

Facilitator / Mentor: Varik Hoang

Becoming a more successful online learner

Video + tips, tools, and tricks from UW !

see:
https://tinyurl.com/y3y4cboh

Learning Resources – 2

CANVAS

- TCSS 501:
- TCSS 502: https://canvas.uw.edu/courses/1429744
- GC-SDE: https://canvas.uw.edu/courses/1436521

GC-SDE Slack Channel for Autumn quarter

- JOIN Channel: https://tinyurl.com/y3q8vpkn

GC-SDE Program Expectations

Approach to Course grading and evaluation

- **Fall Quarter - TCSS 501 / TCSS 502**
  - **75% assignments/programs/projects**
  - **25% quizzes (4 or 5) (NO EXAMS! :-)**
  - **Standard UW grade scale (see Canvas page for details)**

5XX course credits are included in the graduate GPA

Career Development Support

- Andrew Fry
  - CV/Resume review
  - Interview / Job Search / Career coaching
  - Job Resources/connections
- GC-SDE LinkedIn cohort group
- UWT Faculty
  - Support for applying to graduate school programs
  - Best practices, coaching, letters of recommendation

GC-SDE - Activities / Enrichment

Guest Speakers
from Industry, UW/UWT faculty, UWT alumni

Saturdays between noon and 1:30p

Career and technology perspectives

~ Offered monthly

Career Development Support – 2

- Applying to the UWT MS in Computer Science & Systems (MSCSS) program
  - GC-SDE courses designed to meet prerequisites for UWT MSCSS program

Frequently Asked Questions Panel

TACOMA ENGINEERING & TECHNOLOGY

Please direct questions to Curtis E Black

Panelists:

Faculty: Kevin Anderson, Tom Capaul, Ling-Hong Hung
Advisors/Mentors: Curtis Black, Varik Hoang
Coordinators: Ka Yee Yeung, Wes Lloyd

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THANK YOU !

We will keep you posted with updates and additional information.

Questions?

Feel free to reach out by email to
FACULTY, ADVISORS, or COORDINATORS.

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Extra Slides

Courses

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WHERE will the certificate program be held?

Courses will be online via Zoom

HOW to apply?

Visit the UW Grad School Application website and click on ‘**Create a New Applicant Profile’** to begin your application process:

- Complete the corresponding applicant profile form, and continue to the Graduate School Application.
- In “Step 1” of the Application, choose "Graduate Non-Matriculated."
- In “Step 2” of the Application, choose "Computer Science & Systems - Tacoma (MS in Computer Science & Systems)" as the program.

WHY learn Software Development & Engineering (SDE)?

- Many careers outside of computer science leverage programming today in various ways
- Examples of careers that leverage computer science*: Animator, Modeler, Bioinformatics, Book Designer, Business Intelligence Analyst, Forensics Investigator, Computer Support Specialist, Concept Artist, Data Architect, Data Scientist, Database Analyst, Document Imaging Specialist, eCommerce Consultant, . . .
- Salary range: $80k - $130k
- Job security

*Source: https://www.careermatch.com/job-prep/career-insights/articles/majoring-in-computer-science-100-careers-to-consider/

HOW will the GC-SDE program help you to launch a new career?

- Acquire skills necessary to transition to software development
- Courses led by experienced software developers and instructors
- Hands on tutorials and assignments
- Full stack development capstone “team” project
- Career development resources and networking
  - counseling, resume review sessions, access to job postings, networking opportunities, panel discussions, and guest speakers from industry

WHO will benefit from the GC-SDE program?

- Anyone with a Bachelor's degree having basic computer programming experience (e.g. introductory programming classes)
- Anyone looking to expand on programming skills through a focused program, but not wanting to pursue a post-baccalaureate degree
- Anyone looking to understand programming to get ahead in a current job, transition to a new job, or pursue a graduate degree in computer science
  - UW Tacoma MS in Computer Science & Systems: https://www.tacoma.uw.edu/set/ms-computer-science-systems

Designed for working professionals, with classes on Saturdays

Courses

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Prerequisites: TCSS 142 and TCSS 143 or equivalent.

Instructor: Kevin Anderson

Class time: Saturdays 9:30 - noon

Kevin Anderson

BS in Computer Science and Systems from UW Tacoma in 2013

MS in Computer Science from UW Tacoma in 2016.

Nearly 20 years of experience in technology, spanning the industries of education, healthcare, manufacturing, and aerospace.

TCSS 502 Object Oriented Programming (OOP)

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WHEN does the program start?
WHEN and WHERE are courses offered?

- The program will start Saturday October 3rd.
- Courses will be online via Zoom
- Courses in the fall will include synchronous sessions on Saturdays and asynchronous sessions at-your-own-time on weekdays

- Tuition (fees included): $2575/class x 6 classes = $15,450

WHEN and HOW can I apply?

WHEN:

> Registration is open today.
> The priority registration deadline is August 31, 2020

HOW:

> Visit the UW Grad School Application website and click on '**Create a New Applicant Profile**' to begin your application process:

- Complete the corresponding applicant profile form
- Continue to the Graduate School Application
- In "Step 1" of the Application, choose "**Graduate Non-Matriculated**"
- In "Step 2" of the Application, choose the program:
  "Computer Science & Systems - Tacoma (MS in Computer Science & Systems)"

Graduate Certificate: Software Development Engineering (GC-SDE)

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Please complete the survey at:

https://tinyurl.com/y6f2zjh3

We will keep you posted with updates and additional information.

Questions?

Please ask questions via “chat” (to Curtis) any time.