CMPT 479/886/745
Software Engineering: Theory and Practice

Introduction

Nick Sumner
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- Who am I?
  - Nick Sumner (wsumner@sfu.ca)
  - Research Faculty (Software Engineering, Compilers, Program Analysis)

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- Who is your TA?
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- What is the course website?
  - http://www.cs.sfu.ca/~wsumner/teaching/745/

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  - http://www.cs.sfu.ca/~wsumner/teaching/745/
- Where can you discuss course issues?
  - CourSys https://coursys.sfu.ca/2019fa-cmpt-479-x1/discussion/

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  - Systematic approaches for managing risk while producing or providing software.

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Programs are themselves data that you can construct, analyze, transform, synthesize, …

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  - Spans techniques from novel logics to rigorous empirical assessment.
  - Rich *interaction* between theory and practice matter.

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  - How can we gain confidence in correctness?
  - Can you
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  - Can you reason formally about correctness?
  - Can you reason practically about correctness?
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reason formally.
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  - How can we know that our code is correct?
  - Can you prove that your code is correct?
  - Can you test that your code is correct?
  - Can you ensure that your code is correct?
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I will expect you to
- reason formally.
- reason practically.
- *apply* formalism to *solve practical problems*.

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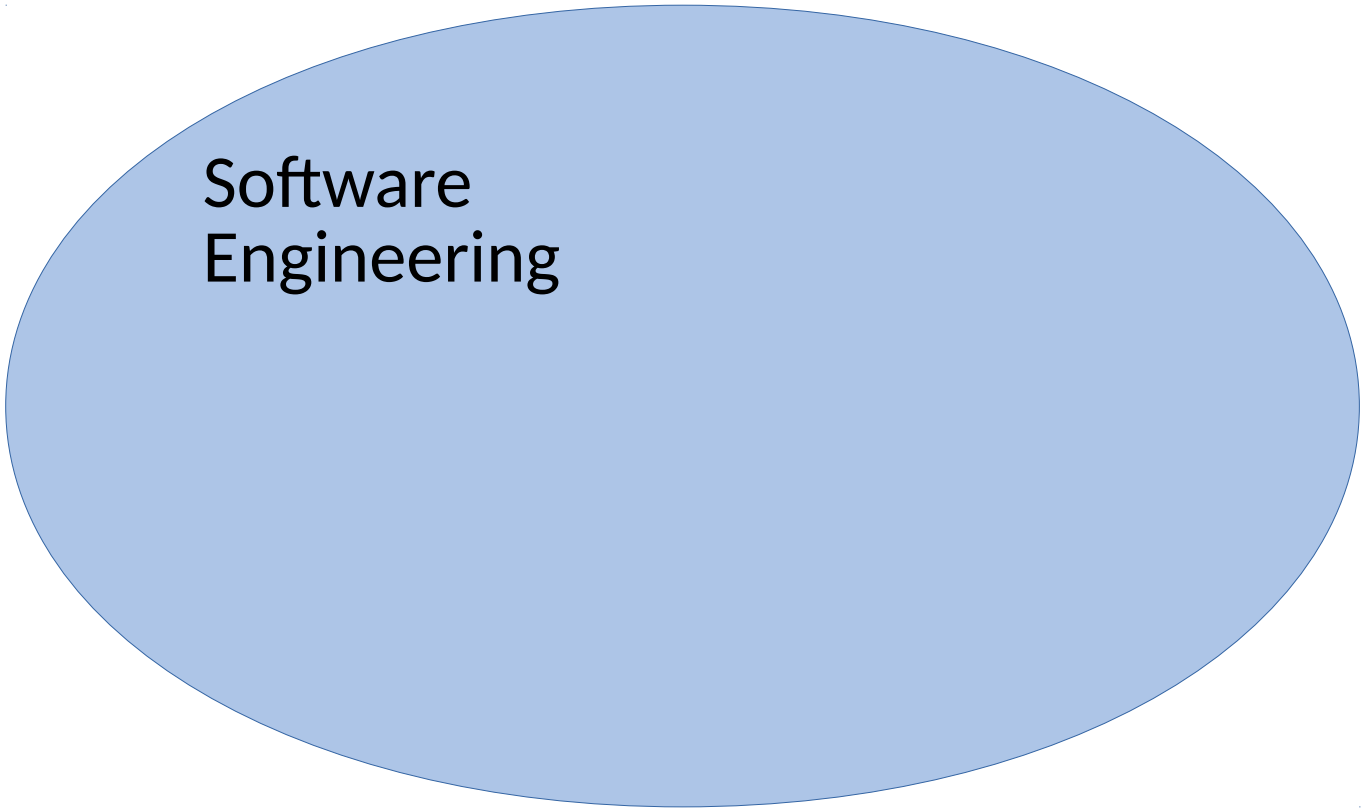
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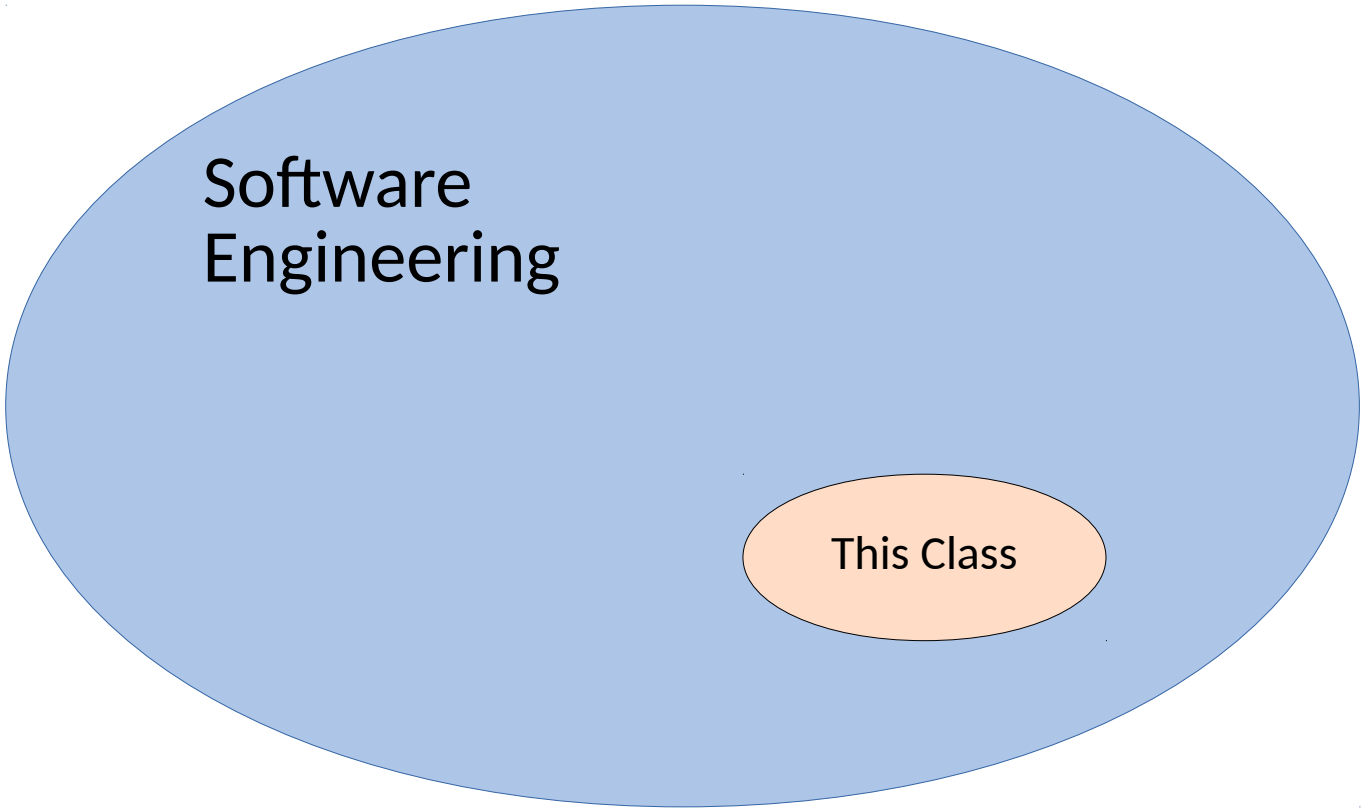
  I will expect you to
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  - recognize that practice may differ from formalism.

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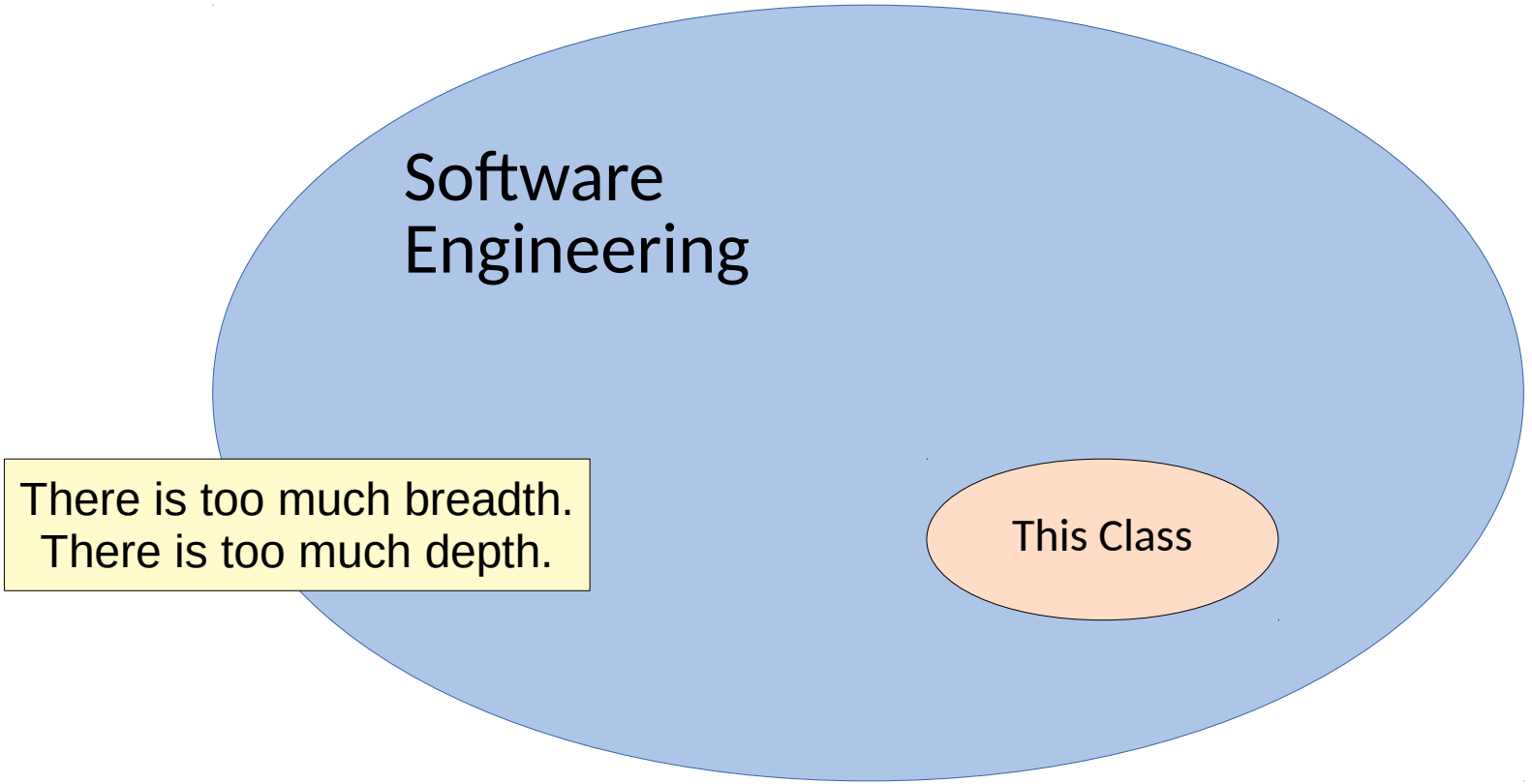
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  - Project planning and management (Agile vs agile vs …)
  - Requirements management
  - SLOs, SLA, and most SRE
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These are worthwhile topics.
Seek them elsewhere.

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- What we will (likely) cover
  - Foundations of software design
  - Performance & bottleneck analysis
  - Testing
  - Formal models of programs
  - Symbolic execution and automated test generation
  - Dynamic analysis
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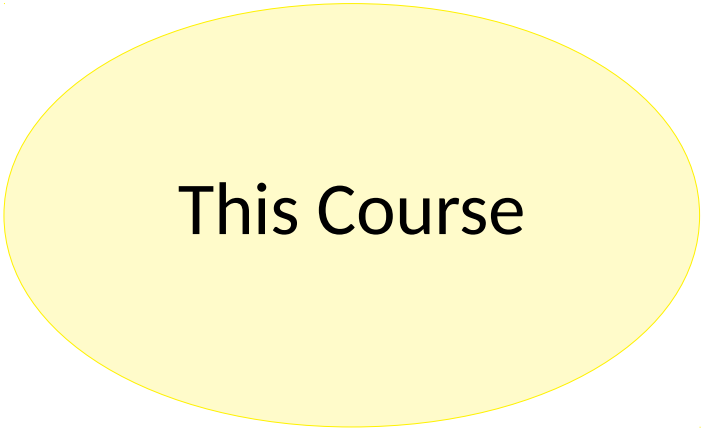
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There is still far too much!
We will focus on *breadth* over *depth*.

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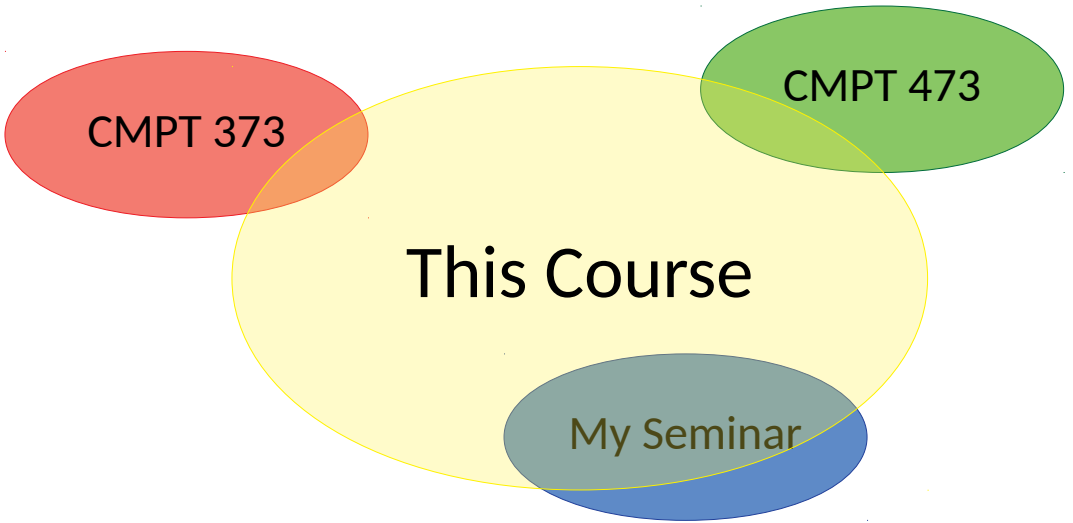
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- Exams
  - Just the final
  - Demonstrate competence & application of course material

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I want you to walk away with a project you are proud of.
It may lead to a paper.
It may to a business.

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It is better to get 0 credit than to cheat!

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- Attendance
  - You don't have to attend, but all in class materials are your responsibility

Let’s get started