

# Reading to Write Code: an Experience Report of a Reverse Engineering and Modeling Course



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# Professional Master of Software Engineering

Quarter 1

Quarter 2

Quarter 3

Quarter 4

Programming courses (6 total)	Programming Styles	User Experience and Design	Career and Entrepreneurship
	Distributed Software Architectures	<b>Reading to Write Code</b> (Reverse Engineering and Modeling)	Project Management
	Software Testing and Debugging	Software Security and Dependability	Capstone

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“One thing that was counterintuitive is that in my first ‘real’ software engineering jobs, I spent **80-90%** of my coding time **reading** and **10% writing.**”

–Eric Dashofy, *Deputy CIO, the Aerospace Corporation*

# Open-Source System

100,000 + lines of code

End-of-quarter goal is to attempt to contribute a new feature.



# Course Design – Highlights

## Interactive Lecture

## Project Practice

### Code Comprehension

Basic comprehension strategies  
Information foraging theory  
Hypothesis-drive vs. inference

Choose a system  
Locate a feature (alone)  
Locate a feature (together)

### Mental Models

Externalizing mental models  
Structure vs behavioral  
UML

Class diagram of entire system  
Locate 2 essential features  
Document those features

### Social Context

Inferred social history  
Code change principles

Choose 3 open issues (alone)  
Choose 3 open issues (together)  
Answer social context questions

### Design Patterns

Designing  
Design cycle  
Design principles

Identify 5 design patterns  
Code your first issue  
Submit pull request

# Student Feedback

“I also took a look at unit tests to better understand the purpose of various functions.”

“PR etiquette and navigation knowledge.”

“I made diagrams during my internship so learning UML, etc. really helped.”

“Not being afraid to contribute to the code before understanding the whole code base.”

“More detail on design patterns for sure. We only went in depth on one or two, but I would like to go in depth about more.”

“Maybe exams could be optional or only for students who need extra credit.”

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“If you want to be a writer, you must do two things above all others: **read a lot** and **write a lot**. There’s no way around these two things that I’m aware of, no shortcut.”

–Stephen King, “Reading to Write”