

# REVERSE ENGINEERING

Fall 2018

<b>Instructor:</b>	G Leaden	<b>Time:</b>	W 8:00 – 9:45 F 11:00 – 12:15
<b>Email:</b>	<a href="mailto:g.leaden1@marist.edu">g.leaden1@marist.edu</a>	<b>Place:</b>	Hancock 2023

**Course Page:** <http://goleaden.com/RE4Marist>

**Office Hours:** By appointment only. Let's grab ☕.

**Required Text:** This book was selected both for its low low cost of \*free\* and its thoroughness. The PDF is still being updated to this day by the author, as this is an ever evolving landscape.

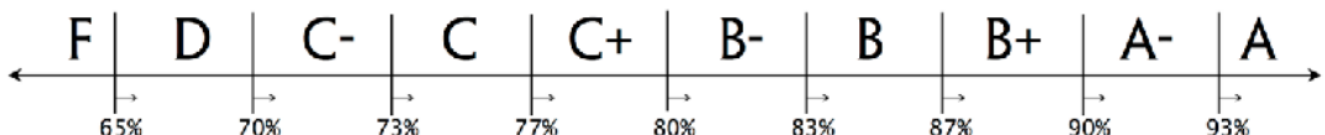
- *Reverse Engineering for Beginners* by Dennis Yurichev.
- Other resources (Books, Articles, Websites, Challenges, and more) are available on the course page.

**Objectives:** This course aims to build upon skills learned in the prerequisites courses and apply them with the specific purpose of understanding compiled programs through assembly language. Topics covered include: basic assembly operations, disassemblers, and binary analysis. Students will review case studies, smash stacks, and gain a unique perspective into how their software looks at the lowest level.

## Prerequisites:

- CMPT 422
- This course also assumes a basic understanding of:
  - Binary
  - Assembly
  - CPU Architecture

## Grading Policy:



Homework and quizzes .....	40%
Midterm .....	25%
Final Project .....	25%
Discussion and Participation .....	5%
Preparedness .....	5%

## Course Policy:

- Please see the Department of Computing Technology Goals listed on the Marist website.

## Class Policy:

This course requires a desire to learn and apply oneself outside of the classroom. There are many resources outside of this course and its official grades that will enhance your understanding of the material. I suggest you review the resources posted on the course website, and feel free to contact me at any time during the course if you would like to learn more, or just discuss the subject in an informal setting. I am never opposed to grabbing coffee ☕.

**Reading Schedule:**

WEDNESDAY	FRIDAY
<div>Aug 29th</div> Introduction, Overview, Syllabus. Reverse Engineering Taxonomy	<div>31st</div> Reverse Engineering Taxonomy
<div>Sep 5th</div> CPUs, ISAs, Binary, Assembly <b>Chapter 1</b>	<div>7th</div> Compilers, Tools Overview <b>Chapter 1</b>
<div>12th</div> Memory [Stack/Heap], Loops <b>Chapter 1</b>	<div>14th</div> Scanf() vs Printf() <b>Chapter 1</b> <i>DUE: HW1: Assembly Analysis, Stack Review</i>
<div>19th</div> Interactive Disassembler, Static Code Analysis	<div>21st</div> Dissassembling our first programs
<div>26th</div> Data Structures in Assembly <b>Chapter 1</b>	<div>28th</div> Data Structures cont. <b>Chapter 1</b>
<div>Oct 3rd</div> Data Types, Signed Numbers, Integer Overflow <b>Chapter 2</b>	<div>5th</div> Bitwise Operators, Endianness <b>Chapter 2</b>
<div>10th</div> <b>Chapter 2 Review</b> <i>DUE: HW2: Reversing and Cracking</i>	<div>12th</div> Case Studies
<div>17th</div> <b>MIDTERM</b>	<div>19th</div> Case Studies
<div>24th</div> Case Studies	<div>26th</div> Identifying Executables, Functions, API Calls <b>Chapter 5</b> <i>QUIZ: Case Studies</i>
<div>31st</div> Best Practices: String Identification, Assert Calls <b>Chapter 5</b>	<div>Nov 2nd</div>
<div>7th</div>	<div>9th</div>

WEDNESDAY		FRIDAY	
14th	<b>23</b>	16th	<b>24</b>
21st	<b>25</b>	23rd	<b>26</b>
28th	<b>27</b>	30th	<b>28</b>
<div>Dec 5th</div>	<b>29</b>	7th	<b>30</b>

Final Project: Write a program in C, Create a video / step-by-step guide on how you dissassembled and cracked the program. Swap program with randomly assigned student (w/o guide). Create video / step-by-step guide on how you went about attempting to dissassemble theirs.