

CS 301: Assembly Language Programming

Fall 2025 - [Dr. Lawlor](#)

Course Meeting: MWF 11:45-12:45 in Usibelli 301 (above the Engineering atrium)

Course Zoom <https://alaska.zoom.us/j/9074747678> (see [Zoom in a Lawlor class](#))

Coming Soon

- [Project](#) proof of concept code is [due on Canvas](#) by Wednesday, November 5.
- [HW10](#) SIMD is on NetRun, and due Wednesday, October 29.
- [HW9](#) float and arm is on NetRun, and due Wednesday, October 22. (Nontrivial last problem!)
- Midterm exam and overall course grades so far are on [NetRun's grading area](#), with brief project comments at the end! (Please do email me if anything here seems wrong.)
- [Semester project](#) background presentations (2 minutes) were on Wednesday, October 15 in class.
- The midterm exam was on Wednesday, October 8, with a paper and online section.
- [HW8](#) printf and buffer overflow is on NetRun, and due Monday, October 6.
- [Semester project](#) topics are due Wednesday, September 24 in the [project topic Google Doc](#)
- [HW7](#) memory and arrays is on NetRun, and due anytime Friday, September 19.
- [HW6](#) pointers, strings and arrays is on NetRun, and due anytime Monday, September 15.
- [HW5](#) pointers is on NetRun, and due Monday, September 15. ~~Thursday, September 11.~~ (Due date moved back because I broke NetRun late Wednesday adding executable stacks, now fixed!)
- [HW4](#) bits is on NetRun, and due Monday, September 8.
- [HW3](#) push and call is on NetRun, and due Thursday, September 4.
- [HW2](#) branch and loop is on NetRun, and due Tuesday, September 2.
- [HW1](#) assembly language basics is on NetRun, and due Thursday, August 28.
- HW0 is a mix of basic C++ and Swift code: on NetRun, due Tuesday, August 26.
 - HW0 and HW1 grades are on [NetRun's grading area](#)
- Use your @alaska.edu email to [set up your NetRun account](#), it will email you your password you can use to [log into NetRun here](#). If you don't see a CS 301 section like below as soon as you log into NetRun, [email me](#) and I can fix it immediately:
 - CS 301: Homepage (Fall 2025)

Reference info

- 10/24: [SIMD branching via bitwise operations](#)

- 10/22: [SIMD: Single Instruction, Multiple Data](#)
- 10/20: [ARM64 stack and function calls](#)
- 10/17: [ARM64 assembly intro](#)
- 10/15: [Semester project](#) background presentations
- 10/13: [Bits inside a float](#): [weird floats like denormal and infinity](#)
- 10/10: [Floats in x64 assembly](#) and start [Bits inside a float](#)
- 10/08: *Midterm exam* in class and online, see above.
- 10/06: Review for midterm exam. Recommended reading:
 - [Assembly Idioms slides](#)
 - [Pointer introduction slides](#)
 - Lecture notes below!
- 10/03: [How to time your code](#)
- 10/01: [Performance introduction](#)
- 09/29: [printf output](#)
- 09/26: [Inline assembly](#)
- 09/24: [Linking assembly and other languages](#)
- 09/22: [Making a stack from scratch](#)
- 09/19: [Buffer overflow attacks](#)
- 09/17: [Struct in assembly](#)
- 09/15: [Memory allocation in assembly](#)
- 09/12: [Arrays in assembly](#)
- 09/10: [Memory layout](#) for strings, integers, and code
- 09/08: [Pointer introduction slides](#)
- 09/05: [Bits in an integer and signed vs unsigned](#) ([bits presentation](#))
- 09/03: [Push/pop the stack](#) and [assembly functions](#)
- 09/01: *No classes, labor day!*
- 08/29: [Assembly "if" and loops via jump](#) (and [Assembly Idioms slides](#))
- 08/27: [Assembly language basics](#): registers and instructions
- 08/25: [The Language Hierarchy](#) ("[Why Assembly?](#)" intro video)
- The [course syllabus](#) has grading info, my office hours, and other good stuff.
- [Semester project requirements](#), first deadline September 24
- Homework trouble? Technical questions? Existential doubts?
 - [Visual guide to assembly language programming idioms](#)
 - [x86-64 assembly cheat sheet](#)

- [ARM64 assembly cheat sheet](#)
- The course TA Andrew Mattson has an office in Usibelli 118 (ring the doorbell outside the lab, or [his Zoom](#)). He has [office hours](#) most mornings.
- Take a deep breath. Assembly is famously hard. You can do this!
- I have drop-in office hours right after class from 1-3pm MWF, either in my Duck 529 office or [on Zoom](#). No appointment needed, quick questions welcome, or email lawlor@alaska.edu anytime!

Location	Used for
This Homepage	Definitive source for announcements, deadlines, details, and reference material
NetRun	Homeworks and runnable lecture examples
Zoom (optional)	Class meetings 11:45-12:45pm MWF or help during my drop-in office hours 1-3pm MWF (see Zoom for a Lawlor class) Class recordings are available (but recorded class lectures aren't as fun as live)
Canvas	Turning in project deliverables
CS Discord (optional)	#csf301 channel for course-specific chat (register here for class channels) Other channels for general CS chat. @Dr. Lawlor for specific help