Course Syllabus

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Saddleback College

CS 3B - COMPUTER ORGANIZATION AND ASSEMBLY LANGUAGE

SYLLABUS – Spring 2021

INSTRUCTOR: DR. BARNETT

OFFICE: SM 324

Office Hours: TTh 9:00-11:30am Zoom (https://us02web.zoom.us/j/85191254980?pwd=Und5UE1uWWxtenlXWGU0UjluMHFFZz09)

room:

email: jbarnett16@saddleback.edu

COURSE DESCRIPTION

The sequel to CS 3A – COMPUTER ORGANIZATION AND MACHINE LANGUAGE – this course develops the concepts of computer organization begun in CS 3A with an emphasis on using assembly language as a bridge to hardware. The concepts covered include languages, operating systems, and multi-level machines.

Student Learning Outcomes

1. Demonstrate the use of a symbolic debugger.
2. Construct internal representations of simple data types.
3. Create assembly language program modules that use the floating po

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int stack.
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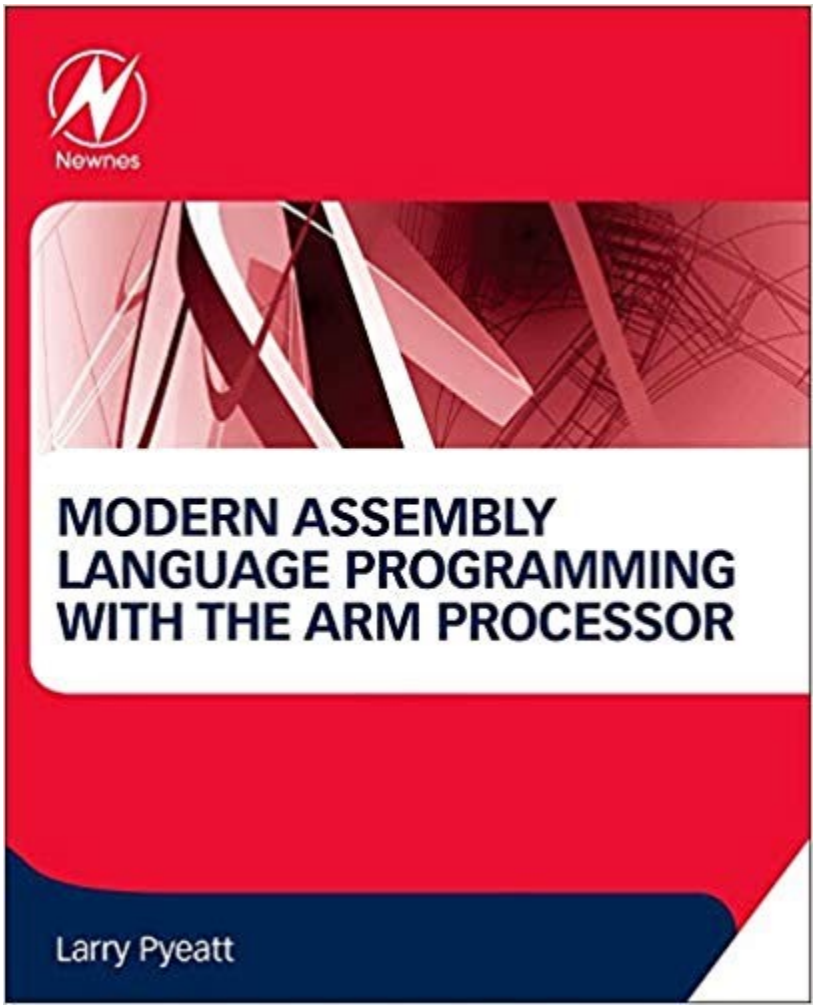
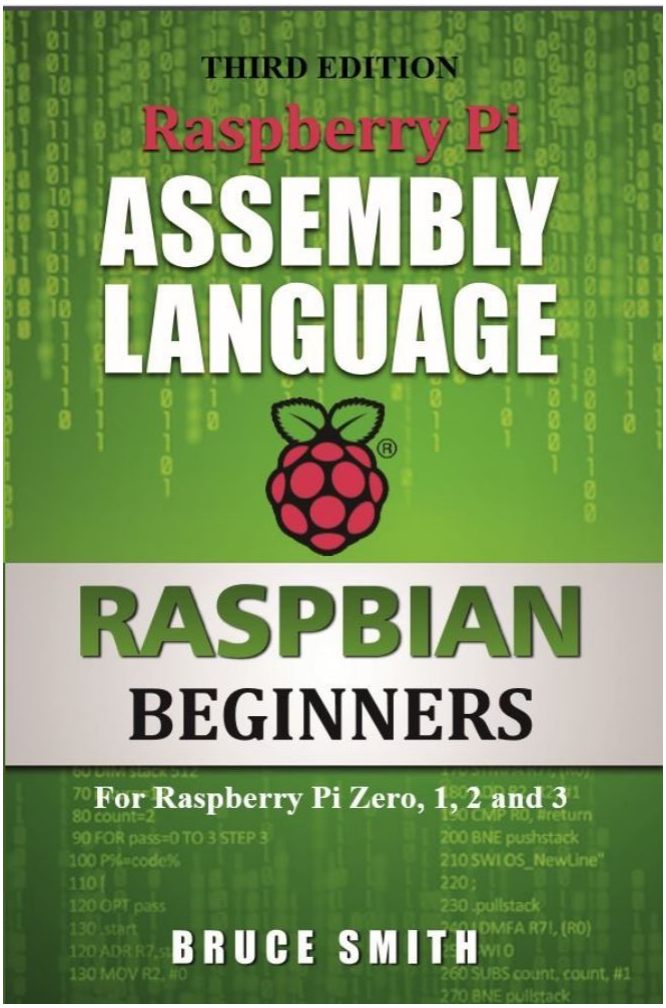
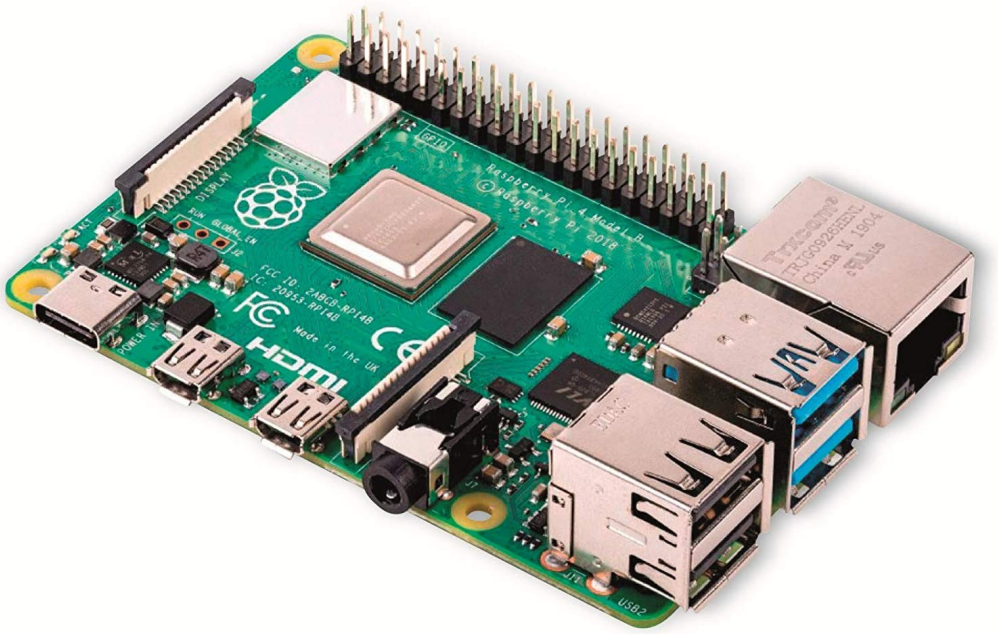
TEXT AND MATERIALS





- (Recommended, lecture notes provided via pdf) **Modern Assembly Language Programming with the ARM Processor 1st Edition (https://www.amazon.com/gp/product/0128036982/ref=ppx_yo_dt_b_asin_title_o00_s00?ie=UTF8&psc=1)** , ISBN-13: 978-0128036983 ISBN-10: 0128036982
- (Recommended as Instruction reference, free pdf available online) **Raspberry Pi Assembly Language RASPBIAN Beginners, 3rd edition (https://www.amazon.com/Raspberry-Assembly-Language-RASPBIAN-Beginners/dp/1492135283/ref=pd_sim_14_19?_encoding=UTF8&pd_rd_i=1492135283&pd_rd_r=d42ba2b7-137d-11e9-886b-4d2ff524339b&pd_rd_w=f6pAR&pd_rd_wg=h2cod&pf_rd_p=18bb0b78-4200-49b9-ac91-f141d61a1780&pf_rd_r=FYS3EVXQ1Q4KR1BENN0T&psc=1&refRID=FYS3EVXQ1Q4KR1BENN0T)** , by Bruce Smith ASIN: B00EMG08GY

I will be augmenting these text books with other material which will be provided either in class or on canvas.



- You will need to purchase your own **Raspberry Pi** (https://www.amazon.com/Raspberry-Model-2019-Quad-Bluetooth/dp/B07TD42S27/ref=sxin_0_ac_d_pm?ac_md=3-0-VW5kZXIgJDUw-ac_d_pm&cv_ct_cx=raspberry+pi+4&keywords=raspberry+pi+4&pd_rd_i=B07TD42S27&pd_rd_r=abe94fb7-0de3-498d-a6bf-1ed56f0ba547&pd_rd_w=gHArA&pd_rd_wg=GnUkH&pf_rd_p=709d2064-e546-4799-9e66-b352ea89951f&pf_rd_r=ZPGEC3K6JGYQGREDF2RC&psc=1&qid=1578362507&s=books) for approximately $48. It is will be nearly impossible to complete the assignments without your own. I would recommend the Pi 4 4 GB (or higher) as opposed to the 2GB version so that you can more easily surf the web and have multiple applications open. There are various accessories that you will likely want to purchase as well (i.e. power supply, case, etc.)
- You will need to install either **Kali Linux 32 bit version** (https://cdimage.kali.org/kali-2019.4/kali-linux-2019.4-i386.iso) or the **Raspbian OS (32 bit version only!!!!)** (http://downloads.raspberrypi.org/raspbian/images/raspbian-2019-06-24/) on a **micro sd card** (https://www.amazon.com/dp/B07FCMBLV6/ref=twister_B07V2PRSXC?_encoding=UTF8&psc=1) at least 32 GB prior to the first day of class. Why 32 bit only? Because the Assembler is different between 32 bit and 64 bit. If your interested in Cyber Security go with Kali Linux. We will spend the first lab day getting your pi set up.

TOPICS (Time frames may vary slightly)

Week 1: Ch 1 - Introduction
Week 2: Ch 2 - GNU Assembly Syntax
Week 3: Ch 3 - Load/Store and Branch Instructions
Week 4: Ch 4 - Data Processing and Other Instructions

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Week 5: Ch 5 - Structured Programming
Week 6: Ch 6 - Abstract Data Types
Week 7: Ch 7 - Integer Mathematics
Week 8: Ch 8 - Non-Intregal Mathematics
Week 9: Ch 9 - The ARM Vector Floating-Point Processor
Week 11: Ch 11 - Devices (time allowing)
Week 12: Ch 12 - Pulse Modulation (time allowing)
Week 13: Augmented Material - Linked List
Week 14: Ch 13 - Common System Devices (time allowing)
Week 16: Ch 18 Mixing C/C++ and Assembly

EVALUATION
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Assignments & Labs

This course will include 1-2 homework assignments (i.e. questions from the text), labs (Programs), and quizzes per week along with five major projects (RASMs). These assignments are intended to provide practice in the competencies students are expected to achieve for each week of class. The quiz may test on the material recently covered in class or an individual or group project covering the same material. Note: you will **not** be **allowed** to **make up** any missed **quizzes**, so weekly attendance is important to your overall grade. **Makeup or early exams will be given only under extraordinary circumstances**. If you miss either the midterm or the final exam, you will receive a score of 0 for that exam. Grading for the course is based upon the percentages as follows:

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PROJECTS (Individual & Group) 55% Grading Scale (NO ROUNDING)
QUIZZES                        5% [90, 100]A
EXAM 1                        10% [80, 90) B
EXAM 2                        10% [70, 80) C
EXAM 3                        20% [60, 70) D
TOTAL                        100% [0, 60)  F
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Assignments: All labs must be submitted to Canvas by the due date and time. Late Work - ZERO-TOLERANCE – NO LATE WORK ACCEPTED. Any programming assignment NOT in the Canvas gets a 0 grade.

Programs: All programs submitted MUST assemble without errors, or a grade of 0 will be assigned. Note: it is possible for your program to assemble without errors, but your program does not produce output related to the assignment. In the case that your program does not produce at least some working output related to the assignment, your grade will be a 0. What determines “output related to the assignment” will be determined when the assignment is made so that there is no question about what is acceptable.

Your code MUST be appropriately documented. You MUST use the correct naming convention when submitting labs/projects/exercises.

Quizzes: Generally speaking, a quiz will be given each week except when an exam is given. If you miss a class, be sure to check with your classmates for notes – and assignments. It is VERY possible that quizzes may be given in class but not made available on Canvas prior to the class meeting. A missed quiz cannot be made up for any reason. However, your lowest quiz grade will be dropped. No calculators, notes, textbooks, or online content of any sort are allowed while taking an exam or quiz.

Ethics: Assignments are to be completed by the individual student. While meaningful dialogue over homework is acceptable, turning in work that someone else has completed is considered **cheating**. All parties involved will receive no points for that assignment. Also, any student caught cheating on a quiz, exam, or any student labs which are too similar to be coincidental will receive grades of 0 and they will be reported to the appropriate disciplinary channels.

Online Exams/Quizzes

Finally, when taking an online exam or quiz, follow these guidelines:

- Select a location where you won't be interrupted
- Before starting the test, know how much time is available for it and that you've allotted sufficient time to complete it
- Turn off all mobile devices, phones, etc. and don't have them within reach
- Clear your area of all external materials — books, papers, other computers, or devices
- Remain at your desk or workstation for the duration of the test
- Exams (excluding quizzes) require that you have an online camera. I will proctor the exams through zoom. If your pc/laptop does not have a camera, you use your phone as a secondary device but only for the purpose of streaming your video.

In class: Students should arrive on time. Wearing of headphones, use of electronic devices not explicitly approved for the class (cell phones, music/video players, etc.) and emailing/ text messaging are not allowed. Recording of class lectures or labs of any form (including audio and video) is strictly prohibited unless authorized specifically by the instructor.

Attendance: Regular attendance is important since each class lecture and lesson builds upon the previous lessons. Students who are absent are responsible for keeping up with the rest of the class. It is difficult to catch up once you fall behind. Because of the strong correlation between attendance and success in this course, the following attendance policy will be enforced. Absences beyond 2 directly affect your final grade as follows.

ABSENCES PENALTY

Prior to the drop deadline:

2 missed classes - Automatic Drop (Instructor Decision)

After drop deadline: Once the drop deadline passes, if your total absences reach 3 or more, then your final grade will be decremented by one for each absence above 2.

When you are absent, you are still responsible for material, assignments, finding out what was missed, making sure that any work due that day gets to the instructor, and getting any assignments or materials handed out during your absence so that you can prepare for the next class. If you need to **drop** the course, it is **your responsibility** to do so, **not** the responsibility of the instructor. To drop the course you must file a drop card with the Office of Admissions and Records or the grade you have earned up to that point will be recorded on your permanent record.

OPEN LAB HOURS – TBD

TUTORING - If you need extra help outside of class, contact Tutorial Services at **Phone:** (949) 582-4519 and/or your instructor. The tutoring office provides trained tutors who have taken the class and are familiar with the material. In a typical tutoring session, a tutor will work with you for approximately 45 minutes to an hour in the open computer lab. Tutoring is primarily to help you understand the course material, not to complete your homework for you. If the tutor ascertains that a student has come to the session unprepared (e.g., has not read the supporting chapter material), the tutor may be unable or refuse to provide the student with assistance.

DISABLED STUDENTS - A student with a verified disability may be entitled to appropriate academic accommodations. Please contact your instructor and/or the Disabled Students Program and Services Office **Phone:** (949) 582-4885 for further information.

IMPORTANT DATES (https://www.saddleback.edu/admissions/dates-and-deadlines#q3)

Course Summary:

Date	Details
	Roll Call Attendance (https://canvas.saddleback.edu/courses/48516/assignments/880713)