Department of Mathematics and Computer Science
St. Mary's College of Maryland
47645 College Drive
St. Mary's City
Maryland 20686

Semester:	Fall 2018
Course Number:	COSC 230.01
Course Title:	Computer Architecture
Prerequisites:	COSC 130, MATH 200
Meeting Times:	Monday, Wednesday and Friday, 1:20 pm – 2:30 pm
Location:	Schaefer Hall, Room 165
Instructor:	Simon Read
Office Location:	Schaefer Hall, Room 173
Office Hours:	See http://faculty.smcm.edu/sread and by appointment
Telephone Number:	~~Extension 4369 (240 895 4369)~~
E-Mail Address:	sread@smcm.edu
Class Web-Site:	http://blackboard.smcm.edu
Required Textbook:	
None	

Catalog Description:

This course studies the structure of computer hardware. Topics include: models of computer hardware; instruction set architectures; simple code generation from a high-level language; machine code; simple logic design; representations of numbers and other data types; computer arithmetic; data path organization; input-output devices; control techniques (FSM and microcode); pipelines; caches; buses; virtual memory; primary secondary and tertiary storage structures.

Objectives:

At the completion of COSC 230, students will be able to explain instruction set architecture as demonstrated by writing explanations targeted to non-experts.

At the completion of COSC 230, students will be able to explain the six major components of a computer as demonstrated by writing explanations targeted to non-experts.

At the completion of COSC 230, students will be able to explain the process of code generation as demonstrated by writing explanations targeted to non-experts.

At the completion of COSC 230, students will be able to explain the role of each layer of

the memory hierarchy as demonstrated by writing explanations targeted to non-experts.

At the completion of COSC 230, students will be able to explain the representation of data in binary notation as demonstrated by writing explanations targeted to non-experts.

At the completion of COSC 230, students will be able to use C programming language as demonstrated by solve simple programming problems.

At the completion of COSC 230, students will be able to apply knowledge of computer architecture as demonstrated by solving related software level problems.

At the completion of COSC 230, students will be able to apply knowledge of computer architecture as demonstrated by writing explanations of the solutions to related software level problems.

Assessment:

This class is a required class, so you must obtain a C- grade or better in order to graduate with a Major in Computer Science.

There are two elements to the assessment of this class: the two examinations and the in-class and homework assignments.

There will be two examinations: a midterm (**weight 10%**) and a final (**weight 30%**). Both examinations will be administered as take-homes. These examinations are designed to test both your understanding of the material presented and your ability to apply the material in problem solving.

There will be a number of small in-class and homework style assignments (**weight 50%**). These will be used to help you develop an understanding of the material presented.

Finally, participation (**weight 10%**) in the classes is an important aspect of the learning experience in this class both for you and your colleagues.

Writing Center:

The Writing & Speaking Center, located in the Library Annex, offers free consultations in writing and speaking for students at all levels and in all disciplines. No matter what you're writing and no matter where you are in the process (generating ideas, drafting, revising or proofreading), the peer tutors in the Center can assist you. These tutors are friendly students and also excellent writers with special training as writing consultants. They would not grade or correct your papers; instead, they'd coach you and help you become a better writer. Similarly, the tutors are also trained to help you plan and practice presentations and other speaking assignments. I encourage you to use the Writing and Speaking Center as much as possible. You can make a one-time or repeating appointment with the Center by visiting their website, www.smcm.edu/writingcenter, and clicking 'Schedule an Appointment'. At the same website, you can find helpful resources on many writing- and speaking-related topics.

Title IX and Sexual Misconduct:

As stated in the St. Mary's Way, the College is a place where we strive to foster

relationships based upon mutual respect, honesty, integrity, and trust. As such, we are committed to providing an educational, living, and working environment free from all forms of harassment and discrimination for all members of our community. The College prohibits all forms of sexual or gender-based harassment, discrimination or misconduct, including sexual assault, sexual harassment, relationship violence, and stalking.

If you or someone you know has experienced sexual misconduct, you may find information about resources and options on the Campus Rights webpage (www.smcm.edu/campus-rights) or by contacting the College's Title IX Coordinator, Michael Dunn (mkdunn@smcm.edu or 240-895-4105).

Under College policy, faculty members are required to share any reports of sexual misconduct with Michael in order to make sure that the College is responding appropriately to address the health and safety needs of members of our community.

There are on-campus confidential resources available, including the counselors at the Wellness Center (240-895-4289) and the Sexual Misconduct Advocacy and Resource Team student-run 24/7 hotline (301-904-2015). More information about on- and off-campus confidential resources, as well as medical treatment, law enforcement, and other support services, may be found on the Campus Rights webpage.

Policies:

1. Communications – This course uses the course management software Blackboard. This system will be used to provide: announcements concerning the class; material presented in class; homework assignments; and external links to useful World Wide Web resources. Your grades will be displayed on Blackboard. *You* are responsible for making sure that this grade sheet accurately reflects the grades given for each piece of work.

2. Academic Integrity – Please refer to the Student Handbook Article II Section C for definitions of Cheating, Plagiarism, Falsification and Resubmission of work. Also available as http://www.smcm.edu/tothepoint/code-of-student-conduct/. Violations of these types will be dealt with accordingly. Not being familiar with your rights and responsibilities is no excuse.

3. Work "In Groups" – Outside of class and in class, you may discuss concepts together. All assignments, with the exception of the essay project and examinations, should be completed in pairs (this is known as Pair Programming in industry). This means that you will not exchange code (in person or via email) with classmates other than your teammate. You should not seek nor accept help from students other than the Classroom Assistants appointed for this section of COSC 230 – Computer Architecture for this semester. Their contact details will be provided to you. The instructor and Classroom Assistants are available during class assignments to help you. You should expect to need their help periodically; this is part of the learning experience. It is important to get help from a qualified and trained resource to help you completely understand the material in hand. Since each concept builds on the previous one it is vital to completely understand each concept. If you feel you don't please seek help from the instructor or Classroom Assistants.

4. Academic Accessibility – Saint Mary's College of Maryland is committed to providing access to the educational experience to students with disabilities and health conditions that impact learning. If you have received a letter from the Office of Student Support Services (OS3), which outlines the academic accommodations to which you are entitled, you *must* meet with me to review that letter and discuss how your learning needs intersect with the course expectations. If you suspect that you have a learning need that could benefit from academic accommodations, you should contact the Office of Student Support Services, who can help you learn more about how to proceed in this instance as well.

5. Late Submissions – Except for unusual, documented circumstances assignments will not be accepted late. This means you should submit whatever you have, even if it is incomplete, before the deadline.

6. Attendance – Attendance in class is an important element of instruction. When you do not attend class not only does your study suffer, but also that of your classmates. Therefore, attendance in class is required. Formal attendance will be taken in every class. In accordance with College policies you are allowed two unexcused absences. Absences will be excused in the case of illness, conflict with athletic events and similar circumstances. Where possible the instructor should be informed in advance of the class.

7. Conduct – Although no penalties will be attached to the following they are rude to both your instructor and class mates. If you *must* speak with one of your classmates, during the lecture phase of the course meeting please do so quietly. Turn cell phones to silent or off during class. During class time computers may only be used for class related activities, such as note taking, trying demonstration projects and in-class worksheets. This means, specifically, no email and no chat clients. Repeated or excessive tardiness is intrusive to the lecture phase.

8. Tardiness – Repeated and excessive tardiness is rude to me and your classmates. Again, you get one freebie. Repeated offenses may result in you being told that you were never here for that class period. If you have a legitimate commitment elsewhere that may result in your tardiness, let me know ahead of time.

9. Incompletes – An I (Incomplete) may be given by the instructor only at the request of the student when extraordinary circumstances, such as extended illness or other serious emergency beyond the control of the student, prevent the student from completing a course within the academic term. To qualify for an Incomplete, the extraordinary circumstances must have occurred near the end of the term and the student must have been attending the course regularly throughout the term up until that point.

10. Grading – To earn a C grade, your work must show a strong understanding of the information presented in the course. To earn a B grade your work must show a strong understanding of the information presented in the course *and* an ability to apply this information in problem solving. To earn an A grade your work must show a strong understanding of the information presented *and* an exceptional ability to apply this information in problem solving.

In-class assignments will be graded on a three point scale because they are simple. If nothing is turned in then 0 points will be assigned. If something was turned in, but it was not close to being correct then 1 point will be assigned. If a good attempt was made to answer the given question, but there were errors then 2 points will be assigned, If the solution was complete and correct then 3 points will be assigned. If the assignment lasts more than one class period a 6 or 9 point scale along the same lines will be used.

11.   Extra Credit – During the semester extra credit assignments *may* be assigned.