Department of Mathematics and Computer Science
St. Mary's College
St. Mary's City
Maryland 20686-3001

Semester:	Spring 2018
Course Number:	COSC 336.01
Course Title:	Computer Networks
Prerequisites:	COSC 230
Meeting Times:	Monday and Wednesday, 2:40 pm to 4:30 pm
Location:	Schaefer Hall, Room 165
Instructor:	Simon Read
Office Location:	Schaefer Hall, Room 173
Office Hours:	Refer to http://faculty.smcm.edu/sread/
Telephone Number:	~~Extension 4369 (240 895 4369)~~
E-Mail Address:	sread@smcm.edu
Class Web-Site:	http://blackboard.smcm.edu

Required Textbook:

> "Computer Networks", *Andrew S. Tanenbaum and David J. Wetherall*, 5th Edition, Prentice-Hall, 2011, ISBN: 978-0-13-212695-3.

Catalog Description:

This course is an introduction to computer networks. The theoretical concepts of networks are illustrated with current technologies. Topics include network models (ISO OSI); common network applications (SMTP, FTP, and HTTP); connection and connection-less transport protocols (TCP and UDP); routing algorithms; data-link protocols (Ethernet); error detection and correction techniques; multiple access protocols (CSMA/CD); physical transmission media (copper wire and fiber optic).

Objectives:

At the completion of COSC 336, students will be able to explain the ISO OSI Seven Layer Model as demonstrated by writing an explanation for non-experts.

At the completion of COSC 336, students will be able to explain typical network applications as demonstrated by writing an explanation for non-experts.

At the completion of COSC 336, students will be able to explain transport-level protocols as demonstrated by writing an explanation for non-experts.

At the completion of COSC 336, students will be able to explain routing algorithms as demonstrated by writing an explanation for non-experts.

At the completion of COSC 336, students will be able to explain data-link protocols as

demonstrated by writing an explanation for non-experts.

At the completion of COSC 336, students will be able to explain multiple access protocols as demonstrated by writing an explanation for non-experts.

At the completion of COSC 336, students will be able to construct solutions to networking problems as demonstrated by developing programs that use at least two protocol levels.

At the completion of COSC 336, students will be able to discover technical problems as demonstrated by writing a paper on a networking issue.

At the completion of COSC 336, students will be able to research complex technical concepts as demonstrated by writing a paper on a networking issue.

At the completion of COSC 336, students will be able to present complex technical concepts as demonstrated by presenting a paper on a networking issue to their peers.

At the completion of COSC 336, students will be able to construct solutions to networking problems as demonstrated by developing programs that use at least two protocol levels.

At the completion of COSC 336, students will be able to construct technical arguments as demonstrated by writing a paper on a networking issue.

What this course will and will not do:

This course will help you to understand how computer networks work and how to use them effectively when creating and using network applications It will focus on the more abstract levels of computer networks, but will also cover the more physical levels as a basic understanding of these is important. This course will take a top-down approach focussing on how well each networking technology meets the requirements of typical networking applications.

Although this course will not cover the practical aspects of setting up and running a computer network, it will give you a theoretical framework which will make it easier for you to learn how to do so, either formally through classes or on your own. This framework will also aid you in adapting to the changes that are inevitable in network technology.

This course will also help you to develop your skills in – finding and evaluating information; critical thinking; developing arguments; written and oral communication; and working in a team.

Assessment:

There are three elements to the grading of this class: two examinations; homework projects; a paper review.

You will take a mid-term (**weight 15%**) and a final (**weight 35%**) examination. Both examinations will be in the "take-home" format.

You will do several programming projects (**total weight 30%**) that will involve concepts introduced in the classes. Some of these you may complete in any programming

language (though only Java will be covered in class); some must be completed in C using the cnet simulator.

You will write a peer-review of a classic paper (**weight 10%**); detailed instructions on what is required will be provided. You will give a presentation on this paper to your classmates at the end of the semester (**weight 10%**).

Methods of Instruction:

Lecture elements of the class will be used to present the factual element of the course. In-class and homework group activities will be used to develop both critical thinking and problem solving abilities, as well as reinforcing conceptual understanding.

The mid-term and final examinations will be used to improve your ability to apply concepts to problem solving.

The programming projects will be used to reinforce the details of some key concepts covered in the class and to provide practice for soft skills such as teamwork and project management.

The review of a classic publication will help develop your written communication, critical thinking and academic research skills. The presentation to the class will help develop your verbal communication skills.

Interactions with the instructor outside scheduled class times will be an important part of your learning in this class. You should use the instructor's office hours as time to discuss concepts, homework projects and the paper review.

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 people foster relationships based upon mutual respect, honesty, integrity, and trust. As such, the College is 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). Please note that under College policy, faculty members are required to share any reports of sexual misconduct with Michael Dunn 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 (SMART) 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* 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 other students. The instructor is available during class assignments and office hours 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.

4. Accommodations – It is college policy to provide reasonable accommodations to students who have disabilities as well as being in compliance with The Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973. If you have a disability for which a Letter of Accommodations has been developed with the Coordinator of Disability Support Services please make an appointment with me as early as possible in order to discuss those accommodations. If you have a documented disability and have not met with the Coordinator of Disability Support Services you are encouraged to contact the Office of Academic Services,

Glendening Hall, Suite 230, (240) 895-3153 as early as possible for a confidential review of supporting documentation.

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.

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.