CAMERON UNIVERSITY

SCHOOL OF ARTS & SCIENCES
DEPARTMENT OF COMPUTING & MATHEMATICAL SCIENCES
COURSE SYLLABUS

I. Course Information

Title: Network Programming
Prefix and Number: CS3013
CRN: 11053

Semester/Term: Fall 2022
Meeting Days and Times: MW 9:30 – 10:45
Location: HOW206

II. Instructor/Contact Information
Name: Chao Zhao
Office Location: HH104D
Office Hours: MW 2:00-3:00 pm
                        TR 9:00-12:00 am

Office Telephone Number: (580) 581-2907
Email Address: chaoz@cameron.edu

III. Textbook and Materials
Required Textbook:

UNIX Networking Programming, Third Edition, W. Richard Stevens, ISBN: 0-13-141155-1, Prentice-Hall Inc., 2004

SOFTWARE: Linux will be used in this class to develop client/server software.

OS SKILLS: Be able to do some basic operations on Linux machine Ada

Blackboard will be used throughout this course.

IV. Course Description

3 Credit hours. Concepts of multiprocessing and interprocess communication, network protocol architecture, construction of client/server software using low and high level system calls. Lecture 3 hours. Prerequisite: CS2413

V. Relevant Student Learning Objectives

Students will:

1. Understand computer networks: Network ISO Model, Protocol Stocks, IP addresses, and interprocess communications.
2. Apply basic client/server programming concepts and skills.
3. Practice basic Unix commands to gain network information in a Unix system and run a server/client application.
4. Understand IP Addresses (v4 and v6).
5. Use basic sockets: TCP sockets, UDP sockets, and SCTP sockets.
6. Apply socket programming skills and techniques to a solve problem.
7. Develop a client/server application software by using socket programming knowledge obtained in this class.

8. Be able to work with peers efficiently and make reasonable contributions to team project.

VI. Common Syllabus Statement and Aligned Gen Ed Slos (Only For General Education and Capstone Courses)
N/A

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VIII. Student Responsibilities

Participation   Students are required to attend class regularly.
Individual Project   Each student must complete an individual project and demonstrate the completed project in class. The project can be developed in C or C++. The completed project includes source code, design document, readme file, and cover page. Project will be graded using the following criteria:

- Source code 70%. Code must be properly commented and must pass compiling.
- Design document 15%. Show your system components and relationship
- Readme 5%.   State how compile and how run your program and system requirements.
- Presentation 10%. Demonstrate your project in class and answer question after demo.

Homework/Projects Student are required to turn in their Homework and projects on time.
Exams Student must take exams on time. No makeup tests will be arranged except emergency cases.

IX. Required Course Assignments
- Two individual projects
- One team project
- Chapter quizzes
- Homework

X. Essential Course Policy Information

- Attendance/Lateness policy: All students are expected to attend class and to arrive on time. This is an active participation class with cumulative learning.
- Policy for late work including exams and projects: As a rule, I do not accept late work (to include exams and quizzes) except for emergencies.
- Policy for extra credit: There are No extra credit problems in this class.
- Policy on cell phone usage: Switch your cell phone to silence. If in class, feel free to use Cell Phones to take pictures of PPTs, chalk board use, or queries done by the instructor in class. Do not use cell phones for phone calls in class.
- Policy on computer usage during class: You can use your computer to do only course related

things, such as read your electronic textbook, or make lecture notes.

- Policy on recording lectures (audio or video): Recording lectures is allowed with instructor's permission.

- Early Alert Policy As encouraged by Cameron University, this instructor will use the Early Alert notification system. Early Alert is a system for identifying students who are having difficulties in a given course. The goal of the Early Alert system is not to penalize students, but rather to address problems – incomplete work, attendance, test scores, etc. – they may be experiencing. By addressing these issues early on in the semester, the hope is that students will be able to take the necessary steps to improve their standing.

- ADMINISTRATIVE WITHDRAWAL: Note: I follow the Cameron Administrative Withdrawal Policy and plan to administratively drop non-attending students who are failing. Prior to this request of administrative withdrawal I will enter an early alert notice for that student.

- **DISABILITY ACCOMODATIONS:** *It is the policy of Cameron University to accommodate students with disabilities, pursuant to federal and state law. Students with disabilities who need classroom accommodations must make their requests by contacting the Office of Student Development at (580) 581-2209, North Shepler Room 314.*

XI.   **Evaluation/Grading**

Grading is done on a point basis with each student/ team earning up to **1000** points. Values for each graded activity are listed:

No.	Item	Score
1	Individual project #1 Binary String	50
2	Individual project #2 Client/Server Talk	100
3	Team project	200
4	Test #1	100
5	Test #2	100
6	Homework	50
7	Quizzes	50

Grading for this class will be based on the following:

```
Projects                        20%
Term project                    10%
Homework/quizzes                10%
2 Exams                         60%
```
(**Final Exam: Dec. 7, 2022, 8:00-10:00 am**)

Final letter grades are assigned as follows:

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A    -      100--90%
B    -       89--80%
C    -       79--70%
D    -       69--60%
F    -       59-- 0%
```

I   -   Emergency Only

Note: The instructor reserves the right to adjust the grading plan to account for unusual circumstances.

XII.   Course Calendar (If Applicable)

TENTATIVE SCHEDULE

Week	content
1 Aug, 15-19	**Chapter 1 Introduction**
2 Aug. 22-26	**Chapter 1 Introduction** **Chapter 2 The Transportation Layer: TCP, UDP, and SCTP**
3 Aug 29- Sept. 2	**Chapter 2 The Transportation Layer: TCP, UDP, and SCTP** **Project #1 Generating All the Binary Permutations between 0 and 255**
4 Sept. 5-9	**Chapter 3 Socket Introduction** **Labor Day Sept. 5**
5 Sept. 12-15	**Chapter 3 Socket Introduction** **Project #1 Due:** **Exam #1**
6 Sept. 19-23	**Chapter 4 Elementary TCP Sockets**
7 Sept. 26-30	**Chapter 4 Elementary TCP Sockets** **Chapter 5 TCP Client/Server Example**
8 Oct. 3-7	**Chapter 5 TCP Client/Server Example**
9 Oct. 10-14	**Chapter 5 TCP Client/Server Example** **Project #2 Talk Project** **Fall Break Oct. 13-14**
10 Oct. 17-21	**Chapter 6 I/O Multiplexing The select and Poll Functions**
11 Oct. 24-28	**Chapter 7 Socket Options**
12 Oct. 31- Step. 4	**Chapter 8 Elementary UDP Sockets**
13 Nov. 7-11	**Chapter 9 Elementary SCTP Sockets** **Exam #2**

Week	content
14 Nov. 14-18	**Chapter 9 Elementary SCTP Sockets**
15 Nov. 21-25	**Chapter 10 SCTP Client/Server Example** **Thanksgiving Break Nov. 23-25**
16 Nov. 28- Dec. 2	**Chapter 11 Name and Address Conversions**
17 Dec. 5-9	**Final Exams** **Dec. 7, Wednesday 8:00-10:00 am**

This schedule is tentative and subject to change. Changes will be announced in class in advance.