



Systems Programming

CSC 2560

Summer 2021, July 12 to August 13

Syllabus:

Course #	Course Title	S.H.	Instructor
CSC 2560	Systems Programming	3	Natasha Kurtonina

Natasha Kurtonina

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978-665-3707

Current Catalog Description:

This course provides the student with the fundamentals of structured programming at the systems level. **UNIX** is used as a base for this course. Students obtain a thorough knowledge of the C language, comfort in using the **UNIX** operating system and an appreciation for a systems approach to low-level programming tasks.

Course Goals:

Students will learn the fundamental principles of structured programming, using the C programming language and the UNIX operating systems environment.

Major Topics Covered in the Course:

1. An overview of C programming language
2. Syntax and Semantics of C
3. Brief history of C and UNIX/Linux
4. C and Systems Programming
5. Anatomy of a C Program
 - Lexical Elements and Operators
 - Pointers and Data Types
 - Dynamic variable, malloc() and calloc() functions
 - Dynamic arrays, pointers arithmetic and strings
 - Passing parameters by values and by reference
 - I/O , working with files

- Static vs Dynamic Linking
- Improving programming skills: implementing sorting, searching algorithms for dynamic arrays, designing recursive functions.

5. Representing Advanced Data Structures in C

- Linked Lists
 - Build Linked Lists
 - Linked Lists Operations
 - Deleting and Inserting Nodes
 - Searching and Sorting Linked Lists
- Stacks and Queues. Priority Queues
- Trees
 - Binary Trees
 - Binary Search Trees
 - Binary Tree Traversal Algorithm
 - Depth-First and Breath-First Traversal Algorithms
 - UNIX/Linux File System Trees

6. Process Management in UNIX/Linux

- The Process Concept
- Process Origin
- Process Execution Mode
- Process Synchronization
- Process Termination
- fork() and System Call for Process Management
- I/O redirections
- Pipe Programming in Linux/Unix
- Library I/O functions

7. Sh Programming

- Sh script versus C- programming
- Sh Commands
- Linux Commands
- Sh control statements
- I/O redirections
- Recursive File Copy

Grading Policy

Assignments	70%
Tests and Participation	30%

FITCHBURG STATE UNIVERSITY UNDERGRADUATE GRADING POLICY

<u>4.0</u>	<u>A</u>	<u>95 – 100</u>
<u>3.7</u>	<u>A-</u>	<u>92 – 94</u>
<u>3.5</u>	<u>A-/B+</u>	<u>89 – 91</u>
<u>3.3</u>	<u>B+</u>	<u>86 – 88</u>
<u>3.0</u>	<u>B</u>	<u>83 – 85</u>
<u>2.7</u>	<u>B-</u>	<u>80 – 82</u>
<u>2.5</u>	<u>B-/C+</u>	<u>77 – 79</u>
<u>2.3</u>	<u>C+</u>	<u>74 – 76</u>
<u>2.0</u>	<u>C</u>	<u>71 – 73</u>
<u>1.7</u>	<u>C-</u>	<u>69 – 70</u>
<u>1.5</u>	<u>C-/D+</u>	<u>67 – 68</u>
<u>1.3</u>	<u>D+</u>	<u>64 – 66</u>
<u>1.0</u>	<u>D</u>	<u>60 – 63</u>
<u>0.0</u>	<u>F</u>	<u>0 – 59</u>
-	<u>IN</u>	<u>Incomplete</u>
-	<u>IP</u>	<u>In Progress</u>
-	<u>W</u>	<u>Withdrawn</u>

How to get help in case your homework program does not run or you don't understand some essentials covered during the class?

Please contact me at any time via e-mail, visit me during my office hours or make an appointment for some other time.

Late submission and Acknowledgements

1. If you submit your assignment one day late, 10% of your grade will be deducted. After that you have one week to submit your assignment, but 40% of your grade will be deducted. No assignments are accepted after one week after the deadline!
2. If somebody helped you with your homework, you have to mention his/her name in the introductory comments for your projects.

Academic Integrity Policy

You can discuss the ideas and strategies for your code with anybody who is willing to participate in the discussion however once you start writing your code you have to do it completely by yourself.

Grade 0.0 will be given for an exam or an assignment for disrespect of University Academic Integrity Policy.

Learning Disabilities. Every attempt will be made to accommodate students with documented disabilities provided accommodation must be requested before the 2nd class meeting.

Fitchburg State University encourages all Extended Campus students to take advantage of our online student services. We have created a “virtual student center” just for you. Here you will find access to Counseling Services, Career Services, The Student Activity Center, the university bookstore and many other helpful links. You can access our student center by going to the university homepage at <http://www.fitchburgstate.edu> and clicking on Offices and Services. Scroll down and click on Extended Campus Center. You will find links to Library Services, our Virtual Student Center and other important information.

FITCHBURG STATE UNIVERSITY DISTANCE LEARNING & EXTENDED CAMPUS LIBRARY SERVICES

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