

CS288 – 006

# Spring 2018 Intensive Programming in Linux

3 Credits

## Course Description

The course covers Linux programming with Apache Web server and MySQL database server using PHP, Python and C as primary programming languages. It consists of four stages: basic tools such as Bash and C programming; searching trees and matrix computing, end-to-end applications such as one that constantly presents top 100 stocks; and extending the applications to run on multiple machines. The course provides students with hands-on experience for programming relatively large applications.

## Course Prerequisites

- CS100 (Roadmap to Computing)
- CS114 (Introduction to Computer Science II)

## Instructor: Dr. Itani

E-mail: itani@njit.edu  
Office: GITC 4315  
Office Hours: M 01:00PM-02:00PM  
W 01:30PM-04:00PM  
Phone: TBD

## Classroom Assistant: Mr. Thierry Doueihy

E-mail: tm334@njit.edu  
Office: GITC 3700  
Office Hours: T 10:00AM-01:00PM  
02:00PM-05:00PM  
W 02:00PM-05:00PM  
R 01:00PM-03:00PM

## Classroom Schedule

Lectures: M 02:30PM-05:30PM CKB 223

## Grading System

- |                    |                    |   |
|--------------------|--------------------|---|
| • Assessment Quiz: | 2% of Final Grade  | [First or second day of class]                    |
| • Assignments:     | 8% of Final Grade  | [Dates to be determined]                          |
| • Quizzes:         | 10% of Final Grade | [Dates to be determined]                          |
| • Midterm 1:       | 25% of Final Grade | On 02/26/2018                                     |
| • Midterm 2:       | 25% of Final Grade | On 03/26/2018                                     |
| • Final:           | 30% of Final Grade | During Final Exams Period [05/04/2018-05/10/2018] |

Grades will be assigned as follows:

A [85% to 100%]  
B+ [80% to 85%]  
B [75% to 80%]  
C+ [70% to 75%]  
C [65% to 70%]  
D [58% to 65%]

## Text Book

Kernighan ... [et al.], The C Programming Language, 2nd Edition. Prentice Hall 1988.  
ISBN: 0-13-110370-9 (Hardcover), or 0-13-110362-8 (Paperback)

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### Policies

- Any student that does not meet the prerequisites must drop the course.
- Class attendance is necessary, and will be monitored. The final grade will be reduced by 1% for every unexcused absence (%2 if the class meets once per week).
- Homework is mandatory. The final grade will be reduced by 1% for every missed homework. Late submissions are not allowed.
- You must bring a valid government or university issued Photo ID to all exams.
- There are no make-up exams. Students who fail to take an exam will receive a score of zero. If you miss one of the two midterms because of a documented special circumstance you may, at the teacher's discretion, receive an imputed grade based on the other midterm.
- Audio and/or video recordings of ANY class material without the teacher's permission are prohibited.

### Statement on Academic Integrity

Cheating, collusion, misconduct, fabrication, and plagiarism are considered serious offences. Violations will not be tolerated and may result in penalties up to and including expulsion from the University.

The University Code on Academic Integrity, which can be found at <http://www.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf>, is enforced in this class.

### Course Outline

#### Stage 1) Fundamental Knowledge

- Linux essentials
- Linux shell – Shell scripting
- Linux shell – Recursive directory traversal
- Linux shell – Pattern matching with regular expressions
- Advanced C programming – Pointers
- Advanced C programming – Heap memory management

#### Stage 2) Advanced Tools and Techniques

- Sorting – Sorting integers with radix sort
- Sorting – IEEE floating point format
- Sorting – Sorting floats with radix sort
- State space search – Uninformed search algorithms
- State space search – Informed search algorithms
- Matrix computation – Solving systems of linear equations
- Matrix computation – Spectral graph partitioning applications

#### Stage 3) End-to-End Real World Web Application

- Web processing – Retrieve content from Web servers using Linux tools and shell scripting
- Web processing – Extract data from XHTML documents using the DOM API
- Web processing – Deploy and manage MySQL database server
- Web processing – Develop the data movement and transformation logic from source to target
- Web processing – Deploy and manage Apache Web server
- Web processing – Extract data from MySQL and produce interactive data visualization using PHP

#### Stage 4) Parallel Programming

- Extending the tools, techniques, and application to run on parallel systems