

## ITMO 417 SYLLABUS

### ITMO 417 Shell Scripting for System Administration

Hours: 3 credit hours / 45 contact hours

Instructor: Sheikh "Sam" Shamsuddin

**Textbook, title, author, and year:** *Practical Guide to Linux® Commands, Editors, and Shell Programming, 3rd Edition*, Mark G. Sobell, 2012.

#### Specific course information

- a. **Catalog description:** This course focuses on preparation of shell scripts to enhance and streamline system administration tasks in all contemporary server operating systems. Scripting will be taught in both native and portable environments. The course will address shell programming, regular expressions, common and system-specific shell utilities and built-in commands, user defined and shell variables, flow control structures, shell functions, and the creation and execution of shell scripts. Homework and hands-on exercises will provide practical experience in contemporary server environments.
- b. **Prerequisites:** ITMO 556

#### Specific goals for the course

- a. **Course Outcomes:**
  - Gain experience skills to write, compile, execute, troubleshoot, analyze, evaluate, and resolve problems using major Shell Scripting Languages - BASH, AWK, Perl, and PowerShell
  - Acquire the ability to develop, synthesize, and identify important language standard libraries and utilities
  - Build experience in software application and development theory and concepts
  - Gain the ability to locate and use of Help Resources
- b. **Course Student Outcomes:**  
**Upon successful completion of the course the student should be able to do the following:**
  - Write and resolve programming problems using BASH, Perl, and PowerShell
  - Apply and use script utilities such as grep, sed, and system commands
  - Complete programming assignments using various scripting languages
  - Describe the integration and implementation of scripting and operating system commands
  - Recall scripting syntax and the language features
  - Create effective and useful Shell Script Programs

#### Topics to be covered

- a. Data Class and course introduction
- b. BASH Scripting, AWK, grep and sed
  - i. Shell commands. Shell Variables. Linux utilities.
  - ii. Selection Control, I/O and Redirection.
  - iii. Loops, Functions
  - iv. Regular Expressions – Grep and Sed
  - v. Arrays and File I/O
  - vi. Scripting using AWK
- c. Perl Scripting
  - i. Scalar Variables, Lists and Arrays.
  - ii. Hashes
  - iii. I/O, Selection Control, Loops
  - iv. Subroutines, File I/O
- d. PowerShell
  - i. Simple programming. Selection Control and Loop.
  - ii. Arrays, Modules, and Files