

Birzeit University

Faculty of Engineering and Technology

Department of Electrical and Computer Engineering

Second Semester 2022/2023

SYLLABUS

Course number and name: ENCS313- Linux Laboratory

Credits and contact hours: Credit: 1 (Lecture: 0, Lab.: 1)

Instructor's: Dr. Mohammad Jubran, Aziz Qaroush

TAs: Shahd Najeeb, Ahed Mafarjah

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Textbook:

The Lab has a set of experiments that will be posted on Birzeit University Academic and Administrative Portal (Ritaj)

• Reference:

- Robert Mecklenburg, *Managing Projects with GNU make* - Third Edition. O'Reilly, 320 pages.
- Stephen Kochan, Patrick Wood, *Unix Shell programming* – Third Edition. Sams Publishing, 456 pages.
- Frank G. Fiamingo, Linda DeBula, Linda Condron, *Introduction to Unix* – Ohio State University.
- Eric Matthes, Python Crash Course: A Hands-On, Project-Based Introduction to Programming. 1st Edition.
- Some hand-outs that will be delivered to students during the semester.
- The world wide web in general.

Specific course information

- **Description:** Fundamental concepts about UNIX and Linux. File system, Process Control, System Administration. Editors, C under Linux, gcc and debuggers. Shell scripting. Python programming. (3 practical hours)
- **Prerequisite:** *COMP132 or COMP142 or COMP230*
- **Core course for Computer Engineering**

Course Objectives and Goal

The aim of this course is to:

- Learn the Linux Operating System: history, distributions, hard disk partitioning, different available packages.
- Learn the different shells (sh, bash, csh, tcsh, ksh).
- Learn the different existing editors (vi, emacs, gedit).
- Learn the basic Linux commands (pwd, cp, mv, ls, ps, grep, date, cut, sort, uniq, head, tail, uptime, etc).
- Learn C-language: syntax, compilation (gcc), building projects (makefile, GNUmakefile), debugging (gdb, ddd).

- Learn basic shell scripting: **if-else**, **case**, **for**, **while**, **break**, **continue**, etc.
- Learn regular expressions (nature, examples).
- Learn advanced shell scripting with sed and awk.
- Learn Python programming language (syntax and control structures, built-in functions, text manipulation, debugging, formats, modules).
- Learn the allegro graphics library: installation, compiling and running the examples (if time permits).

(ABET) Relationship of course to Computer Engineering Program Student Outcomes:

B: Ability to design and conduct experiments, analyze and interpret data.

E: Ability to identify, formulate and solve engineering problems.

K: Ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

Brief list of topics to be covered

- Exp 1: Getting started with Linux.
- Exp 2: Shells, Pipes, and editors under Linux.
- Exp 3: Regular Expressions under Linux.
- Exp 4: Shell scripting – Part I.
- Exp 5: Shell scripting – Part II.
- Exp 6: Shell scripting – Part III.
- Exp 7: Learning & Programming Python Part I.
- Exp 8: Learning & Programming Python Part II.
- Exp 9: Learning & Programming Python Part III.
- Exp 10: Learning & Programming Python Part IV.
- Exp 11: C-language, Compilation, Debugging, Project Management – Part I.
- Exp 12: C-language, Compilation, Debugging, Project Management – Part II.
- Exp 13: C-language, Compilation, Debugging, Project Management – Part III.

Tentative Grading:

- Lab Work and Participations 10%
- Projects (two projects): 50%
- Final: 40%

Policies:

- No late submissions for projects will be accepted.
- The submissions of the projects will be only through ITC.
- Come to All Labs
- All students are expected to comply with University rules and regulations on academic Integrity and honesty.