

Course Syllabus

1.	Course title	System Programming and Compilers
2.	Course number	1901476
3.	Credit hours (theory, practical)	3
	Contact hours (theory, practical)	3
4.	Prerequisites/corequisites	Computer Organization (1901322)
5.	Program title	B.Sc. in Computer Science
6.	Program code	01
7.	Awarding institution	The University of Jordan
8.	School	King Abdullah II School of Information Technology
9.	Department	Computer Science
10.	Course level	Fourth year
11.	Year of study and semester (s)	2022/2023 - First semester
12.	Other department(s) involved in teaching the course	-
13.	Main teaching Language	English
14.	Delivery method	<input type="checkbox"/> asynchronous <input checked="" type="checkbox"/> synchronous
15.	Online platform(s)	<input checked="" type="checkbox"/> Moodle <input checked="" type="checkbox"/> Microsoft Teams <input type="checkbox"/> Skype <input type="checkbox"/> Zoom <input checked="" type="checkbox"/> Others: Email
16.	Date of production/revision	02/10/2022

17. Course Coordinator: Sami Serhan

Computer Science Department, Office no. 107, 1st floor
Phone: +9625355000. Extension: 22574
Email: samiserh@ju.edu.jo
Office hours:08:30-09:30 (Sun, Mon, Tue)

18. Other instructors:

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19. Course Description:

Introduction to system programming. Assemblers and their classifications. Loaders and linkers and their implementations. Macro processors: types and functions. Compilers: introduction to compilation phases,

Syntax analysis and grammars, Code generation and code optimization.

20. Course aims and outcomes:

A- Aims:

The main goal of this course is to teach students the foundation of system programming and compilers, and how they are implemented. The course aims to provide students with sufficient background in the theoretical concepts of system programming and compilers, enable them to develop any part of system programs and compilation phases.

Objectives include enabling students to:

1. Learn about different system programs and compilers.
2. Understand the algorithms used in the developing of system programs and compilers.
3. Understand the techniques used in the implementation of system programs and compilers.
4. Understand the dependency between system programs and computer architecture.
5. Write some system programs.

B- Intended Learning Outcomes (ILOs):

A- Knowledge and Understanding: Students should ...

- A1) Learn the concepts of system programming and compilers.
- A2) Know the important principles of system programming and compilers.

B- Intellectual skills: with the ability to ...

- B1) Compare and analyse algorithms used in the different system programs and compilation phases .
- B2) Apply appropriate tools to algorithm design.

C- Subject specific skills – with ability to ...

- C1) Work on Open environment to implement and handle different system programs and compilers.
- C2) Translate learned ideas and concepts into practice.
- C3) Understand the main attributes of different parts of system programming and compilers.

D- Transferable skills – with ability to

- D1) Possess good programming style and system programming and compilers concepts .
- D2) Develop advanced structures and algorithms into complete projects.
- D3) Choose the appropriate algorithm structure for a certain project.

21. Topic Outline and Schedule:

	Topic	TLA (teaching learning and assessment)	Teaching methods/ platform	References	NEW ABET SOs		Week						
Introduction:	Topic 1 definitions, the dependency between system programs and computer architecture.	In class questions	Synchronous lecture/ (MS-Teams)	Chapter 1 Text1	1,3	1.1	1						
			Synchronous lecture/ (MS-Teams)			1.2							
			Synchronous lecture/ (MS-Teams)			1.3							
	Topic 2 Assemblers Two-pass assemblers Program blocks Control sections One-pass assemblers Multi-pass assemblers	In class questions Quiz 1: Topics 1-2 Assignment 1: Topic 2	Synchronous lecture/ (MS-Teams)	Chapter 2 Text1	1,3,4	2.1	2-4						
			Synchronous lecture/ (MS-Teams)			2.2							
			Synchronous lecture/ (MS-Teams)			2.3							
			Synchronous lecture/ (MS-Teams)			3.1							
			Synchronous lecture/ (MS-Teams)			3.2							
			Synchronous lecture/ (MS-Teams)			3.3							
			Synchronous lecture/ (MS-Teams)			4.1							
			Synchronous lecture/ (MS-Teams)			4.2							
			Synchronous lecture/ (MS-Teams)			4.3							
			Synchronous lecture/ (MS-Teams)			5.1							
			Synchronous lecture/ (MS-Teams)			5.2							
			Synchronous lecture/ (MS-Teams)			5.3							
			Synchronous lecture/ (MS-Teams)			6.1							
			Synchronous lecture/ (MS-Teams)			6.2							
			Synchronous lecture/ (MS-Teams)			6.3							
						Topic 3 Loaders and Linkers Absolute loaders Relocating loader Linking loader Linkage editor Dynamic linking Bootstrap loader		In class questions Assignment2: Topic 3	Synchronous lecture/ (MS-Teams)	Chapter 3 Text1	4,5	8.1	5-7
									Synchronous lecture/ (MS-Teams)			8.2	
Synchronous lecture/ (MS-Teams)	8.3												
Synchronous lecture/ (MS-Teams)	9.1												
Synchronous lecture/ (MS-Teams)	9.2												
Synchronous lecture/ (MS-Teams)	9.3												

			(MS-Teams)				
			Synchronous lecture/ (MS-Teams)			10.1	
			Synchronous lecture/ (MS-Teams)			10.2	
			Synchronous lecture/ (MS-Teams)			10.3	
			Synchronous lecture/ (MS-Teams)			11.1	
			Synchronous lecture/ (MS-Teams)			11.2	
			Synchronous lecture/ (MS-Teams)			11.3	
	Topic 4 Macro processors Different classifications of macro processors Macro processors options Conditional macro expansion	In class questions Assignment3: Topic 4	Synchronous lecture/ (MS-Teams)	Chapter 4 Text1	1,3,5	12.1	8-9
			Synchronous lecture/ (MS-Teams)			12.2	
			Synchronous lecture/ (MS-Teams)			12.3	
			Synchronous lecture/ (MS-Teams)			13.1	
			Synchronous lecture/ (MS-Teams)			13.2	
			Synchronous lecture/ (MS-Teams)			13.3	
			Synchronous lecture/ (MS-Teams)			14.1	
			Synchronous lecture/ (MS-Teams)			14.2	
			Synchronous lecture/ (MS-Teams)			14.3	
	Topic 5 Compilers Introduction Compilation phases Syntax analysis and grammars Code generation Code optimization	In class questions Quiz2: Topic 5	Synchronous lecture/ (MS-Teams)	Chapters 1, 2,4 Text2	1,4,6	15.1	10-15
			Synchronous lecture/ (MS-Teams)			15.2	
			Synchronous lecture/ (MS-Teams)			15.3	
			Synchronous lecture/ (MS-Teams)			16.1	
	Review		Synchronous lecture/ (MS-Teams)			16.2	16
			Synchronous lecture/ (MS-Teams)			16.3	

22. Evaluation Methods and Course Requirements (Optional):

	Platform	Week	Topic(s)	Mark	Evaluation Activity
	Essay/Written	3 rd	Topics 1-2	10	Quiz
	Essay/Written	7 th	Topics 1- 4	30	Mid
	Essay/Written	11 th	Topic 5	10	Quiz
		Final exams period	Topics 1-5	50	Final

23. Course Requirements

students should have a computer, internet connection, webcam, account on a specific software/platform.

24. Course Policies:

A- Attendance policies:

B- Absences from exams and handing in assignments on time:

C- Health and safety procedures:

D- Honesty policy regarding cheating, plagiarism, misbehavior:

E- Grading policy + Weighting (i.e. weight assigned to exams as well as other student work)

F- Available university services that support achievement in the course:

G- Statement on Students with disabilities

Students with Disabilities: Students with disabilities who need special accommodations for this class are encouraged to meet with the instructor and/or their academic advisor as soon as possible. In order to receive accommodations for academic work in this course, students must inform the course instructor and/or their academic advisor, preferably in a written format, about their needs no later than the 4th week of classes.

25. References:

A- Required book (s), assigned reading and audio-visuals:

Text1: System Software, Leland L. Beck, latest edition, Addison Wesley.

Text2: Compilers, principles, techniques, and tools, Aho, latest edition, Addison Wesley.

B- Recommended books, materials, and media:

- Systems programming, Donovan, McGraw-Hill
- Software Design and Development, Gilbert, Science research associates.

26. Additional information:

27. Name of Course Coordinator: Sami Serhan-----Signature:  ----- Date: 02/10/2022----
28. Head of Curriculum Committee/Department: ----- Signature: -----
29. Head of Department: ----- Signature: -----
30. Head of Curriculum Committee/Faculty: ----- Signature: -----
31. Dean: ----- Signature: -----