



كلية علوم الحاسب والمعلومات
قسم هندسة البرمجيات

College of Computer and Information Sciences

Department of Software Engineering

Software Construction Laboratory - SWE 481

Smart schedule

#	Name	ID
1	Jumanah Alwakeel	444200514
2	Joudy Alnounou	444200139
3	Najd Albabtain	444201076
4	Duna Alnujaidi	444200589

Section #	79818
Group #	1
Supervisor	Dr. Bushra Alkadhi

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1. Definitions:

word	Definition
user	Students, Faculty members, Teaching load Committee, Schedule committee, Registrar
irregular student data	students name, remaining courses from past level and courses needed to keep student from failing behind
Level overview	Visualize the schedule per group in a level, along with the number of sections, the assigned instructors, and the number of students in each section.
Course overview	Visualize classroom assignments to sections, number of students per section, instructors' assignments to sections.
Schedule Rules	<ul style="list-style-type: none">• Reserved Break Times: Breaks are fixed from 12:00–1:00 PM.• Midterm Periods: Reserved exam slots are on Monday and Wednesday, 12:00–2:00 PM.• Prerequisite Courses: Courses with prerequisites may be scheduled together when beneficial.• Lab Sessions: Labs are scheduled as continuous 2-hour blocks.• Electives: Elective courses are prioritized in the early morning or late afternoon.

2. Requirements:

2.1 Functional Requirements

- 2.1.1 The user shall be able to sign up using user role, email, user ID, phone number and a random password.
- 2.1.2 The user shall be able to log in using email and password.
- 2.1.3 The user shall be able to search the schedule by keywords using course name or section number.
- 2.1.4 The user shall be able to filter the schedule by level to view schedules for one or more levels.
- 2.1.5 The user shall be able to filter the schedule by section to view schedules for a specific section.
- 2.1.6 The user shall be able to log out of the system.
- 2.1.7 The user shall be able to reset their password using an OTP sent to their email.
- 2.1.8 The student shall be able to view the preliminary academic schedule once the Teaching Load Committee has confirmed the initial schedule, as well as all subsequent updated versions.
- 2.1.9 The student shall be able to submit elective course preferences using student name, student ID, current Level and selecting desired courses through a survey.
- 2.1.10 The student shall be able to view the exam timetable.
- 2.1.11 The student shall be able to provide comments and feedback on the preliminary schedule and exam timetable.
- 2.1.12 The student shall be able to receive notifications when the preliminary schedule or exam is published.
- 2.1.13 The faculty member shall be able to view their preliminary teaching schedule and all updated versions.
- 2.1.14 The faculty member shall be able to submit feedback on their preliminary teaching schedule.

- 2.1.15 The schedule committee shall be able to view all versions of the schedule.
- 2.1.16 The schedule committee shall be able to view the number of students per section.
- 2.1.17 The scheduling committee shall be able to change the default number of students per section, which is set to 25.
- 2.1.18 The scheduling committee shall be able to notify the registrar to enter irregular student data.
- 2.1.19 The scheduling committee shall be able to input course-level scheduling information received from other departments, which are fixed course slots, number of sections, room/resource constraints, and instructor assignments, before building the preliminary schedule
- 2.1.20 The scheduling committee and teaching load committee shall be able to add new scheduling rules.
- 2.1.21 The scheduling committee and teaching load committee shall be able to modify an existing scheduling rule.
- 2.1.22 The scheduling committee and teaching load committee shall be able to delete the existing scheduling rule.
- 2.1.23 The scheduling committee shall be able to modify academic schedules.
- 2.1.24 The scheduling committee shall be able to modify exam timetables.
- 2.1.25 The scheduling committee shall be able to export the final schedules.
- 2.1.26 The scheduling committee shall receive notifications and reminders based on university deadlines.
- 2.1.27 The teaching load committee shall be able to view the initial schedule and all updated versions.
- 2.1.28 The teaching load committee shall be able to provide feedback to the scheduling committee to suggest adjustments to the schedule.

- 2.1.29 The registrar shall be able to enter irregular student data only after receiving a notification from the scheduling committee requesting the data.
- 2.1.30 The system shall generate recommended schedules based on predefined rules and user preferences.
- 2.1.31 The system shall generate a survey for students to gather preferences for elective courses.
- 2.1.32 The system shall display dashboards showing level overview and course overview.
- 2.1.33 The system shall maintain a history of changes and versions of the schedule.
- 2.1.34 The system shall allow scheduling and teaching load committee members to collaborate and comment in real-time.
- 2.1.35 The system shall notify relevant users when updates, comments, or feedback are made.

2.2 Non-Functional Requirements

- Performance:

2.2.1 The system shall respond to user interaction within 2 seconds.

2.2.2 The system shall be capable of recovering from system failure within 10 minutes.

2.2.3 The system shall support real-time collaboration where updates made by one committee member are visible to all other active members within 4 seconds.

- Usability:

2.2.4 The user shall be able to learn to use the system in 4 hours.

2.2.5 The system shall provide separate interfaces for students, faculty members, scheduling committee, and teaching load committee

2.2.6 The system shall provide a graphical user interface (GUI) with an interactive button for ease of use.

- Availability:

2.2.7 The system shall be available 99.9% of the time during the academic semester.

- Security:

2.2.8 The system shall authenticate users during password reset process by sending an OTP to their email.

2.2.9 The system shall encrypt profile details and passwords using AES-256 encryption.

- Reliability:

2.2.10 The system shall ensure data integrity by performing monthly automated backups of schedules and user data to prevent data loss.

- Accuracy:

2.2.11 The system shall ensure that AI-generated schedule recommendations maintain at least 99% accuracy compared to manually validated scheduling rules.

3. Draft of Demo Schedule:

Level 3 Section 1	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4
Sunday	103 PHYS	106 MATH	151 MATH	111 CSC		105 IC		
Monday	103 PHYS (L)		MATH 106 (T)		MID			
Tuesday	103 PHYS	106 MATH	151 MATH	111 CSC		102 IC		
Wednesday	105 IC		MATH 151 (T)		MID		CSC 111 (L)	
Thursday	103 PHYS	106 MATH	151 MATH	111 CSC		CSC 111 (T)		
Level 3 Section 2	8-9	9-10	10-11	11-12	12-1	1-2	2-3	3-4
Sunday	151 MATH	111 CSC	106 MATH	103 PHYS		105 IC		
Monday	MATH 106 (T)		MATH 151 (T)		MID		CSC 111 (L)	
Tuesday	151 MATH	111 CSC	106 MATH	103 PHYS		CSC 111 (T)		
Wednesday	105 IC		103 PHYS (L)		MID			
Thursday	151 MATH	111 CSC	106 MATH	103 PHYS		102 IC		
Level 4	8-9	9-10	10-11	11-12	12-1	1-2	2-3	
Sunday	104 PHYS	244 MATH	113 CSC	303 CEN		113 CSC (T)		
Monday	113 CSC Lab				MID			
Tuesday	104 PHYS	244 MATH	113 CSC	303 CEN		IC		
Wednesday	104 PHYS Lab		244 MATH (T)		MID		303 CEN (T)	
Thursday	104 PHYS	244 MATH	113 CSC	303 CEN				
Level 5 Section 1	8-9	9-10	10-11	11-12	12-1	1-2	2-3	
Sunday	MATH254	CSC 220 (T)	CSC 212					
Monday			201 PHYS / 140 MIC / 105 IC		MID			
Tuesday	MATH254	CSC 220	CSC 212			CSC 212 (T)		
Wednesday	CSC 220 Lab		201 PHYS / 140 MIC		MID			
Thursday	MATH254	CSC 220	CSC 212			MATH254 / 106IC		
Level 5 Section 2	8-9	9-10	10-11	11-12	12-1	1-2	2-3	
Sunday	MATH254	CSC 212		CSC 220 (T)			CSC 212 (T)	
Monday	CSC 220 Lab		201 PHYS / 140 MIC		MID			
Tuesday	MATH254	CSC 212		CSC 220				
Wednesday			201 PHYS / 140 MIC		MID			
Thursday	MATH254	CSC 212		CSC 220		MATH254 / 106IC		
Level 6	8-9	9-10	10-11	11-12	12-1	1-2	2-3	
Sunday	IS 230			CSC 227			IS 230 (T)	
Monday					MID		CSC 227 (T)	
Tuesday	IS 230			CSC 227				
Wednesday	1105 IC / 108 IC				MID			
Thursday	IS 230			CSC 227				
Level 7 Section 1	8-9	9-10	10-11	11-12	12-1	1-2	2-3	
Sunday								
Monday					MID			
Tuesday						107 IC		
Wednesday					MID			
Thursday								
Level 7 Section 2	8-9	9-10	10-11	11-12	12-1	1-2	2-3	
Sunday								
Monday					MID			
Tuesday						107 IC		
Wednesday					MID			
Thursday								
Level 8	8-9	9-10	10-11	11-12	12-1	1-2	2-3	
Sunday								
Monday			201 PHYS / 140 MIC		MID			
Tuesday						OPER 122		
Wednesday			201 PHYS / 140 MIC		MID			
Thursday	108 IC					OPER 122 (T)		

