**Week 5 Final Project: Student Portal UML Design Models**

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**Figure 1: Class Diagram**

A screenshot of a computer

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**Description:** The Class Diagram in **Figure 1** provides a structural overview of the Student Portal, showcasing the primary classes (Student, Admin, Course, Enrollment, and Waitlist), their attributes, methods, and relationships. It highlights how students interact with courses and waitlists, administrators manage courses, and the system tracks enrollments and waitlisted students.

A diagram of a course employment

Description automatically generated**Figure 2: Sequence Diagram**

**Description:** The Sequence Diagram in **Figure 2** illustrates the course enrollment process, detailing interactions between the Student, System, Course, Enrollment, and Waitlist classes. It captures the sequence of operations where a student attempts to enroll in a course, the system checks course availability, and either enrolls the student or adds them to the waitlist if the course is full.

**Figure 3: Use Case Diagram**

A diagram of a person's course

AI-generated content may be incorrect.

**Description:** The Use Case Diagram in **Figure 3** illustrates the interactions between different user roles (Student, Admin, Instructor, and Super Admin) and the system functionalities. Students can log in, register, view courses, enroll, cancel enrollment, and manage waitlist actions. Admins manage and monitor courses and enrollments. Instructors support course-related tasks. The Super Admin oversees system-level operations like user authentication, updating course availability, and notifying users.

A diagram of a company

Description automatically generated**Figure 4: Activity Diagram**

**Description:** The Activity Diagram in **Figure 4** shows the course enrollment process, starting from login validation. If authentication fails, the session ends. After successful login, the student selects a course. If the course is unavailable, the student can join the waitlist. If the course is available, the student can enroll. Once enrolled, they can optionally cancel the enrollment. Each path clearly ends the session or transitions to the next step in the process. This diagram outlines key decision points and actions of the Student Portal System.

**Figure 5: State Diagram**

A diagram of a flowchart

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**Description:** The State Diagram in **Figure 5** illustrates the states a student progresses through during the course enrollment process. It begins in the "Idle" state, transitioning to "Authenticating student." If authentication fails, it loops back to "Idle." Once authenticated, the system checks course availability. If unavailable, the student is moved to the "Waitlisted" state, with a notification sent. If available, the student enters the "Enrollment confirmed" state, and a notification is sent. Enrollment can be canceled, transitioning to "Enrollment canceled," followed by notification. The process ends after the final state, ensuring all notifications and transitions are managed.