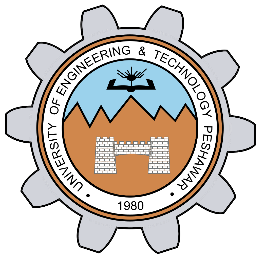
**KEY MILESTONE 1**

**Course Registration System**



**Database Management Systems Lab**

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# Entity and Attribute Description – Course Registration System:

|  |  |  |
| --- | --- | --- |
| ENTITY | DESCRIPTION | ATTRIBUTES |
| Student | Represents a student enrolled in the institution | student\_id (PK), first\_name, last\_name, email, phone, department\_id (FK) |
| Instructor | Represents an instructor teaching courses | instructor\_id (PK), first\_name, last\_name, email, phone, department\_id (FK) |
| Department | Represents an academic department | department\_id (PK), department\_name |
| Course | Represents a course offered by a department | course\_id (PK), course\_name, course\_code, credit\_hours, department\_id (FK), instructor\_id (FK) |
| Registration | Represents a student's registration to a course | registration\_id (PK), student\_id (FK), course\_id (FK), semester, registration\_date |
| Schedule | Represents a course schedule | schedule\_id (PK), course\_id (FK), classroom\_id (FK), day\_of\_week, start\_time, end\_time |
| Classroom | Represents a classroom where courses take place | classroom\_id (PK), room\_number, building, capacity |

### **Business Rules :**

1. **Student Registration**
   * A student must be registered in exactly one department.
   * A student can register for multiple courses, but the same course cannot be registered twice in the same semester.
2. **Instructor Assignment**
   * An instructor can teach multiple courses, but each course is taught by only one instructor.
   * An instructor must belong to a department.
3. **Course Management**
   * Each course must be associated with one department.
   * Each course must have a unique course code.
   * A course may be scheduled in one or more time slots, but not overlapping ones.
4. **Classroom Allocation**
   * A classroom can host multiple courses, but not at the same time.
   * The classroom capacity must be sufficient for the number of students registered in the course.
5. **Registration Constraints**
   * A student cannot register for more than a fixed number of credit hours per semester (e.g., 18 credit hours).
   * A registration record must be created before the course start date.
6. **Scheduling Rules**
   * Each schedule must specify the classroom, day of the week, start time, and end time.
   * A course cannot be scheduled in overlapping time slots for the same instructor.
7. **Department Structure**
   * Each department must have at least one course and one instructor.
   * Departments must have unique names.
8. **Data Integrity**
   * All foreign key relationships must be maintained (e.g., a student cannot be assigned to a non-existent department).
   * Deleting a course should remove all associated schedules and registrations (with confirmation).

**ENTITY RELATIONSHIP DIAGRAM (ERD):**

**A screenshot of a computer

AI-generated content may be incorrect.**

### **References:**

1. ChatGPT by OpenAI – <https://chat.openai.com>
2. Google Gemini – <https://gemini.google.com>
3. DBDiagram.io – <https://dbdiagram.io>
4. QuickDBD – <https://www.quickdatabasediagrams.com>