Entities:

Program, PLO, CO, Department, Account, Student, Faculty ,Course, Section,Evaluation, Assessment

Attributes:

1. Program - ProgramID(primary key, simple), ProgramName(simple).

2. PLO - PLOID(primary key, simple), PLOName(simple), PLODescription(simple).

3. CO - COID(primary key, simple), COName(simple), CODescription(simple).

4. Department - DepartmentName(primary key, simple), FacultyID(simple), PhoneNumber(simple).

5. Account(Supertype) - AccountID (primary key, simple), name (composite), BirthDate (composite), gender (simple), EmailAddress (simple), ContactNumber (simple), address (simple).

6. Student(Subtype) – EnrollDate(composite), TotalCourseCompleted(simple).

7. Faculty(Subtype) – AcademicQualifications (simple), Specialization (simple), JobPosition (simple), Salary (simple).

8. Course – CourseID (primary key, simple), CourseTitle (simple).

9. Section(Weak Entity) – CourseID(foreign key, primary key, simple), Semester(primary key, simple), SectionNumber (partial identifier, simple), Schedule(simple) , MaximumCapacity(simple).

10. Evaluation - StudentID(primary key, foreign key, simple), AssessmentID(primary key, foreign key, simple), TotalMarksObtained(simple).

11. Assessment - AssessmentID(primary key, simple), CourseID(foreign key, simple), COID(foreign key, simple), SectionNumber(foreign key, simple), AssessmentName(simple), TotalMarksAcheivable(simple).

Relationships:

Account, Student and Faculty have a supertype/subtype relationship. Partial Specialization rule and Disjoint rule has been applied to this relationship.

Student – Department Relationship: One to Many

Cardinality- Binary (A student must have exactly one department & a department must have one or more students).

Student – Section Relationship: Many to Many

Cardinality- Binary (A student may enroll in one or more sections & a section must have atleast one student).

Relational attribute - Registration Date.

Student – Evaluation Relationship: One to Many

Cardinality- Binary ( A student belongs to one or more evaluation & an evaluation belongs to exactly one student).

Faculty – Department Relationship: One to Many

Cardinality- Binary ( A faculty has exactly 1 department & a department has multiple faculties).

Faculty – Course Relationship: Many to Many

Cardinality- Binary (A faculty may teach multiple courses & a course must be taught by atleast 1 faculty) .

Relational attribute - TeachingDays, TeachingTime.

Faculty – Evaluation Relationship: Many to Many

Cardinality- Binary (An Evaluation is done by one or more faculties & a faculty must do atleast one evaluation) .

Relational attribute - EvaluationDate.

Course – Section Relationship: One to Many

Cardinality- Binary (A course may have one or more sections & a section must have exactly 1 course) .

Department – Course Relationship: One to Many

Cardinality- Binary (A department must offer one or more courses & a course must be offered by exactly 1 department).

Program - Course Relationship: One to Many

Cardinality- Binary ( A program contains multiple courses & a course belongs to exactly one program).

CO - Course Relationship: Many to Many

Cardinality- Binary ( Many courses has a CO & a course has multiple COs).

Course - Course (prerequisite) Relationship: Many to Many

Cardinality- Unary (A course can be a prerequisite of one or more courses & a course may have one or more prerequisites).

Course - Course (map/co-offered) Relationship: One to Many

Cardinality- Unary (A course may be mapped with many other courses & multiple courses may be mapped with exactly one course).

Program - PLO Relationship: One to Many

Cardinality- Binary( For each program there will be a set of program learning outcomes (PLO) & a PLO is placed exactly under one program).

Program - Department Relationship: One to Many

Cardinality- Binary(A Department has multiple programs & a program has exactly one department).

PLO - CO Relationship: One to Many

Cardinality- Binary(A CO must be mapped with exactly one PLO & a PLO may be mapped with one or more COs).

CO - Assessment Relationship: One to Many

Cardinality- Binary( An assessment is mapped with exactly one CO & a CO is mapped with one or more assessments).

Evaluation - Assessment Relationship: One to Many

Cardinality- Binary(An assessment has one or more evaluation & an evaluation is done for exactly one assessment).

Assessment - Section Relationship: One to Many

Cardinality- Binary(An assessment contains exactly one section & a section must have one or more assessments).