INFS7901 formal specifications

Student information management and school educational administration application

Description:

The most important content of this application is the student information and the teacher information, so all the functions of this applications are carried out around these data information.By structuring the relationship between students, teachers and departments, students can not only update their own information and query the information of teachers and classmates in real time, but also make it convenient for students to query the course information and register for the course, and for teachers and departments to query and update some information about students(e.g. grades or major) and courses.

Schema:

Relations:

1. Department

[Dept_ID: INTEGER(30), Dept_Name: VARCHAR(50)&Not Null, D_Mail: VARCHAR(100), Director：VARCHAR(100)]

2. Class

[Class_ID: VARCHAR(30), **Dept_ID: INTEGER(30)**, Class_Name: VARCHAR(50)&Not Null, Student_NO: INTEGER(255)&Not Null Default 0]

3. Student

[Student_ID: VARCHAR(30), **Class_ID: VARCHAR(30)**, S_FirstName: VARCHAR(50)&Not Null, S_LastName: VARCHAR(50)&Not Null, Gender: VARCHAR(10)&Female/Male, Birthday: DATE, Department: VARCHAR(50), Major: VARCHAR(50), Address: VARCHAR(50)]

4. Course

Compulsory[Course_ID: VARCHAR(50), Course_Name: VARCHAR(50)&Not Null, Department: VARCHAR(50) , Credit: Decimal(4,2), **Teacher_ID: VARCHAR(50)**, C_Description: VARCHAR(1000)]

Selective[Course_ID: VARCHAR(50), Course_Name: VARCHAR(50)&Not Null, Department: VARCHAR(50) , Credit: Decimal(4,2), **Teacher_ID: VARCHAR(50)**, S_Description: VARCHAR(1000)]

5. Teacher

[Teacher_ID: VARCHAR(50), Teacher_Name: VARCHAR(50)&Not Null, **Dept_ID: INTEGER(30)**, T_Mail: VARCHAR(100), Department: VARCHAR(50), Education_Experience: VARCHAR(1000)]

6. Project

[Project_ID: VARCHAR(50), **Teacher_ID: VARCHAR(50),** Project_Name: VARCHAR(50)&Not Null, Project_Level: VARCHAR(50),]

7. Enrollment

[**Course_ID**, **Student_ID**, Grade]

8. Teach

[**Course_ID**, **Teacher_ID**]

9. Works_on

[**Project_ID**,**Teacher_ID**]

Foreign Keys:

Class. Dept_ID --> Department. Dept_ID
Student. Class_ID --> Class. Class_ID
Course. Compulsory. Teacher_ID --> Teacher. Teacher_ID
Course. Selective. Teacher_ID --> Teacher. Teacher_ID
Teacher. Dept_ID --> Department. Dept_ID
Project. Teacher_ID --> Teacher. Teacher_ID
Enrollment. Course_ID --> Course. Course_ID
Enrollment. Student_ID --> Student. Student_ID
Teach. Course_ID --> Course. Course_ID
Teach. Teacher_ID --> Teacher. Teacher_ID
Works_on. Project_ID --> Project. Project_ID
Works_on. Teacher_ID --> Teacher. Teacher_ID

1. Department

Attribute name	Domain	Constraints
Dept_ID	INTEGER(30)	Primary Key
Dept_Name	VARCHAR(50)	Not Null
D_Mail	VARCHAR(100)	
Director	VARCHAR(100)	

2. Class

Attribute name	Domain	Constraints
Class_ID	VARCHAR(30)	Primary Key Partial key
Class_Name	VARCHAR(50)	Not Null
Dept_ID	INTEGER(30)	Foreign Key
Student_NO	INTEGER(255)	Not Null Default 0

3. Student

Attribute name	Domain	Constraints
Student_ID	VARCHAR(30)	Primary Key
Class_ID	VARCHAR(30)	Foreign Key
S_FirstName	VARCHAR(50)	Not Null
S_LastName	VARCHAR(50)	Not Null
Gender	VARCHAR(10)	Female, Male
Birthday	DATE	
Department	VARCHAR(50)	
Major	VARCHAR(50)	
Address	VARCHAR(50)	

4. Course

Attribute name	Domain	Constraints
Course_ID	VARCHAR(50)	Primary Key
Course_Name	VARCHAR(50)	Not Null
Department	VARCHAR(50)	
Credit	Decimal(4,2)	
Teacher_ID	VARCHAR(50)	Foreign Key

5. Teacher

Attribute name	Domain	Constraints
Teacher_ID	VARCHAR(50)	Primary Key
Teacher_Name	VARCHAR(50)	Not Null
T_Mail	VARCHAR(100)	
Department	VARCHAR(50)	
Education_Experience	VARCHAR(1000)	

6. Project

Attribute name	Domain	Constraints
Project_ID	VARCHAR(50)	Primary Key Partial Key
Project_Name	VARCHAR(50)	Not Null
Project_Level	VARCHAR(50)	
Teacher_ID	VARCHAR(50)	Foreign Key

Functional dependencies:

1. Department

(1) Closure of Dept_ID is: Dept_ID, Dept_Name, D_Mail, Director (Candidate Key)

The functional dependency listed above shows that if we know the Dept_ID of Department, when we search it on the application, the related information including itself about this department will pop up as well, such as the name and mail of this department and the director of this department.

(2) Closure of Dept_Name is: Dept_Name, D_Mail, Director

The functional dependency listed above shows that if we know the Dept_Name of Department, when we search it on the application, the related information including itself about this department will pop up as well, such as the mail of this department and the director of this department.

(3) Closure of Dept_ID, Dept_Name is: Dept_ID, Dept_Name, D_Mail, Director (Super Key)

(4) Closure of Dept_ID, D_Mail is: Dept_ID, Dept_Name, D_Mail, Director (Super Key)

(5) Closure of Dept_ID, Director is: Dept_ID, Dept_Name, D_Mail, Director (Super Key)

Because Dept_ID is Candidate Key, we could put any other attribute of Department with Dept_ID to form a new superkey, which could also reference other attributes.

2. Class

(1) Closure of Class_ID, Dept_ID is: Class_ID, Dept_ID, Class_Name, Student_NO (Candidate Key)

Because Class is weak entity, Class_ID is partial key. Thus, when we would like to search one class on the application,we should know the Class_ID and Dept_ID. Then, the related information including themselves about this class will pop up as well, such as the name and mail and the number of students of this class.

(2) Closure of Class_ID, Dept_ID, Class_Name is: Class_ID, Dept_ID, Class_Name, Student_NO (Super Key)

(3) Closure of Class_Name is: Class_Name, Student_NO

3. Student

(1) Closure of Student_ID, Class_ID is: Student_ID, Class_ID, S_FirstName, S_LastName, Gender, Birthday, Department, Major, Address (Super Key)

(2) Closure of Student_ID, S_FirstName, S_LastName is: Student_ID, Class_ID, S_FirstName, S_LastName, Gender, Birthday, Department, Major, Address (Super Key)

(3) Closure of Student_ID is: Student_ID, Class_ID, S_FirstName, S_LastName, Gender, Birthday, Department, Major, Address (Candidate Key)

4. Course

(1) Closure of Course_ID, Teacher_ID of Compulsory is: Course_ID, Teacher_ID, Course_Name, Department, Credit, C_Description (Candidate Key)

(2) Closure of Course_ID, Teacher_ID of Selective is: Course_ID, Teacher_ID, Course_Name, Department, Credit, S_Description (Candidate Key)

(3) Closure of Course_Name is: Course_Name, Department

5. Teacher

(1) Closure of Teacher_ID, Dept_ID is: Teacher_ID, Dept_ID, Teacher_Name, T_Mail, Department, Education_Experience (Super Key)

(2) Closure of Teacher_ID, T_Mail is: Teacher_ID, Dept_ID, Teacher_Name, T_Mail, Department, Education_Experience (Super Key)

(3) Closure of Teacher_ID is: Teacher_ID, Dept_ID, Teacher_Name, T_Mail, Department, Education_Experience (Candidate Key)

6. Project

(1) Closure of Project_Id, Teacher_ID is: Project_Id, Teacher_ID, Project_Name, Project_Level (Candidate Key)

(2) Closure of Project_Name is: Project_Name, Project_Level

(3) Closure of Project_Level is: Project_Level

Normalised Schema:

1. Department:

Dept_ID --> Dept_Name, D_Mail, Director

(1) R1 { Dept_ID, Dept_Name }
    Dept_ID --> Dept_Name
    Primary Key: Dept_ID

(2) R2 { Dept_ID, D_Mail }
    Dept_ID --> D_Mail
    Primary Key: Dept_ID

(3) R3 { Dept_ID, Director }
    Dept_ID --> Director
    Primary Key: Dept_ID

Dept_Name --> D_Mail, Director

(4) R4 { Dept_Name, D_Mail }
    Dept_Name --> D_Mail

(5) R5 { Dept_Name, Director }
    Dept_Name --> Director

Therefore, R1 and R2 and R3 and R4 and R5 are in 3NF.

2. Class:

Class_ID, Dept_ID --> Class_Name, Student_NO

(1) R1 { Class_ID, Dept_ID, Class_Name }
    Class_ID, Dept_ID --> Class_Name
    Primary Key: Class_ID, Dept_ID
    Foreign Key: Dept_ID

(2) R2 { Class_ID, Dept_ID, Student_NO }
    Class_ID, Dept_ID --> Student_NO
    Primary Key: Class_ID, Dept_ID

Foreign Key: Dept_ID

Class_Name --> Student_NO

(3) R3 { Class_Name, Student_NO }
Class_Name --> Student_NO

Therefore, R1 and R2 and R3 are in 3NF.

3. Student

Student_ID --> Class_ID, S_FirstName, S_LastName, Gender, Birthday, Department, Major, Address

(1) R1 { Student_ID, S_FirstName, S_LastName }
Student_ID --> S_FirstName, S_LastName
Primary Key: Student_ID

(2) R2 { Student_ID, Gender }
Student_ID --> Gender
Primary Key: Student_ID

(3) R3 { Student_ID, Birthday }
Student_ID --> Birthday
Primary Key: Student_ID

(4) R4 { Student_ID, Department }
Student_ID --> Department
Primary Key: Student_ID

(5) R5 { Student_ID, Major }
Student_ID --> Major
Primary Key: Student_ID

(6) R6 { Student_ID, Address }
Student_ID --> Address
Primary Key: Student_ID

(7) R7 { Student_ID, Class_ID}
Student_ID --> Class_ID
Primary Key: Student_ID
Foreign Key: Class_ID

Therefore, R1 and R2 and R3 and R4 and R5 and R6 and R7 are in 3NF.

4. Course

Compulsory: Course_ID, Teacher_ID --> Course_Name, Department, Credit, C_Description

(1) R1 { Course_ID, Teacher_ID, Department }
Course_ID, Teacher_ID --> Department
Primary Key: Course_ID
Foreign Key: Teacher_ID

(2) R2 { Course_ID, Teacher_ID, Course_Name }
Course_ID, Teacher_ID --> Course_Name
Primary Key: Course_ID
Foreign Key: Teacher_ID

(3) R3 { Course_ID, Teacher_ID, Credit }
Course_ID, Teacher_ID --> Credit
Primary Key: Course_ID
Foreign Key: Teacher_ID
(4) R4 { Course_ID, Teacher_ID, Teacher_ID}
Course_ID, Teacher_ID --> Credit
Primary Key: Course_ID
Foreign Key: Teacher_ID
(5) R5 { Course_ID, Teacher_ID, C_Description}
Course_ID, Teacher_ID --> C_Description
Primary Key: Course_ID
Foreign Key: Teacher_ID
(6) R6 { Course_Name, Department }
Course_Name --> Department
Therefore, R1 and R2 and R3 and R4 and R5 and R6 are in 3NF.

Selective: Course_ID, Teacher_ID --> Course_Name, Department, Credit, S_Description
(7) R1 { Course_ID, Teacher_ID, Department }
Course_ID, Teacher_ID --> Department
Primary Key: Course_ID
Foreign Key: Teacher_ID
(8) R2 { Course_ID, Teacher_ID, Course_Name }
Course_ID, Teacher_ID --> Course_Name
Primary Key: Course_ID
Foreign Key: Teacher_ID
(9) R3 { Course_ID, Teacher_ID, Credit }
Course_ID, Teacher_ID --> Credit
Primary Key: Course_ID
Foreign Key: Teacher_ID
(10) R4 { Course_ID, Teacher_ID, Teacher_ID}
Course_ID, Teacher_ID --> Credit
Primary Key: Course_ID
Foreign Key: Teacher_ID
(11) R5 { Course_ID, Teacher_ID, S_Description}
Course_ID, Teacher_ID --> S_Description
Primary Key: Course_ID
Foreign Key: Teacher_ID
(12) R6 { Course_Name, Department }
Course_Name --> Department
Therefore, R1 and R2 and R3 and R4 and R5 and R6 are in 3NF.

5. Teacher

Teacher_ID --> Dept_ID, Teacher_Name, T_Mail, Department, Education_Experience
(1) R1 { Teacher_ID, Dept_ID }

Teacher_ID --> Dept_ID
Primary Key: Teacher_ID
Foreign Key: Dept_ID

(2) R2 { Teacher_ID, Teacher_Name }
Teacher_ID --> Teacher_Name
Primary Key: Teacher_ID

(3) R3 { Teacher_ID, T_Mail }
Teacher_ID --> T_Mail
Primary Key: Teacher_ID

(4) R4 { Teacher_ID, Department }
Teacher_ID --> Department
Primary Key: Teacher_ID

(5) R5 { Teacher_ID, Education_Experience }
Teacher_ID --> Education_Experience
Primary Key: Teacher_ID

Therefore, R1 and R2 and R3 and R4 and R5 are in 3NF.

6. Project

Project_Id, Teacher_ID --> Project_Name, Project_Level

(1) R1 { Project_Id, Teacher_ID, Project_Name }
Project_Id, Teacher_ID --> Project_Name
Primary Key: Project_Id, Teacher_ID
Foreign Key: Teacher_ID

(2) R2 { Project_Id, Teacher_ID, Project_Level }
Project_Id, Teacher_ID --> Project_Level
Primary Key: Project_Id, Teacher_ID
Foreign Key: Teacher_ID

Project_Name --> Project_Level

(3) R3 { Project_Name, Project_Level }
Project_Name --> Project_Level

Therefore, R1 and R2 and R3 are in 3NF.

SQL dump:

```
-- phpMyAdmin SQL Dump
-- version 4.6.6deb5
-- https://www.phpmyadmin.net/
--
-- Host: localhost
-- Generation Time: Apr 14, 2020 at 12:29 PM
-- Server version: 5.7.28-0ubuntu0.18.04.4
-- PHP Version: 7.2.24-0ubuntu0.18.04.2
```

```
SET SQL_MODE = "NO_AUTO_VALUE_ON_ZERO";
SET time_zone = "+00:00";


/*!40101 SET @OLD_CHARACTER_SET_CLIENT=@@CHARACTER_SET_CLIENT */;
/*!40101 SET @OLD_CHARACTER_SET_RESULTS=@@CHARACTER_SET_RESULTS */;
/*!40101 SET @OLD_COLLATION_CONNECTION=@@COLLATION_CONNECTION */;
/*!40101 SET NAMES utf8mb4 */;

--
-- Database: `SIN_SEA`
--

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--
-- Table structure for table `Class`
--

CREATE TABLE `Class` (
  `Class_ID` varchar(30) NOT NULL,
  `Class_Name` varchar(50) NOT NULL,
  `Student_NO` int(255) NOT NULL DEFAULT '0',
  `Dept_ID` int(30) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;

--
-- Dumping data for table `Class`
--

INSERT INTO `Class` (`Class_ID`, `Class_Name`, `Student_NO`, `Dept_ID`) VALUES
('ACCT1', 'Accounting class1', 50, 1),
('ACCT2', 'Accounting class2', 35, 1),
('CHEM1', 'Chemical class1', 23, 2),
('DS1', 'Data Science class1', 35, 3),
('ECON1', 'Economics class1', 20, 1),
('HEAL1', 'Health class1', 52, 5),
('IT1', 'Information System class1', 68, 3),
('MED1', 'Medicine class1', 30, 4),
('PHAR1', 'Pharmacy class1', 25, 4),
('PHY1', 'Physics class1', 45, 2);

-- --------------------------------------------------------
```

```
--
-- Table structure for table `Compulsory`
--

CREATE TABLE `Compulsory` (
  `Course_ID` varchar(50) NOT NULL,
  `Course_Name` varchar(50) NOT NULL,
  `Department` varchar(50) DEFAULT NULL,
  `Credit` decimal(4,2) DEFAULT NULL,
  `C_Drescription` varchar(1000) DEFAULT NULL,
  `Teacher_ID` varchar(50) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;

--
-- Dumping data for table `Compulsory`
--

INSERT INTO `Compulsory` (`Course_ID`, `Course_Name`, `Department`, `Credit`, `C_Drescription`, `Teacher_ID`) VALUES
('ACCT7101', 'Accounting', 'Business', '2.00', 'An introductory course that equips students with an integrated base of theoretical and technical knowledge and skills in financial accounting. Financial accounting is a system used to prepare reports that disseminate information about the performance and financial status of a business to external parties.', 'T128'),
('CHEM3001', 'Advanced Organic Chemistry', 'Science', '2.00', 'Molecular conformations, effective sizes of groups. Types of organic transformations & their mechanisms: stereochemical outcomes, structural effects on reactivity, role of intermediates. Analytical approaches to organic synthesis: reagents, methodologies, specificities & stereochemistry, illustrated by synthesis of natural & non-natural compounds. Functional group & whole molecule retrosynthesis.', 'T224'),
('COMP7500', 'Advanced Algorithms & Data Structures', 'Engineering', '2.00', 'Analysis of algorithms. Solution of summation & recurrence equations. Algorithm paradigms: divide-&-conquer, greedy algorithms, dynamic programming, backtracking, branch-&-bound. Advanced graph algorithms. Amortised analysis. Self-adjusting data structures. Complexity classes, NP-completeness. Approximation algorithms. Randomized algorithms.', 'T386'),
('DATA7202', 'Statistical Methods for Data Science', 'Engineering', '2.00', 'This course will provide students with the core ideas which are important for analysing and interpreting massive data sets. These include modelling techniques: Linear models, smoothing regularisation and LASSO methods for big datasets and logistic regression.', 'T303'),
('ECON7310', 'Elements of Econometrics', 'Business', '2.00', 'Introductory applied econometric course for students with basic economic statistics background. Topics covered include: economic models and role of econometrics, linear regression, general linear model, hypothesis testing, specification testing, dummy variables, simple dynamic models and simple cointegration models. Tutorial problems are solved using a relevant econometrics program.', 'T152'),
('MEDI7285', 'Introduction to Digital Health', 'Medicine', '2.00', 'This course will examine the impact of ICT integration in healthcare along with other factors such as human resources,
```

economics and government policies. This course will set students on the path to thinking critically about issues related to digital health.', 'T416'),
('MKTG7501', 'Fundamentals of Marketing', 'Business', '2.00', 'Introduction to marketing management; consumer behaviour; marketing research & segmentation; product life cycle theory; product & pricing strategies; distribution & logistics; promotional strategy including advertising & personal selling; marketing organisation, planning & control; international marketing, services marketing & marketing for not-for-profit organisations.', 'T136'),
('PHRM3042', 'Pharmaceutical Discovery & Microbiology', 'Medicine', '2.00', 'Pharmaceutical microbiology relating to the principles and practice of pharmacy. Drug design and structure activity relationships of drugs used for: i) the treatment or prophylaxis of infections, ii) the treatment or management of respiratory conditions, and iii) the treatment of cancers.', 'T460'),
('PHYS3071', 'Computational Physics', 'Science', '2.00', 'Computational physics involving the Unix/Linux operating system environment and C programming. This is an introduction to computer programming & relevant numerical & graphical methods as applied to a range of physics problems. Topics include classical dynamics (ODEs).', 'T239'),
('PUBH3005', 'Influencing Health Behaviours', 'Health', '2.00', 'This course provides an overview of an evidence-based approach to the development, implementation and evaluation of health behaviour interventions.', 'T511');

-- --

--
-- Table structure for table `Department`
--

```
CREATE TABLE `Department` (
  `Dept_ID` int(30) NOT NULL,
  `Dept_Name` varchar(50) NOT NULL,
  `D_Mail` varchar(100) DEFAULT NULL,
  `Director` varchar(100) DEFAULT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

--
-- Dumping data for table `Department`
--

```
INSERT INTO `Department` (`Dept_ID`, `Dept_Name`, `D_Mail`, `Director`) VALUES
(1, 'Business', 'bel@uq.edu.au', 'Professor Andrew Griffiths'),
(2, 'Science', 'enquire@science.uq.edu.au', 'Professor Melissa Brown'),
(3, 'Engineering', 'enquiries@eait.uq.edu.au', 'Professor Vicki Chen'),
(4, 'Medicine', 'med.enquiries@uq.edu.au', 'Professor Stuart Carney'),
(5, 'Health', 'habs@uq.edu.au', 'Professor Bruce Abernethy');
```

-- --

```
--
-- Table structure for table `Enrollment`
--

CREATE TABLE `Enrollment` (
  `Grade` int(100) NOT NULL,
  `Student_ID` varchar(30) NOT NULL,
  `Course_ID` varchar(50) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;

--
-- Dumping data for table `Enrollment`
--

INSERT INTO `Enrollment` (`Grade`, `Student_ID`, `Course_ID`) VALUES
(90, '123', 'ACCT7101'),
(83, '123', 'MKTG7501'),
(89, '123', 'ECON7310'),
(81, '236', 'ECON7310'),
(78, '236', 'ACCT7101'),
(82, '236', 'MKTG7501'),
(88, '354', 'MKTG7501'),
(76, '354', 'ACCT7101'),
(91, '354', 'ECON7310'),
(87, '369', 'COMP7500'),
(97, '369', 'DATA7202'),
(95, '701', 'DATA7202'),
(85, '701', 'COMP7500'),
(85, '459', 'PUBH3005'),
(80, '521', 'MEDI7285'),
(90, '521', 'PHRM3042'),
(90, '606', 'PHRM3042'),
(95, '606', 'MEDI7285'),
(95, '714', 'CHEM3001'),
(77, '842', 'CHEM3001'),
(87, '842', 'PHYS3071'),
(81, '714', 'PHYS3071');

-- --------------------------------------------------------

--
-- Table structure for table `Project`
--
```

```
CREATE TABLE `Project` (
  `Project_ID` varchar(50) NOT NULL,
  `Project_Name` varchar(50) NOT NULL,
  `Project_Level` varchar(50) DEFAULT NULL,
  `Teacher_ID` varchar(50) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;

--
-- Dumping data for table `Project`
--

INSERT INTO `Project` (`Project_ID`, `Project_Name`, `Project_Level`, `Teacher_ID`) VALUES
('P11', 'Income inequality in Australia', 'QLD I', 'T128'),
('P12', 'The hotel of healing', 'QLD II', 'T136'),
('P13', 'A decade of serving the community', 'Brisbane II', 'T152'),
('P21', 'Energy, materials and light', 'UQ I', 'T224'),
('P22', 'Microbes and molecules', 'AU II', 'T239'),
('P31', 'Making Spatiotemporal Data More Useful', 'UQ I', 'T303'),
('P32', 'Microwave Inspection and Detection Systems', 'QLD III', 'T386'),
('P41', 'Inventing new clinical medicine', 'AU II', 'T416'),
('P42', 'Child Health Research', 'Brisbane III', 'T460'),
('P5', 'Health, well-being and ageing', 'AU I', 'T511');

-- --------------------------------------------------------

--
-- Table structure for table `Selective`
--

CREATE TABLE `Selective` (
  `Course_ID` varchar(50) NOT NULL,
  `Course_Name` varchar(50) NOT NULL,
  `Department` varchar(50) DEFAULT NULL,
  `Credit` decimal(4,2) DEFAULT NULL,
  `S_Drescription` varchar(1000) DEFAULT NULL,
  `Teacher_ID` varchar(50) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;

--
-- Dumping data for table `Selective`
--

INSERT INTO `Selective` (`Course_ID`, `Course_Name`, `Department`, `Credit`, `S_Drescription`,
```

`Teacher_ID`) VALUES
('ACCT3103', 'Advanced Financial Accounting', 'Business', '2.00', 'Accounting for corporate group structures, joint arrangements, associates, foreign currency translations, operating segments, external administration and capital structures.', 'T128'),
('ACCT3104', 'Management Accounting', 'Business', '2.00', 'Accounting information relevant for planning, control & performance evaluation decisions by management in business & non-business organisations; alternative analyses & systems; conceptual issues & behavioural implications.', 'T136'),
('COMP7702', 'Artificial Intelligence', 'Engineering', '2.00', 'Methods & techniques within the field of artificial intelligence, including problem solving and optimisation by search, representing and reasoning with uncertain knowledge and machine learning. Specific emphasis on the practical utility of algorithms and their implementation in software.', 'T386'),
('DATA7703', 'Machine Learning for Data Scientists', 'Engineering', '2.00', 'Machine learning is a branch of artificial intelligence concerned with the development & application of adaptive algorithms that use example data or previous experience to solve a given problem.', 'T303'),
('ECON7390', 'Financial Econometrics', 'Business', '2.00', 'This course gives an introduction to various aspects of financial econometrics. Characteristics of financial data will be studied and several major econometric models used in finance will be surveyed. Students learn how to analyse financial data and are introduced to some of the major tools used in both in the literature and by practitioners.', 'T152'),
('MEDI7284', 'Introduction to Rural and Remote Medicine', 'Medicine', '2.00', 'This course covers occupational health, safety and wellness in the rural context and how these impact on the health and well-being of people living in rural and remote communities.', 'T416'),
('NUTR2003', 'Nutrition in the Lifespan', 'Health', '2.00', 'This course provides an understanding of the significance of nutrition across the lifespan, using a public health perspective. This course reviews the nutritional and dietary requirements of humans for different periods of their lifespan and for specific physiological states. ', 'T511'),
('PHRM2021', 'Dosage Form Design A1', 'Medicine', '2.00', 'The study and application of physicochemical principles to the design, formulation and effective use of liquid and semi-solid dosage forms. The basic principles of biotechnology as they pertain to the pharmaceutical industry will be introduced.', 'T460'),
('PHYS1001', 'Mechanics & Thermal Physics I', 'Science', '2.00', 'Nature of physics, kinematics, dynamics, conservation laws, rigid body rotation, oscillations, fluids and elasticity, thermodynamics, arrow of time, heat engines, laboratory experiments & error analysis.', 'T239'),
('SCIE1000', 'Theory & Practice in Science', 'Science', '2.00', 'This foundation course in science introduces students to the broad range of mathematical, analytical, conceptual and computational tools employed by scientists to develop, analyse and interpret models of scientific processes.', 'T224');

-- --

--
-- Table structure for table `Student`
--

```
CREATE TABLE `Student` (
  `Student_ID` varchar(30) NOT NULL,
  `S_FirstName` varchar(50) NOT NULL,
  `S_LastName` varchar(50) NOT NULL,
  `Gender` varchar(10) DEFAULT NULL,
  `Birthday` date DEFAULT NULL,
  `Department` varchar(50) DEFAULT NULL,
  `Major` varchar(50) DEFAULT NULL,
  `Address` varchar(50) DEFAULT NULL,
  `Class_ID` varchar(30) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;

--
-- Dumping data for table `Student`
--

INSERT INTO `Student` (`Student_ID`, `S_FirstName`, `S_LastName`, `Gender`, `Birthday`, `Department`, `Major`, `Address`, `Class_ID`) VALUES
('123', 'Anny', 'J', 'Female', '1998-01-01', 'Business', 'Accounting', '7521 Belgrave Cove, Northgate, QLD, 4013', 'ACCT1'),
('236', 'Jone', 'W', 'Male', '1997-12-23', 'Business', 'Accounting', '7104 Legend Avenue, Waterfront Place, QLD, 4001', 'ACCT2'),
('354', 'Steven', 'K', 'Male', '1997-06-02', 'Business', 'Economics', '7402 Woodhall Lane, Eagle Farm, QLD, 4009', 'ECON1'),
('369', 'Iris', 'M', 'Female', '1999-07-20', 'Engineering', 'Information System', '9913 Shadowmoss Parkway,Waterfront Place,QLD,4001', 'IT1'),
('459', 'Jane', 'R', 'Female', '1995-10-01', 'Health', 'Health', '7206 Nikerton Street, Wintergarden, QLD, 4002', 'HEAL1'),
('521', 'Kate', 'P', 'Female', '1996-02-21', 'Medicine', 'Medicine', '579 Woodleaf Drive, Albion, QLD, 4010', 'MED1'),
('606', 'KJ', 'J', 'Male', '1997-09-04', 'Medicine', 'Pharmacy', '3611 Oaks Avenue, Spring Hill, QLD, 4000', 'PHAR1'),
('701', 'Zack', 'H', 'Male', '1998-10-16', 'Engineering', 'Data Science', '9170 Wethersfield Way,Rothwell,QLD,4022', 'DS1'),
('714', 'Olivia', 'K', 'Female', '1997-05-01', 'Science', 'Physics', '5450 Cd Smith Way,New Farm,QLD,4005', 'PHY1'),
('842', 'Jeff', 'J', 'Male', '1994-04-28', 'Science', 'Chemical', '2277 Old Bridge Parkway,Rothwell,QLD,4022', 'CHEM1');

-- --------------------------------------------------------

--
-- Table structure for table `Teacher`
```

```
--

CREATE TABLE `Teacher` (
  `Teacher_ID` varchar(50) NOT NULL,
  `Teacher_Name` varchar(50) NOT NULL,
  `T_Mail` varchar(100) DEFAULT NULL,
  `Department` varchar(50) DEFAULT NULL,
  `Education_Experience` varchar(1000) DEFAULT NULL,
  `Dept_ID` int(30) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;

--
-- Dumping data for table `Teacher`
--

INSERT INTO `Teacher` (`Teacher_ID`, `Teacher_Name`, `T_Mail`, `Department`, `Education_Experience`, `Dept_ID`) VALUES
('T128', 'Stephen Birch', 'stephen.birch@uq.edu.au', 'Business', 'Accounting Phd graduating from ANU', 1),
('T136', 'Inma Beaumont', 'i.beaumont@uq.edu.au', 'Business', 'Accounting Phd graduating from ANU', 1),
('T152', 'Sandy Brauer', 's.brauer@uq.edu.au', 'Business', 'Economics Phd graduating from NYU', 1),
('T224', 'Laurie Buys', 'l.buys@uq.edu.au', 'Science', 'Chemical Phd graduating from UCLA', 2),
('T239', 'John Cairney', 'j.cairney@uq.edu.au', 'Science', 'Physics Phd graduating from Griffth', 2),
('T303', 'Jason Connor', 'cysar@uq.edu.au', 'Engineering', 'Data Science Phd graduating from MIT', 3),
('T386', 'Neil Cottrell', 'n.cottrell@uq.edu.au', 'Engineering', 'IT Phd graduating from MIT', 3),
('T416', 'Andrew Cresswell', 'hos@hms.uq.edu.au', 'Medicine', 'Medicine Phd graduating from Cambridge', 4),
('T460', 'Sharon Doyle', 's.doyle1@uq.edu.au\r\n', 'Medicine', 'Pharmacy Phd graduating from Oxford', 4),
('T511', 'Derek Arnold', 'habs.adr@uq.edu.au', 'Health', 'Health Phd graduating from UQ', 5);

--
-- Indexes for dumped tables
--

--
-- Indexes for table `Class`
--
ALTER TABLE `Class`
  ADD PRIMARY KEY (`Class_ID`,`Dept_ID`);
```

```
--
-- Indexes for table `Compulsory`
--
ALTER TABLE `Compulsory`
  ADD PRIMARY KEY (`Course_ID`),
  ADD KEY `Teacher_ID` (`Teacher_ID`);

--
-- Indexes for table `Department`
--
ALTER TABLE `Department`
  ADD PRIMARY KEY (`Dept_ID`);

--
-- Indexes for table `Enrollment`
--
ALTER TABLE `Enrollment`
  ADD KEY `FK_En` (`Student_ID`),
  ADD KEY `FK_E` (`Course_ID`);

--
-- Indexes for table `Project`
--
ALTER TABLE `Project`
  ADD PRIMARY KEY (`Project_ID`,`Teacher_ID`);

--
-- Indexes for table `Selective`
--
ALTER TABLE `Selective`
  ADD PRIMARY KEY (`Course_ID`),
  ADD KEY `Teacher_ID` (`Teacher_ID`);

--
-- Indexes for table `Student`
--
ALTER TABLE `Student`
  ADD PRIMARY KEY (`Student_ID`),
  ADD KEY `Class_ID` (`Class_ID`);

--
-- Indexes for table `Teacher`
--
ALTER TABLE `Teacher`
```

```
  ADD PRIMARY KEY (`Teacher_ID`),
  ADD KEY `Dept_ID` (`Dept_ID`);

--
-- Constraints for dumped tables
--

--
-- Constraints for table `Compulsory`
--
ALTER TABLE `Compulsory`
  ADD CONSTRAINT `Compulsory_ibfk_1` FOREIGN KEY (`Teacher_ID`) REFERENCES `Teacher` (`Teacher_ID`);

--
-- Constraints for table `Enrollment`
--
ALTER TABLE `Enrollment`
  ADD CONSTRAINT `FK_E` FOREIGN KEY (`Course_ID`) REFERENCES `Compulsory` (`Course_ID`),
  ADD CONSTRAINT `FK_En` FOREIGN KEY (`Student_ID`) REFERENCES `Student` (`Student_ID`);

--
-- Constraints for table `Selective`
--
ALTER TABLE `Selective`
  ADD CONSTRAINT `Selective_ibfk_1` FOREIGN KEY (`Teacher_ID`) REFERENCES `Teacher` (`Teacher_ID`);

--
-- Constraints for table `Student`
--
ALTER TABLE `Student`
  ADD CONSTRAINT `Student_ibfk_1` FOREIGN KEY (`Class_ID`) REFERENCES `Class` (`Class_ID`);

--
-- Constraints for table `Teacher`
--
ALTER TABLE `Teacher`
  ADD CONSTRAINT `Teacher_ibfk_1` FOREIGN KEY (`Dept_ID`) REFERENCES `Department` (`Dept_ID`);

/*!40101 SET CHARACTER_SET_CLIENT=@OLD_CHARACTER_SET_CLIENT */;
/*!40101 SET CHARACTER_SET_RESULTS=@OLD_CHARACTER_SET_RESULTS */;
/*!40101 SET COLLATION_CONNECTION=@OLD_COLLATION_CONNECTION */;
```