DESIGN REPORT

I have divided my tables into 3 tiers to enable easy capturing of data semester wise. The requirement that multiple adjustments should be made every time the course reopens is made easy by dividing into different tiers and thus data can be inserted and changed faster by updating in least possible places.

Tier- 0

This tier contains the core tables which have constant/basic data and need not be updated frequently. The tables are,

- USER_INFO
- CATEGORY_INFO
- COURSE_INFO
- MATERIAL
- LECTURE
- ASSIGNMENT
- TEACHER_INFO
- ROLE
- CERTIFICATES
- USER_REGISTRATION
- ENCRYPTION

Tier -1

This tier captures next level details semester wise. For example which assignment/lecture/material belongs to which semester, which user registered for which course in which semester etc . These tables have some kind of dependency. The tables are,

- USER COURSE DETAILS
- ASSIGNMENT ASSIGNMENT
- MATERIAL ASSIGNMENT
- LECTURE ASSIGNMENT

- GRADE DETAILS
- COURSE ASSIGNMENT
- COURSE REGISTRATIONS

Tier -2

This tier captures data in the most detailed level. For example, lecture notes/comments table captures the notes given by a particular teacher for a particular course in a particular semester along with the timestamp. The tables are,

- USER GRADE DETAILS
- FEEDBACK
- COMMENTS
- ASSIGNMENT NOTES/COMMENTS
- LECTURE NOTES/COMMENTS
- MATERIAL NOTES/COMMENTS
- USER PERFORMANCE

Relationships:

1. The tables USER_INFO and USER_REGISTRATION have a one to many relationship because one user can register in multiple courses.
2. The tables COURSE_INFO and CATEGORY_INFO have a one to many relationship because one course can belong to multiple categories.
3. The tables COURSE_INFO and COURSE_ASSIGNMENT have a one to many relationship because people with different roles can have the same course. For example many TA’s and teachers can have the same course.

Key points and assumptions:

The ‘typeid’ attribute in the ‘Comments’ table takes care of whether the comment is passed on lecture or assignment. It has one of the values i.e ‘lectureid’ or ‘assignmentid’ depending on what the comment is for. The ‘type_name’ attribute has values ‘lecture’ or ‘assignment’.

Multi-valued Attributes:

1. ‘Type’ attribute in ‘Material’ table can have the values: syllabus, textbook, lecture.
2. ‘Paymentmethod’ attribute in ‘encrypt’ table can have the following values : Visa/Master Card, Paypal, Bitcoin etc.
3. ‘Role_name’ attribute in ‘Role’ table can have the following values: Teacher, TA, graders etc

The alternative to this is combining all the tiers into few generic tables. This would decrease the number of entities but it would make extracting data slower and updating cumbersome.