Data Model Design

Note: The following is modelled and calculated after a single use case.

<< insert ERD here and describe >>

The data model will be implemented using MySQL. The definitions in Table 1, Table 2 and Table 3 will be based on the size stated in the MySQL documentation.

Table 1: Data design for Course

No	Field	Type	Size (byte)	Key
1.	CourseId	int	4	Primary
2.	Code	varchar	10	N/A
3.	NameEn	varchar	300	N/A
4.	NameMs	varchar	300	N/A
Total Size			**614**	

Table 2: Data design for CourseFile

No	Field	Type	Size (byte)	Key
1.	CourseFileId	int	4	Primary
2.	Course	int	4	Foreign
Total Size			**8**	

Table 3: Data design for CourseFileMaterial

No	Field	Type	Size (byte)	Key
1.	CourseFileMaterialId	int	4	Primary
2.	CourseFile	varchar	4	Foreign
3.	FilePath	varchar	400	N/A
4.	FileName	varchar	100	N/A
Total Size			**508**	

Estimation of Storage

The data storage maintains the data described in Table 1, Table 2 and Table 3. This section calculates the data storage estimation for 50 semesters.

Master Data Size

An Entity Course will be created only once for the application's whole life cycle. Table 4 shows the estimation of the master data. The total estimation is 18,420 bytes.

Table 4: Details of estimation for master data

Item	Amount	Unit
Size of one Course data	614	byte
Estimated number of data	30	quantity
Total Estimation of Master Data	**(614 * 30) = 18,420**	**byte**

Transactional Data

CourseFile and CourseFileMaterial data will be created for every semester. Table 5 shows the estimation of the transactional data. The total estimation is 152, 640 bytes.

Table 5: Details of estimation for transactional data

Item	Amount	Unit
Size of one CourseFile data	8	byte
Size of one CourseFileMaterial data	508	byte
Maximum number of CourseFileMaterial per CourseFile	10	quantity
Size of one CourseFile data	8 + (508 * 10) = 5, 088	byte
Number Maximum Course File Per Semester	30	quantity
Total Estimation of Transactional Data	**5, 088 * 30 = 152, 640**	**byte**

Estimation of Data Storage

The total estimation of data storage is 10MB. The details are shown in Table 6.

Table 6: Details of estimation for data storage

Item	Amount	Unit
Total Masterdata	18,420	byte
Total Transactional data	152, 640	byte
Number of Semester	50	quantity
Total Estimation of Data Storage	18,420 + (152, 640 * 50) = 7, 650, 420	byte
	= 7.65042	MB
	= 10	**MB**

Estimation of File Storage

Each CourseFileMaterial is associated with a PDF file. The file will be stored in hierarchical path. (Example: semester\course\xxx.pdf). The total storage estimation for files is 250, 500 MB. The details are shown in Table 7.

Table 7: Detail of estimation for file storage

Item	Amount	Size
Size of hierarchical path	1	MB
Maximum size of PDF	50	MB
Maximum number of CourseFileMaterial per CourseFile	10	quantity
Number of Semester	50	quantity
Total Estimation of File Storage	**50 * 10 * (50 + 1) = 250, 500**	**MB**

Estimation of Total Data Storage

This application manages and maintains both structured and unstructured data. The total estimation is 250, 510 MB. The details are shown in Table 8.

Table 8: Details of estimation for total data storage

Item	Amount	Unit
Data Storage	10	MB
File Storage	250, 500	MB
Total Estimation of Data Storage	**250, 000 + 10 = 250, 510**	**MB**

The size of data storage required is 16GB. HDD type will be used to store the data.