<u>Introduction to Software Engineering</u>
<u>CSE291</u>

Department of Computer Science

COMSATS University Islamabad, Lahore Campus

Online E-Learning System

Requirements Specification

Department of Computer Science

COMSATS University Islamabad, Lahore Campus

27 October 2021

Project Details

Type (Nature of project)	[✔] **D**evelopment [ ] **R**esearch [ ] **R&D**					
Area of specialization	Software Engineering					
Project Group Members						
Sr.#	Reg. #	Student Name	CGPA	Email ID	Signature	Obtained Marks
(i)	FA20-BSE-064	Hafiz Kunwar M. Ahmad	3.33	Fa20-bse-064@cuilahore.edu.pk		
(ii)	FA20-BSE-017	Syed Ali Sherazi	3.20	Fa20-bse-017@cuilahore.edu.pk		

<div align="center">

REQUIREMENTS SPECIFICATION

</div>

1. Introduction   [By FA20-BSE-017]

E-learning system is an online learning system available for all students and teacher who wants to learn and teach respectively. The aim of this project to educate student and provide job facilities to teacher in situation like covid. Mainly, this document has been prepared to provide information that establishes an understanding of functional and non-functional requirements of the e-learning systems.

1.1 Purpose

The purpose of the requirements specification document is to specify all requirements for the e-learning system and provide exception cases for the better development of system. This will help the software designers in developing this system in accordance with the requirements given in this specification.

1.2 Scope

The scope of this document is to specify requirements for the e-learning system. In this document we will cover:

- Functional requirements for the e-learning system
- Non-functional requirements
- Constraints or assumptions of the specification

2. Overview   [By FA20-BSE-064]

This is an online eLearning system available on Online Web. This online eLearning system provides a one window operation to all the stakeholders of the system that specifically include the admin, teacher, and the students. This system will let you register users and keep the records of the users and will help them to educate with a better and advanced approach. Scheduling the Meetings, uploading of materials, giving grades, communication technology and queries section. The system provides customized interfaces for the mentioned stakeholders This system is a multitasking system as it provides multiple facilities such that online meeting, uploading quizzes, assignment and learning material and chat box facility.

Product Functions

The Online E-Learning System provides the following functions:

The **Admin** can perform the following functions:

- Register Users (accept information of users)
- Keeping Records

- Managing Data (Databases of Courses)
- CRUD (Create, Read, Update, Delete) Data
- Accept Feedbacks

The **Teachers** can perform the following functions:

- Registration/Login
- Profile
- Course Registration
- See Registered Courses
- See all Registered Students
- Accept Students Request
- Give Grades
- Upload Assignments/Quizzes/ Lecture Contents
- Invite Students through Meeting links.
- Take Online Video Session
- Chat Box
- Feedback
- Logout

The **Students** can perform the following functions:

- User Registration/Sign-in
- Login
- Profile
- Add/Drop a Course
- See Registered Courses
- See all Instructors
- Take Online Video Session
- Assignments/QUIZ
- Lecture Contents
- Report Card
- Chat Box
- Feedback
- Logout

3. Functional Requirements

Admin   [By FA20-BSE-064]

FR01: Registration

Req. No.	Functional Requirements
FR01-01	The admin will register the users(student or teacher) to the eLearning system by accepting their provided information. It will make the user experience reliable and define their preferences
FR01-02	Admin will create and give user profile to them after their registration and login.

FR02: Keeping Records

FR02-01	As admin registered the users, he will store the login details of the users.
FR02-02	Store the information of the users they have provided at the time of registration or on their profile.
FR02-03	Admin will see the list of teachers or students and their details. Only admin will delete or update the details of teacher/students.

FR03: Managing Data

FR03-01	Admin will manage the databases of Courses provided by the system.
FR03-02	Admin will see the list of available courses provided to the system. Only admin will edit or update the detail of courses. Admin will see the list of teachers or students registered to different courses.
FR03-03	Also only admin will add new courses or delete a specific course.

FR04: CRUD

FR04-01	Admin Tracks all the information and details of the users. Create, Read, Update and Delete (CRUD) data or information will be applied by the admin.

FR05: Accept Feedback

FR05-01	The admin will accept the feedbacks provided by the users (student/teacher).

Teacher   <mark>**[By FA20-BSE-064]**</mark>

FR06: Registration/Login

Req. No.	Functional Requirements
FR06-01	Users will register themselves as a teacher on the website using registration module. By providing their information such as: name, email, password, contact, gender etc. to the sign-up form.
FR06-02	After registration, user will login to the system as a teacher from the login form.

FR07: Profile

FR07-01	After Login, Teacher will be provided by their profile page. They can see their information in the profile details section such as: name, email, courses and contact.
FR07-02	At profile page, there is an option for password change. Here student first enter his previous password then entered new password in order to change his password.
FR07-03	Teacher can also update his personal details on the profile page. After update, website will display the updated data of student on Profile.

FR08: Course Registration

FR08-01	In this module teacher will get a beautiful engaging UI/UX where he will be able to add or search a course which he is interested in teaching.
FR08-02	The system shall display list of courses that the teacher has added. (The courses will be suggested regarding to the information/field they have given in the registration).
FR08-03	Teacher will be able to register or delete a course at a given time.
FR08-04	Teacher shall also see the list of number of students studying a course from him. Teacher will accept the request of new students wants to join his course.

FR09: Grading

FR09-01	In this module teacher will give grades to the students in their respective courses.
FR09-02	Teacher will be able to update or see the grades given to the students.
FR09-03	Teacher will be able to see the status of his students by looking at the average GPA of the students taken in his course.

FR10: Assignment/Quiz

FR10-01	Teacher will upload and assign assignment/quiz to the students. Teacher will choose the starting & ending date and set the time to upload assignment/quiz.
FR10-02	Teacher will be able to download the uploaded assignments/quiz by the students. Teacher will also see the missing assignments/quiz of the students.

FR11: Study Material

FR11-01	In this module Teacher will upload recorded lectures, course handbook and academic notes related to his course. Students can download those notes and videos from this section.
FR11-02	Uploaded date and the type of file uploaded will be shown.

FR12: Video Calling

FR12-01	This is the newly advanced added module. In this module Online Video Calling Feature is introduced. Students can communicate with the teacher online.
FR12-02	Teacher will generate the meeting link for his respective online classes. Students will join the online session through that link.
FR12-03	Moreover, Student will comment on online session and will ask question to instructor during section and will clear his debut.
FR12-04	Teacher will be able to mute his voice, hand raise, share his screen, turn on his mic, turn on his camera and can end the call.
FR12-05	After end the call student will go back to video calling section and will join other class on time

FR13: Chat Box

FR13-01	Teacher will communicate with their students through Chat-box or through voice note. They will reply to the queries of the students.
FR13-02	Teacher will set time for the students to contact him.

FR14: Feedback

FR14-01	Teacher will be able give feedback about the eLearning system.
FR14-02	Teacher will be able to logout from the system.

Student   [By FA20-BSE-017]

FR15: Registration

Req. No.	Functional Requirements
FR15-01	First of all, student will have to register himself by providing some information like his name, email address, semester, age, gender and password. This will enable the student to use this platform for education purpose.

Exception

FR15-02	If student will enter wrong email at signup form, then message display "No such Mail exists please enter your mail again".

FR16: Login

FR16-01	Once the student registered now, he will be login into the system by entering his mail and password.

Exception

FR16-02	If student will enter unregistered email at sign-in form, then message display "Entered-Mail is invalid please enter your mail again".
FR16-03	If student will enter wrong password at sign-in form, then message display "PASSWORD INCORRET TRY AGAIN!".

FR17: Create Student Profile

FR17-01	When the student will login on the website then he will see his profile. The profile will contain student's name, registration number, semester, total credit hours and his email.
FR17-02	At profile page, there is an option for student's password change. Here student first enter his previous password then entered new password in order to change his password.
FR17-03	After update, website will display the updated data of student.

FR18: Course Registration

FR18-01	After login into the system, Student will be able to add/drop and view his register course.
FR18-02	The system shall display list of courses that the student will add. Student will be able to add course which he wants to learn in this semester.
FR18-03	Student will be able to see his registered course that he registered during registration process in the current semester.
FR18-04	If student register course accidently or he wants to drop any course. Student will be able to drop course(s) from the registered course(s) list of the current semester.
FR18-05	Student will be able to see suggested course and he will be able to add course from that registered course.

FR19: Registered Courses

FR19-01	Once the students registered his courses, then he will be able to see his course.
FR19-01-01	At course section, student will be able to see course instructor name, credit hours and instructor qualification.

FR20: Grade

FR20-01	At grade section, student will be able to see his registered course grade.
FR20-01-01	He will see his grade with course number ,course name, course credit hours, obtained marks , and GPA of that course. Moreover, student will be able to see his CGPA and overall status of that semester.
FR20-02	In grade section, student will be able to see detail of his CGPA.
FR20-02-01	Detail of course contains current CGPA of student , a graph that compare current CGPA with the previous CGPA of student. Moreover, there is a overall review section for student.

FR21: Assignment

FR21-01	At assignment section, student will be able to see his registered course assignment.
FR21-02	Student will see his assignment with starting and ending time.
FR21-02-01	Student will be able to download the assignment file and will be able to see file format (whatever file is in pdf or in word).
FR21-02-02	Student will be able to browsers the assignment file that he wants to upload.
FR21-02-03	Moreover, Student can see the assignment number of his registered course.
FR21-03	Student will be able to see the detail of his registered course assignment.
FR21-03-01	Detail section will contain the missing assignment that student has not uploaded on time.
FR21-03-01	There is a search bar, where student will search to get specific assignment detail.
FR21-04	If no assignment available, then "No assignment available" will be display.

Exception

FR21-05	If student will enter assignment file and it fail to upload, then there is two possibilities
FR21-06	First the file format is incorrect then it displays "Enter file with .pdf or with .doc format".
FR21-07	Second, internet is not working then message will display "Check you connection ".
FR21-08	If course file is not able to download, then there must be a connectivity issue.

FR22: Quiz

FR22-01	At quiz section, student will be able to see his registered course quiz.
FR22-02	Student will see his quiz with ending time.
FR22-02-01	Student will be able to download the quiz file and will be able to see file format (whatever file is in pdf or in word).
FR22-02-02	Student will be able to browsers the quiz file that he wants to upload.
FR22-02-03	Moreover, Student can see the quiz number of his registered course.
FR22-03	Student will be able to see the detail of his registered course quiz.
FR22-03-01	Detail section will contain the status of quiz that the quiz is uploaded or not.
FR22-04	If no quiz available, then "No quiz available" will be display.
FR22-05	There is a search bar, where student will search to get specific quiz detail.

Exception

FR22-06	If student will enter quiz file and it fail to upload, then there are two possibilities
FR22-07	First the file format is incorrect then it displays "Enter file with .pdf or with .doc format".

FR22-08	Second, internet is not working then message will display "Check you connection ".
FR22-09	If course file is not able to download, then there must be a connectivity issue.

FR23: Study Material

FR23-01	At study material section, student will be able to see his registered course study material.
FR23-02	Student will see his study material's uploading date and file type.
FR23-02-01	Student will be able to see the lecture number with uploaded study material.
FR23-02-02	Student will be able to download the study material file.
FR23-03	Moreover, Student will see all subjects' study material there.
FR23-04	There is a search bar, where student will be able to search specific course material.
FR23-05	If there is no study material will upload by instructor, then that course cell will remain empty.
FR23-06	If course file is not able to download, then there must be a connectivity issue.

Exception

FR23-07	If course file is not able to download, then there must be a connectivity issue.
FR23-08	If file is not download, then file must be corrupt.

FR024: Video Calling

FR24-01	At video call section, student will be able to see his registered course video link (if link generate by instructor) .
FR24-02	Student will be able to add comment at call section.

FR24-02-01	Student will be able to see lecture time and join meeting by clicking on that link(generated by instructor) .
FR24-03	Once the student clicked on link, he will go to other screen whe]re he will attend online section with his instructor and fallowers.
FR24-04	Moreover, Student will comment on online session and will ask question to instructor during section and will clear his debut.
FR24-05	Student will be able to mute his voice, hand raise, share his screen, turn on his mic , turn on his camera and can end the call.
FR24-06	After end the call student will go back to video calling section and will join other class on time

Exception

FR24-07	If online session will not be able to join, then there must be a connectivity issue.

FR025:Chat Box

FR25-01	At chat box section, student will be able to see his registered course instructor contact.
FR25-02	If student have any query about his subject, then he will be able to contact his instructor.
FR25-02-01	Time will be mentioned that at what about instructor is free to talk with student. student will only contact to his instructor in mentioned time.
FR25-03	When student will contact to his instruction by clicking on contact button.
FR25-04	Once the student clicks on contact button, he will go to the chat screen.
FR25-05	At chat screen, first student will set his status that he is online/offline.
FR25-06	Student will select the teacher whom he wants to contact.
FR25-07	Student will text teacher and can send pictures/file to the teacher.

FR25-08	student will search specific instructor from search bar.
FR25-09	Moreover, Student will see all previous chat with his instructor.
FR25-10	Student will be seeing that if the teacher online or not.

Exception

FR25-11	If message will not be able to send, then there must be a connectivity issue.

FR026: Feedback

FR26-01	At feedback section, student will be able to send feedback.
FR26-02	If student face any issue, he will be able to send problem to admin.

Exception

FR26-02	If message will not be able to send, then there must be a connectivity issue.

FR027: Logout

FR27-01	Student will be able to logout from the online learning system.

4. Non-functional requirements   [By FA20-BSE-064]

NFR01: Performance

NFR01-01	Average load time of the starting page of the system must be less than 2 second.

NFR02: Security

NFR02-01	System must provide access to authorized users only that enter through the login module.
NFR02-02	System must not provide access to ANY user EXCEPT the ADMIN to update the database.

NFR03: Usability

NFR03-01	The interface of the system is easy to understand by the users.

NFR04: Defects-Maintenance

NFR04-01	Post Release defects of the system must not exceed 1 critical bug per month.
NFR04-02	Post Release bug fixing should not take more than 3 hours.

NFR05: Privacy

NFR05-01	User personal details and data should be private and secured.

NFR06: Safety

NFR06-01	User personal details and data should be safe and encrypted.

5. Process Model   [By FA20-BSE-017]

RAD (Rapid Application Development).

- Because the requirements of our project are well known.
- A lot of user interaction is involved as it is an online web system.
- Users are actively involved in the development.
- Prototyping of the system is also involved during development.
- End users get the better understanding of the system being developed.
- The technical risk is limited.
- In this model changes are adapted easily.
- This modal reduces the development time.