

Hamdard University  
Department of Computing  
Final Year Project



**A Website for DoC, Hamdard University**  
**FYP-001/FL24**  
**Software Requirement Specifications**

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*Document Sign off Sheet*

<b>A website for DoC Hamdard University</b>	Version: 1.0
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### ***Document Information***

<b><i>Project Title</i></b>	<b><i>A Website for DoC, Hamdard University</i></b>
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### *Revision History*

<i>Date</i>	<i>Version</i>	<i>Description</i>	<i>Author</i>
17/01/2025	1.0	Final document	Syeda Noreen Zahra

### *Definition of Terms, Acronyms, and Abbreviations*

<i>Term</i>	<i>Description</i>
<i>DoC</i>	<i>Department of Computing</i>
<i>FYP</i>	<i>Final Year Project</i>
<i>CMS</i>	<i>Content Management System</i>



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## **1. Introduction**

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### **1.1 Purpose of Document**

*The purpose of this Software Requirements Specification (SRS) document is to describe everything needed to build a website for the Department of Computing at Hamdard University. This website will make it easy for students, faculty, and administrators to access information, and stay updated. Here's why this document is important:*

#### **1. Clarify What Needs to Be Built**

*It explains all the features and tools the website will include, like subpages for programs (Computer Science, Artificial Engineering, and Software Engineer etc.), faculty details, timetables, announcements, and automated forms.*

#### **2. Centralize All Requirements**

*It gathers all the technical and functional details in one place, ensuring everyone working on the project understands the goals and how the website should function.*

#### **3. Improve Communication The website will allow:**

- *Students to access information easily.*
- *Faculty to make announcements and manage tasks efficiently.*
- *A chatbot to answer user questions.*

#### **4. Guide the Technical Team**

*It specifies the tools, software, and hardware required to build the website, ensuring the development team knows what technology to use.*

#### **5. Define Roles and Responsibilities**

*It documents who can do what on the website (e.g., only the HOD can post announcements, event images, coordinator images, etc).*

### **1.2 Intended Audience**

*The purpose of this project is to:*

- 1. Prospective students interested in the Department of Computing and its sub-disciplines.*

*Visitors seeking information computing department.*

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### 1.3 Abbreviations

<b>DoC</b>	<i>Department of Computing</i>
<b>FYP</b>	<i>Final Year Project</i>
<b>Dynamic Website</b>	<i>A website that updates its content dynamically based on user interaction or data changes.</i>
<b>Chatbot</b>	<i>chatbot that operates on a predefined set of rules, scripts, or decision trees to interact with users</i>
<b>Timetable</b>	<i>A schedule of classes and activities organized by section and semester.</i>
<b>Database</b>	<i>An organized collection of data stored electronically for easy access, management, and retrieval.</i>
<b>SQL lite</b>	<i>Structured Query Language, used for managing and querying relational databases.</i>
<b>Prototype Methodology</b>	<i>A software development approach focused on iterative refinement based on user feedback.</i>
<b>Frontend</b>	<i>The part of a website that users interact with directly, including design and layout.</i>
<b>Backend</b>	<i>The server-side logic of a website that handles data storage, processing, and functionality.</i>

### 1.4 Project Background

*The proposed project involves developing a dynamic and user-friendly website for the Department of Computing (DoC) at Hamdard University. The primary purpose is to create an online centralized platform that enhances communication, resource accessibility, and transparency for students, faculty, and prospective students.*

#### **Key Objectives:**

- 1. Provide comprehensive departmental information, including faculty profiles, batch advisors, program coordinators, and library resources.*
- 2. Introduce integrated features like:*
  - A news and announcements area to keep the department updated.*



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- *A chatbot for addressing frequently asked questions.*
- *Faculty pages for specific program faculties*
- *Societies page for societies objective and latest event update*

### 1.5 Problem Statement

*Currently, the Department of Computing lacks a dynamic and user-friendly web platform to centralize and streamline the dissemination of departmental information. Important updates such as announcements, faculty profiles, program-specific details (BS, MS, PhD), and society activities are not easily accessible online, leading to reduced engagement and communication gaps among students, faculty, and administrative staff. Additionally, there is no structured system for administrators (like the HOD) to manage content independently. The absence of a chatbot to assist with common queries further adds to student confusion. This project aims to address these challenges by introducing a centralized website with an integrated admin panel, chatbot, and dynamically managed content to improve efficiency, transparency, and communication within the department.*

### 1.6 Project Scope

1. **Department Overview Pages:** *Comprehensive pages dedicated to Computer Science, and Software Engineering, Artificial Intelligence each detailing faculty members, coordinators, and the department head.*
2. **Societies Page:** *Give Information about societies and recent images of recent events.*
3. **Announcement System:** *A portal where only the HOD and Coordinator can log in to make announcements to students and faculty.*
4. **Chatbot Integration:** *A chatbot that provide responses to frequently asked questions and queries, leveraging the university's existing information.*

### 1.7 Not In Scope

1. *Integration with external educational systems beyond Hamdard University.*
2. *Non-academic departments (e.g., administration, non-computing departments).*
3. *Mobile app version of the website (only the web-based version will be developed).*
4. *Advanced AI features beyond the chatbot for providing automatic suggestions or handling dynamic data interpretation.*

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## 1.8 Project Objectives

1. **Centralize Information:** Develop a website that serves as a single point of access for faculty details, events, coordinators announcements.
2. **Enhance Student Experience:** Integrate a chatbot to ensure students can easily find the information they need, like timetables, faculty c, and department-specific details.
3. **Ensure Accessibility:** Provide students, faculty, and staff easy access to department-specific pages and chatbot.

## 1.9 Stakeholders & Affected Groups

The proposed **Department of Computing (DoC) website** involves multiple stakeholders and user groups that will benefit from or interact with the platform. These include the following:

### 1. Primary Stakeholders: 1. public (Current):

- o Access to detailed faculty and department information.
- o Ease in finding and announcements.

### 2. Program Coordinators:

- o Streamlined management of student records and departmental updates.
- o Tools to upload, sort, and manage data like uploading faculty info event's images or announcements.

### 3. Head of Department (HOD):

- o Tools for handling escalated announcements.
- o Access to add or delete things from admin panel.

## 2. Affected Groups:

### 1. Visitors and Alumni:

- o Prospective students and alumni will gain easy access to departmental information and resources, fostering engagement and trust in the department.

## 1.10 Operating Environment

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The **Department of Computing (DoC) website** will operate in a secure and reliable environment to ensure smooth functionality for all users, including students, faculty, and administrative staff. Below is a detailed description of the operating environment:

### **1. Web Hosting Environment:**

#### **Platform:**

The website will be hosted on university-maintained server to ensure scalability and reliability.

#### **Operating System:**

Windows for local development environments.

### **2. User Devices:**

- **Supported Devices:**

The website will be responsive and accessible via:

- Desktops and laptops (Windows, macOS, Linux).
- Mobile devices (iOS and Android).
- Tablets (all major platforms).

#### **Browsers:**

- Google Chrome
- Microsoft Edge

### **3. Network Requirements:**

- **Local Access:**

The website will be accessible via the university's LAN for administrative purposes.

- **Internet Access:**

Public access for students, faculty, and prospective students from external locations using secure HTTPS protocols.

- **Bandwidth:**

Moderate bandwidth usage to accommodate multiple users accessing resources like timetables, forms, and chatbot services simultaneously.

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### 3. Software:

- **Frontend:**  
*HTML, CSS, JavaScript, and frameworks like React.js or Bootstrap for a responsive and interactive UI.*
- **Backend:**  
*Node.js or Python for server-side logic.*
- **Database:**  
*SQL lite/PostgreSQL for managing records like timetables, library resources, and user submissions.*

### 4. Security Measures:

- **Authentication:**  
*Role-based access for HOD, and Coordinator to ensure secure data management.*

### 6. Maintenance and Updates:

*The website will be managed by a designated web administrator from the department, who will handle updates for:*

- *HOD's Message*
- *Announcements.*
- *Faculty information.*
- *Societies events*
- *Coordinators Images*

## 1.11 System Constraints

### 1. Technical Constraints

- **Chatbot Dependency:**  
*The chatbot relies on data from website. Inaccurate or outdated data on the website could affect chatbot responses.*

### 2. Resource Constraints

- **Hardware Requirements:**  
*The system requires modern computers or servers with sufficient processing power for hosting and data management. Limited access to these resources could delay deployment.*

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- **Human Resources:**

*Dependence on web developers, database administrators, and testers for development and maintenance may cause delays if skilled personnel are unavailable.*

### 3. Security Constraints

- **Role-Based Access:**

*The system enforces role-based access for different stakeholders (e.g. HOD, coordinators).*

*Mismanagement of access roles could compromise data integrity.*

### 4. Development Constraints

- **Methodology:**

*The use of an evolutionary prototyping methodology means features will be developed and refined iteratively.*

*This may delay the final delivery of certain functionalities.*

### 5. Performance Constraints

- **Concurrent Users:**

*The system is designed for moderate traffic and may require scaling for high user loads.*

- **Internet Dependency:**

*Internet access is required for users to access the website and for functionalities like email and chatbot integration.*

## 1.12 Assumptions & Dependencies

### 1. Assumptions

- **Data Availability:** *provided and maintained by the department.*

- **User Feedback:**

*Regular feedback from students, faculty, and administrators will be available to improve the website using the evolutionary prototyping approach.*

- **Moderate Traffic:**

*The system assumes a moderate number of concurrent users and is not designed for heavy traffic without scaling.*

- **Device Compatibility:**

*Users will access the website through supported devices and modern browsers.*

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- **Administrative Roles:**

*Role-based access will be appropriately assigned and maintained to ensure system security and functionality.*

## 2. Dependencies

- **Hosting Environment**

*Availability of a secure and reliable hosting environment (e.g., a university-maintained server hosting).*

- **Development Tools and Frameworks:**

*The project relies on tools like VS Code, languages HTML, CSS and Javascript, framework Bootstrap or React.js (frontend), Node.js or Python (backend), and SQL lite databases for development and deployment.*

- **Skilled Personnel:**

*Access to skilled developers, database administrators, and testers for smooth development and maintenance.*

- **Internet Connectivity:**

*Reliable internet access for public users to interact with the website and its features (e.g., chatbot, announcements, form submissions).*

- **Timely Inputs:**

*The project depends on timely inputs from stakeholders, such as faculty information, library data, and feedback from users.*

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## 2. External Interface Requirements

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### 2.1 Hardware Interfaces

The Department of Computing (DoC) website will interact with various hardware systems to ensure smooth operation, secure access, and efficient functionality. Below are the details of the hardware interfaces:

#### 1. Web Hosting Server

- **Purpose:**  
Hosts the website and backend systems for accessibility by students, faculty, and administrators.
- **Specifications:**
  - Processor: Quad-core or higher
  - RAM: Minimum 8 GB (16 GB recommended for scalability).
  - Storage: SSD with at least 500 GB for fast read/write operations.
  - Network: 1 Gbps Ethernet for high-speed connectivity.
- **Behavior:**  
Ensures reliable uptime, supports multiple concurrent users, and processes requests efficiently.

#### 2. User Devices

- **Purpose:**  
Provides access to the website for students, faculty, and staff.
- **Supported Devices:**
  - **Desktops and Laptops:** Windows.
  - **Mobile Devices:** Android platforms.
  - **Tablets:** All major tablet devices.
- **Behavior:**  
Responsive website design ensures compatibility and consistent user experience across devices.

#### 3. Administrative Systems • Purpose:

Used by Coordinator, and HODs for tasks like image uploads, announcements, and faculty cards.

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- **Specifications:**

- *Computers or laptops with updated operating systems (Windows 10/11,).*
- *Minimum Hardware: Dual-core processor, 4 GB RAM, and 500 GB HDD/SSD.*
- *Peripherals: Internet access, keyboard, and mouse for input.*

- **Behavior:**

*Facilitates secure login for authorized personnel to access backend functionalities.*

#### **4. Networking Hardware**

- **Purpose:**

*Supports communication between the website, database..*

- **Components:**

- **Routers and Switches:** *Ensure stable connections within the LAN and to the internet.*
- **Firewall Hardware:** *Protects the server from unauthorized access and cyber threats.*

- **Behavior:**

*Provides uninterrupted and secure connectivity for hosting and data transmission.*

#### **5. Backup and Storage Systems**

- **Purpose:**

*Ensures data reliability and recovery in case of system failure.*

- **Specifications:**

- *Network-attached storage (NAS) or cloud-based backup solutions.*
- *Capacity: At least 1 TB storage for maintaining backups of website data, user records, and forms.*

- **Behavior:**

*Periodic backups prevent data loss and allow quick recovery during system failures.*



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## 2.2 Software Interfaces

*The Department of Computing (DoC) website will interface with several software systems and applications to deliver its functionalities. Below are the details for each application:*

### 1. Information About DoC:

?

#### **Purpose:**

*To provide detailed information about the Department of Computing, including its academic programs (BS, MS, PhD), faculty details, departmental objectives, research areas, and student societies. This information serves students, faculty, and prospective applicants.*

?

#### **External**

#### **Owner:**

*Department of Computing (DoC), Hamdard University*

?

#### **Interface Details:**

- *Presented on the website through dedicated web pages and sections (e.g., About Us, Programs, Faculty, Societies).*
- *Information is displayed using a user-friendly frontend interface.*
- *Data is fetched dynamically from the admin panel where applicable (e.g., faculty info, coordinators).*
- *Accessible through navigation menus for easy exploration by users.*

?

### 2. Chatbot

- **Purpose:**  
*Provides conversational assistance to users.*
- **External Owner:**  
*Department of Computing*
- **Interface Details:**
  - **Integration:** *chatbot platform.*
  - **Behavior:** *The chatbot pulls data from the DoC website to answer user queries.*

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### 3. Administrative

- **Purpose:**  
*Allows authorized users to manage announcements, events, and news updates.*
- **External Owner:**  
*IT Team.*
- **Interface Details:**
  - **Integration:** *Internal admin panel linked to the website database.*
  - **Behavior:** *Restricted to authenticated users (e.g., HOD and coordinator) for making updates.*

### 2.3 Communications Interfaces

*The Department of Computing (DoC) website relies on various communication interfaces to connect with systems, devices, and users. These interfaces ensure secure and efficient data exchange and accessibility.*

#### 1. Local Area Network (LAN)

- **Purpose:**  
*Facilitates secure internal communication for administrative tasks like timetable updates, announcements, and database management.*
- **Details:**
  - **Protocol:**
    - ✦ *HTTP/HTTPS for accessing the website on the intranet.*
    - ✦ *SQL for connecting to the local database.*
  - **Behavior:**
    - ✦ *Administrative staff and faculty can use the LAN to access backend systems for uploads and updates.*
  - **Security:**
    - ✦ *Firewalls and VLAN segmentation to isolate sensitive data and restrict unauthorized access.*

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## 2. Internet Communication

- **Purpose:**

*Provides public access to the website and supports external communications like email notifications and chatbot integration.*

## 3. Communication with Database Systems

- **Purpose:**

*Enables storage and retrieval of information, such as faculty profiles, timetables, and library data.*

- **Details:**

- **Protocols:**

- ✦ *SQL for database queries.*

- **Behavior:**

- ✦ *Real-time retrieval of data for timetables, records, and library resources.*

- ✦ *Admins use secure access to update information.*

- **Behavior:**

- ✦ *Regular backups are sent to a remote or cloud-based storage system for disaster recovery.*

## 5. User Communication Devices

- **Purpose:**

*Enables interaction between users (students, faculty, and staff) and the website.*

- **Behavior:**

- *Responsive design ensures compatibility across devices (desktops, laptops, tablets, and mobile phones).*

## 6. Networking Hardware Communication

- **Purpose:**

*Maintains stable connections between systems and devices.*

## 2.4 System Functions

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*Based on the project proposal for the Department of Computing website, here is an example of how system functions and attributes can be organized for the website:*

### **1. Home Page**

- *Display a banner with announcements (data fetched from Admin Panel).*
- *Show HOD's message (uploaded via Admin Panel).*
- *Display 3 buttons/links:*
  - o *Computer Science*
  - o *Software Engineering*
  - o *Artificial Intelligence*
- *Show Department Info (static content).*
- *Display Coordinator Images (admin-uploaded).*

### **2. Announcements Module**

- *Admin can:*
  - o *Add and delete announcements.*
- *Announcements should appear in a banner on the homepage.*

### **3. HOD Message Module**

- *Admin (HOD) can:*
  - o *Upload or delete HOD's message (title, description, image, name).*
- *Display HOD message on homepage.*

### **4. Coordinator Section**

- *Admin can:*
  - o *Upload or delete images of program coordinators.*

### **5. Programs Pages**

*Each program (CS, SE, AI) has its own page, with the following sub-pages:*

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- *BS*
- *MS*
- *PhD*
- *Faculty*

#### **6. Faculty Page**

- *Admin can:*
  - o *Add or delete faculty member details and photos.*
  - o *Users can view faculty profiles by program (CS, SE, AI).*

#### **7. Society Page**

- *View department societies and their details.*
- *Admin can:*
  - o *Upload society images of past events.*

#### **8. Authentication System**

- *Register: New HOD/Admin can register.*
- *Login: Admin authenticates with id and password.*
- *On successful login:*
  - o *Redirect to Admin Panel to manage content.*

#### **9. Admin Panel**

- *Admin can:*
  - o *Manage Announcements*
  - o *Upload HOD Message*
  - o *Upload Coordinator*
  - o *Images*
  - o *Manage Faculty*
  - o *Profiles*
  - o *Upload Society*
  - o *Event Pics*

#### **10. Chatbot (Hamdard Bot)**

- *Answer common FAQs about Hamdard University.*

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## ***System Attributes / Nonfunctional Requirements***

*These define how the system performs under constraints and expected quality levels.*

### ***1. Usability***

- *User-friendly and intuitive UI/UX for both frontend users and admin.*
- *Responsive design for mobile, tablet, and desktop.*

### ***2. Reliability***

- *Website should load without errors and handle incorrect data gracefully.*
- *Admin actions should not cause crashes or data loss.*

### ***3. Security***

- *Admin panel protected with login credentials.*
- *Passwords stored securely.*

### ***4. Performance***

- *Fast loading for pages.*
- *Optimized images for faculty, and events.*

### ***5. Maintainability***

- *Code should be modular and well-documented.*
- *Future developers can easily update or scale modules.*

### ***6. Availability***

- *Website should have >99% uptime once hosted.*
- *Pages and chatbot should work even if some data is not present.*

### ***7. Scalability***

- *Can easily add new programs or extend faculty without major structure changes.*
- *Can later integrate real-time chat, course listings, or student portals.*

### ***8. Compatibility***

- *Supported on all modern browsers (Chrome, Edge).*
- *Works on Android, iOS, and desktop OS platforms.*

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## 2.5 Use Cases

Describe the following items:

- ✦ *Actors & use cases*
- ✦ *Use case diagrams*
- ✦ *High level, essential use cases* **Actors & Use Cases Actors:**

1. **Student:** View faculty info, announcements, societies event images coordinators.
2. **Chatbot:** Provides automated answers to FAQs.

### Use Case Diagram

Actors interact with use cases like:

- **Student:** View info about DOC and, Chat with Chatbot.
- **Chatbot:** Provide FAQ Assistance.

### High-Level Use Cases

- **Admin::** can add message, make announcement, upload images and chat with chatbot..
- **Chatbot:** Provide FAQ assistance.

### 2.5.1 List of Actors

#### 4.2.1 List of Actors and Use Cases

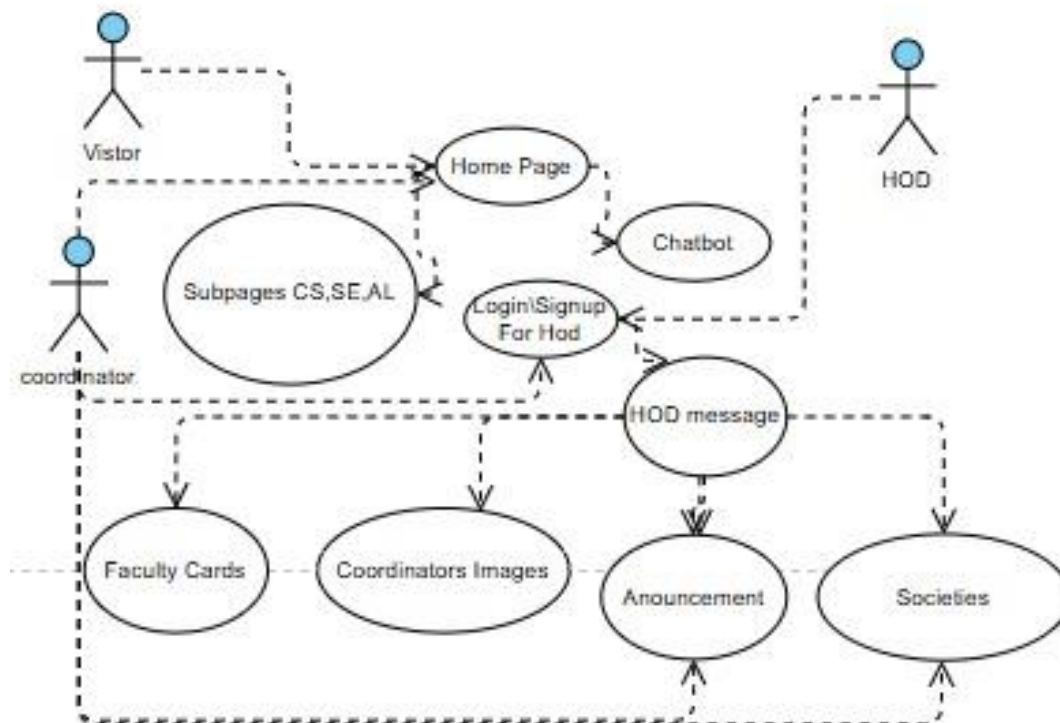
<b>Actor</b>	<b>Use Cases</b>
<b>Student</b>	<i>Societies- Chat with Chatbot - Departmental Information</i>
<b>Faculty</b>	<i>- View Personal and Departmental Information - Societies- Chat with Chatbot</i>
<b>Administrator</b>	<i>- Update Faculty and Departmental Information. Make announcement, add images, add message of HOD</i>
<b>Prospective Student</b>	<i>- View departmental Information</i>
<b>Chatbot</b>	<i>- Provide FAQ Answers - Assist Users with Website Navigation</i>

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### 2.5.2 List of Use Cases

<b>Use Case</b>	<b>Description</b>
<b>Chat with Chatbot</b>	Provide automated responses to common questions.
<b>Update Faculty Information</b>	Admin updates faculty and departmental details.
<b>Make Announcement</b>	Admin can make announcements.
<b>Add HOD's message</b>	HOD can add his message from admin panel
<b>Display News and Announcements</b>	Show updates and announcements for the department.

### 2.5.3 Use Case Diagram





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#### **2.5.4 Description of Use Cases**

##### ***Use Case: Access societies images***

<b><i>Section</i></b>	<b><i>Details</i></b>
<i>Name</i>	<i>Access Societies</i>
<i>Actors</i>	<i>Coordinator, HOD</i>
<i>Purpose</i>	<i>Allow users to view or update societies details.</i>

##### ***Typical Course of Events:***

<b><i>Actor Action</i></b>	<b><i>System Response</i></b>
<i>1. User selects "Societies" from the home page.</i>	<i>System displays societies details.</i>

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### 3. **Non - Functional Requirements**

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#### **3.1 . Usability**

- *User-friendly and intuitive UI/UX for both frontend users and admin.*
- *Responsive design for mobile, tablet, and desktop.*

#### **5.2. Reliability**

- *Website should load without errors and handle incorrect data gracefully.*
- *Admin actions should not cause crashes or data loss.*

#### **5.3 Security**

- *Admin panel protected with login credentials.*
- *Passwords stored securely.*

#### **5.4 Performance**

- *Fast loading for pages.*
- *Optimized images for faculty, and events.*

#### **5.5. Maintainability**

- *Code should be modular and well-documented.*
- *Future developers can easily update or scale modules.*

#### **5.6. Availability**

- *Website should have >99% uptime once hosted.*
- *Pages and chatbot should work even if some data is not present.*
- *Can easily add new programs or extend faculty without major structure changes.*
- *Can later integrate real-time chat, course listings, or student portals.*

#### **Compatibility**

- *Supported on all modern browsers (Chrome, Firefox, Edge).*
- *Works on Android, iOS, and desktop OS platforms.*

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## 2. *References*

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*List References*