



DAYANANDA SAGAR
UNIVERSITY



SCHOOL OF
ENGINEERING

DAYANAND SAGAR UNIVERSITY SCHOOL OF ENGINEERING

Devarakaggalahalli , Harohalli , Kanakpura , Ramanagara Dt. , Bangalore – 562112

FULL STACK DEVELOPMENT

REPORT ON

DSU WEBSITE

Bachelor of Technology in

Computer Science &

Technology Submitted By

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DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY

SCHOOL OF ENGINEERING

DAYANAND SAGAR UNIVERSITY

(2025-2026)

SCHOOL OF ENGINEERING DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY

Devarakaggalahalli , Harohalli , Kanakpura , Ramanagara Dt.. , Bangalore - 562112

CERTIFICATE

This is to certify that the work titled "**DSU WEBSITE**" is carried out by **Mr. BRAHMA PRUTHVI [ENG24CT0003]**, **Ms. SNEHA [ENG24CT0070]**, **Mr. KALLAN GOWDA [ENG24CT0007]**, **Mr. VARUN SANDESH [ENG24CT0034]**, **Mr. MAHESH S [ENG24CT0011]** Bonafide students of Bachelor of Technology in Computer Science and Technology at the School of Engineering, Dayananda Sagar University, Bangalore in partial fulfillment for the award of degree in Bachelor of Technology in Computer Science and Technology, during the year 20252026.

Dr. Santhosh Kumar J

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DECLARATION

We, by **Mr. BRAHMA PRUTHVI [ENG24CT0003]**, **Ms. SNEHA [ENG24CT0070]**, **Mr. KALLAN GOUDA [ENG24CT0007]**, **Mr. VARUN SANDESH [ENG24CT0034]**, **Mr. MAHESH S [ENG24CT0011]** are students of the seventh semester B.Tech in Computer Science and Technology, at School of Engineering, Dayananda Sagar University, hereby declare that the project phase I titled "VIDHI MITRA" has been carried out by us and submitted in partial fulfillment of the award of degree in Bachelor of Technology in Computer Science and Technology during the academic year 2025-26.

BRAHMA PRUTHVI [ENG24CT0016]

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Place : **BANGALORE**

Date :

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ABSTRACT

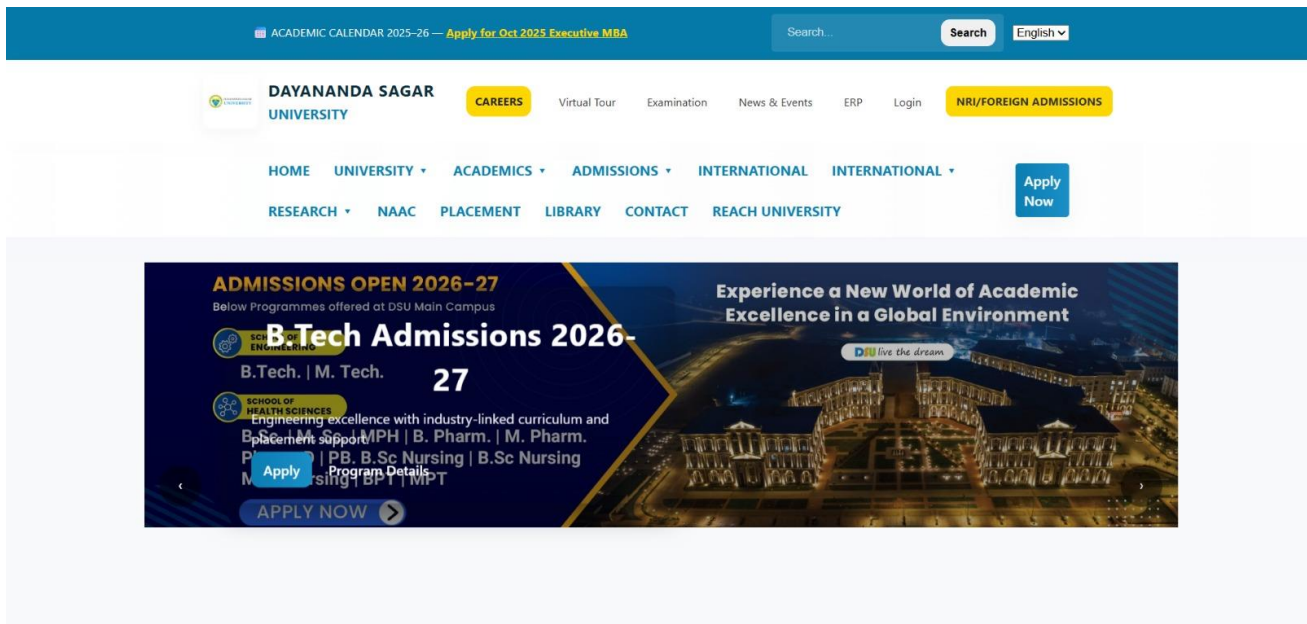
This project focuses on developing a modern, responsive, and visually appealing university website interface for Dayananda Sagar University (DSU). The purpose is to design a digital platform that aligns with contemporary web standards while ensuring usability, accessibility, and device adaptability. The website includes core functionalities such as a multi-level navigation menu, dynamic hero slider, awards and recognition presentation, academic programs grid, structured footer, and scroll-triggered animations. These components collectively improve the structure of information presentation and enhance the browsing experience for prospective students, academic staff, and visitors. The project adopts HTML, CSS, and JavaScript without relying on external frameworks, making it lightweight and easy to maintain. This report covers the purpose, requirements, system design, code structure, functional specifications, results, and conclusions derived from the development process.

1. INTRODUCTION

Educational institutions rely heavily on digital platforms to communicate vital information, promote programs, and engage with stakeholders. In the case of Dayananda Sagar University, the objective is to create a modern, professional, and intuitive interface that represents the institution's identity and meets the expectations of today's users.

The internet is often the first point of contact between a university and its future students. Therefore, the quality of the user interface plays a significant role in creating a positive impression. This project is designed with the intention of improving user experience through a well-structured layout, smooth navigation, responsive elements, and interactive components.

The final product is developed entirely using standard web technologies to ensure simplicity, customizability, and fast load performance. The focus is on clean code practices, modularity, accessibility compliance, and high responsiveness across all devices.



2. CHALLENGES FACED

☐ Integrating Frontend with Backend

Connecting the registration form on the frontend with the backend server required understanding of API routes, HTTP methods, and data flow. Initially, handling form submissions and transferring data correctly posed difficulties.

☐ Learning and Implementing MongoDB

Since MongoDB uses a NoSQL structure, designing collections and understanding schema-less data storage was a challenge. Proper configuration of the database and ensuring successful connectivity from the backend also took time.

☐ Handling Data Validation and Errors

Ensuring that the registration form accepted only correct and complete data required implementing validation checks. Managing server-side errors and debugging unexpected issues was also challenging.

☐ Designing a Responsive UI

Making the website visually appealing and ensuring it worked well on different screen sizes (desktop, tablet, mobile) required additional effort in CSS and layout design.

☐ Deploying the Application (if applicable)

Hosting the website and database together, and ensuring stable performance, was initially confusing due to configuration and compatibility issues.

☐ Version Control and Collaboration

If the project was done as a team, coordinating code changes and resolving merge conflicts in version control systems like Git was a challenge.

☐ Managing Time and Tasks

Balancing frontend design, backend logic, testing, and documentation within the project deadline was

3.TOOLS USED

1. HTML (Hyper Text Markup Language)

HTML was used to create the basic structure of the web pages. It defines the layout of the website, including headings, paragraphs, forms, images, and navigation menus. It serves as the foundation of the entire frontend.

2. CSS (Cascading Style Sheets)

CSS was used to style the website and make it visually appealing. It helped in improving the website's design through colors, fonts, layouts, responsiveness, and animations. CSS ensured the website worked well on different devices.

3. JavaScript

JavaScript was used to add interactivity to the website. It handles client-side validations, dynamic content updates, and smooth user interactions. It enhances the overall user experience.

4. Node.js

Node.js served as the backend runtime environment. It allows JavaScript to run on the server side. Node.js was used to build APIs, process form data, and manage server operations.

5. Express.js

Express.js is a lightweight web framework for Node.js. It was used to create routes, manage requests and responses, and simplify backend development. It helps structure the server logically and efficiently.

6. MongoDB

MongoDB is a NoSQL database used to store registration form data. It provides a flexible document-based structure, making it easy to insert, update, and retrieve student details. It integrates smoothly with Node.js applications.

7. Mongoose

Mongoose is an ODM (Object Data Modeling) library for MongoDB. It simplifies database operations by allowing schema creation and easy interaction with collections. It helps maintain clean and structured database code.

8. Git & GitHub

Git was used for version control, enabling team collaboration and tracking code changes. GitHub was used to store the code repository online and manage project updates effectively.

9. VS Code (Visual Studio Code)

VS Code was the main code editor used in this project. It offers extensions, debugging tools, and a clean interface, making development faster and easier.

10. Postman

Postman was used to test backend APIs. It helped verify if data was correctly being sent to the server and stored in MongoDB.

4.OUTCOMES

The development of the full-stack College Website resulted in several valuable technical and practical outcomes. One of the major outcomes was gaining hands-on experience in building a complete web application from scratch using modern web technologies. Through this project, we learned how to design a clean and responsive user interface using HTML, CSS, and JavaScript, ensuring smooth navigation and readability across different devices.

On the backend, we successfully implemented server-side functionalities using Node.js and Express.js. This enhanced our understanding of API creation, routing, request handling, and integrating the frontend with the backend. Another significant achievement was learning how to store and manage data using MongoDB. By working with a NoSQL database, we gained insights into database connectivity, schema design (if using Mongoose), and CRUD operations, which are essential skills for full-stack development.

The successful integration of the registration form with the database demonstrated our ability to implement real-life data processing and validation. In addition to technical knowledge, the project improved our teamwork, problem-solving, and time-management skills. Overall, the project helped us understand the complete workflow of web development and strengthened our confidence to build more advanced full-stack applications in the future.

5. OVERVIEW OF PROJECT

The project involves building a comprehensive front-end interface for a university landing page. The design follows a clean layout with a logical hierarchy of sections. The interface is organized into:

- **Topbar section** with quick notices and search functionality.
- **Header section** with logo, navigation links, and CTA buttons.
- **Sticky main navigation bar** with multi-level dropdown menus.
- **Hero image slider** showcasing key announcements or programs.
- **Recognition & Awards section** highlighting accreditations.
- **Programs Grid section** displaying academic departments.
- **Rich footer** containing links, contact details, and social media icons.

The system is optimized using modern CSS layout techniques such as Grid and Flexbox, combined with interactive JavaScript elements. Emphasis is placed on ensuring browser compatibility, optimized file structure, and an intuitive user flow.

2.1 PURPOSE AND GOALS

Purpose

The primary purpose is to design and develop a front-end interface that represents Dayananda Sagar University in a professional, organized, and user-friendly manner. The website aims to deliver accurate information while providing an enjoyable and seamless browsing experience.

Goals

1. **Provide an intuitive navigation structure** using dropdowns and submenus.
 2. **Showcase university achievements** through a dedicated recognition and awards section.
 3. **Display academic offerings** effectively using a responsive grid layout.
 4. **Ensure accessibility and performance**, enabling smooth use across devices.
 5. **Implement dynamic features** such as sliders and animations to increase engagement.
 6. **Maintain branding consistency** through uniform color schemes, typography, and alignment.
 7. **Support scalability**, allowing more pages or backend services to be integrated easily.
-

2.2 TECHNOLOGY USED

The project is built using standard and lightweight front-end technologies.

HTML5

Used for structuring the content and defining semantic elements such as header, nav, main, section, article, footer, and lists.

CSS3

Used to design the layout, animations, responsive structure, and overall visual appearance. Key CSS features used include:

- CSS Grid Layout
- Flexbox Layout
- Media Queries
- Transitions and hover effects
- Box shadows and gradients
- Responsive typography

JavaScript (ES6)

Used for:

- Navigation menu toggle
- Dropdown activation for desktop and mobile
- Hero image slider logic
- Scroll reveal animations using IntersectionObserver
- Footer year update
- Simple animation controls

Development Tools

- VS Code (code editor)
- Live Server extension (testing)
- Browser developer tools (debugging)
- Git (version control - optional)

Optional Tools

- Figma (for UI design mockups)

- XAMPP or other local server (if deploying a backend later)

3. FUNCTIONAL REQUIREMENTS

The website must meet several functional requirements for correct operation.

3.1 Interface Requirements

- The UI must be responsive across mobile, tablet, and desktop.
- Navigation should remain clearly visible and easy to use.
- Sections should display content in an organized, accessible manner.

3.2 Navigation Requirements

- Dropdown menus must expand on hover in desktop mode.
- Dropdown menus must expand on tap/click in mobile mode.
- The menu should collapse cleanly when the toggle button is used.

3.3 Hero Slider Requirements

- Should support auto sliding at set intervals.
- Should allow manual navigation using arrows and dot indicators.
- Must fade images smoothly with no flickering.

3.4 Content Display Requirements

- Awards section must display all cards neatly in grid or flex layout.
- Programs section must adapt dynamically to screen width using CSS Grid.

3.5 Animation Requirements

- Scroll animations must trigger when sections enter the viewport.
- Animations must not cause lag or layout shift.

3.6 Footer Requirements

- Footer should include address, contact details, important links, and social buttons.
- Current year must update automatically using JavaScript.

3.7 Performance Requirements

- The page must load quickly on all devices.
- No external libraries should slow down loading.
- Code should follow optimization best practices.

4. CODE SNIPPETS

Below are some sample excerpts. You may insert screenshots in your final report.

4.1 Multi-Level Dropdown Navigation

```
<li class="dropdown">
  <a href="#" class="dropbtn">INTERNATIONAL ▼ </a>
  <ul class="dropdown-content">
    <li><a href="international-admissions.html">International Admissions</a></li>
    <li><a href="international-students.html">International Students</a></li>
    <li><a href="global-collaboration.html">Global Collaborations</a></li>
  </ul>
</li>
```

```
<h2>B.Tech Admissions 2026-27</h2>
<p>Engineering excellence with industry-linked curriculum and placement support.</p>
<div class="hero-actions">
  <a class="btn primary" href="#">Apply</a>
  <a class="btn ghost" href="#">Program Details</a>
</div>
</div>
</div>

<div class="slide" data-index="1" aria-hidden="true" style="background-image:url('images/banner2.png')">
  <div class="hero-content reveal">
    <h2>Executive MBA – Oct 2025</h2>
    <p>Weekend classes for working professionals. Limited seats available.</p>
    <div class="hero-actions">
      <a class="btn primary" href="#">Register</a>
      <a class="btn ghost" href="#">Download Brochure</a>
    </div>
  </div>
</div>

<button class="slider-control prev" aria-label="Previous slide">&lsaquo;</button>
<button class="slider-control next" aria-label="Next slide">&rsaquo;</button>
<div class="slider-dots" aria-hidden="false"></div>
</div>
</section>

<!-- Recognition & awards -->
<section class="awards-section reveal" aria-label="Recognition and accreditations">
  <div class="section-inner">
    <h2>Recognition & Accreditations</h2>
```

4.2 CSS — Scroll Reveal Animation

```
.reveal {
  opacity: 0;
  transform: translateY(20px);
  transition: opacity 0.8s ease, transform 0.8s ease;
```

```
}
```

```
.reveal.in-view {  
  opacity: 1;  
  transform: translateY(0);  
}
```

```
hero h1{font-size:64px; margin:0 0 8px 0; letter-spacing:1px}  
hero .sub{font-size:18px; opacity:0.95; margin-bottom:14px}  
cta{display:inline-block; background:var(--yellow); padding:12px 18px; border-radius:6px; color:█#000; font-weight:700; text-decoration:none}  
  
* arrows */  
arrow(position:absolute; top:50%; transform:translateY(-50%); width:48px; height:48px; border-radius:50%; border:none; background:█rgba(255,255,255,0.5);  
left{left:18px}  
right{right:18px}  
  
* responsive */  
media (max-width:900px){  
  .hero{height:360px}  
  .hero h1{font-size:38px}  
  .main-nav{display:none}  
}  
  
* ===== Vars & reset ===== */  
root{  
  --max-width:1100px;  
  --muted:█#6b7986;  
  --card:█#ffffff;  
  --shadow: 0 8px 26px █ rgba(8,18,30,0.04);  
  --ease:cubic-bezier(.2,.9,.3,1);  
  --accent: █#0b3760;  
}  
  
{box-sizing:border-box}  
html,body{height:100%}  
body{  
  margin:0;  
  font-family:Inter,system-ui,-apple-system,"Segoe UI",Roboto,"Helvetica Neue",Arial;  
  color:█#0b2d3b;  
  background:█#f6f8fb;  
  -webkit-font-smoothing:antialiased;  
  -moz-osx-font-smoothing:grayscale;  
  line-height:1.45;
```

4.3 JavaScript — IntersectionObserver

```
const observer = new IntersectionObserver(entries => {  
  entries.forEach(entry => {  
    if (entry.isIntersecting) {  
      entry.target.classList.add('in-view');  
      observer.unobserve(entry.target);  
    }  
  });  
}, { threshold: 0.10 });
```

```
document.querySelectorAll('.reveal')  
  .forEach(el => observer.observe(el));
```

4.4 JavaScript — Mobile Menu Toggle

```
const toggleBtn = document.getElementById('mobile-toggle');
const menu = document.getElementById('primary-menu');
```

```
toggleBtn.addEventListener('click', () => {
  menu.classList.toggle('open');
});
```

4.5 JavaScript — Hero Slider

```
function goToSlide(i) {
  slides.forEach((slide, index) => {
    slide.style.opacity = index === i ? '1' : '0';
  });
  currentIndex = i;
}
```

```
// prev/next
slider.querySelector('.prev')?.addEventListener('click', () => { reset(); goTo((current-1+slides.length)%slides.length); });
slider.querySelector('.next')?.addEventListener('click', () => { reset(); goTo((current+1)%slides.length); });

function start(){
  timer = setInterval(() => {
    goTo((current+1)%slides.length);
  }, interval);
}
function reset(){
  clearInterval(timer);
  start();
}

// init
goTo(0);
start();

// pause on hover/focus for accessibility
[slider, ...slides].forEach(el => {
  el.addEventListener('mouseenter', () => clearInterval(timer));
  el.addEventListener('mouseleave', start);
  el.addEventListener('focusin', () => clearInterval(timer));
  el.addEventListener('focusout', start);
});

})();

/* Scroll reveal (simple) */
(function(){
  const obs = new IntersectionObserver(entries => {
    entries.forEach(e => {
      if(e.isIntersecting) {
        e.target.classList.add('in-view');
        obs.unobserve(e.target);
      }
    });
  });
  document.querySelectorAll('.reveal').forEach(el => {
    obs.observe(el);
  });
})();
```


5. RESULTS

5.1 Functional Results

- All navigation menus function correctly in both desktop and mobile layouts.
- Hero slider transitions smoothly with automatic and manual controls.
- Scroll animations execute correctly on all major browsers.
- Sections such as Recognition & Awards and Programs Grid display accurately on deployment.

5.2 Performance Results

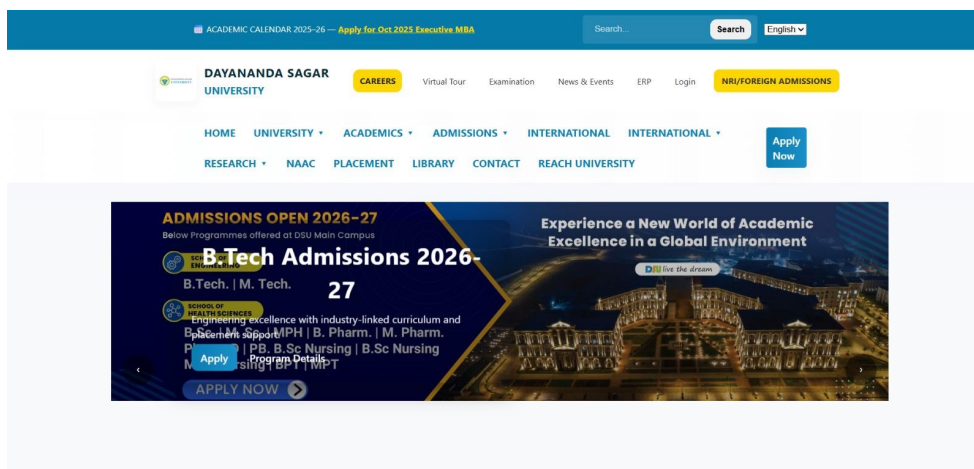
- Load time is significantly optimized due to absence of heavy libraries.
- CSS Grid ensures minimal DOM complexity and efficient reflow.
- JavaScript execution is lightweight and well-scoped.

5.3 Responsiveness Results

- Website adapts fluidly from large desktop screens to small mobile screens.
- Dropdowns, grids, and images resize proportionally without distortion.

5.4 Usability Results

- Clear structure improves navigation for new visitors.
- Content is easy to interpret due to consistent spacing and typography.
- Visual elements such as shadows and gradients improve readability.



Student Registration

Complete this form to register as a student. All fields marked with * are required.

Personal Information

First Name *

Last Name *

Email Address *

Phone Number *

Date of Birth *



Gender *



Address Information

Street Address *

Enter your street address

City *

City

State *

State

ZIP Code *

ZIP Code

Country *

India

Account Information

Password *

Create a strong password

Minimum 8 characters

Confirm Password *

Re-enter password

☐ I agree to the [Terms and Conditions](#) *

Register

Clear

The screenshot shows a GitHub repository page for 'FSD-FRONT-END' by user 'Brahmapruthi'. The repository is public and has 2 commits. The file list includes: images, .gitignore, MONGODB_SETUP.md, README.md, README_MongoDB.md, about.html, index.html, olajs, om.css, package-lock.json, and package.json. The commit history shows that all files were added in a single commit by 'Brahmapruthi' 13 minutes ago. The right sidebar contains sections for 'About' (describing the repository's focus on front-end development), 'Releases' (no releases published), 'Packages' (no packages published), and 'Deployments' (2 deployments).

6. UNIQUE FEATURES

6.1 Lightweight Custom Slider

Unlike typical websites that use libraries such as Swiper.js, this project uses a custom-built slider for improved load performance and full control over behavior.

6.2 Multi-Level Navigation

The navigation system supports:

- Primary dropdown
 - Nested submenu
 - Mobile toggle mode
- This ensures flexibility for future expansion.

6.3 IntersectionObserver-Based Animations

Animations run efficiently and activate only when necessary, reducing CPU usage compared to traditional scroll event listeners.

6.4 Modular Design

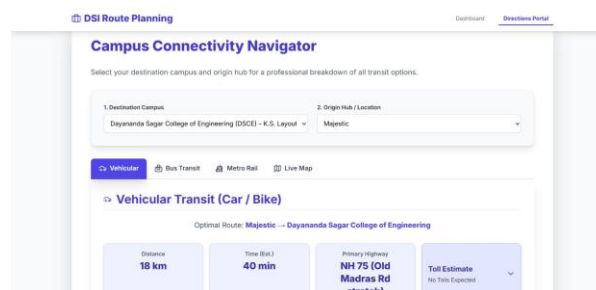
HTML, CSS, and JS are cleanly separated into files, making maintenance easy and avoiding code duplication.

6.5 Pure CSS Responsive Grid

Instead of relying on frameworks like Bootstrap, CSS Grid is used to create a completely flexible, scalable programs section.

6.6 Accessibility Considerations

- Aria labels for key elements.
- High contrast colors.
- Keyboard navigation compatibility.
- Mobile-responsive touch targets.



DSU Library|Collaborative Learning Space

Central Library

Gateway to Academic Excellence

Welcome to the DSU Central Library. We are committed to fostering an environment conducive to intellectual growth and providing access to a world-class collection of print and digital resources.

E-Resource Access

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Print Collection

Explore our vast collection of 1,00,000+ print volumes across all academic disciplines.

[Borrowing Details →](#)

Dedicated Helpdesk

Get assistance with reference, research methods, and citation styles from our expert staff.

[Contact Research Desk →](#)



7. Main University Office & Location

DSU Main Administration Block

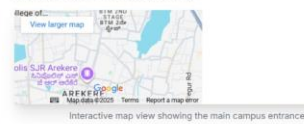
Official Correspondence

📍 **DSU Global Campus, Knowledge Park**, Ring Road, Sector 15, New City, 560001, State of Bharat.

☎️ **Phone (Main Switchboard):**+91 80 1234 5678

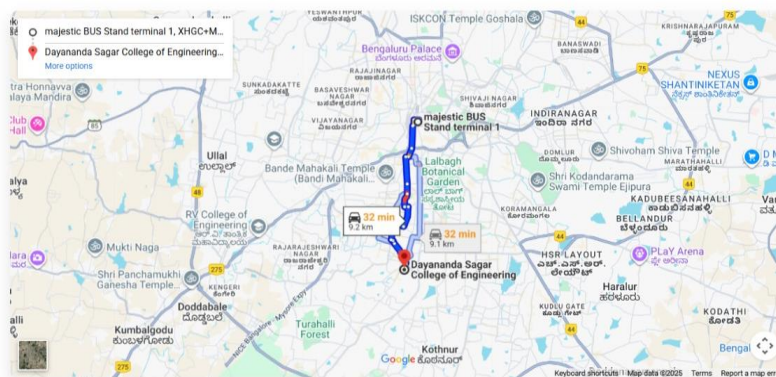
✉️ **Email (General Enquiries):**+ info@dsu.edu.in

Interactive Location Map



Live Geospatial Visualization

Live map route from **Majestic** to **Dayananda Sagar College of Engineering**. Adjust the transport mode and view real-time traffic conditions within the embedded map.



7. CONCLUSION

The project accomplishes its objective of creating a modern, structured, and responsive university website interface. The use of pure HTML, CSS, and JavaScript ensures a lightweight system that is fast and easy to maintain. The inclusion of dynamic components such as the hero slider and scroll reveal animations enhances the interface without compromising performance.

The website is scalable, meaning more modules, backend integrations, or student portals can be added later. With its clean design and functional architecture, the system provides an excellent foundation for a complete and professional university website.

Overall, the project successfully integrates usability, aesthetics, and efficiency, making it suitable for real-world deployment and academic evaluation.

Github link: [CLICK HERE FOR GITHUB LINK:](#)

