



**DAYANANDA SAGAR  
UNIVERSITY**



**SCHOOL OF  
ENGINEERING**

Devarakaggalahalli, Harohalli, Kanakapura Road, Ramanagara District, Karnataka – 562 112

---

## **Department of CSE (Data Science)**

**A.Y: 2024-2025**

### **Department Strategic Plan for 2024-2025**

#### **DAYANANDA SAGAR UNIVERSITY**

Dayananda Sagar University is a proud member of the Dayananda Sagar Institutions family, which was founded in the early 1960s by a visionary, late Sri Dayananda Sagar. These institutions have morphed into an educational power house, spread over five campuses, catering to the education needs of over 17,000 students with diverse specializations. With a legacy of over six decades, Mahatma Gandhi Vidya Peetha Trust, Bengaluru, established Dayananda Sagar University during 2014, with the objective of meeting the needs of quality higher education in this part of the world.

Dayananda Sagar University is a State Private University of unitary nature, established on 16/05/2014 via Karnataka State Government Notification, enacted through Dayananda Sagar University Act, 2012, the Karnataka Act No. 20 of 2013. DSU is recognized by UGC, AICTE, BCI, INC, NMC, and PCI, and is a recognized SIRO from Ministry of Science and Technology, GoI.

DSU presently offers 35 under graduate programs and 15 post graduate programs under seven different Schools, as well as executive education, in addition to PhD, covering a wide range of areas – engineering, management, arts, commerce, science and humanities, pharmacy,



DAYANANDA SAGAR  
UNIVERSITY



SCHOOL OF  
ENGINEERING

Devarakaggalahalli, Harohalli, Kanakapura Road, Ramanagara District, Karnataka – 562 112

---

## Department of CSE (Data Science)

A.Y: 2024-2025

allied health sciences, nursing, medicine and law. DSU caters to over 7,000 students and scholars, and has over 400 well-qualified faculty members.

DSU boasts Atal Innovation Centre, an incubation centre established with the financial support from Atal Innovation Mission, NITI Aayog, and is a recognized nodal centre of Virtual Labs under IIT Roorkee, a MHRD initiative. DSU has been awarded fourth rank with four stars under the category of New University from Karnataka State Universities Ranking Framework, with 5 out of 5 stars under two categories – Teaching Excellence and Research Excellence.

### **Vision**

To be a centre of excellence in education, research and training, innovation and entrepreneurship and to produce citizens with exceptional leadership qualities to serve national and global needs.

### **Core Values**

*The Pursuit of Excellence:* A commitment to strive continuously to improve ourselves and our systems, with the aim of becoming the best in our field.



DAYANANDA SAGAR  
UNIVERSITY



SCHOOL OF  
ENGINEERING

Devarakaggalahalli, Harohalli, Kanakapura Road, Ramanagara District, Karnataka – 562 112

---

## Department of CSE (Data Science)

A.Y: 2024-2025

*Fairness:* A commitment to objectivity and impartiality, to earn the trust and respect of the society.

*Leadership:* A commitment to lead responsively and creatively in educational and research processes.

*Integrity and Transparency:* A commitment to be ethical, sincere and transparent in all activities and to treat all individuals with dignity and respect.

### Mission

To achieve our objectives in an environment that enhances creativity, innovation and scholarly pursuits while adhering to our vision.

### DEPARTMENT OF CSE ( DATA SCIENCE)

#### Vision

- To produce Engineers for Industry and Society in the field of Computer Science and Engineering (Data Science) by providing excellence in Education, Research and Entrepreneurship with a focus on sustainable solutions to fulfill global needs.

#### Mission



**DAYANANDA SAGAR  
UNIVERSITY**



**SCHOOL OF  
ENGINEERING**

Devarakaggalahalli, Harohalli, Kanakapura Road, Ramanagara District, Karnataka – 562 112

---

## **Department of CSE (Data Science)**

**A.Y: 2024-2025**

The Department of Computer Science and Engineering (Data Science) is committed to:

- M1: Impart quality technical education, critical thinking and sustainable learning practices in the domain of Computer Science and Engineering (Data Science) with ethical values and leadership qualities.
- M2: Inculcate Interdisciplinary Research and Innovation by establishing Industry-Academia collaboration to solve critical problems.
- M3: Prepare graduates to become Ethical Data Science practitioners to contribute in data driven global society.

## **Programs Offered**

### **UG Programs**

- B.Tech - CSE (Data Science) (120) – 4 Years Duration-2023-24

## **Strategic Plan model-2023-24**

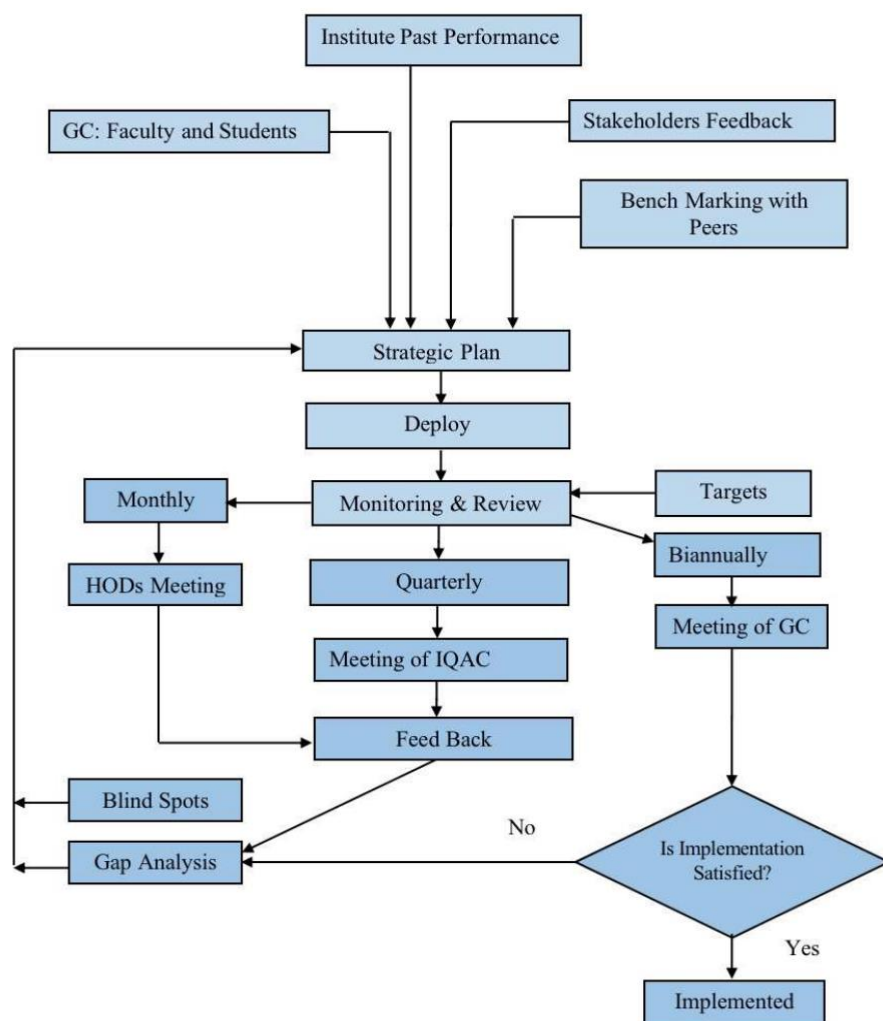


Figure 1 Flow Chart representing Department Strategic Plan

## STRATEGIC PLANNING

- SWOC ANALYSIS



DAYANANDA SAGAR  
UNIVERSITY



SCHOOL OF  
ENGINEERING

Devarakaggalahalli, Harohalli, Kanakapura Road, Ramanagara District, Karnataka – 562 112

## Department of CSE (Data Science)

A.Y: 2024-2025



### • IDENTIFYING GOALS

#### Short-term Goals of the Department (1-2 Years):

- ❖ Foundation Building: Bridge courses, skill development workshops, and value-added courses to lay a strong foundation.
- ❖ Hands-on Learning: Codeathons, Datathons, and Hackathons to foster practical skills and innovation.



**DAYANANDA SAGAR  
UNIVERSITY**



**SCHOOL OF  
ENGINEERING**

Devarakaggalahalli, Harohalli, Kanakapura Road, Ramanagara District, Karnataka – 562 112

---

### **Department of CSE (Data Science)**

**A.Y: 2024-2025**

- ❖ Centre of Excellence: Establishing Center of Excellence (COE) in CSE (Data Science)
- ❖ Inter-school activities, SOE + Medicine + Dental
- ❖ Promote that every faculty to publish at least one research article every year in refereed / SCI Journals / Conferences.
- ❖ Increasing student clubs

#### **Medium-term Goals of the Department (2-3 Years):**

- ❖ Strengthen the quality research activities among faculty and students.
- ❖ MoUs with Industry for curriculum development, delivery, certifications, Internship
- ❖ NBA accreditation.

#### **Long-term Goals of the Department (4-5 Years):**

- ❖ Improve quality of publications
- ❖ Plan for hosting Springer Conference
- ❖ Faculty Skill Upgradation to teach new and updated curriculum
- ❖ Inter-school activities, SOE + Medicine + Dental
- ❖ NBA, NIRF accreditations



DAYANANDA SAGAR  
UNIVERSITY



SCHOOL OF  
ENGINEERING

Devarakaggalahalli, Harohalli, Kanakapura Road, Ramanagara District, Karnataka – 562 112

---

## Department of CSE (Data Science)

A.Y: 2024-2025

- ❖ Hosting High quality International Conference/ National Hackathon
- ❖ Alumni group for student mentoring, development.

The University has a **student centric approach and stakeholders are the final beneficiary of these developments.**

University approved curriculum is strictly adhered to and faculty members and students are encouraged to take up online short term courses/ value added courses to enhance skills and technical abilities. Encouraging high quality research, industry engagement, entrepreneurship and social outrage that are targeted at helping people of the region.

The activities are planned in the beginning of every academic year through the Academic calendar and suggestions are sought from the faculty members.

Development plan is a quality initiative which concentrates on the development of the departments in terms of infrastructure, faculty strength, faculty achievement, students' development and students' achievement.





DAYANANDA SAGAR  
UNIVERSITY



SCHOOL OF  
ENGINEERING


Devarakagalahalli, Harohalli, Kanakapura Road, Ramanagara District, Karnataka – 562 112

## Department of CSE (Data Science)

A.Y: 2024-2025

The plan is finalized by the HOD in consultation with the faculty members. This plan is then discussed in the HOD's meeting with the Dean followed by approval from the management.

### • ACTION PLAN

SL NO	FOCUSED AREA	ACTION PLAN
1	Program offered	<p><b>Diverse Courses</b></p> <p>To be in the forefront of global technological advancements and to meet the current and future industry requirements, the institution continuously offers diverse courses.</p>  <p><b>Year 1</b></p> <ul style="list-style-type: none"> <li><b>Foundation Courses</b> <ul style="list-style-type: none"> <li>Linear Algebra and Differential Equations</li> <li>Engineering Physics</li> <li>Engineering Graphics And Design Thinking</li> <li>Introduction to Electronics</li> <li>Introduction to Electrical Engineering</li> </ul> </li> <li><b>Skill Enhancements</b> <ul style="list-style-type: none"> <li>C Programming for Problem Solving</li> <li>Python Programming for Problem Solving</li> </ul> </li> <li><b>Liberal Studies/ Ethical Courses</b> <ul style="list-style-type: none"> <li>Technical English</li> <li>Constitution of India and Professional Ethics</li> <li>Biology for Engineers</li> <li>Python/R Programming</li> </ul> </li> </ul> <p><b>Year 2</b></p> <ul style="list-style-type: none"> <li><b>CSE Courses</b> <ul style="list-style-type: none"> <li>Transform Calculus, Fourier Series and Numerical Techniques</li> <li>Digital Logic Design</li> <li>Discrete Mathematics and Graph Theory</li> <li>Basics of Computer Networks</li> <li>Probability, Statistics &amp; Stochastic Processes</li> <li>Computer Organization and Architecture</li> </ul> </li> <li><b>CSE Courses</b> <ul style="list-style-type: none"> <li>Data Structures</li> <li>Design and Analysis of Algorithms</li> <li>Database Management System</li> </ul> </li> <li><b>Skill Enhancements</b> <ul style="list-style-type: none"> <li>Introduction to Linux Programming</li> <li>Introduction to Web Development</li> <li>DevOps</li> <li>NoSQL, MongoDB, MySQL</li> </ul> </li> </ul> <p><b>Year 3</b></p> <ul style="list-style-type: none"> <li><b>CSE (Data Science) Courses</b> <ul style="list-style-type: none"> <li>Finite Automata and Formal Language</li> <li>Software Engineering and Project Management</li> <li>OODS with Java</li> <li>Fundamentals of Data Science</li> <li>Compiler Design and System Software</li> <li>Advanced Data Science</li> </ul> </li> <li><b>Professional DS courses</b> <ul style="list-style-type: none"> <li>Data Warehouse and Knowledge Mining</li> <li>Data Analytics with Hadoop</li> <li>Pattern Analysis in Data Science</li> <li>Data Privacy and Security</li> </ul> </li> <li><b>Skill Enhancements</b> <ul style="list-style-type: none"> <li>Data Analytics and Visualization Tools</li> <li>Introduction to IOT</li> <li>Management and Entrepreneurship</li> <li>S&amp;S Programming</li> <li>Special topic projects</li> </ul> </li> </ul> <p><b>Year 4</b></p> <ul style="list-style-type: none"> <li><b>Cutting Edge Technologies</b> <ul style="list-style-type: none"> <li>Bio Inspired Learning</li> <li>NLP Tools &amp; Teckstack Techniques</li> <li>Full Stack Development</li> <li>Social Network Analysis</li> <li>Recommender Systems</li> <li>Augmented Reality and Virtual Reality</li> <li>Information Retrieval</li> <li>Knowledge Engineering and Expert Systems</li> </ul> </li> <li><b>Interdisciplinary Elective courses</b> <ul style="list-style-type: none"> <li>Foundations of Data Science</li> <li>Data Exploration and Visualization</li> <li>Business Analytics</li> </ul> </li> <li><b>Skill Enhancements</b> <ul style="list-style-type: none"> <li>Research Internship</li> <li>Industry Internship</li> <li>Research Projects</li> <li>Major Projects</li> </ul> </li> </ul> <p><b>DS Jobs</b></p>



DAYANANDA SAGAR  
UNIVERSITY



SCHOOL OF  
ENGINEERING

Devarakaggalahalli, Harohalli, Kanakapura Road, Ramanagara District, Karnataka – 562 112

## Department of CSE (Data Science)

A.Y: 2024-2025

	<div><div>Curriculum</div><div>Achieving Excellence in Technical Education, Research and Consulting through an Outcome Based Curriculum focusing on Continuous improvement and Innovation by Benchmarking against the Global Best Practices.</div><div><ul style="list-style-type: none"><li>Aligns with the IIT Standards</li><li>Aligns with Latest Industry demands</li><li>focus on NEP-2020 features</li></ul></div><div>Syllabus revision done as per the Industry needs</div><div>Curriculum Enrichment: Incorporated courses having focus on EMPLOYABILITY/ ENTREPRENEURSHIP/ SKILL DEVELOPMENT</div><div><div>Curriculum Standards</div><div><div><div>Caters</div><div>Higher Studies</div><div>Industry</div><div>Research &amp; Development</div><div>Competitive Exams</div></div><div><div>Institution</div><div>IITM, IITD, IITB, IITKG, IITR</div><div>NITK, NITW, VIT, NITR, VTU</div><div>Bryant University</div><div>University of Melbourne</div></div><div><div>Principles</div><div>Flexibility to work across many disciplines</div><div>Fundamental skills and Knowledge</div><div>Innovative &amp; Recent developments</div><div>Succeed in rapidly changing field</div></div></div><div><div>Total Credits: 162</div><table><tr><th>Blended courses</th><th>2020-21</th><th>2021-22</th><th>2022-23</th><th>2023-24</th></tr><tr><td>Math courses</td><td>4</td><td>4</td><td>5</td><td>5</td></tr><tr><td>Core CSE courses</td><td>12</td><td>12</td><td>12</td><td>12</td></tr><tr><td>Professional courses</td><td>17</td><td>17</td><td>22</td><td>-</td></tr><tr><td>Industry Skill enhancement courses/ Projects</td><td>5</td><td>5</td><td>6</td><td>-</td></tr><tr><td>Allied courses</td><td>8</td><td>8</td><td>8</td><td>-</td></tr></table></div></div></div>	Blended courses	2020-21	2021-22	2022-23	2023-24	Math courses	4	4	5	5	Core CSE courses	12	12	12	12	Professional courses	17	17	22	-	Industry Skill enhancement courses/ Projects	5	5	6	-	Allied courses	8	8	8	-
Blended courses	2020-21	2021-22	2022-23	2023-24																											
Math courses	4	4	5	5																											
Core CSE courses	12	12	12	12																											
Professional courses	17	17	22	-																											
Industry Skill enhancement courses/ Projects	5	5	6	-																											
Allied courses	8	8	8	-																											



DAYANANDA SAGAR  
UNIVERSITY



SCHOOL OF  
ENGINEERING

Devarakaggalahalli, Harohalli, Kanakapura Road, Ramanagara District, Karnataka – 562 112

## Department of CSE (Data Science)

A.Y: 2024-2025

3.	<b>Teaching - Learning and Evaluation</b>	<p><b>Teaching Plan:</b></p> <p>Preparation of course plan module-wise and be uploaded onto Moodle</p> <p><b>Modes of Learning:</b></p> <ul style="list-style-type: none"> <li>• participation in conferences, workshops, technical competitions and events.</li> <li>• access to e-journals for knowledge enhancement.</li> <li>• Project Based Learning, Independent Learning (Access to e-journal for knowledge enhancement)</li> <li>• remedial extra classes;</li> <li>• inspirational talks, lectures and workshops by personnel of repute;</li> <li>• exposure to video and audio e-learning materials;</li> </ul> <p><b>Focus on Innovation in Teaching</b></p> <ul style="list-style-type: none"> <li>• Computer Assisted Learning (In-class Programming, Moodle, E-Journals, Quiz)</li> <li>• Programming skills building: Improving the quality of lab experience</li> <li>• Competitive Programming: Hackathons and participation on Codechef</li> <li>• Flip classes</li> </ul> <p><b>Focus on Students Encouragement</b></p> <ul style="list-style-type: none"> <li>• Academic competitions,</li> <li>• Club activities:</li> <li>• hackathons for students: development of gaming applications,</li> <li>• brain-storming sessions, and group discussions</li> <li>• Interactions with alumni,</li> <li>• Internship in industry</li> </ul> <p><b>Focus on Quality Project</b></p> <ul style="list-style-type: none"> <li>• Community-based projects Funded by state government</li> <li>• Innovative projects: recognized by the industry</li> <li>• Research projects under the curriculum: UG Research</li> </ul> <p><b>Focus of Quality of the Exam</b></p> <ul style="list-style-type: none"> <li>• Fixed Examinations: written quizzes, fixed-hour tests, and examinations</li> <li>• Flexible Examinations: oral presentation, reflection notes, mini-projects, online coding competitions</li> </ul> <p><b>Focus on Unique Pedagogy and Assessment : Outcome-Based</b></p>
----	---	---



DAYANANDA SAGAR  
UNIVERSITY



SCHOOL OF  
ENGINEERING

Devarakaggalahalli, Harohalli, Kanakapura Road, Ramanagara District, Karnataka – 562 112

**Department of CSE (Data Science)**

**A.Y: 2024-2025**

<b>4</b>	<b>Research, Innovations and Extension</b>	<b>Research Thrust Areas</b> <ul style="list-style-type: none"><li>● Machine intelligence (AI&amp;ML, Computer Vision, Digital Image Processing)</li><li>● Big Data Analytics,</li><li>● Data Science</li><li>● Cloud Analytics</li><li>● Cyber Analytics and Forensic</li><li>● Medical Data Analytics</li></ul> <b>Encouraging faculties for publishing papers in reputed journals, Patents,</b> <b>Book/Book Chapters</b>
----------	--	---



DAYANANDA SAGAR  
UNIVERSITY



SCHOOL OF  
ENGINEERING

Devarakaggalahalli, Harohalli, Kanakapura Road, Ramanagara District, Karnataka – 562 112

---

**Department of CSE (Data Science)**

**A.Y: 2024-2025**

	<b>Infrastructure and Learning Resources</b>	<b>Laboratory details</b> <ul style="list-style-type: none"><li>• Data Science Laboratory (A-410)</li></ul> <b>Department Facilities</b> <ol style="list-style-type: none"><li>1. ICT Enabled Classrooms -1</li><li>2. CCTV Camera in Classrooms and Lab</li><li>3. Internet Facility</li></ol> <div>Wifi – 100 MBPS                      LAN-1 GBPS</div>
--	--	--



DAYANANDA SAGAR  
UNIVERSITY



SCHOOL OF  
ENGINEERING

Devarakagalahalli, Harohalli, Kanakapura Road, Ramanagara District, Karnataka – 562 112

## Department of CSE (Data Science)

A.Y: 2024-2025

### Student Support and Progression



DAYANANDA SAGAR  
UNIVERSITY

### Industry Collaborations



SCHOOL OF  
ENGINEERING

#### ALTAIR & MATLAB

- ❑ 30+ Projects using ALTAIR Rapid Miner Tool
- ❑ 20+ Projects on IOT domain in progress
- ❑ 20+ Special topic Projects
- ❑ 15+ Major Projects

Industry Knowledge Transfer Outcomes : ALTAIR/ MATLAB

#### Project Statistics

Semester	Course /Certification/ Projects	Platform	No. of Students
7 <sup>th</sup> , 5 <sup>th</sup> , 3 <sup>rd</sup> Sem	Data Engineering Professional	Rapid Miner Studio	160
7 <sup>th</sup> , 5 <sup>th</sup> , 3 <sup>rd</sup> Sem	Data Engineering Master	Rapid Miner Studio	140+
6 <sup>th</sup> & 4 <sup>th</sup> Sem	Applications and Use case Machine Learning Certification	Rapid Miner Studio	50+
3 <sup>rd</sup> Sem	MATLAB Certifications	MATWORKS	150+



#### Student Enrichment Events- Statistics 2024



**Short Term Training**  
**Accelerating Success**  
16th February, 2024



**Contest**  
**Quiz-Venture Enhance Your Skills with C**  
1st March, 2024



**Webinar on**  
**Cyber Strategies for Cutting-Edge Data Science**  
6th March, 2024



**AptiPrecision: Fine-Tuning Numerical Abilities**  
7th March, 2024



**Webinar on**  
**Exploring Paths In Data Science Careers**  
11th March, 2024



**Talk on**  
**DataspHERE: IEEE Data Science Exploration**  
14th March, 2024



DAYANANDA SAGAR  
UNIVERSITY

### Internships & Placements



SCHOOL OF  
ENGINEERING

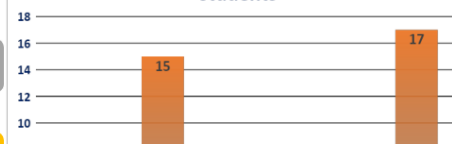
#### Internships- Final Year Students

- 25 students with 10 to 30k stipend/month

#### Internships- Pre-Final Year

- 5 students with 5 to 10K Stipend/month

#### Placement Statistics of Final Year students







**DAYANANDA SAGAR  
UNIVERSITY**





**SCHOOL OF  
ENGINEERING**

Devarakaggalahalli, Harohalli, Kanakapura Road, Ramanagara District, Karnataka – 562 112

**Department of CSE (Data Science)**

**A.Y: 2024-2025**

	<b>Governance, Leadership and Management</b>	<p><b>Faculty Empowerment Strategies</b></p> <div>  <b>DAYANANDA SAGAR UNIVERSITY</b> </div> <div> <b>FDPs Planned</b> </div> <div>  <b>SCHOOL OF ENGINEERING</b> </div> <div> <p><b>1</b></p> <p><b>Cloud Data Analytics and Distributed Computing:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Overview of big data technologies such as Hadoop, Spark, and Flink.</li> <li><input type="checkbox"/> Hands-on experience with distributed computing frameworks for processing and analyzing large-scale datasets.</li> <li><input type="checkbox"/> Techniques for optimizing data processing pipelines and improving scalability and performance.</li> </ul> <p><b>2</b></p> <p><b>Time Series Forecasting and Anomaly Detection:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Introduction to time series analysis and forecasting techniques.</li> <li><input type="checkbox"/> Hands-on experience with time series forecasting models such as ARIMA (Auto Regressive Integrated Moving Average) and LSTM (Long Short-Term Memory) networks.</li> <li><input type="checkbox"/> Anomaly detection methods using statistical approaches, machine learning algorithms, and deep learning techniques.</li> </ul> </div>
	<b>Institutional Values</b>	<p><b>Promotion of gender equity</b></p> <p><b>A framework of systematized and standardized procedures is adopted and monitored</b></p> <p><b>DSU prescribes and offers several regular academic courses</b></p>