Madan Bhandari University of Science and Technology
Invitation of Applications for Admission to Master of Applied Science in Artificial Intelligence and Master of Applied Science in Data Science

March 3, 2024

1. Introduction

Madan Bhandari University of Science and Technology (MBUST) was established through the promulgation of the Madan Bhandari University of Science and Technology Act, 2079 (2022 AD) on August 3, 2022. This Act grants extensive autonomy to the University creating an enabling environment for developing MBUST into a world-class research-oriented university. MBUST holds the promise of making a direct contribution to the economic development of the country through the creation of new knowledge and technology, which should enhance the competitiveness of the country's economy.

The MBUST ***vision is to be a world-class university*** and the ***mission is to build prosperous and just Nepal***. MBUST is committed to provide world-class education by attracting talented and committed students and academic staff, and providing a conducive environment for research and development activities focused at solving real-life problems of the industry using the state-of-the-art knowledge and technology.

2. Academic Programs

The teaching and research activities of the University will be guided by the real-life problems of the industry. Teaching and research programs of the University will be delivered through the Institutes engaged in research related to specific economic sectors. The students will pursue their study in close collaboration with related industries and are expected to develop a new technology for collaborating industrial partners. This approach is designed to produce graduates who are "job creators" rather than "job seekers".

In December 2023 the first batch of students were enrolled into PhD programs in Organic Agriculture and Forest Biomaterials and Master of Applied Science program in Organic Agriculture.

Academic programs to be offered in May 2024 session are Master of Applied Science in:

1. Artificial Intelligence
2. Data Science

Program structure (Attachment 1) and list of resource persons (Attachment 2) are appended to this notice. Please visit www.mbust.edu.np for more details.

3. Intake, Fees and Scholarships

Program	Total intake	Tuition fee waiver and scholarships	Tuition fee waiver	Fee paying
Master of Applied Science in Artificial Intelligence	Up to 16	For up to 4	For up to additional 4	Up to 8
Master of Applied Science in Data Science	Up to 16	For up to 4	For up to additional 4	Up to 8

Monthly scholarship of Rs.25,000 may be provided to Master's students based on scholastic performance for two years subject to meeting the prescribed performance threshold. Scholarships are subject to availability of resources. Students getting fee waiver and scholarships are required to be engaged in University's research and other activities.

For getting tuition fee waivers and scholarships students will have to commit to serving at the MBUST or institutions placed by the MBUST for at least two years in case of Master's students. The duration of service will be half of the above for students getting only the fee waiver.

If recipients of tuition fee waiver and scholarship leave the study before completion they will have to reimburse the total amount of scholarship received and pay tuition fees for the whole course. The tuition fees for one year is Rs.150,000 for Master's programs.

To encourage only committed students to get admitted and handle the University property with care, the following non-tuition fees will be charged: registration fee of Rs.25,000; refundable deposit of Rs.50,000, which will be refunded on completion of the study; and refundable security deposit of Rs.25,000 towards the compensation for possible damages to the University property associated with the negligence. In addition, a transportation charge will apply for students using office shuttle service to and from Chitlang.

4. Admission Schedule

March 3, 2024	Call for Applications
March 8-31	Application period
April 10	Shortlist publication
April 14 - 15	Written examinations and interview
April 22	Publication of admission list
April 29 – May 5	Admission days
May 14	Course registration
May 15	Orientation
May 16	Instruction starts

5. Eligibility

- 4-year Bachelor's in science/engineering/technology or other relevant fields from recognized universities with CGPA of 2.75 out of 4.0 (or international equivalent).

6. Application Submission

Online application form will be available in MBUST at http://mbust.edu.np from March 8, 2024. Applications must be submitted online. Applications are open to all nationalities. Applications in hard copies or scanned copies shall not be entertained.

Bank details to deposit application fee:
MADAN BHANDARI UNIVERSITY OF SCIENCE AND TECHNOLOGY
A/C No. 01800106701870000001
Nepal Bank Limited
Gabahal Branch, Lalitpur

In case of difficulties in applying online, please contact:

Name: Saroj Joshi

Email Id: Jsaroj284@gmail.com

Contact number: 9868795646

7. Documents and Information to be Submitted

Mandatory documents

1. Academic transcripts
    a. Bachelor's level
    b. Secondary school transcript (grade 12)
    c. Secondary Education Examination transcript (grade 10)
2. Research statement (Attachment 3)
3. Personal statement (Attachment 4)
4. Citizenship certificate/Passport
5. CV
6. Bank voucher/evidence of the deposition of application fee of Rs. 500

Optional documents

1. Publication list
2. Experience certificates
3. Additional transcripts
4. Other documents (not more than five)

8. Selection of Students

Criteria for Selection

The students will be selected based on the following set of criteria.

Criteria	Trans-cripts	Research statement	Personal statement	Special skills	References	Essay writing	Interview	Total
Weighting, %	20	10	15	10	10	10	25	100

Students should submit the names of three referees who can provide the firsthand reference on the students. The students should name only those referees who agree to be interviewed by the University.

Students are encouraged to submit documents showing special achievements/skills which could enhance the chances of their success in the studies.

Students with publication records in peer-reviewed journals and conferences will have an advantage in the selection. Therefore, students are encouraged to provide a list of publications (Attachment 5).

Essay writing and interview will take place at the University premises at Chitlang.

Shortlisting

Students will be shortlisted based on the cumulative score of the first five criteria. The number of students shortlisted will not exceed the double of the planned intake.

Final selection

The final selection for the admission will be based on the cumulative score of all criteria.

9. Pledge

The selected students shall be required to sign a pledge committing, among others, to complete the study, serve the MBUST or an institution assigned by the MBUST in lieu of scholarship and fee waiver provided at the time of admission.

10. Briefing on the Programs

An online briefing on the programs will be held on March 17 at 3pm. The meeting ID and passcode of the meeting are copied below.
Meeting ID: 455 501 614 686
Passcode: Em7qs3
Those interested to attend the briefing are requested to send an email to info@mbust.edu.np confirming their attendance.

11. Open House

An Open House for prospective students and interested stakeholders will be held on March 24, 2024 from 11am to 3pm at the University premises at Chitlang. The Open House should help students and other stakeholders to get more information about the academic programs, human resources of the University, interact with the teaching and administrative staff and visit laboratory and other facilities. The participation in the Open House should also help students to get information on the queries they have and get a better idea about the preparation required for the study at the University.

Students are expected to make their own arrangement for the travel to the University for the participation in the Open House.

Information on the University is available at https://www.mbust.edu.np. Inquiries related to this Invitation may be forwarded to info@mbust.edu.np.

President
Madan Bhandari University of Science and Technology
Chitlang, Thaha Municipality Ward 9, Bagmati Province

Attachment 1

Program Structure

A. Artificial Intelligence

Program Description

Artificial intelligence (AI) has become an important part of our society. It has created opportunities to transform existing structures and models in businesses, the public sector, and society. Machine learning (ML), an important component for building AI applications, is gaining popularity in automated decision-making with the availability of large-scale data and affordable infrastructure. With these developments, skilled AI and ML engineers and data scientists are in high demand with a wide range of career opportunities everywhere. The program aims to give fundamental knowledge and practical skills needed to design, build, and apply AI systems in a chosen area of specialization.

Designing applications which delivers an impact and contributes to sustainable development is an important aspect of the training. Students will undertake projects relevant to one or more Sustainable Development Goals (SDGs). Furthermore, these goals are introduced in the elective courses along with the use cases in core courses where AI has had an impact.

This two-year program has been developed to fill the gap in the availability of skilled AI scientists and engineers in Nepal. The program will offer rigorous training in the foundations and application-oriented artificial intelligence. Graduates of this program will have explored a variety of domains such as agriculture, healthcare, industry automation and social media to contribute to economies and societies. They will be capable of undertaking careers in the industry as well as academia.

Learning Outcomes and Career Opportunities

Students who complete the program will be able to demonstrate the ability to integrate AI in various social and organizational contexts. Furthermore, they can design and evaluate AI innovations. They will possess competence and skills to integrate knowledge, analyze complex situations with limited information, identify and creatively address critical issues, plan and execute advanced tasks within set time frames, evaluate their work, effectively communicate findings both nationally and internationally, and possess the skills needed for research, development, or qualified employment. Specific learning objectives of the program include:

- Understand the fundamentals of artificial intelligence, machine learning, natural language processing and computer vision
- Hands-on knowledge of state-of-the-art tools for real-world problem solving
- Analyze and critically discuss ethical issues within AI and that arise from the application of AI
- Review and criticize scientific literature
- Account for the current situation and prospects of AI for some domains such as agriculture, healthcare, IoT, industrial automation and social media

The graduates will be equipped to take roles such as:

- AI scientists at technology companies working on cutting-edge technologies
- Industry-sponsored PhD

- Analyst and scientist working in banking, finance, telecommunication, health, agriculture, and other sectors that require a systematic understanding of AI and the context
- Entrepreneurs of technology-based business start-ups

Program Structure

Semester I

No.	Course	Credit
1	Machine Learning	3
2	Practical Data Science with Python	2
3	Research Methods for Intelligent Systems	1
4	Development Policy	0
5	Group Project (specializing in AI and people-facing applications)	4
	Total Credit	10

Semester II

No.	**Course**	**Credit**
1	Computer Vision	3
2	Entrepreneurship and Innovation Strategies for AI	0
3	Case Studies in Ethics and Fairness in AI	0
4	Natural Language Processing	3
5	Elective	3
	Total Credit	**9**

Semester III

No.	**Course**	**Credit**
1	Advanced Topics in Deep Learning	3
2	Thesis – Part A	12
	Total Credit	**15**

Semester IV

No.	**Course**	**Credit**
1	Thesis – Part B	16
	Total Credit	**16**

Courses for Electives

- Reinforcement learning
- Artificial intelligence and multi-agent systems
- Graphical models
- AI for agriculture
- Data, algorithm and society
- AI and Internet of Things
- Applied health care and AI
- Industrial AI and automation
- Social media analysis for social good

B. Data Science

Program Description

The two-year Masters of Applied Science in Data Science program is a research-based graduate program that aims to provide students with advanced knowledge and research skills in the field of data science. In this program, students will embark on a journey to explore data science, from foundational concepts to cutting-edge research. Through a blend of core courses, electives, and research, students will engage in deep learning and application of data science principles, culminating in the completion of an original research thesis. This program is structured to nurture critical thinking, problem-solving, and ethical research practices in data science.

Aims

1. **Knowledge Advancement:** To provide students with a comprehensive understanding of data science principles, methodologies and emerging trends, which enables them to become experts in the field.
2. **Research Excellence:** To foster an innovative and research-oriented culture that enables students to carry out independent studies and contribute to the data science field.
3. **Interdisciplinary Learning:** Through multidisciplinary study and collaboration, an integrated perspective of data science's applications and impact on society is established.
4. **Professional and Academic Development:** To prepare students for both research and industry roles in data science, equipping them with expertise in diverse career paths of data science.

Objectives

1. Implement machine learning algorithms to solve real-world data science problems.
2. Evaluate and compare the performance of machine learning models and choose appropriate techniques for specific tasks.
3. Conduct advanced statistical analysis to derive insights from data.
4. Critically assess and apply ethical guidelines and research methods to ensure the validity of data science research.
5. Create novel research contributions in the field of data science through the Master's thesis.

Program structure

Semester I

No.	Course Code	Course	Credit
1	DSI 701	Programming for Data Science	2
2	DSI 702	Data Analytics and Visualization	3
3	DSI 703	Machine Learning for Data Science	3
4	RS 701	Research Methods for Data Science	1
5	MGT 701	Development Policy	0
Sub-credits			**9**

Semester II

No.	Course Code	Course	Credit
1	DSI 712	Data Engineering and Architecture	2
2	DSI 713	Deep Learning	3
3	ELE 9**	Elective I	3
4	ELE 9**	Elective II	3
5	MGT 712	Entrepreneurship for Data Science	0
Sub-credits			**11**

Semester III

No.	Course Code	Course	Credit
1	RS 801	Thesis (Ongoing)	

Semester IV

No.	Course Code	Course	Credit
1	RS 801	Thesis	30
Sub-credits			**30**
Total credits			**50**

4. Elective Courses

Students must select two electives from the list below.

Electives (for Elective 1 & 2)	
1. Generative AI and Applications 2. Text Mining and Information Retrieval 3. Human-Computer Interaction 4. AI in IoT	5. AI in Agriculture 6. AI in Climate 7. AI in Tourism 8. Social Network Analysis 9. Healthcare Analysis

Attachment 2

Resource Persons

Artificial Intelligence and Data Science

1. Prof. Suresh Manandhar, Honorary Chair, Artificial Intelligence, MBUST, Former Professor, University of York, UK
2. Prof. Bishnu Prasad Gautam, Full Professor, Department of Economic Informatics, Kanazawa Gaukin University, Japan
3. Dr. Ved Prasad Kafle, Research Manager, National Institute of Information and Communications Technology, Japan; Visiting Professor, The University of Electro-Communications, Japan
4. Dr. Bhuwan Bhattarai, Artificial Intelligence Expert, MBUST

Attachment 3

Framework for Research Statement

Research statement of up to 600 to 800 words related to the program the student has applied for shall be developed by the applicant. The statement shall include

- Title
- Research problem definition
- Importance of the selected research problem in terms of contribution to national economy
- Research plan
- Expected results and impact

Attachment 4

Framework for Personal Statement

A personal statement shall be a concise description of the personal background, academic journey and research interests of the applicant of up to 800 to 1,000 words. It shall also highlight specific qualities and special skills of the applicant which may be helpful for the successful completion of the studies and research. He/she shall also describe the reasons for selecting MBUST and the program.

Attachment 5

Format for Publication List

In chronological order based on the year of publication

No.	Title of the publication	Author/s	Name and other details of Journal/Book/others	Web reference	Year