

## Our Faculty

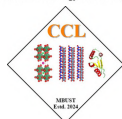
- Assoc. Prof. Dr. Sabina Shrestha  
Natural Products Chemistry
- Asst. Prof. Dr. Sudip Pandey  
Forest and Environment
- Asst. Prof. Dr. Saurabha Bhattarai  
Chemical Engineering
- Asst. Prof. Dr. Kishor Timsina  
Structural Engineering
- Asst. Prof. Dr. Jhashanath Adhikari Subin  
Computational Chemistry

## Our Laboratories

- Natural Products Laboratory
- Wood Science Laboratory
- Biomaterial & Nanotechnology Laboratory
- Computational Chemistry Laboratory



Biomaterials  
& Nanotechnology Laboratory



## Key Research Areas for Innovation for Empowering Industry & Circular Bio-economy

### Non-Timber

- Medicinal and Aromatic Plants
- Natural Colorants
- Biomaterials Chemistry
- Biomass Utilization
- Nutraceutical / Functional Food Design
- Clay Composite Optimization

### Timber

- Timber preservation and Treatment Technologies
- Wood Products in Changing Climate
- Quality Assessment and Grading System
- Dendro-Wood Anatomy
- Engineered Wood Products Development

## About the University

Madan Bhandari University of Science and Technology (MBUST) is a research-driven interdisciplinary institution that aims to enhance Nepal's technological landscape through innovation and human resource development in Research, Development, and Innovation (RDI). Aligned with key economic sectors, MBUST focuses on upgrading production technologies to bolster national economic growth and improve livelihoods. Our problem-based learning approach integrates real-world challenges from inception, empowering students to select and tailor their curriculum to align with chosen issues. Committed to integrity and inclusivity, MBUST upholds principles of transparency and equity, fostering a conducive learning and research environment free from biases based on gender, ethnicity, religion, or political affiliation.

Embark on a transformative journey at MBUST, where innovation meets opportunity to drive Nepal's sustainable future

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# MADAN BHANDARI UNIVERSITY OF SCIENCE AND TECHNOLOGY



## GRADUATE PROGRAM IN FOREST BIOMATERIALS SCIENCE AND ENGINEERING

# Introduction

The Master and PhD degree in Applied Science programs at MBUST are strategically designed to advance STEM disciplines, specifically focusing on developing sustainable technologies for value-added utilization of forest resources. These programs equip students with advanced competencies in applying cutting-edge research and technologies to foster sustainable development, generating environmental, economic, and social benefits, particularly meeting the future needs of the forest-based industries sector both locally and internationally.

### Key program features include:

- A distinctive focus that complements existing forestry graduate programs in Nepal while emphasizing sustainable development tailored to local needs.
- Integration of industrial applications of forest technologies to enhance productivity and economic viability.
- Development of specialized knowledge to efficiently utilize and conserve forest resources, fostering research and innovation essential for supporting forest-based industries.

# Forest Biomaterials Science and Engineering (FBMSE) Academic Program

## Eligibility

### Master in FBMSE:

- 4-year Bachelor's degree in Science/Engineering/Technology fields from recognized universities with CGPA of 2.75 out of 4.0 (or international equivalent)

### Ph.D. in FBMSE:

- Master's degree in Science/Engineering/Technology fields from recognized universities with CGPA of 3.0 out of 4.0 (or international equivalent)

# Program Aims

The program has been designed to provide graduates with:

- A solid foundation in fundamental forest biomaterials science and technology.
- Practical knowledge of the forest sector through field trips, internships, and collaborative projects addressing real-world challenges.
- Access to state-of-the-art laboratory facilities at the university.
- Skills to foster partnerships among industry, community, academia, and government for a comprehensive educational experience.
- Exposure to cutting-edge science and technology developments through interactions with leading global scientists and participation in international training programs.
- Support and resources to cultivate entrepreneurial skills, enabling students to explore and develop innovative ventures in forest utilization.

# Learning Outcomes

Graduates specializing in Forest Biomaterials at MBUST will independently demonstrate:

- Capacity for independent research or experimentation on forest biomaterials using appropriate methods.
- Skill in effectively communicating and critically utilizing source materials and experimental results, with the ability to publish in peer-reviewed academic journals.
- Competence in diversifying the utilization of forest resources and optimizing management to enhance livelihoods.
- Capability to produce thesis and patent applications that meet international scientific standards.
- Potential to pursue entrepreneurial ventures in forestry, applying knowledge and skills to drive innovation and economic growth.
- Ability to contribute to the government strategies and policies for timber and non-timber forest product and their utilization.

# Courses

## A. Core Courses

S.N.	Course code	Course title	Credit
1	FB-CR-501	Fundamentals of Forest Biomaterials	4
2	FB-CR-502	Chemistry of Biomaterials	4
3	FB-CR-550	Advanced Topics in Sustainable Bio-products	4
4	GC-CR-501	Development Policy	3
5	GC-CR-502	Research Methodology and Data Mining	3

## B. Non-Credit Compulsory Courses

S.N.	Course code	Course title	Credit
1	GC-NC-550	Entrepreneurship, Scientific Communication and Leadership	0
2	FB-NC-551	Forest Conservation and Management	0

## C. Technical Elective Courses

Course Code	Course Title	Credit
FB-EL-561	Mechanics of Biomaterials and Bio-composites	4
FB-EL-562	Bonding and Adhesion Sciences and Technology	4
FB-EL-563	Wood Drying, Grading, Finishing, Treatment, Seasoning and Protection	4
FB-EL-564	Non-timber Forest Products Processing and Value Addition	4
FB-EL-565	Extraction and Characterization of Essential Oils and Secondary Metabolites	4
FB-EL-566	Dendro-wood Anatomy and its Application	4
FB-EL-567	Bioenergy, Bio-carbon, and Biorefinery	4
FB-EL-568	Biological Treatment and Conversion of Biomass	4
FB-EL-569	Utilization of Forest Products (such as Bamboo etc.) and other Non-wood Natural Materials	4
FB-EL-570	Engineered Design and Construction	4
FB-EL-571	Conservation of Landscape and Biodiversity	4
FB-EL-572	Rainwater Discharge and Forest Management	4
FB-EL-573	Advanced Biomaterial Development and Protection	4
FB-EL-574	Environmental Life Cycle Assessment and Thinking	4
FB-EL-575	Bamboo engineering	4
FB-EL-576	Utilization of non-timber natural materials, advanced biomaterial development and protection	4
FB-EL-577	Applied element modeling of structures	4

Total credit for Master in Applied Sciences = 50 credit (18 credit core course + 4 credit Technical elective + 28 credit Thesis)

Total credit for Ph.D. = 75 credit (18 credit core course + 8 credit Technical elect 49 credit Thesis)