



# PROSPECTUS

BCA | BBM | BBS | MBS | B. Tech. (Food) | B. Pharmacy | BSc / MSc Microbiology | MSc Biotechnology



**NIST Higher Education**  
AFFILIATED TO TRIBHUVAN UNIVERSITY  
**Learn, Explore & Lead**

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# Few Words from CHAIRPERSON



Nist higher education with 25 years of enriched experience has been recognized as a Conglomerate Academic Institution offering specialized skill building courses in Science , Management & Information Technology .

The institute duly affiliated with Tribhuvan University imparts Bachelor & Master level programs in Science, Management & Information Technology. As a resourceful organization having own infrastructure & experienced faculty members , we guarantee to offer synchronized & customized teaching /learning process in order to convert our raw intake into a Skilled manpower as required by the Industry & Economy.

On behalf of the institution I welcome all of you to be a member of this profound academic organization & enhance your knowledge & skill for the betterment of yourself ,your society & Nation at large.

Prakash Chandra Paudel  
Chairperson  
NIST Higher Education

Prakash Chandra Paudel  
Chairperson,  
NIST Higher Education



Dr. Madhav Pd. Baral  
Campus Chief,  
NIST Higher Education  
(Group of Colleges)

## Welcome from CAMPUS CHIEF

NIST Higher Education is a constituent entity of NIST Foundation. Three colleges namely National College(NC),National Model College for Advance Learning (NMCAL) and National College of Food Science and Technology (NCFST) established in 1998 and 2007 are currently offering various undergraduates and graduates courses with a dream to develop a deemed university, focusing exclusively on medicine, science and technology, management, humanities (IT) and agriculture. These institutions have been created after the realizations of deep sense of the responsibility towards our nation and people. Hence, we're on the lookout for not only the brightest and best student from all over the nation but we equally welcome to those economically weak with high academic courage to develop their potentiality as well. There is no such thing as a typical NIST student. But they do all have one thing in common-they approach the society with curiosity. The sort of curiosity that keeps them going in the face of challenge and often results in extraordinary things.

NIST education will expose you to real world challenges with no easy answers, teaching that opens everything up to question, challenges and opportunities to work across multi-cultural teams. We value all students as individuals. Our smaller class sizes and high-quality teaching will provide more personalized attention and support.

Exciting times are ahead of us and I am confident that you are looking for an inspiring environment where you can achieve all your future career goals in our colleges. If you take full advantages of the opportunities open to you, you won't just come out with a degree that is recognized by employers across the globe instead you will also gain skills that will last you for the rest of your life.

I also look forward welcoming you and your parents into our door step.  
With best wishes

Dr. Madhav Pd. Baral  
Campus Chief

## Few Words from Asst. Campus Chief



**Nava Raj Heka**  
Asst. Campus Chief  
NIST Higher Education

National college, NCFST and NMCAL are the integral parts of NIST Higher Education. We offer an ever-expanding range of contemporary courses designed to meet the needs of the each sector of the economy and the nation. Under the umbrella of NIST FOUNDATION, National College, NCFST and NMCAL are a premier institutions providing graduate and post graduate courses in the field of management, science and technology, humanities & social sciences and medicine. Colleges duly affiliated to Tribhuvan University are situated in Lainchour, Kathmandu heart of the city. Furthermore, we have an extensive network of contracts with institutions throughout the nation.

We are in fact, a group of academicians and professional experts having substantial experience in the field of education and business and our aim is to produce Educated, Dynamic and Energetic Youth in the field of management, science, medicine and IT capable to be mark stones for the development of the nation. NIST, registered as an NGO is a non-profit oriented organization and wishes to be a Trustee of the Society in providing better education at reasonable fee structure. In the short run, NIST has already achieved prominence as one of Nepal's most innovative and enterprising educational institution . In this context, NIST Higher Education Board has been undertaking the task of producing functional managers through BBS program, middle level managers through MBS program, IT professionals through BCA program, corporate leaders and entrepreneurs through BBM program, healthcare professionals through B. Pharm program, food technologist through B. Tech (Food) program and lab technicians through BSc. and MSc. microbiology and MSc. biotechnology programs duly affiliated to Tribhuvan University. Our aim is to become one of the apex educational institutions in the republic of Nepal within the first decade of 21st century.

With best regards,  
-Nava Raj Heka  
Asst. Campus Chief

# About Us

## NIST Higher Education

NIST FOUNDATION is formed as a group of more than 1 dozen academic institutions. The foundation provides students with the opportunity to study courses from preschool leading to masters' degree qualifications in Nepal. All programs of study have been approved at the appropriate level ranging from National Education Board to Tribhuvan University and others.

## About Tribhuvan University

TRIBHUVAN UNIVERSITY (TU), established in 1959 A.D., situated in Kirtipur, Kathmandu is the first and renowned institution of higher education in Nepal. There are 39 central departments, 62 constituent campuses in TU. More than 1084 colleges are affiliated to TU. The university is spread over an area of 154.77 hectare land. It is the only university of the nation having collaborative links with numerous international institutions. The university has bilateral agreements with more than 12 dozens international universities/institutions and 9 national institutions. It has four institutes, four faculties and four research centers. The university is one of the largest in the world in term of number of students enrolled. On 2013, the government of Nepal has principally agreed to declare Tribhuvan University as the central University of the nation. The University runs courses for students leading to internationally accepted undergraduate, graduate, postgraduate, M.Phil. and Ph.D. degrees



## VISION

To be an academic leader in discharging the deep social responsibility by inspiring individual in generating knowledge through scholarly creative and innovative endeavors which provides foundation to address the upcoming problems and challenges faced by human beings.

## MISSION

NIST Higher Education with the motto of Sanskrit "विद्याधनं सर्वधनं प्रधानम्" has a mission to spread the advanced management and technical knowledge to the undergraduates and graduates making them capable and responsible citizen.

**Our mission followed by set defined objectives could be narrated as:**

1. To make the students full aware about the principles of management, medical & food science and IT concept
2. To help the students apply the managerial principles and other knowledge acquired in the classroom into practice through real life business and other laboratory case studies, short term field work, market research activities and defined project work.
3. To develop the student's capability in analyzing critically a given problem through group discussion, brain storming and participation approach.
4. To help demonstrate the proficiency in the skills required for front and middle level managers through application of leadership styles, paper presentation, role playing and research and practical research works.

**NIST Higher Education fulfills its vision contributing the global society in solving many problems through**

- Producing managers from BBS, BBM and MBS programs.
- Bringing efficiency in performance Producing IT officers through BCA program.
- Preparing food doctors for ensuring quality of food human being undertake through B.Tech (Food) program.
- Producing lab technicians and researchers through B. Sc and M.Sc. Microbiology and bio-tech programs.
- Producing Pharmacists for best drug production for the human health care

# COLLEGES UNDER NIST Higher Education

National College

BCA, BBM, BBS, MBS  
B.Sc./M.Sc. Microbiology  
M.Sc. Biotechnology

National College of Food  
Science & Technology (NCFST)

B.Tech Food

National Model College for  
Advance Learning (NMCAL)

B. Pharmacy

## Why NIST ?

NIST College having renowned academic reputation offers advanced science facilities, tech-driven learning through labs, modern classrooms, digital resources, experienced faculty, and holistic development opportunities. This makes NIST an ideal choice for education and personal growth.

Renowned Academic Reputation

Cutting-edge Science Facilities

Tech-Driven Learning

Modern Learning Environment

Digital Resources

Experienced Faculty



# Teaching Learning Methodology



Our teaching learning approach are Problem Based, Self-Directed, Competency Based, Evidence Based, Community Oriented Need Based Integrated Teaching Learning.

- Interactive Lectures
- Simulation
- Role-play
- Small group discussion
- Case study
- Seminar
- Interactive Journal clubs
- Brainstorming
- Demonstration
- Problem oriented learning
- Problem based learning
- Self-directed learning
- Dissertation
- Academia Interaction
- Observation visit/Field visit
- In-plant training
- Integrated teaching
- Assignment



# Bachelors of Pharmacy

The Institute of Medicine (IOM) in Nepal has been a pioneer in health professions education for the last three decades. With a commitment to producing skilled Human Resources for Health (HRH) according to the nation's changing needs, IOM launched the Bachelor of Pharmacy Program in 2000 AD (2057 BS). This move was in response to the country's growing demand for high-quality pharmacy professionals, in line with the National Drug Policy of 1995 and regional-level policies to enhance pharmaceutical education.

National Model College for Advanced Learning (NMCAL), established in 2007 AD, operates under the NIST Foundation and is affiliated with IOM, Tribhuvan University. NMCAL has been offering the Bachelor of Pharmacy program since its inception, aiming to produce globally competent pharmacists. This 4-year course is designed to cultivate expertise in drug-related fields such as manufacturing, compounding, dispensing, and rational drug use counseling. Pharmacists, who form a crucial part of the Patient-Pharmacist-Physician triad, play a pivotal role in medication management and therapy. They possess comprehensive knowledge of various aspects of medicines, including mechanisms of action, uses, preparation, storage, interactions, adverse effects, and drug formulation quality control.

The program's multidisciplinary approach, with a focus on research-oriented subjects, is geared towards meeting the demands of the field and producing capable professionals who bridge the gap between health sciences and the molecular realm.

## Objective of the program

The objective of B. Pharma program is to produce qualified pharmacists who could provide pharmaceutical services, research and education in the capacity of:

1. Community and hospital pharmacist
2. Herbal drug development experts
3. Drug/medicines regulators
4. Managers of pharmaceutical services
5. Specialists in various scientific aspects of pharmacy







## Expected Outcomes

After the completion of the course, the graduates will be able to:

- Maintain professionalism and respect
- Understand pharmacy's scientific basis
- Apply knowledge creatively in various pharmacy areas
- Analyze national drug policies and regulations
- Lead collaborative research projects
- Solve problems using knowledge and skills
- Handle drug-related tasks confidently
- Communicate effectively with healthcare professionals
- Counsel patients and maintain relationships
- Work in clinical settings as part of a team
- Assess drug interactions and compatibility
- Provide drug information to users and healthcare personnel
- Manage hospital and community pharmacies
- Monitor and implement drug policies
- Plan and evaluate pharmacies and industries
- Conduct research in pharmaceutical fields
- Teach in educational institutions
- Assess drug quality using various methods
- Ensure quality assurance in drug industry
- Inspect manufacturing, storage, and distribution
- Manage production, marketing, and quality control

## Eligibility Criteria:

- Candidates willing to join the BPharm program must fulfill certain criteria:
- They should have successfully completed a Certificate in Pharmacy from the Institute of Medicine (IOM) or a university recognized by Tribhuvan University (TU). OR,
- They should have passed the I. SC. or 10+2 (Biology Group) or an equivalent degree from a board, institution, or university recognized by Tribhuvan University (TU).
- They should have obtained a minimum of 50% marks in the I. SC. or 10+2 or Certificate in Pharmacy or its equivalent.
- Candidates from the I. SC. and 10+2 science background should not exceed the age of 25. However, there is no age limit for students with a Certificate in Pharmacy.

## Admission Process:

Students are required to follow all the process given by medical education commission.

## Course Outline

The course is for four academic years, concentrating mainly on professional pharmacy courses and other supplementary subjects. The first year consists of six-theory papers and three practicals carrying a total load of 990 Teaching Hours (46 credits) including both theory and practical. In the second year, there are six theory papers and six-practical carrying a total load of 1080 Teaching Hours (48 credits). In the third year, there are seven theory papers and three practicals carrying a total load of 900 Teaching Hours(48credits) and in the fourth year there will be four theory and one practical paper carrying a total load of 450 Teaching Hours (36 credits). The course consists of total of 3420 Teaching Hours (178 credits). Apart from these papers, a 3 months' period is allotted to Dissertation and a 2 months' time is allotted to the in-plant training in the fourth year.

## Curriculum structure

Code No.	Name of the subject	Hrs/wk	Hrs/yr	Credit	Marks
<b>FIRST YEAR</b>					
BP 401 A	Anatomy, Physiology & Pathology-Theory	3	90	6	100
BP 402 A BP 402 B	Biochemistry- Theory Biochemistry-Practical	3 3	90 90	6 2	100 50
BP 403 A BP 403 B	Pharmaceutical Chemistry-Theory Pharmaceutical Chemistry-Practical	3 3	90 90	6 2	100 50
BP 404 A	Medicinal Chemistry I-Theory	3	90	6	100
BP 405 A	Pharmacology I-Theory	3	90	6	100
BP 406 A BP 406 B	Pharmaceutical Microbiology-Theory Pharmaceutical Microbiology-Practical	3 3	90 90	6 2	100 50
<b>Total of First Year</b>		<b>33</b>	<b>990</b>	<b>46</b>	<b>750</b>



Code No.	Name of the subject	Hrs/wk	Hrs/yr	Credit	Marks
<b>SECOND YEAR</b>					
BP 501 A	Pharmaceutics I (Physical Pharmacy)-Theory	3	90	6	100
BP 501 B	Pharmaceutics I (Physical Pharmacy)- Practical	3	90	2	50
BP 502 A	Medicinal Chemistry II-Theory	3	90	6	100
BP 502 B	Medicinal Chemistry II-Practical	3	90	2	50
BP 503 A	Biopharmaceutics and Pharmacokinetics- Theory	3	90	6	100
BP 503 B	Biopharmaceutics and Pharmacokinetics- Practical	3	90	2	50
BP 504 A	Pharmacognosy - Theory	3	90	6	100
BP 504 B	Pharmacognosy - Practical	3	90	2	50
BP 505 A	Pharmacology II - Theory	3	90	6	100
BP 505 B	Pharmacology II - Practical	3	90	2	50
BP 506 A	Pharmaceutical analysis and quality assurance I - Theory	3	90	6	100
BP 506 B	Pharmaceutical analysis and quality assurance I - Practical	3	90	2	50
	<b>Total of Second Year</b>	<b>36</b>	<b>1080</b>	<b>48</b>	<b>900</b>
<b>THIRD YEAR</b>					
BP 601 A	Pharmaceutical Engineering-Theory	3	90	6	100
BP 602 A	Pharmaceutics II (Dosage Forms & Formulation) -Theory	3	90	6	100
BP 602 B	Pharmaceutics II (Dosage Forms & Formulation)-Practical	3	90	2	50
BP 603 A	Pharmaceutical analysis and quality assurance II- Theory	3	90	6	100
BP 603 B	Pharmaceutical analysis and quality assurance II- Practical	3	90	2	50
BP 604 A	Ayurvedic and Herbal Technology-Theory	3	90	6	100
BP 604 B	Ayurvedic and Herbal Technology-Practical	3	90	2	50
BP 605 A	Biostatistics & Research Methodology-Theory	3	90	6	100
BP 606 A	Pharmaceutical Jurisprudence-Theory	3	90	6	100
BP 607 A	Community Pharmacy and First Aid-Theory	3	90	6	100
	<b>Total of Third Year</b>	<b>30</b>	<b>900</b>	<b>48</b>	<b>850</b>
<b>FOURTH YEAR</b>					
BP 701 A	Clinical and Hospital Pharmacy-Theory	3	90	6	100
BP 701 B	Clinical and Hospital Pharmacy-Practical	3	90	2	50
BP 702 A	Pharmaceutical Management-Theory	3	90	6	100
BP 703 A	Pharmaceutics III (Industrial Pharmacy) - Theory	3	90	6	100
BP 704 A	Pharmacotherapeutics-Theory	3	90	6	100
BP 705 DT	Dissertation			6	100
BP 706 IP	In-plant Training in Hospital + Industry (4 weeks each)			4	100
	Total of Fourth Year	15	450	36	650
	<b>Grand Total</b>	<b>114</b>	<b>3420</b>	<b>178</b>	<b>3150</b>

- For the dissertation work, each student should develop a thesis topic, which will be carried out under the guidance of teachers. The students should submit a thesis and defend it.
- Recognizing the need to develop the ability to translate theory into practice, students are placed for in-plant training in pharmaceutical manufacturing units, hospitals, drug stores as a part of curriculum at the beginning of 4th year. There will be One-week field trip for Pharmacognosy. There will be field trip for visiting various Domestic/Multinational pharmaceutical industries in third year.

## Evaluation System

There will be internal assessments (formative) done by the teachers during the period of the course including class tests, written assignments, seminar and case studies. There will be university examinations (summative) at the end of the year.

### Theory

The full marks allocated to the subjects with teaching hours 90 are 100 marks for theory and 50 marks for practical. Out of 100 marks, 20% is allocated to the internal assessment and 80% to the final examination in each subject according to T.U. regulation. Students should obtain at least 50% marks separately in internal assessment and final examination for passing the subject.

The full mark allocated to the practical is 50 marks out of which 20% marks (i.e. 10) is allocated to the internal assessment and 80% (i.e. 40) to the final examination in each practical according to T.U. regulation. Students should obtain atleast 50% marks separately in internal assessment and final examination for passing the practical.

**Note:** Minimum number of practical in each subject should be 15. Lab records and attendance will be compulsorily required for practical examination.

**Dissertation and in-plant training:** 100 marks each is allocated for dissertation and in- plant training. Students should obtain atleast 50% marks each in dissertation and in-plant training. (Refer to the Evaluation Chart).

**Attendance:** Minimum 75 %. Attendance will be required on each theory and practical subjects for attending final theory and practical examinations.

## Grading system

Following are the grading system of B. Pharmacy Programme.

Grade	CGPA	Percent Equivalent	Performance Remarks
A	4.0	90 and Above	Distinction
A-	3.7	80-89.9	Very Good
B+	3.3	70-79.9	First Division
B	3.0	60-69.9	Second Division
B-	2.7	50-59.9	Pass in Individual
F	0	Less than 50	Fail

## Evaluation Chart

Code No.	Name of the subject	University Exam	Int Assessment	Full Marks	Pass Marks
	<b>FIRST YEAR</b>				
BP 401 A	Anatomy, Physiology & Pathology-Theory	80	20	100	50
BP 402 A	Biochemistry- Theory	80	20	100	50
BP 402 B	Biochemistry-Practical	40	10	50	25
BP 403 A	Pharmaceutical Chemistry-Theory	80	20	100	50
BP 403 B	Pharmaceutical Chemistry-Practical	40	10	50	25
BP 404 A	Medicinal Chemistry I-Theory	80	20	100	50
BP 405 A	Pharmacology I-Theory	80	20	100	50
BP 406 A	Pharmaceutical Microbiology-Theory	80	20	100	50
BP 406 B	Pharmaceutical Microbiology-Practical	40	10	50	25



Code No.	Name of the subject	Ext. Evaluation	Int. Assessment	Full Marks	Pass Marks
<b>SECOND YEAR</b>					
BP 501 A	Pharmaceutics I (Physical Pharmacy)-Theory	80	20	100	50
BP 501 B	Pharmaceutics I (Physical Pharmacy)- Practical	40	10	50	25
BP 502 A	Medicinal Chemistry II-Theory	80	20	100	50
BP 502 B	Medicinal Chemistry II-Practical	40	10	50	25
BP 503 A	Biopharmaceutics and Pharmacokinetics- Theory	80	20	100	50
BP 503 B	Biopharmaceutics and Pharmacokinetics- Practical	40	10	50	25
BP 504 A	Pharmacognosy - Theory	80	20	100	50
BP 504 B	Pharmacognosy - Practical	40	10	50	25
BP 505 A	Pharmacology II - Theory	80	20	100	50
BP 505 B	Pharmacology II - Practical	40	10	50	25
BP 506 A	Pharmaceutical analysis and quality assuranceI - Theory	80	20	100	50
BP 506 B	Pharmaceutical analysis and quality assuranceI - Practical	40	10	50	25
<b>THIRD YEAR</b>					
BP 601 A	Pharmaceutical Engineering-Theory	80	20	100	50
BP 602 A	Pharmaceutics II (Dosage Forms and Formulation) -Theory	80	20	100	50
BP 602 B	Pharmaceutics II (Dosage Forms and Formulation)-Practical	40	10	50	25
BP 603 A	Pharmaceutical analysis and quality assurance II- Theory	80	20	100	50
BP 603 B	Pharmaceutical analysis and quality assurance II- Practical	40	10	50	25
BP 604 A	Ayurvedic and Herbal Technology-Theory	80	20	100	50
BP 604 B	Ayurvedic and Herbal Technology-Practical	40	10	50	25
BP 605 A	Biostatistics & Research Methodology-Theory	80	20	100	50
BP 606 A	Pharmaceutical Jurisprudence-Theory	80	20	100	50
BP 607 A	Community Pharmacy and First Aid-Theory	80	20	100	50
<b>FOURTH YEAR</b>					
BP 701 A	Clinical and Hospital Pharmacy-Theory	80	20	100	50
BP 701 B	Clinical and Hospital Pharmacy-Practical	40	10	50	25
BP 702 A	Pharmaceutical Management-Theory	80	20	100	50
BP 703 A	Pharmaceutics III (Industrial Pharmacy) - Theory	80	20	100	50
BP 704 A	Pharmacotherapeutics-Theory	80	20	100	50
BP 705 DT	Dissertation	80	20	100	50
BP 706 IP	In-plant Training in Hospital + Industry (4 weeks each)	80	20	100	50

## Scientific Tools

The labs are equipped with Tablet hardness tester (Monsanto), PCR, Double- beam UV Visible Spectrophotometer, High Speed Refrigerated Centrifuge, Autoclave, Freezer (-20°C), pH meter, Micropipettes, Incubators, Laminar flow, Electronic, Balance, Microscopes, Heating Block, Centrifuges, Hot plates with stirrer, Dissolution test apparatus, Disintegration test apparatus, 10-station compression machine, Double cone blender, Water Bath Shakers etc. In addition, college is well equipped with air conditioned tissue culture laboratory, library, seminar room and a computer laboratory with internet.

## Seminar

All student must attend and take active participation in seminars organized by the college. Every year, each student must present at least four research papers provided to him/her with critical assessments. Assessment will be carried out for skills & quality of presentation.

## Scholarships

- Provides 10% scholarship as government process
- Each student must carry out a research project on given topic to complete this program. Potential student may receive research grants/support from NAST, UGC or National or International agencies. In this concern, college will explore possibilities and also provide necessary assistance to the students.
- Scholarship of excellence will be awarded to the meritorious students in terms of :
  - Class topper will be given 50% scholarship in the next year.
  - 80% scholarship will be awarded to TU board topper.



# Bachelors of Food Technology

Food science encompasses the entire journey of food, from raw material selection to end-user consumption and analysis. It covers areas like raw materials, composition, production, preservation, safety, packaging, and sensory evaluation. This field also includes related areas such as food microbiology, chemistry, and food physics.

Food technology is the practical application of food science in developing and producing food. It involves selecting, preserving, processing, packaging, distributing, and ensuring the safety and nutrition of food. The field is gaining popularity worldwide, including in Nepal, due to its relevance in today's health-conscious society. NCFST offers quality education in Food Technology through experienced faculty, focusing on practical learning. Join us for a unique educational experience in this flourishing field.



## About NCFST

Established in 2007 as a part of the National Institute of Science and Technology (NIST), National College of Food Science and Technology (NCFST) offers a comprehensive range of top-tier food technology programs. Boasting a faculty of esteemed food scientists, professors, and industry professionals, NCFST is the prime destination for individuals aspiring to thrive in a dynamic industry that constantly innovates, introduces new products, and adopts cutting-edge technologies. In an ever-evolving technological landscape, food technologists face the challenge of mastering food science, chemistry, microbiology, engineering, and nutrition to meet modern consumer demands. Since its inception, NCFST has been nurturing students to become skilled and well-rounded professionals in this field.

## Why NCFST ?

NCFST encourages innovative teaching practices to meet the academic and professional need of students. Academic programs at NCFST offer people with the right mix of technical knowledge, practical experiences and all-round ability to establish successful career in the field of food science and technology.

- Pragmatic approach
- Splendid environment
- First class service

## Tradition of Success

NCFST, under the umbrella of NIST, has been providing a generation of successful graduates securing highest positions in the University board exam results and such graduates have obtained influential position on many field already. NCFST is strongly dedicated to produce such excellent graduates in the future.

## Advanced Study

M.Sc. with major Food Microbiology and Food Biotechnology is already running in our sister organization and NCFST has proposed M. Tech. (Food) program to run in the future.

## This program specifically aims to:

- Provide knowledge in food science and the principles underlying food processing.
- Give wider knowledge to students in advanced food engineering.
- Acquaint students with industrial management practices.
- Train the students in product specific specialization areas.

## Eligibility

The candidates who have passed in second division I.Sc. Or 10+2 (science) and certificate level of food technology /laboratory technology from Tribhuvan University or an institute recognized by this university shall be considered eligible to apply for admission to B.Tech. (Food).



## Admission Criteria

To be eligible for admission to the Bachelor of Technology in Food Technology program at Tribhuvan University and its constituent campuses, applicants must meet the following requirements:

- Completion of 12 years (10+2) of formal education with a minimum of second division. The applicant should have successfully finished higher secondary education or an equivalent recognized by Tribhuvan University.
- Applicants who have completed a certificate level program in food technology or laboratory technology from Tribhuvan University or a TU-recognized institute are also eligible to apply.
- All applicants must take the entrance examination conducted by the Institute of Science and Technology (IoST), Tribhuvan University. A passing score in the entrance exam is mandatory.
- The university will release a merit list based on entrance exam performance. Those on the merit list can seek admission to Tribhuvan University, its constituent campuses, and affiliated private colleges according to their ranking.

## Scope

The food industry offers fast-paced, diverse employment opportunities. Skill shortages mean graduates are frequently offered positions before graduation. Opportunities include:

- Quality Assurance Manager
- Production Manager
- Laboratory Supervisor
- Food Packaging Manager
- Research Associate in premier institutes, universities and research and development units
- Food packaging technologist and food preservation managers in various food packaging industries
- Opportunities in various posts in government services (Department of Food Technology and Quality Control, Food Management and Trading Company, etc.)
- A very appropriate career option for aspiring entrepreneur even with very low investment

## Scope abroad

- Product development manager in a food research company
- Research work as a scientist abroad to formulate new product range
- A sensory scientist to monitor organic properties like aroma, flavor and more.
- Monitor or quality controller of food products in their contamination and adulteration prevention units.

## Major Activities at NCFST

- International internship opportunities
- Excellent performance in co-curricular & extra activities in national and international competition
- Group project work for product design and development
- Nutritional survey
- Practical courses conducted in mini-industrial scale food pilot plant
- Resource exchange with industrial institutions
- Social activities



"B. Tech. (Food)" is a four-year program following annual exams with 2000 total marks. Subjects, excluding Dissertation, allocate 25% marks to practicals. Year one covers basic sciences, engineering, microbiology. Year two focuses on food science and processing fundamentals. Years three and four teach product technology, quality control, and food plant management, including a compulsory dissertation.

## First Year Curricular Structure of B.Tech.(Food)

Subject	Full Marks
Physics	100
Chemistry	100
Math and Statistics	100
Instrumental Techniques of Analysis	100
Basic and Food Microbiology	100
Basic Principles of Engineering	50
<b>Total</b>	<b>550</b>

### Second Year

Subject	Full Marks
Food Chemistry	100
Principles of Food Processing	100
Food Engineering (Unit Operation and Process Engineering)	100
Biochemistry and Human Nutrition	100 (50+50)
Technology of Food Products- I (Cereals, Legumes, Oilseed and Protein)	100
<b>Total</b>	<b>500</b>

### Third Year

Subject	Full Marks
Technology of Food Products- II (Fruits and Vegetables, Chocolate and Sugar Confectionery, Tea, Coffee and Spices)	100
Technology of Food Products- III (Meat, Fish and Poultry)	100
Biochemical Engineering	100
Industrial Microbiology	100
Food Quality Control and Analysis	100
<b>Total</b>	<b>500</b>

### Fourth Year

Subject	Full Marks
Storage and Packaging Technology	100 (50+50)
Operation Research and Food Plant Management	100
Dairy Technology	100
Dissertation	100
In-plant Training and Class Seminar	50
<b>Total</b>	<b>450</b>
<b>Grand Total</b>	<b>2000</b>

Working days: 150 days in an academic year



### Class hour

- Theory: One theory paper of 100 marks will have 4 lectures per week. A lecture class has a duration of 50 min.
- Practical: One practical paper of 25 marks will have 4 hours of practical per week.
- Attendance: 70 percent attendance in the class is compulsory.

### Exam

A 100-marks paper is divided into a theory paper of 75 marks and a practical paper of 25 marks. Students will appear in three hours examination for a theory paper of 75. The student will have to pass separately in theory and practical examinations.

# B.Sc Microbiology



## About National College

National College was established in 1998 with an objective to pursue excellence in higher education in Science and Technology. After seven years' of exciting experience of running B. Sc. Microbiology, the college, with the encouraging feedback from the students, guardians and experts of the relevant field, launched M. Sc. Microbiology program in 2005 under the affiliation of Tribhuvan University with major in Medical & Food Microbiology and then in Biotechnology in 2012 AD. Thus, in the short run, National College has already achieved prominence as one of the Nepal's most innovative and enterprising educational institution in the field of Bachelor's and Master's in Microbiology and Master's in Biotechnology. We strive to establish it as one of the apex educational institution of Nepal. The institution has proved itself as a center of excellence and has been well recognized nationally and internationally.

## Objectives :

- Foster skilled microbiologists equipped to address contemporary global challenges.
- Deliver theoretical and practical proficiency in microbiology for diverse applications.
- Empower students to drive progress in agricultural, medical, industrial, and environmental microbiology.
- Enable students to provide expert insights and consultation in microbiology-related domains.

## Publications:

In order to disseminate current scientific events, college has regularly published a magazine, research papers and journals respectively. These magazines are true platform to exhibit the creativity of the students and teachers.

## Eligibility for B.Sc. Microbiology:

The candidates who have passed (I.Sc/+2 (Science) or equivalent examination at least in a good second division are eligible to apply. Candidate must pass entrance examination taken by TU.

## Career Prospects

BSc. Microbiology graduates enjoy promising careers in various industries, including food, pharmaceuticals, research institution, and governmental departments. International demand and well-paying roles are common. Further studies open doors for advancement. Microbiology offers a secure, rewarding career with growth potential in both industry and academia.

- Academic researcher
- Biomedical scientist
- Biotechnologist
- Clinical research associate
- Clinical scientist, immunologist
- Food technologist
- Medicinal chemist
- Microbiologist
- Nanotechnologist
- Pharmacologist
- Drug and Material Designer
- Bioinformatics expert
- Research scientist (life sciences)
- Technical brewer
- Water quality scientist
- Ecologist
- Environmental engineer
- Forensic scientist
- Marine biologist
- Physician associate
- Science writer
- Quality controller
- Molecular Biologists

## Career and Scope:

- BSc Microbiology graduates have promising job prospects.
- Microbiology offers diverse career opportunities in various industries.
- Industries include food and beverage, biomedical labs, pharmaceuticals (microbe-focused), distilleries, research institutes, vaccine production, dairy, forensics, bio-fertilizers, enzymes, mushrooms, and more.
- Government positions related to microbiology are available.
- Graduates are in high demand in developed countries with well-paying opportunities.
- Further studies enhance career prospects.
- Microbiology provides job security, advancement potential, and opportunities in both industry and academia.

## B.Sc. Microbiology Syllabus.

### First Year

SN	Subject	FM	Theory Hrs	Num. Prac
1	BOT101 Botany	100	150	25
2	MB101 General Microbiology	100	150	25
3	CHE101 Basic Chemistry I	100	150 (50X3)	20
4	SC101 Scientific Communication	50	50	0

### Second Year

1	APS203 Applied Statistics	50	75	0
2	BOT202 Botany	100	180	25
3	CHE201 Chemistry	100 1	50 (50X3)	20
4	MB201 Biochemistry and Molecular Biochemistry	100	150	21

### Third Year

1	MB 303 Pharmaceutical Microbiology	50	75	0
2	MB 301 Molecular Cell Biology	100	150	8
3	CHE 303 Basic Biochemistry	50	75	0
4	CHE 302 Chemistry	100	150 (50X3)	20
5	RM 305 Research Methodology	100	150	0

### Fourth Year

1	MB401 Agriculture and Food Microbiology	100	150	10
2	MB403 Medical and Public Health Microbiology	100	150	10
3	MB407 Instrumentation	50	75	0
4	COM408 Computation course	50	80	
5	ProjectBSc Thesis	100	Project work	



# M.Sc. Microbiology

The MSc Microbiology program at Tribhuvan University is a 2-year degree with four semesters. Started in 1990, it shifted to a semester system in 2013. The curriculum includes general subjects in the first semester and specialized tracks like Medical Microbiology, Public Health Microbiology, Food Microbiology, and Agricultural Microbiology from the second semester onward. The third semester delves into specialization, while the fourth emphasizes research, including seminars, a thesis, and practical internships. This practical approach bridges theory and real-world experience.

## Objectives

Produce skilled microbiologists, molecular biologists, and researchers for global demand.

Equip graduates with modern molecular biology techniques for basic and applied research.

Prepare professionals to explore microorganisms' potential for antibiotic production and other microbial products.

Train experts in disease monitoring, identification, and control, and enable research in food production, crop protection, and soil fertility sectors.

## Admission Requirement

- Candidates must hold a Bachelor of Science in Microbiology from Tribhuvan University or an equivalent degree from a recognized college/university.
- Applicants are required to take and pass the entrance examination conducted by the Central Department of Microbiology (CDM).
- Admission is based on a merit list formed by combining 80% of the entrance exam marks and 20% of the Bachelor of Science in Microbiology marks.
- Candidates failing to meet the minimum qualifying pass marks set by CDM will not be admitted.
- Admission is divided into 80% free competition and 20% reserved for inclusivity in Tribhuvan University and its constituent colleges.
- The entrance exam is a 2-hour test, and detailed information can be found on the CDM website.

## Career and Scope

1. Microbiology is a highly sought-after field in the science stream with expanding horizons.
2. Graduates have diverse job opportunities beyond typical roles.
3. Microbiology encompasses various specializations, offering jobs from pharmaceuticals to cosmetics and contributing to biotechnology.
4. Graduates can teach and conduct research in Medical, Dental, and Veterinary schools.
5. Laboratory testing and experiment conducting are viable roles.
6. Researchers delve into micro-organism, tissue, cell structure, function, ecology, biotechnology, and genetics.
7. MSc Microbiology holders are in demand globally, increasing chances of international employment.





# Syllabus : M.Sc. Microbiology

## Semester I

Course code	Course Title	Nature of Course	Credits	Evaluation (40% internal assessment)
<b>Compulsory courses</b>				
MB 501	Advances in Microbiology	Theory	3	75 (45+30)
MB 502	Immunology	T	3	75 (45+30)
MB 503	Microbial Genetics and Molecular Biology	T	3	75 (45+30)
MB 504	Biochemistry and Biotechnology	T	3	75 (45+30)
MB 505	Practical on (MB 501 + MB 502)	P	2	50
MB 506	Practical on (MB 503 + MB 504)	P	2	50
<b>Total</b>			<b>16</b>	<b>400</b>

## Discipline : Medical Microbiology

### Semester II

Course code	Course Title	Nature of Course	Credits	Evaluation (40% internal assessment)
MB 551	Human Anatomy and Physiology	T	3	75 (45+30)
MB 557	Systemic and Diagnostic Bacteriology-1	T	3	75 (45+30)
MB 558	Systemic and Diagnostic Virology-1	T	3	75 (45+30)
MB 559	Systemic and Diagnostic Parasitology	T	3	75 (45+30)
MB 560	Practical on (MB 551 + MB 557)	P	2	50
MB 561	Practical on (MB 558 + MB 559)	P	2	50
<b>Total</b>			<b>16</b>	<b>400</b>

### Semester III

Course code	Course Title	Nature of Course	Credits	Evaluation (40% internal assessment)
MB 601	Research Methods and Biostatistics	T	3	75 (45+30)
MB 607	Systemic and Diagnostic Bacteriology-2	T	3	75 (45+30)
MB 608	Systemic and Diagnostic Virology-2	T	3	75 (45+30)
MB 609	Systemic and Diagnostic Mycology	T	3	75 (45+30)
MB 610	Practical on (MB 607)	P	2	50
MB 611	Practical on (MB 608 + MB 609)	P	2	50
<b>Total</b>			<b>16</b>	<b>400</b>

### Semester IV

Course code	Course Title	Nature of Course	Credits	Evaluation (40% internal assessment)
MB 655	Industry based Internship	P	8	S/US
MB 656	Dissertation	P	8	200
<b>Total</b>			<b>16</b>	<b>200</b>
<i>S/US- Satisfactory (Pass)/unsatisfactory (Fail)</i>				

## Discipline : Food and Industrial Microbiology

### Semester II

Course code	Course Title	Nature of Course	Credits	Evaluation (40% internal assessment)
MB 562	Food Fermentation Technology	T	3	75 (45+30)
MB 563	Food Biotechnology and Nutraceuticals	T	3	75 (45+30)
MB 564	Advanced Food Microbiology	T	3	75 (45+30)
MB 565	Food Safety Management and Toxicology	T	3	75 (45+30)
MB 566	Practical on (MB 562 + MB 563)	P	2	50
MB 567	Practical on (MB 564 + MB 565)	P	2	50
<b>Total</b>			<b>16</b>	<b>400</b>

### Semester III

Course code	Course Title	Nature of Course	Credits	Evaluation (40% internal assessment)
MB 601	Research Methods and Biostatistics	T	3	75 (45+30)
MB 612	Food Science and Nutrition	T	3	75 (45+30)
MB 613	Food Processing and Preservation Technology	T	3	75 (45+30)
MB 614	Total Quality Management and Quality Assurance	T	3	75 (45+30)
MB 615	Practical on (MB 612)	P	2	50
MB 616	Practical on (MB 613 + MB 614)	P	2	50
<b>Total</b>			<b>16</b>	<b>400</b>

### Semester IV

Course code	Course Title	Nature of Course	Credits	Evaluation (40% internal assessment)
MB 655	Industry based Internship	P	8	S/US
MB 656	Dissertation	P	8	200
<b>Total</b>			<b>16</b>	<b>200</b>

*S/US- Satisfactory (Pass)/unsatisfactory (Fail)*





# M.Sc. Biotechnology

## About M.Sc. Biotechnology

The Master of Science in Biotechnology program at Tribhuvan University offers an advanced curriculum spanning science, business, and law. This two-year program covers molecular and traditional biotechnology, integrating diverse subjects like Engineering, Chemistry, Microbiology, Genetics, and more. With four semesters, the program provides a holistic understanding of product development and requires full-time study of sixty-four hours to successfully complete.

## Admission Requirements

Students interested in pursuing the M.Sc. in Biotechnology program should have Bachelor degree in Science with biological science and chemistry and a bachelor degree in Biochemistry, Agricultural Science, Biotechnology, Medical Lab, Medicine, Medical Lab Technology, Environmental Science (with Biological science and Chemistry) and Food Technology. Applicants must have to secure minimum of fifty percent marks. Applicants who fulfill these criteria are allowed to sit in the entrance exam.

## Objectives

- Provide comprehensive understanding of fundamental and advanced biotechnological concepts.
- Equip students to address both theoretical and practical biotechnological challenges.
- Foster engagement in research endeavors.
- Cultivate innovative thinking and ethical awareness in biotechnology, nurturing graduates for successful careers in the field and related domains.

## Career and Scope

The MSc in Biotechnology opens doors to diverse career paths including bioinformatics, gene regulation, drug discovery, biomedical engineering, and more. Graduates can pursue roles in research, academia, and industries related to biotechnological products. While Nepal's biotechnology sector is nascent, it's growing, ensuring future job prospects. As biotechnology's importance in daily life increases, graduates can expect promising opportunities nationally and globally.

## Curriculum structure

### First Semester

Code	Course Title	Credits	Evaluation (40% internal Assessment)
BT 511	Cell Biology and Genetics	3	75(45+30)
BT 512	Molecular Biology	3	75(45+30)
BT 513	Molecular Biochemistry	2	50 (30+20)
BT 514	Microbiology	3	75(45+30)
BT 515	Bioprocess & Biochem. Technology	3	75(45+30)
Practical Courses (L) (40% internal)			
BT 511L	Cell Biology and Genetics	1	25
BT 512L	Molecular Biology	1	25
BT 513L	Biochemistry	1	25
BT514L	Microbiology	1	25
BT 515L	Bioprocess & BT	1	25
<b>Total</b>		<b>19</b>	<b>475</b>

### Second Semester

Code	Course Title	Credits	Evaluation (40% internal Assessment)
BT 521	Genetic Engineering	2	50 (30+20)
BT 522	Immunology and immunotechnology	3	75 (45+30)
BT 523	Plant Biotechnology	3	75 (45+30)
BT 524	Bioinformatics	2	50 (30+20)
BT 525	Biophysical Chemistry	2	50 (30 + 20)
BT 526	Metabolic Biochemistry metabolites	2	50 (30+20)
Practical Courses (L) (40% internal)			
BT 521L	Genetic engineering	1	25
BT 522L	Immunology	1	25
BT 523L	Plant biotechnology	1	25
BT524L	Bioinformatics	1	25
BT 526L	Metabolic Biochemistry and	1	25
<b>Total</b>		<b>19</b>	<b>475</b>

# Staffs and Faculties

## Department of Pharmacy

Dr. Sabyata Gautam (HOD)  
Dr. Sarbajna Man Tuladhar  
Dr. Kaji Prasad Ghimire  
Dr. Deepak Kumar Shrestha  
Dr. Prakash Gyawali  
Dr. Santoshanand Jha  
Anil Prasad Shah  
Sangita Shakya  
Sujana Shakya  
Mohan Amatya  
Sujan Adhikari  
Prachanda Manandhar  
Prem Poudel  
Anish Rai  
Rojita Tuladhar

## Department of B.Tech (Food)

Prof. Dr. Surendra Bdr. Katuwal  
Dr. Sarbajna Man Tuladhar  
Prof. Geeta Bhattarai  
Rakesh Kusma (HOD)  
Niraj Poudel  
Ashik Tiwari  
Jenuka Tamang  
Pravin Ojha  
Arjun Regmi  
Khem Raj Bhatta  
Sujan Sapkota  
Sunil Aryal  
Pradeep Kaji Poudel  
Dirga Raj Baral  
Suprina Sharma  
Sagar Kafle  
Achyut Bhattarai  
Suraj Poudel  
Pawan Rijal  
Jayshree Shrestha  
Tanka Bhattarai  
Anil Basnet  
Sushan Niraula

## Department of Microbiology/ Biotechnology

Dr. Era Tuladhar (HOD)  
Dr. Gorkha Raj Giri  
Dr. Kaji Prasad Ghimire  
Dr. Sarala Manandhar  
Dr. Janardan Khadka  
Dr. Kshitiz Raj Shrestha  
Dr. Sabari Rajbahak  
Dr. Prashant Dhoj Adhikari  
Dr. Sarala Manandhar  
Dr. Janardan Khadka  
Dr. Dipendra Shrestha  
Aashik Tiwari  
Sujita Manandhar  
Jenuka Tamang  
Apekshya Dahal  
Santosh Parajuli  
Saugat Adhikari  
Pradeep Kaji Poudel  
Prasanna Maharjan  
Nabraj Poudel  
Binod Neupane  
Niranjan Thapa  
Sangya Paudel  
Ashish Tiwari  
Durga Adhikari  
Sandeep Thapa  
Prasant Dhoj Adhikari  
Dipendra Shrestha  
Rakesh Kumar Shah  
Nabraj Poudel  
Ajit Dhimal  
Puspa Raj Sanjal

## Administrative Staffs

Sunita Timilsina (Chief Accountant)  
Aakriti Chettri (Administrative officer)  
Rojina Maharjan (Cashier)  
Ramila Acharya (Receptionist)  
Deepak Sapkota (IT)  
Pradeep Pokharel (IT)  
Badri Tamang (Lab Assistant)  
Deepak Dhakal (Office Assistant)  
Devaka Regmi (Librarian)  
Dhan Bahadur Pulami (Admin Staff)  
Dinesh Pandey (Microbiology Lab Incharge)  
Rajendra Devkota (Chemistry Lab)  
Jeevan Pulami (Food Lab)  
Poornima Aryal (Instructor Food Lab)  
Nirmala Pulami (Food Lab)  
Laxmi Rokaya (Biochemistry + Botany)  
Suresh Rai (Pharmacy Lab)  
Sabina Sharma (Biotechnology Lab)  
Bimal Bdr. Singh (Office Assistant)  
Lalita Nagarkoti (Office Assistant)

# Testimonials

Being an alumna of NCFST, I would like to emphasize that “Success never knocks at the door of the student life; destiny relies on the platform we build.” Furthermore, I like to thank NCFST for bolstering my knowledge in the world of food technology through its excellent faculty and furnished laboratories for conducting various researches. Pursuing graduation from the reputed institution isn’t only a matter of pride for me, but also like a pylon which made me what I am today; a real food technologist. So, don’t be in dilemma if you are opting NCFST as an institution of your choice. But don’t entirely believe in my words, come here and feel it yourself. You don’t know your limit until you have been pushed beyond them.

My time as an undergraduate student at NCFST was truly unforgettable. The wonderful faculties, staff and well-equipped labs created a perfect environment for my studies. Every day brought new discoveries in food science, whether it was diving into food engineering, chemistry, processing, safety, or related topics. Learning was a joy, and I embraced it fully. Yet, beyond classes, something magical happened. I formed lifelong friendships that kindled during the welcome program as a 1st year student and only grew stronger as we explored food industries across Nepal together in an unforgettable 10 day expedition by our final years. These experiences have become cherished memories, leaving a lasting impact on my heart. NCFST not only provided me with knowledge but also gave me valuable connections and moments I’ll treasure forever.

NMCAL, as an educational institution, has constantly been elevating ambitions and hope among students. A combination of dynamic management team, enthusiastic and dedicated teaching faculty members, innovative and creative environment, interactive classroom, practical based education and overall a student friendly atmosphere helps to turn those big dreams into reality. In my view, NMCAL always provided opportunities for an enthusiastic student to learn and grow comfortably to prove his/her potential and deliver the best performance.

It has been an immense pleasure to be a part of National College (NACOL). The college has a fantastic environment to grow and learn. I did not feel like a student but a family member of NACOL. With the dedicated and caring teaching faculty members, dynamic management team, cooperative staff and outstanding practical courses. NACOL has thrived to bring out the best from each student, through successful guidance and motivation. The students are encouraged to be ambitious and face any challenges in their path to aspire students’ dreams.



**Manisha Singh**  
PhD Scholar, RMIT University,  
Melbourne, Australia



**Karuna Kharel, Ph.D., Post-doctoral Associate, University of Florida**  
NCFST 4th batch topper



**Sujana Shakya**  
1st Batch, B. Pharm T.U. Topper, 78%



**Manila Poudel**  
Nepal Health Research Council (NHRC),  
Technical Co-ordinator and Field  
Researcher



## NIST Higher Education

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