COURSE STRUCTURE

	FIRST SEMESTER	CREDITS
BT511	Cell Biology and Genetics	3
BT512	Molecular Biology	3
BT513	Molecular Biochemistry	2
BT514	Microbiology	3
BT515	Bioprocess Techniques	3
BT511L*	Cell Biology and Genetics	1
BT512L*	Molecular Biology	1
BT513L*	Biochemistry	1
BT514L*	Microbiology	1
BT515L*	Bioprocess Techniques	1
	TOTAL	19

	SECOND SEMESTER	CREDITS
BT521	Genetic Engineering	2
BT522	Immunology & Immunotechnology	3
BT523	Plant Biotechnology	3
BT524	Bioinformatics	2
BT525	Biophysical Chemistry	2
BT526	Metabolic biochemistry	2
BT521L*	Genetic Engineering	1
BT522L*	Immunology & Immunotechnology	1
BT523L*	Plant Biotechnology	1
BT524L*	Bioinformatics	1
BT526L*	Biochemistry	1
	TOTAL	19

	THIRD SEMESTER	CREDITS
BT611	Food Biotechnology	3
BT612	Medical & Pharmaceutical Biotech	3
BT614	Agriculture Biotechnology	3
BT616	Biostatistics	2
BT617	IPR	1
BT611L*	Food Biotechnology	1
BT612L*	Medical & Pharmaceutical Biotech	1
BT614L*	Agriculture Biotechnology	1
BT618L*	Project practical	1
	TOTAL	16

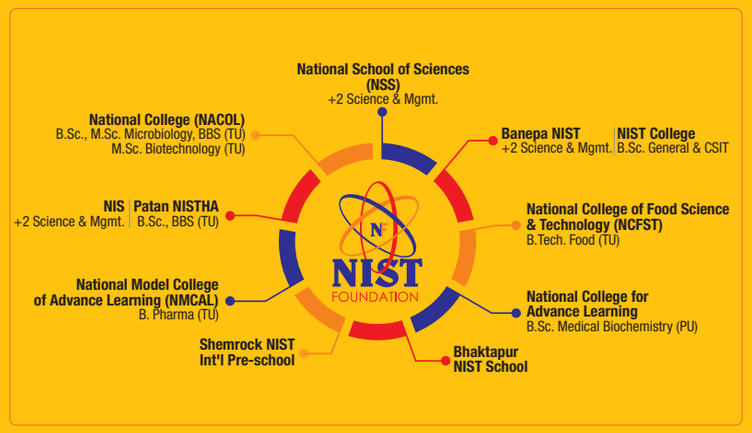
	FOURTH SEMESTER	CREDITS
BT621	Thesis	6
BT622	Seminar	0
	TOTAL	6

EVALUATION

Internal Assessment: 20%
Final Examination: 80%

GRADING

Distinction: 80% & above
First division: 70% & above
Second division: 50% & above

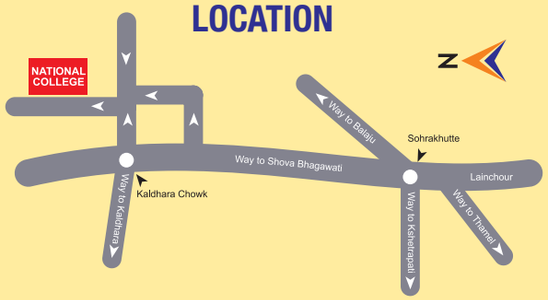


M.Sc.
BIOTECHNOLOGY
AFFILIATED TO TRIBHUVAN UNIVERSITY

Dr.Madav Prasad Baral
Principal & President of NIST Foundation

Dr. Niranjan Parajuli
Head of Department

LOCATION



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NATIONAL COLLEGE (NACOL)
ESTD. 2012
FACULTY OF SCIENCE

NIST Higher Education Complex, Khusibu, Naya bazaar, Kathmandu




BACKGROUND

National College has begun M.Sc. Biotechnology program since 2012 under the affiliation of Tribhuvan University with an aim to produce globally competent manpower. Biotechnology is one of the fastest growing and promising study sectors in the world. It develops a new product or process upon application of engineering technologies on living organisms. It is also known as a combination of biology and other engineering technologies. It covers a wide variety of subjects like genetics, biochemistry, microbiology, immunology, virology, chemistry and engineering. As a field of applied biology, biotechnology has application in various sectors such as health care, drug discovery, vaccine production, crops production, biofuels, biodegradable plastics, vegetable oil, washing powder, organic products (including beer and milk products), biosensor, degradation of widely-diffused toxic compounds and nanotechnology etc.

Though there is a diverse opportunity to work in the field of biotechnology, Nepal is lagging to make it a prime sector for employment opportunity and economic upliftment. Thus, this program has targeted to fulfill such demands through research-oriented multidisciplinary subject.

OBJECTIVES

To produce highly knowledgeable and skilled manpower capable of carrying out independent advanced research in biotechnology as well as competent to ably perform related jobs in industry and academics (national and international level).

CAREER OPPORTUNITIES

This program is suitable for students wishing to enter employment in the biotechnology and pharmaceutical industry, as well as those wishing to progress to a higher research degree (Ph.D).There is a great career opportunity in Biotechnology in the global and local scenario (NARC, NAST, and DiagnosticResearch Centers). Other areas of employment are as follows; a) chemicals, pharmaceuticals and food industries b) education and environmental protection bodies and c) government sectors.

OUR MISSION

Our mission is to build a strong research and teaching environment that responds to future challenges in biotechnology. Our target is to enrich students with practical knowledge and confidence, make them sellable in the global and local job market. Thus, we will not be limited within the course of study. We attempt to update students through “Journal Club” in other areas of biotechnology (implication of synthetic biology to produce biofuels, use of high throughput on drug screening, use of biomaterials in nanotechnology etc.). Social platform “teamie” will be used for collaborative learning. We adopt totally different way of teaching/learning which distinct than the traditional way of teaching/learning style in Nepal.

INFRASTRUCTURE

The labs are equipped with PCR, Real-time PCR, Elisa Reader, 96-well Plate Reader,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, Rocking Platform, Electrophoresis apparatus (for DNA & Protein), Test tube Rotator, Water Bath Shakers etc. In addition, college is wellequipped with air conditioned tissue culture laboratory, library, seminar room and a computer laboratory with internet facility.

OUR VISION

Our vision is to develop an environment that fosters exemplary, innovative that responds swiftly to the challenges of the 21st century. In the diversity of biotechnology, pharmaceutical biotechnology is the one which could play a vital role to boost country’s economy up. Nepal can produce medicines (including antibiotics) for internal demand and export as well through this technology. Our vision is to set up research environment which will bring educational institutes and industries closer. We will provide manpower’s and technology to industries and as return, industries will create jobs for our graduates.

ELIGIBILITY FOR ADMISSION

1. Candidates with Bachelor degree in Biotechnology, Microbiology, Agricultural Science, Biochemistry, Environmental Science (with chemistry and biological science), Medical lab Technology (BMLT), Food Technology, and Bachelor degree in science with chemistry and biological sciences (Botany and Zoology), from Tribhuvan University or equivalent degrees from other recognized institutes or universities are eligible for admission.
2. The candidate must secure at least 50% marks in aggregate in Bachelor level.
3. Candidates should appear on Entrance Examination conducted by the Central Department of Biotechnology, Tribhuvan University to get an admission at National College.

SELECTION CRITERIA

The candidates will be selected for the admission on the basis of merit, which will be assessed by

1. The percentage of the marks secured in Bachelor degree (20%)
2. The marks secured in the entrance test of the Biotechnology Department (80%)

SEMINAR AND RESEARCH

All students must attend and take active participation in seminars organized by the college (Biotech program). Every semester, each student must present at least four research papers provided to him/her with critical assessments. Evolution will be done by assessing quality of presentation. Each student must get at least satisfactory grade in the Seminar. Each student must carry out a research project on given topic to complete this program. Potential student may receive research grants/support from Ministry of Science and Technology, NAST, UGC or other foreign agencies. In this connection, college will explore possibilities and also provide necessary assistance to students.

CAREER SUPPORT AND PERSONAL DEVELOPMENT

The National College can help students to:

- plan what to do after this program
- write a CV
- improve job applications
- look for work experience
- find vacancies
- help to find fellowship for Ph.D. study in abroad
- help to write a research proposal

SCHOLARSHIP

College offers scholarship to those students who have secured the highest mark in the undergraduate examination. Special discount is given to students of NIST education network. The partial scholarship will be given to those students who have secured above 80% marks in the end semester examination.

DURATION OF THE PROGRAM

Four semesters completed in two academic years and a semester consists of 15 weeks.

CURRENT RESEARCH PROJECTS

- Screening of extracts from medicinal plants and actinomycetes for the inhibition of enzymes of diabetic target (Funded by TWAS/UNESCO)
- Tissue culture of Paulownia tomentosaSteud, Potato, Black cardamom and others
- Rapid Screening for Sickle Cell Disease among people of Western Nepal by Real Time PCR
- Isolation of Antibiotics from Actinomycetesand Myxobacteria for use in Pharmaceutical Industry

We already completed some research projects successfully, which were supported by Asian Development Bank, NAST, and University Grants Commission.