



**Sri Dharmasthala Manjunatheshwara College(Autonomous),Ujire- 574 240**

### **Biotechnology Skill Enhancement Program- BiSEP**

**(Offered by P.G Department of Biotechnology)**

An initiative by the Department of IT,BT & S & T, Government of Karnataka& supported by DBT,Government of India.In collaboration with LSSSDC , CSIR-IICT & ABLE.

#### **Post graduate Diploma Course**

#### **Objectives:**

- Impart industry – oriented skill-upgrading training
- Enhance employability in biotech sector
- Train & mentor students/faculty from different districts of Karnataka
- Nurture the local talent and create an ecosystem of entrepreneurship and growth of biotech sector
- Create research environment that foster excellent R & D to address challenges in areas of Agri, Health, Food & nutrition.

#### **Strength of P.G Department of Biotechnology**

The Department has Memorandum of Understanding(MoU) with some of the renowned companies like Aristogene ,Bengaluru;Bhat laboratories,Bengaluru;Labland biotech pvt Ltd,Mysore; Vidyarathana Pvt Ltd, Kerala.

Its alumni are presently working in Biocon , Syngene ,Metahelix , IIHR, Mylaen Lab, Bengaluru.

Updated skill training provided in Upstream Fermentation- Small & pilot, downstream process- Product purification, HPLC , cell culture assay, to meet the industrial demand

#### **Remarkable features of Programme**

- Unique prog with enhanced placement opportunity in biotechnology sector

- Emphasizes on application of biological and engineering principles involving microbial, plant and mammalian systems
- Curriculum with skilled policies accord with industrial demand
- Course completion merits the candidates with placements as Process developer ,Executive upstream/down stream production, Scientist-Protein biologist; product biology, Executive quality control scientist-cultures, Manager-QA and QC

### **ABOUT DOMAIN : FERMENTATION & BIOPROCESS**

In Karnataka fermentation market has been growing rapidly from last ten years due to great demand for fermentation chemicals(alcohols, organic acids, enzymes & others) in pharmaceuticals, cosmetics, food & beverage industries. High industrialization rate in emerging economies such as China, India, South Korea, Mexico etc is anticipated to be responsible for huge market growth. Potentiality of fermentation industry lies within Inter relationship between technology, market developments, strategies of producers and particularly raw material supply. Understanding such interrelationship is essential in comprehending the future development of the Fermentation industry. Fermentation and Bioprocessing domain deals with the production of therapeutic proteins on using different expression systems as well as high cell density fermentation including media selection, preparation and sterilization, fermenter functional design, sterilization in place and sterilization process validation, fermenter inoculation and maintenance of different fermentation parameters, scale up of fermentation process, fermenter harvest and cleaning process validation. For animal cell culture, media preparation and sterilization by filtration, sub-culturing, suspension culture and monitoring, monitoring of bioreactor cultures. In downstream processing, familiarization with chromatography equipment, column packing methods, column equilibration, and operation of tangential flow filtration as well as its cleaning and sanitation, dead end filtration will also be part of the curriculum. In addition, regulatory requirements of different countries and cGMP requirements for the production area of biopharmaceuticals will also be covered.

### **Future prospects**

In the fastest growing biotech industry, biopharmaceuticals consist of about 62% of the \$3 billion generated in financial year 2009-10. According to the 9th Biospectrum - ABLE Biotech Industry Survey 2011, the industry has grown by 21.5%, slightly less than \$4 billion in financial year 2010-2011. Biopharma industries include Biocon, Serum Institute of India, Panacea Biotech, Reliance Life Sciences, Shantha Biotechniques, Indian Immunologicals, Bharat Biotech, Cadila Health Care, Intervet India, Intas Biopharma, Eli Lilly, Hafkine Biopharma, Glaxo Smith Kline, Novo Nordisk, etc.

## COURSE DETAILS

**Domain :** Fermentation & Bioprocess

**Duration :** 1 Year Program: 6 months course work & 6 months industry internship  
.Program is supported by a fellowship of Rs 10,000/month

**Eligibility :** Masters degree (Life sciences/Biotechnology/Microbiology/Biochemistry/Bioinformatics or any other Life sciences related courses) or B.E/B.Tech. (Biotechnology/Bioinformatics) or Bachelor of Pharmacy/Agriculture/Veterinary or any 4 years degree courses in Life Science subjects. The minimum marks for students belonging to SC/ST categories shall be not less than 40% and for all other categories it shall be not be less than 50% in the qualifying degree examination.

**Fees :** Rs.50,000/- per student excluding examination fees (if any). The resident students of Karnataka joining the course under BiSEP to pay Rs.25,000/- only as course fee. Balance Rs.25,000/- will be reimbursed to host institutes by Government on submission of prescribed documents..(excluding hostel fees)

**Admission Procedure :** Admission shall be done through online entrance test “**Karnataka – Biotechnology Aptitude Test (K-BAT)**”. Ranking generated for each candidate with 50% of Entrance Test marks + 50 % marks of qualifying examination. The candidates securing upto 50% marks belonging to general category/OBCs and 40% for candidates belonging to SC/ST category will be called for Counselling and Seat Allotment to select their choice of domain and institute based on the availability of domain and institute.

### **Seat Matrix in each Institute**

Total 20 seats in each institute; 10 seats are reserved for Resident Students of Karnataka & 10 seats for Non-resident Students of Karnataka. Reservations for students belonging to OBCs/SC/ST and

| <b>Seat Reservation / Category</b>                 | <b>OBC</b> | <b>SC</b> | <b>ST</b> | <b>HK</b> | <b>Others</b> | <b>Total</b> |
|--|------------|-----------|-----------|-----------|---------------|--------------|
| <b>Resident Students of Karnataka</b>              | 3          | 2         |           | 1         | 4             | 10           |
| <b>Non-Resident Students of Karnataka category</b> | 0*         | 2         |           | 0         | 7             | 10           |

Hyderabad - Karnataka regions are provided as per Government norms.

\*OBC reservation under non-resident students of Karnataka category, wherever applicable will be implemented as per the policy of each participating University/Institute.

**Contact** : BiSEP course Co ordinator

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**Admission through Biotechnology Aptitude Test(KBAT)**

**For more details contact URL: [www.bisep.karnataka.gov.in](http://www.bisep.karnataka.gov.in)**

