

# Biotechnology Skill Enhancement Programme

## Biotechnology Skill Enhancement Programme (BiSEP) at Dayananda Sagar College of Engineering

Biotech Finishing School (BTFS) was a very unique initiative in India with enhanced placement opportunities in Biotech Sector launched by Government of Karnataka in the Millennium Biotech Policy-II, in association with Government of India. BTFS was established in Karnataka with appropriate course content and duration to equip graduates and post-graduates with necessary employable skills and to make them industry ready. Dayananda Sagar Institutions was selected to conduct the Bio-Technology Finishing School (BTFS) programme from September 2011 for the period of five years. The programme is continued for the next cycle of five years and renamed as **Biotechnology Skill Enhancement Programme (BiSEP)**, PG Diploma in **Plant Genetic Engineering**.

### Course Highlights

- The programme is affiliated to the Dayananda Sagar University, Bengaluru and the students upon successful completion would be eligible for the PG Diploma awarded by the University.
- The selected students through Karnataka Biotechnology Aptitude Test (KBAT) conducted online by KBITS are provided a fellowship of Rs. 10,000/- per month throughout the duration of the programme (1 Year) by KBITS, GoK and DBT, New Delhi.
- The students would also be examined and certified by the Life Science Sector Development Council (LSSSDC), a statutory body under National Skill Development Council (NSDC), New Delhi.
- DSCE is equipped with a dedicated Innovation and Entrepreneurship Development Cell (IEDC) which provides mentorship and assistance for establishing Start ups in the biotech sector.



### Domain:

“Plant Genetic Engineering”.

**Duration:**

12 months- Course Work (6 months) + Internship (6 months)

**Eligibility:**

Candidates must have a minimum of 50% in Masters degree from Universities of the state or any other University recognized as equivalent in Life Sciences, Biotechnology, Microbiology, Biochemistry, Bioinformatics or any other life science related courses; B.E./B.Tech. – Biotechnology, Bioinformatics; Bachelor of Pharmacy, Agriculture, Veterinary, MBBS and BDS are also eligible to apply.

Candidates who have appeared for the M.Sc/B.E. final exams can also apply. Upon selection, a provisional degree certificate should be submitted to the respective colleges within two weeks of course commencement.

**Course Fees Structure:**

Fees for the 12 months programme is Rs. 25,000/- for Karnataka candidates and Rs.50,000/- for Non Karnataka candidates.

**Selection:**

Registered candidates will have to clear the Karnataka Biotechnology Aptitude Test (KBAT) conducted online. Those who qualify this test will be screened and selected through interviews conducted by a panel of experts from both academics and industry. For more details visit <http://www.bisep.karnataka.gov.in>

**Karnataka Biotechnology Aptitude Test (KBAT)**

KBAT aims to test the fundamental concepts in Biology, Aptitude and English.

KBAT is an online exam. It can be taken from anywhere with a good internet facility.

KBAT consists of 100 multiple choice questions which need to be answered in 60 minutes.

**Fellowship:** Students are provided with a fellowship of **Rs. 10,000/- per month** throughout the duration of the programme (1 Year). Department of Biotechnology (DBT), Govt. of India provides the fellowship for non Karnataka candidates and KBITS, Govt. of Karnataka provides the fellowship for Karnataka candidates.



## **Introduction**

Plants are the major sources of food supply and the major contributors of raw materials to industries. But many factors such as drought, land degradation, pests, and diseases are coming in the way of production and productivity. Plant Genetic Engineering is being used to address problems in all areas of agricultural production and processing. Genetic Engineering is the manipulation of organism's genome. A plant genetic engineer will alter genes in order to improve the biological capabilities of plants. The main goal is to help people lead quality lives. 81% of globally grown soybean and cotton are GM crops. 35% of corn and 30% of canola grown globally are GM. 90% of corn grown in North America is GM corn. With the controversies of direct gene manipulation by cloning and transformation, currently scientists are relying on genome editing technology. Many developing countries are slowly accepting GM crops and many MNCs are working in this area. These companies are involved in the use of markers in Breeding, Genome editing, cloning and characterization of economically important genes against pests, pathogen, salinity stress etc., and also in commercial micro propagation of crops.

## **Scope and Application**

Currently, there is a need for skilled personnel who cater to the needs of industries. India is mainly an agrarian country where in the production and productivity of crops is low compared to developed countries. The low productivity coupled with increased need of food for its growing population provides an opportunity for plant biotech industry to step in, to meet the demands. This provides a huge demand for industry ready manpower to engage in plant biotech industry. There will be opportunities in the Plant biotech industries, hybrid seed companies and also in plant tissue culture sector as the students will be trained in techniques of Plant Tissue Culture, Plant Breeding and strategies for developing plant lines adapted to biotic and abiotic stresses.

## **Curriculum**

The curriculum of the Biotechnology Skill Enhancement Programme (BiSEP) for PG Diploma in Plant Genetic Engineering consists of hands-on training in routine as well as state of the art technologies with a sound background on principles and practices of each technology. With the sophisticated facilities acquired and built specifically for this, BiSEP have the required manpower and the knowledge to train future generations of workforce to cater to the needs of Plant Biotechnology industries. Moreover there is an intense interaction with the industries. Their constant input and feedback benefit the trainees.

## **Industrial Partners:**

Monsanto India Ltd, Dupont India, Mahyco Seeds Ltd, Indo American Hybrid Seeds, Pioneer hybrid seeds, Limagrain, Solar Agrotech private Ltd, Ajeet Seeds Ltd, Amruth Seeds, Ashoka Seeds, Reliance life sciences, Orris Life Sciences, Solae, Metahelix Life Sciences, Natural Remedies, Plantek, Lowes Tissue culture, Criyagen, Biogenomics.



### **Alumini Testimonials (BTFS):**

"BTFS program is the finest course I have known which merges the border between academics and industry. The academic part of the course imparts practical knowledge of the science followed by the internship program which gives invaluable insight into the market driven research on which organizations are focused on. This has helped me to gain a clear perspective of the opportunities I have and guided me in choosing where I should focus my energy for making a stable career in my chosen field. I thank the BTFS committee and also Dayananda Sagar Institute for the course that imparted the right training and appropriate attitude to me and helped me find a successful career in a very short time."



Mr. Sai Santhosh Machiraju  
Research Associate  
Dupont Ltd., Hyderabad.

The BTFS Course was a great startup for my career in Life Science field, the PG Diploma in Plant genetic transformation, genome, seed and marker analysis from Dayananda Sargar college, added extra value to my basic degree (i.e., B.E Biotechnology), and always there is time and place for everything and my time and place was given by biotech finishing school and Dayananda Sagar college. For the students like me BTFS is the best place to start with. And finally I like to thank all the coordinators and faculties of all the Biotech finishing schools for making all the students life's valuable.



Mr. Rakesh. J  
Junior Research Fellow

“An ignited mind is the most powerful weapon on the earth, above the earth and under the earth; and this is got through education.”

At first, I would like to thank the BTFS and Karnataka government IT&BT Department for arranging such a useful program for the graduate students.

I would also like to thank Dayananda Sagar Institutions Bangalore for the 6 months training; it helped me to polish my skills for industrial needs. The course syllabus and classes were designed to meet industrial requirements. Industrial visits, soft skill classes and presentations also helped us to improve our confidence and communication skills. I would like to thank Management, professors and entire staff of Dayananda Sagar Institutions for successful completion of my six months training.



Mr. Visnu Chandran  
Research Associate  
Dupont Ltd., Hyderabad.

The course - Plant Genetic Transformation, Genome, Seed and Marker Analysis at DSI, Bangalore has laid the foundation for my career. I got placed in the same company where i was referred for internship. The BTFS course, as told in our orientation, bridged the gap between academia and industry. I am thankful to KBITS for the wonderful course, DSI for their facilities and my tutors for their guidance.



Ms. Raji Vipin  
Research Associate  
Metahelix Ltd., Bangalore.



**To learn more about the BiSEP Programme & KBAT Examination – BiSEP Karnataka**  
(<http://www.bisep.karnataka.gov.in>)