

Bachelor of Engineering in Genetic Engineering

Duration	Level
4 Years	Graduation
Type	Eligibility

Degree 10+2 or Equivalent

B.E. Genetic Engineering or Bachelor of Engineering in Genetic Engineering is an undergraduate Genetic engineering course. Genetic engineering, also called genetic modification, is the direct human manipulation of an organism's genome using modern DNA technology. It involves the introduction of foreign DNA or synthetic genes into the organism of interest. The introduction of new DNA does not require the use of classical genetic methods. However traditional breeding methods are typically used for the propagation of recombinant organisms. The most common form of genetic engineering involves the insertion of new genetic material at an unspecified location in the host genome. The syllabus for the course is divided into eight semesters and some electives. The degree course creates a lot of career scopes for the candidates after the completion of it and its duration is four years.

B.E. Genetic Engineering Eligibility

- Students should have passed 10+2 or equivalent examination, with Biology, Chemistry, and Mathematics as well as genetics as part of the biology. Or
- A bachelor's degree in science or molecular biology.

B.E. Genetic Engineering Syllabus

Syllabus of Genetic Engineering as prescribed by various Universities and Colleges.

Sem. I	
Sr. No.	Subjects of Study
1	Mathematics I
2	English
3	Physics
4	Chemistry
5	Basic Engineering I
Practical	
1	Physics Laboratory
2	Chemistry Laboratory
3	Computer Literacy
4	Engineering Drawing
5	NSS / NCC / NSO / YOGA
6	Personality Development-I
Sem. II	
Theory	
1	Mathematics LS II
2	Material Science

3	Principles of Environmental Science
4	Biochemistry
5	Basic Engineering II
6	Cell Biology
7	Value Education
Practical	
1	Workshop Practice
2	Computer Practice
3	Biochemistry Laboratory
4	Personality Development II
Sem. III	
Theory	
1	Enzyme Technology
2	Genetics and Cytogenetics
3	Immunology
4	Microbiology
5	Mechanical Operations & Heat Transfer
6	German Language Phase I/Japanese Language phase I/French Language Phase I
7	Computer Skills
Practical	
1	Microbiology Laboratory
2	Immunology Laboratory
3	Personality Development III
Sem. IV	
Theory	
1	Basic Molecular Techniques
2	Molecular Biology
3	Stoichiometry and Engineering Thermodynamics
4	Bioprocess Principles
5	Biostatistics
6	German Language Phase II/Japanese Language phase II/French Language Phase II
7	Comprehension I
Practical	
1	Molecular Techniques Laboratory
2	Bio process Engineering Laboratory
3	Personality Development IV
Sem. V	
Theory	
1	Advanced Molecular Techniques
2	Functional Genomics and Microarray Technology
3	Momentum Transfer
4	Bioprocess Engineering
5	Biophysics
6	Plant Tissue Culture and Transgenic Technology
7	Personality Development V
Practical	

1	Gene Expression Laboratory
2	Plant Genetic Engineering Laboratory
3	Industrial Training I
Sem. VI	
Theory	
1	Recombinant DNA Technology
2	Bioinformatics
3	Chemical Reaction Engineering
4	Gene Therapy
4	Biosensors and Biochips
5	Elective I
6	Comprehension II
7	Personality Development VI
Practical	
1	Gene Cloning & DNA Sequencing Laboratory
2	Bioinformatics Laboratory
Sem. VII	
Theory	
1	Bio-separation Technology
2	Animal Cell Culture and Transgenic Technology
3	Nano biotechnology in Healthcare
4	Stem Cell Biology
5	Elective II
6	Comprehension II
Practical	
1	Genome Analysis Laboratory
2	Animal Cell Culture Laboratory
3	Bio-separation Laboratory
4	Industrial Training II
Sem. VIII	
Practical	
1	Project Work
2	Bio-safety, Bioethics, IPR & Patents
3	Elective III

Some of the Electives

VI Semester Electives	
1	Human Genetics
2	Protein Engineering
3	Industrial Microbiology
4	Industrial management
VII Semester Electives	
1	Bioreactor Design
2	Biomedical Engineering
3	Genes and Diseases
VIII Semester Electives	
1	Bio-confinement of Genetically Modified Organisms

2	Food Safety & Genetically Modified Food
3	Pharmaco informatics
4	Molecular Medicine

B.E. Genetic Engineering Colleges

- Sathyabama University, Chennai
- Indian Institute of Science - Bangalore, Bangalore
- Indian Institute of Technology - IIT Bombay, Mumbai

B.E. Genetic Engineering Course Suitability

- Those who have specific skills in logical thinking, numeracy, and computing; awareness of current issues and ethical debates are the most suitable ones for it.
- Students who can work in group projects and seminars are also a good match for it; this enables you to develop team skills and communication skills, such as report writing and making presentations.
- Candidates willing for further studies also are suitable for it.
- To be a successful genetic engineer, one must have a sharp analytical mind, an aptitude for research, high levels of concentration, eye for details, lively imagination, abundant physical stamina to put in long hours of work, ability to work as a team, moreover he should have a sound moral sense.

How is B.E. Genetic Engineering Course Beneficial?

- Research and educational institutes are the two major sectors that offer jobs to the professionals of Genetic engineering.
- Scholars after specializing in genetic engineering studies may join as lecturers.
- Experienced research scholars or doctoral degree holders are appointed as assistant professors and professors depending on experience. Research scholars are appointed by organizations involved in genetic studies.
- Not only in India, all over the globe Genetics has courses created candidates capable of taking up research assignments in institutes all over the globe.
- Candidates completing genetic engineering courses in India mostly travel to United States, United Kingdom or Germany for further research and investigative assignments.
- They can go Masters' degree having passed their graduation.

B.E. Genetic Engineering Employment Areas

- Enabling Technologies
- Educational Institutes
- Management & Healthcare System
- Powertrain Designing Companies
- Agriculture Sector
- Biomedical Companies

B.E. Genetic Engineering Job Types

- Info. Security Engineer

- Junior Research Fellow
- Research Associate
- Inform. Security Analyst
- Plant Breeder
- Prod. Control Associate
- Lecturer & Professor

Advance Course in B.E. Genetic Engineering

- M.Tech. (Genetic Engineering)