



हरकोर्ट बटलर प्राविधिक विश्वविद्यालय

नवाबगंज, कानपुर - 208002, उ.प्र., भारत

HARCOURT BUTLER TECHNICAL UNIVERSITY

NAWABGANJ, KANPUR - 208002, U.P., INDIA

(Formerly Harcourt Butler Technological Institute, Kanpur)

Phone : +91-0512-2534001-5, 2533812, website : <http://www.hbtu.ac.in>, Email : vc@hbtu.ac.in



**DEPARTMENT WISE
VISION
MISSION
PROGRAM EDUCATIONAL OBJECTIVES (PEOS)
PROGRAM OUTCOMES (POs)
PROGRAM SPECIFIC OBJECTIVES (PSO)**

School of Engineering	
Civil Engineering	Link
<p>VISION</p> <p>To position as a global leader in Civil Engineering teaching, research, innovation and extension activities; for sustainable growth of economy with a meaningful and lasting impact on the society.</p> <p>MISSION</p> <ol style="list-style-type: none"> 1. Imparting quality academics in Civil Engineering Education. 2. Carrying out high quality applied research and innovation in Civil Engineering with due considerations for sustainability. 3. Imparting extension activities in form of consultancy, continuing education thereby leading to capacity building. 4. Enhancing linkages with alumni and industry. <p>PROGRAM EDUCATIONAL OBJECTIVES (PEOS)</p> <p>The Department of Civil Engineering has identified 5 PEOs:</p> <p>PEO-1: Apply principles of basic and engineering sciences in analysis, design and operation of civil engineering systems.</p> <p>PEO-2: Graduates will be actively engaged in a professional career as a civil engineer or pursue higher studies in relevant specialization.</p> <p>PEO-3: Graduates, will understand and assess the societal needs to see as to how civil engineering projects affect the society and the environment in view of the sustainability issues.</p> <p>PEO-4: Graduates will understand professional practice issues and demonstrate a commitment to professional and continuing education.</p> <p>PEO-5: Engage in lifelong learning and adapt to changing professional needs to keep themselves abreast with the state of the art in field.</p> <p>PROGRAM SPECIFIC OBJECTIVES (PSO)</p> <p>The graduates of Civil Engineering at HBTU Kanpur will be able to:</p> <p>PSO-1: Able to apply concepts of Civil Engineering to design simple infrastructure such as Building, water tanks, retaining walls, water supply systems, wastewater treatment plants, hydraulic structures, highways, traffic signals problems, landfills, ash ponds etc</p> <p>PSO-2: Able to design and conduct civil engineering experiments, as well as to analyze and interpret data.</p> <p>PSO-3: Exhibit knowledge of basic and applied sciences (Physics, Chemistry and Maths) and apply the same for solving real life civil engineering field problem.</p> <p>PSO-4: Exhibit an ability to use the techniques, skills, and modern engineering tools necessary for civil engineering practice.</p>	<p>http://hbtu.ac.in/civil-engineering-2/</p>
Computer Science and Engineering & Information Technology	
<p>Vision</p> <p>To excel in Computer Science & Engineering education, research, innovation and global employability.</p> <p>Mission</p> <ol style="list-style-type: none"> 1. Achieve academic excellence in Computer Science & Engineering through an innovative teaching-learning process. 2. Inculcate technical competence and collective discipline in students to excel for global 	<p>http://hbtu.ac.in/computer-science-engineering-2/</p>

employability, higher education and societal needs.

3. Establish focus research groups in leading areas of Computer Science & Engineering.

4. Sustain quality in Computer Science & Engineering education & research through continuous & rigorous assessment.

Program Educational Objectives (PEOs)

1. Graduates will be able to take up technical/ professional positions for design, development, and problem solving in software industries and R&D organizations.

2. Graduates will be technical, ethical, responsible solution providers and entrepreneurs in various areas of Computer Science & Engineering.

3. Graduates will be capable and competent to pursue higher studies in Institutions of International / National repute.

4. Technical ability to analyze, develop and innovate systems and technologies in the leading/ever-evolving areas of Computer Science & Engineering.

Program Outcomes (POs)

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member

<p>and leader in a team, to manage projects and in multidisciplinary environments.</p> <p>12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.</p> <p>Program Specific Outcomes (PSOs)</p> <p>By the completion of B. Tech. Computer Science & Engineering program, the students will achieve the following program specific outcomes:-</p> <ol style="list-style-type: none"> 1. The ability to understand, analyse and develop applications in the field of algorithms, system software, databases, web design, networking and artificial intelligence. 2. The ability to apply standard practices and strategies in software project development using suitable programming environment to deliver a quality product. 3. The ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur, and a zest for higher studies. 4. The ability to use research based knowledge to do literature survey, formulate problem, design & carry-out experimentation, analyse & interpret experimental results for complex research problems. 	
<p>Electrical Engineering</p> <p>VISION</p> <p>Building department into a knowledge hub, through its utmost focus on relevant education, innovation and cutting edge research, and out-reach activities for the conservation, peace, happiness, well-being and prosperity of all creation.</p> <p>MISSION</p> <ul style="list-style-type: none"> • To educate and train the students equipped with knowledge of electrical engineering, analytical abilities, ethics and integrity human and social values and leadership qualities • Capacity building, innovation and development of research capabilities through collaboration / agreements and symbiotic relationship with industry / institutes / universities and other government / private / non-government agencies and civil societies. • Providing environment friendly, reasonable and sustainable solutions for local & global needs. • Creating awareness and also enhancing resource generation through STCs, FDPs, SDPs, etc. • Implementation of quality processes in teaching and learning, and research. • Foster an ecosystem as per the need of the time well-knitted with the nature, and establishing Centre(s) of Excellence / state of art lab facilities in niche areas as per strengths of department • Establishing the department as the leader and hand holding others institutions / universities <p>PROGRAM EDUCATIONAL OBJECTIVES (PEOS)</p> <p>PEO 1. Ability to exhibit memory of previously learned material by recalling fundamental facts, terms, basic concepts and answers about the selection, in the domain of electrical engineering.</p> <p>PEO 2. Ability to demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptors and stating main ideas, in the domain of electrical engineering.</p> <p>PEO 3. Ability to solve problems in new situations by applying acquired knowledge, facts,</p>	

<http://hbtu.ac.in/electrical-engineering-2/>

<p>techniques and rules in a different, or new way, in the domain of electrical engineering.</p> <p>PEO 4. Ability to examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations, in the domain of electrical engineering.</p> <p>PEO 5. Ability to compile information together in a different way by combining elements in a new pattern or proposing alternative solutions, in the domain of electrical engineering.</p> <p>PEO 6. Present and defend opinions by making judgments about information, validity of ideas or quality of work based on a set of criteria, in the domain of electrical engineering.</p>	
Electronics Engineering	
<p>Vision Department of Electronics Engineering aims to deliver Technical Education in the field of Electronics and Communication Engineering, for producing Engineers and Technologists who are happy, healthy and competent professionals, motivated to serve the society through research & innovation.</p> <p>Mission</p> <ol style="list-style-type: none"> 1. To educate and train the students with state-of-the-art in Electronics and Communication Engineering. 2. To prepare the students who are fit for meeting the requirements and challenges of the Industry right at the time of their graduation by evolving a sustainable Industry-University interaction system for this. 3. To upgrade the teaching standards through continued efforts toward improvement of the qualification and expertise of the teachers as well as supporting staff. 4. To create awareness amongst the students towards socio environmental technologies by offering related courses and organizing seminars/workshops on these topics in the university and by encouraging participation in similar activities at other places. 5. To expand research and development activities in the frontier areas related to Electronics and Communication. 6. To include the aspect of integration of environmental balance and human values in the curriculum. 7. To provide academic support to other technical institutions at state & national level through the process of networking. 8. To start social service programs like education for masses, particularly using the enhanced means of communication. <p>Program Educational Objectives (PEOs) Program graduates, within three years from their graduation will</p> <p>PEO 1: have knowledge of basic and applied sciences, so as to apply the necessary competence for technically sound, economically feasible and socially acceptable solutions of real life complex engineering problems.</p> <p>PEO 2: be fit for meeting the requirements and challenges of industries, research and academic institutions both at the national and International level, by applying expertise gained in area of electronics and communication engineering.</p> <p>PEO 3: be professionally competent with excellent communication and management skills along with being enterprising professionals and responsible citizens capable of delivering their services individually as well as in a collaborative framework.</p> <p>Program Outcomes Engineering Graduates will be able to:</p> <ol style="list-style-type: none"> 1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. 2. Problem analysis: Identify, formulate, review research literature, and analyze 	<p>http://hbtu.ac.in/electronics-engineering-2/</p>

<p>complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.</p> <p>3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.</p> <p>4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.</p> <p>5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.</p> <p>6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.</p> <p>7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.</p> <p>8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.</p> <p>9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.</p> <p>10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.</p> <p>11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.</p> <p>12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.</p> <p>Program Specific Outcomes (PSOs)</p> <p>PSO 1: Students should be able to apply the acquired knowledge of core Electronics and Communication Engineering courses in the analysis, design, and solution of Real Life Complex Engineering Problems in teamwork environment.</p> <p>PSO 2: Student should have ability to absorb and apply modern electronic software and hardware for design and analysis of complex engineering problems.</p>	
<p>Mechanical Engineering</p> <p>Vision</p> <p>To produce quality mechanical engineer with knowledge, skill and creativity to cater to the needs of the industry and the society.</p> <p>Mission</p> <p>M-1: To offer academic programme in tune with the requirements of the industry. M-2: To undertake research and development activities for solving real life problems. M-3: To provide conducive environment for promoting creativity and innovation.</p> <p>Program Educational Objectives (PEOs)</p> <p>PEO 1: To impart knowledge and skill in the students to understand basic mechanical engineering concepts. PEO 2: To inculcate creativity and analytical power to solve real life engineering problems. PEO 3: To provide ample opportunities, training and exposure to the students to work as a team and to develop leadership qualities. PEO 4: To develop entrepreneurial capabilities in the students. PEO 5: To encourage and motivate the students to imbibe the art of self-learning. PEO 6: To prepare the students for the service in the industry and society by continuously</p>	<p>http://hbtu.ac.in/mechanical-engineering-2/</p>

updating the curriculum. 3

Program Outcomes (POs)

Engineering graduates will be able to:

PO 1	Engineering knowledge: An ability to apply basic knowledge of science, mathematics and engineering fundamentals in the field of mechanical engineering.
PO 2	Problem analysis: An ability to identify, formulate, review research literature and analyze mechanical engineering problems using basics principles of science, mathematics and engineering.
PO 3	Design / development of solutions: An ability to design for complex mechanical engineering problems using basic design concepts, analyze and process to meet the desired needs with in realistic constraints such as manufacturability, durability, sustainability and economy with appropriate consideration for the public health, safety, cultural, societal, and environmental considerations.
PO 4	Conduct investigations of complex problems: An ability to design and conduct experiments using research-based knowledge and methods including design of experiments, analyze, interpret the data and results with valid conclusion.
PO 5	Modern tool usage: An ability to apply the modern tools and apply appropriate techniques to synthesize, model, design, analyze, verify and optimize to solve complex mechanical engineering problems within defined specification by using suitable modern tools to satisfy the needs of the society within realistic constraints such as social, economical, political, ethical, health, safety and manufacturing.
PO 6	The Engineer and Society: An ability to understand the impact of mechanical engineering solutions globally, in terms economic, societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	Environment and sustainability: An ability to understand the principles, commitment and practice to improve product sustainable development globally in mechanical engineering with minimal environmental effect.
PO 8	Ethics: An ability to understand and apply ethical principles and commitment to address professional ethical responsibilities of an engineer.
PO 9	Individual and team work: An ability to function efficiently as an individual and as a group member in a team in multidisciplinary activities
PO 10	Communication: An ability to communicate, comprehend and present effectively with engineering community and the society at large on complex engineering activities by receiving clear instructions for preparing effective reports and design documentation.
PO 11	Project management and finance: An ability to acquire and demonstrate the knowledge of contemporary issues related to finance and managerial skills to bring up entrepreneurs and entrepreneurship.
PO 12	Life-long learning: An ability to recognize and adapt to emerging field of application in engineering and technology by developing self-confidence for continuing education and lifelong learning process.

School of Chemical Technology	
Biochemical Engineering	Link
http://hbtu.ac.in/bio-chemical-engineering-2/	
Vision The department of Biochemical Engineering aspires to be globally recognized center to develop professionals with technical knowledge and skills, leadership qualities and strong ethical values for successful career in Biochemical and allied industries, research and development organizations.	
Mission The mission of the Department of Chemical Technology Biochemical Engineering -	
M1 To develop state-of-the-art facilities to impart technical knowledge and skill to the graduate and post graduate students for Biochemical and allied industries and research organizations.	
M2 To be a center of research and development for betterment of society in sustainable manner.	
M3 To develop state-of-art the technologies for testing and consultancy for industry and society.	
M4 To cultivate strong ethical values to be a successful professionals and to become life-long learners.	
Program Educational objectives (PEOs) for B.Tech. Chemical Technology- Biochemical Engineering - The educational objectives of B.Tech. Chemical Technology- Biochemical Engineering program are:	
PEO1 To produce globally competent technical manpower in the field of Biochemical, products , processing and allied areas to cater the need of country	
PEO2 To impart knowledge for development of innovation designs production materials and processes for sustainable development of society	
PEO3 To serve the industry to meet the challenges in terms of quality assurance and standardization to with stand the global competitiveness	
PEO4 To be able to discharge duties with professional attitudes and ethics	
Program outcomes (POs) of B.Tech. Chemical Technology - Biochemical Engineering	
Graduating Students of B.Tech. Chemical Technology- Biochemical Engineering program will be able to: Program Outcomes (POs)	
Graduate Attributes(GAs)	
PO1	Apply the knowledge of mathematics, science engineering fundamentals and Engineering concepts for the solution of complex engineering problems
PO2	Identify formulate, review literature and analyze complex problems related to Chemical Technology- Biochemical Engineering reaching substantiated conclusions using first principles of mathematics and engineering sciences
PO3	Design solution for complex problems in Chemical Technology- Biochemical Engineering and design system components or process that meet the specified needs with appropriate consideration for the public health and safety, and cultural, societal and environmental considerations
PO4	Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions
PO5	Create, select and apply appropriate techniques, resources and modern engineering tools such as optimization techniques, simulations, including predication and modeling to complex process

	engineering problems with an understanding of their limitations.		
PO6	Apply contextual knowledge with justification to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering and Chemical Technology- Biochemical Engineering professional practice	The Engineer & Society	
PO7	Understand the impact of the professional engineering and Chemical Technology- Biochemical Engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development	Environment and sustainability	
PO8	Apply ethical principles and commit to professional ethics adhering to the norms of the engineering and Chemical Technology- Biochemical Engineering practice	Ethics	
PO9	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings	Individual and team work	
PO10	Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.	Communication	
PO11	Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.	Project management and finance	
PO12	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.	Life-long learning	
Program specific outcomes (PSOs) for B.Tech. Chemical Technology Biochemical Engineering program are: Graduating Students of B.Tech. Chemical Technology Biochemical Engineering program will be able: PSO1 to apply practical skills, technical knowledge in major streams such as Biology, manufacturing, processing, and applications areas of engineering and technology in Biochemical Engineering and allied industries PSO2 to take-up career in research organizations or to pursue higher studies in Biochemical Engineering and interdisciplinary programs with high regard for ethical values, environmental and social issues.			
Chemical Engineering			
VISION To emerge as a global leader in the areas of education and research in Chemical Engineering to handle the technological challenges in Chemical Engineering & Allied Fields and catering the requirements of stakeholders and society. MISSION The missions of the Department of Chemical Engineering are: M1: To provide state-of-art technical education to the undergraduate and post graduate students. M2: To create a conducive and supportive environment for the overall growth of our students. M3: To cultivate awareness of social responsibilities in students to serve the society. M4: To groom students with leadership skills helpful in Startups, professional ethics and accountability along with technical knowledge to face the changing needs of industry and environment.			http://hbtu.ac.in/chemical-engineering-2/

<p>M5: To provide consultancy services to the Chemical and Allied industries of the region, state and the country.</p> <p>Program Educational Outcomes (PEOs) The educational objectives of B.Tech. Chemical Engineering are: PEO1: Graduates from our department will be proficient in varied areas of Chemical Engineering that are industrially and academically significant such as Petroleum Refining, Petro Chemicals, Instrumentation & Process Control, Modeling & Simulation, Nanotechnology, Electrochemical technology, Process Engineering & Design along with recent advances. PEO2: Graduates will exhibit entrepreneurship, leadership and high professional skills while maintaining ethical and moral values. PEO3: Graduates will continuously strive and align their activities for betterment of the society. PEO4: Graduates will discharge their duties with professional attitudes and ethics.</p> <p>Program Specific Outcomes (PSOs) The Program specific outcomes (PSOs) of B.Tech. Chemical Engineering are: PSO 1: Apply the knowledge and analytical ability to solve Petroleum and Fertilizer industry problems. PSO 2: Analyze and formulate economically viable solutions for waste management systems. PSO 3: Design and development of ecofriendly sustainable chemical engineering processes.</p>			
<p>Food Technology</p> <p>VISION “To achieve excellence in technical education, research and innovation”</p> <p>MISSION 1. Imparting Knowledge to develop analytical ability in science and technology to serve the industry and society at large. 2. Equip and enable students with conceptual, technical and managerial skills to transform the organization and society. 3. Inculcating entrepreneurial philosophy and innovative thinking to promote research, consultancy and institutional social responsibility. 4. Serving people, society and nation with utmost professionalism, values and ethics to make development sustainable and quality of life.</p> <p>THE DEPARTMENT VISION “To develop technically sound food technocrats, to cater the needs of food processing industries, Research & Development organizations and society”.</p> <p>MISSION The missions of the Department of Food Technology are: M1 Imparting technical knowledge to develop human resources for food processing sectors. M2 Imparting knowledge & technical skills for better processing and value addition of Food & Agro-products through R&D. M3 Inculcating innovative thinking with the aim to support entrepreneurship and to develop state-of-art technologies for testing and consultancy to fulfill the needs of industry and society. M4 Cultivating strong ethical values for sustainable modern and safe food to society.</p> <p>Program Educational objectives (PEOs) for B. Tech. Chemical Technology-Food Technology The educational objectives of B. Tech. Chemical Technology - Food Technology program are:</p> <table border="1" data-bbox="191 1812 1299 1873"> <tr> <td data-bbox="191 1812 305 1873">PEO1</td><td data-bbox="305 1812 1299 1873">Graduates of the program will contribute to the development of sustainable growth of food processing sector for the betterment of society</td></tr> </table>		PEO1	Graduates of the program will contribute to the development of sustainable growth of food processing sector for the betterment of society
PEO1	Graduates of the program will contribute to the development of sustainable growth of food processing sector for the betterment of society		

<http://hbtu.ac.in/food-technology/>

PEO2	Graduates of the program will accept and create innovations in providing solution for sustainable technological development	
PEO3	Graduates of the program will meet challenges in terms of quality assurance and standardization to withstand the global competitiveness	
PEO4	Graduates of the program will exhibit professionalism, ethical attitude, team spirit and pursue lifelong learning for betterment of society	

Program Outcomes (POs) of B. Tech. Chemical Technology - Food Technology
Graduating Students of B. Tech. Chemical Technology - Food Technology program will be able to:

Program Outcomes (POs)		Graduate Attributes (GAs)
PO1	Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.	Engineering Knowledge
PO2	Identify, formulate, review research literature, and analyses complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.	Problem Analysis
PO3	Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.	Design / Development of solutions
PO4	Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.	Conduct Investigations of complex problems
PO5	Create, select and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.	Modern Tool Usage
PO6	Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.	The Engineer & Society
PO7	Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.	Environment and sustainability
PO8	Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.	Ethics
PO9	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.	Individual and team work
PO10	Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.	Communication
PO11	Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.	Project management and finance
PO12	Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.	Life-long learning

Program Specific Outcomes (PSOs) for B. Tech. Chemical Technology - Food Technology program are:
Graduating students of B. Tech. Chemical Technology - Food Technology program will be able:

PSO1	to apply practical skills, technical knowledge in major streams such as chemistry, manufacturing, processing, and to application areas of engineering & technology in food industries	
PSO2	to take-up career in research organizations and to pursue higher studies in food technology and interdisciplinary programs with high regard for ethical values, environmental and social issues.	
Leather Technology		
VISION Department of Leather Technology at HBTU aims at being a leader of innovation in the area of Leather to produce quality technologists of world standards to deliver the benefits of the developed technologies to the people.		http://hbtu.ac.in/leather-technology-2/
MISSION 1. To achieve academic excellence and practical knowledge in the fields of Leather, Leather Application, and allied areas. 2. To inculcate technical competence in students for formulation, manufacture and application of advanced Leather with eco -friendly and sustainable approach. 3. To develop state-of-art facilities for testing and consultancy for industry to make the department a center of excellence in the field of Leather at global level. 4. To develop indigenous and adaptable technologies related to Leather for small scale production and to develop entrepreneurial skills, towards betterment of society.		
PROGRAM EDUCATIONAL OBJECTIVES (PEOS) PEO 1: To produce graduates and post graduates who will be able to meet the requirements and challenges at national & international levels in the field of formulation, manufacture and application of Leather and allied products. PEO 2: To inculcate in students the fundamental concepts related to Leather Production & applications to enable them to develop novel technologies to meet the global standards of eco-friendliness & sustainability. PEO 3: To produce technologists with high moral values and professional ethics, who can work with industry hand-in-hand for mutual benefits and to sensitize them for job creation for the society, specially the rural community.		
PROGRAM OUTCOMES (PO's) OF B.TECH. CHEMICAL TECHNOLOGY - LEATHER TECHNOLOGY PROGRAM B.Tech. Chemical Technology- Leather Technology Graduates of the program will be able to: Program Outcomes (POs) Graduate Attributes(GAs)		
PO1	Apply the knowledge of science engineering fundamentals and Technological concepts for the solution of Technological problems such that they meet the industry requirement to serve leather as well as footwear and garment making industry.	Technological/Engineering Knowledge
PO2	Identify formulate, review literature and analyze complex problems related to Chemical Technology- Leather Technology reaching substantiated conclusions using engineering Tech. sciences	Problem Analysis
PO3	Solution for industry requirement as per technological changes reforms, latest technique and management requirement of leather industry.	Development of solutions
PO4	Use research-based knowledge and research methods including project work and seminar work for the latest topics in leather industry, analysis and interpretation of data, and synthesis of the information to provide valid conclusions	Projects works & seminar for professional enhancement

PO5	Impart knowledge to the students the core concepts of chemical engineering such that they are prepared to face the competitive exams and accentuate higher studies and research	Modern Tool Usage
PO6	Apply contextual knowledge with justification to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering and Chemical Technology-Leather Technology professional practice	The Technologist & Society
PO7	Understand the impact of the professional engineering and Chemical Technology- Leather Technology solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development	Environment and sustainability
PO8	Apply ethical principles and commit to professional ethics adhering to the norms of the engineering and Chemical Technology- Leather Technology practice	Ethics
PO9	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings	Individual and team work
PO10	Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.	Communication
PO11	Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.	Project management and finance
PO12	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.	Life-long learning
PROGRAM SPECIFIC OUTCOMES (PSOS) FOR B. TECH. CHEMICAL TECHNOLOGY-LEATHER TECHNOLOGY PROGRAM PSO 1: Students should be able to apply the acquired knowledge in the professional world related to formulation, manufacture and application of Leather and allied products and should be sensitized technocrats towards using indigenous resources and infrastructure to develop novel technologies compatible with the startup mission of India. PSO 2: Graduates should be able to handle research and development assignments in industry and should be welcome candidates for higher studies in high profile national and international institutes/universities with a strong concern for environment and social issues.		
Oil Technology		
Vision Transforming the individuals into globally competent Chemical Technologist (Oil Technologist) to fulfill technological needs of industry and society in large. II) Mission We are committed to: <ul style="list-style-type: none"> • Provide quality education through innovation in teaching and learning practices meeting the global standards • Encourage faculty and students to carry out socially relevant and forward looking research • Offer consultancy services using state of the art facilities fulfilling the needs of the industry and society 		http://hbtu.ac.in/oil-technology/

- Enable our students, faculty and staff to play leadership roles for the betterment of the society in a sustainable manner

Programme Educational Objectives (PEO) for B Tech Oil Chemical Technology-Oil Technology Programme:

PEO1. Graduates of the programme will contribute to the development of sustainable growth of engineering and Oil technology sector for the betterment of society

PEO2. Graduates of the programme, as an employee of an organization or as an employer, will continuously update their domain knowledge for continuous professional development with focus on research & development and industry interaction

PEO3 Graduates of the programme will accept and create innovations in providing solution for sustainable technology development

PEO4 Graduates of the programme will discharge their duties as professional engineer and Oil Technologist with quality and ethics

Programme Outcomes (POs) of B.Tech Chemical Technology - Oil Technology

Graduating Students of B. Tech. Chemical Technology- Oil Technology programme will:

Programme Outcomes(POs)		Graduate Attributes (GAs)
PO1.	Apply the knowledge of mathematics, science, engineering fundamentals and Engineering concepts for the solution of complex Engineering problems	Engineering Knowledge
PO2.	Identify, formulate, review literature and analyze complex problems related to Chemical Technology-Oil Technology reaching substantiated conclusions using first principles of mathematics and engineering sciences.	Problem Analysis
PO3.	Design solutions for complex problems in Chemical Technology-Oil Technology and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations	Design/Development of solutions
PO4.	Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.	Conduct Investigations of complex problems
PO5.	Create, select, and apply appropriate techniques, resources, and modern engineering tools such as optimization techniques, simulations, including prediction and modeling to complex process Engineering problems with an understanding of their limitations.	Modern Tool Usage
PO6.	Apply contextual knowledge with justification to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering and Chemical Technology-Oil Technology professional practice	The Engineer & Society
PO7.	Understand the impact of the professional engineering and Chemical Technology-Oil Technology solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development	Environment and Sustainability
PO8.	Apply ethical principles and commit to professional ethics adhering to the norms of the engineering and Chemical Technology-Oil Technology practice	Ethics
PO9.	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings	Communication

PO10.	Communicate effectively on complex engineering and Chemical Technology-Oil Technology activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions	Individual and Team work
PO11.	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change	Lifelong Learning
PO12.	Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage engineering and Chemical Technology-Oil Technology projects and in multi disciplinary environments.	Project management & Finance

Paint Technology												
VISION The department of paint technology aspires to achieve excellence in teaching-learning, research and innovation in Paint and allied areas.	http://hbtu.ac.in/paint-technology-2/											
MISSION : The missions of the department of Chemical Technology- Paint Technology are:												
M1 To develop state of the art facilities to impart technical knowledge and skill to the graduate students for paint and allied industries and research organizations												
M2 To be a center of research and innovation for betterment of society in sustainable manner.												
M3 To develop state-of-the-art technologies for testing, training and consultancy for industry and society.												
M4 To cultivate strong ethical values to be a successful professionals and to become life-long learners.												
PROGRAM EDUCATIONAL OBJECTIVES (PEOS)												
PEO 1: To produce graduates and post graduates who will be able to meet the requirements and challenges at national &international levels in the field of formulation, manufacture and application of paints and allied products.												
PEO 2: To inculcate in students the fundamental and molecular concepts related to resins, polymers, pigmentsand additives to enable them to develop novel technologies to meet the global standards of eco-friendliness &sustainability.												
PEO 3: To produce technologists with high moral values and professional ethics, who can work with industryhand-in-hand for mutual benefits and to sensitize them for job creation for the society, specially the rural community.												
PROGRAM OUTCOMES (PO's) OF B.TECH. CHEMICAL TECHNOLOGY - PAINT TECHNOLOGY PROGRAM												
B.Tech. Chemical Technology- Paint Technology Graduates of the program will be able to:												
	<table><tr><th>Program Outcomes (POs)</th><th>Graduate Attributes(GAs)</th></tr><tr><td>PO1</td><td>Apply the knowledge of mathematics, science engineering fundamentals and Engineering concepts for the solution of complex engineering problems</td><td>Engineering Knowledge</td></tr><tr><td>PO2</td><td>Identify formulate, review literature and analyze complex problems related to Chemical Technology- Paint Technology reaching substantiated conclusions using first principles of mathematics and engineering sciences</td><td>Problem Analysis</td></tr><tr><td>PO3</td><td>Design solution for complex problems in Chemical Technology- Paint Technology and design system components or process that meet the specified needs with appropriate consideration for the public health and safety, and cultural, societal and environmental</td><td>Design/ Development of solutions</td></tr></table>	Program Outcomes (POs)	Graduate Attributes(GAs)	PO1	Apply the knowledge of mathematics, science engineering fundamentals and Engineering concepts for the solution of complex engineering problems	Engineering Knowledge	PO2	Identify formulate, review literature and analyze complex problems related to Chemical Technology- Paint Technology reaching substantiated conclusions using first principles of mathematics and engineering sciences	Problem Analysis	PO3	Design solution for complex problems in Chemical Technology- Paint Technology and design system components or process that meet the specified needs with appropriate consideration for the public health and safety, and cultural, societal and environmental	Design/ Development of solutions
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PO4	Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions	Conduct Investigations of complex problems	
PO5	Create, select and apply appropriate techniques, resources and modern engineering tools such as optimization techniques, simulations, including predication and modeling to complex process engineering problems with an understanding of their limitations.	Modern Tool Usage	
PO6	Apply contextual knowledge with justification to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering and Chemical Technology- Paint Technology professional practice	The Engineer & Society	
PO7	Understand the impact of the professional engineering and Chemical Technology- Paint Technology solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development	Environment and sustainability	
PO8	Apply ethical principles and commit to professional ethics adhering to the norms of the engineering and Chemical Technology- Paint Technology practice	Ethics	
PO9	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings	Individual and team work	
PO10	Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.	Communication	
PO11	Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.	Project management and finance	
PO12	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.	Life-long learning	
PROGRAM SPECIFIC OUTCOMES (PSOs) FOR B. TECH. CHEMICAL TECHNOLOGY- PAINT TECHNOLOGY PROGRAM PSO 1: Students should be able to apply the acquired knowledge in the professional world related to formulation, manufacture and application of paints, coatings and allied products and should be sensitized technocrats towards using indigenous resources and infrastructure to develop novel technologies compatible with the startup mission of India. PSO 2: Graduates should be able to handle research and development assignments in industry and should be welcome candidates for higher studies in high profile national and international institutes/universities with a strong concern for environment and social issues.			
Plastic Technology			
Vision The department of chemical technology-plastic technology aspires to achieve excellence in technical knowledge and skill, research and innovation in Plastics and Allied areas. Mission : The mission of the Department of Chemical Technology- Plastic Technology are: M1 To develop state-of-the-art facilities to impart technical knowledge and skill to the graduate & post graduate students for plastic and allied industries and research organizations M2 To be a center of research and innovation for betterment of society in sustainable manner.			http://hbtu.ac.in/plastic-technology-2/

M3 To develop state-of-the-art technologies for testing and consultancy for industry and society.

M4 To cultivate strong ethical values to be a successful professionals and to become life-long learners.

The Program Educational Objectives (PEOs) of B.Tech. Chemical Technology-Plastic Technology program are:

PEO1	Graduates will be technically competent in the field of polymers, resins, processing and allied areas to cater the need of country.
PEO2	Graduates will be able to innovate in designs, production of materials and processes for sustainable development of society.
PEO3	Graduates will serve the industry to meet the challenges in terms of quality assurance and standardization to with stand the global competitiveness.
PEO4	Graduates will discharge duties with professional attitudes and ethics.
Program Specific Outcomes:	
PSO1	to apply practical skills, technical knowledge in major streams such as chemistry, manufacturing, processing, and applications areas of engineering and technology in plastic and allied industries
PSO2	to take-up career in research organizations or to pursue higher studies in plastic technology and interdisciplinary programs with high regard for ethical values, environmental and social issues.

Program Outcomes as defined by NBA (PO)

Engineering Graduates will be able to:

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.	
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.	
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change	
SCHOOL OF BASIC & APPLIED SCIENCES		
CHEMISTRY		
VISION The Department of Chemistry aims to train the students with conceptual and experimental tools required to understand the Chemistry from molecules to materials.		
MISSION <ol style="list-style-type: none"> 1. To awaken the young minds and discover their talents both in theory and practicals. 2. To train and mentor students as responsible scientists and professionals for their involvement in all aspects of life. 3. To encourage and train the students in the broadest and most liberal manner about the advancement of Chemistry in all of its branches through its education, research and service mission. To explore and advance new chemical frontiers in the field of life sciences, physical sciences, medicine, energy and materials.		
PHYSICS		
VISION To contribute significantly to the nation by excellent scientific, technological education and research by offering state of the art Undergraduate, Postgraduate and Doctoral programs.		
MISSION <ul style="list-style-type: none"> • To provide state of the art teaching in physics to undergraduate students, so that they could be able to contribute significantly to the society so as to empower the mankind globally. • To produce Ph.D. students with analytical skills, so that they could prove themselves as an asset to the society as a researcher, scientist, teachers and would be capable to handle the organization as a professional leader. 		
MATHEMATICS		
VISION To produce excellent academicians/researchers in Mathematics for teaching/research in interdisciplinary applied thrust areas and to equip budding technocrats/ engineers with sound mathematical/computing skills for social welfare.		
MISSION <ul style="list-style-type: none"> • To impart mathematical education in order to explore and apply mathematical concepts for technological innovations through activities and experimentation. • To train students with strong mathematical foundation for conducting research or for serving in industry. • To inculcate the ability to apply mathematical and computational skills in students for modeling, formulation and solving real-life problems. 		
SCHOOL OF HUMANITIES DEPARTMENT		
VISION To achieve excellence in technical education, research and innovation.		
MISSION <ul style="list-style-type: none"> • Imparting Knowledge to develop analytical ability in Humanities and Social Sciences to serve 		

<p>the industry and society at large.</p> <ul style="list-style-type: none"> • To inculcate entrepreneurial philosophy and innovative thinking to promote research, consultancy and institutional social responsibility. • To equip and enable people with managerial skills to transform the business organization and society. • To work with people, society and nation to make sustainable development and quality of life. 	
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