MAHARAJA RANJIT SINGH PUNJAB TECHNICAL UNIVERSITY
Dabwali Road, Bathinda (Pb.) - 151001
(Estd. by Govt. of Punjab Vide Punjab Act No. 5 of 2015) ONLY TECHNICAL UNIVERSITY OF PUNJAB HAVING UGC APPROVAL UNDER 2(f) AND 12 B OF UGC ACT, MEMBER AIU.

Handbook of Career Opportunities

Prepared by:
INTERNAL QUALITY ASSURANCE CELL
MAHARAJA RANJIT SINGH PUNJAB TECHNICAL UNIVERSITY
(DABWALI ROAD, BATHINDA (PB.)- 151001)

BOOKLET FOR
CAREER OPTIONS AFTER COURSES OFFERED IN CAMPUS

2021

INTERNAL QUALITY ASSURANCE CELL

MAHARAJA RANJIT SINGH PUNJAB TECHNICAL UNIVERSITY

BATHINDA 151001

BOOKLET FOR CAREER OPTIONS AFTER COURSES OFFERED IN CAMPUS

Prepared by:

- Dr. Rajesh Gupta, Department of Mechanical Engg., GZSCCET, MRSPTU, Bathinda
- Dr. Sudhanshu Pratap Singh, Department of Chemistry, MRSPTU, Bathinda
- Er. Harjot Singh Sidhu, Director (T&P), MRSPTU, Bathinda
- Er. Haramritpal Singh, Department of Mechanical Engg., GZSCCET, MRSPTU, Bathinda

Inputs by:

- Dr. Ashish Baldi, Director, IQAC, MRSPTU, Bathinda

Version 1
Year 2021

INTERNAL QUALITY ASSURANCE CELL

BOOKLET FOR
CAREER OPTIONS AFTER COURSES OFFERED IN CAMPUS

Mechanical Engineering

Mechanical Engineering is the art and science of designing, development and control of systems and components.

Mechanical engineering is the application of the principles and problem-solving techniques of engineering from design to manufacturing to the marketplace for any object. Mechanical engineers analyse their work using the principles of motion, energy, and force—ensuring that designs function safely, efficiently, and reliably, all at a competitive cost.

Disciplines within mechanical engineering include: Aerospace, Automation, Automotive, Autonomous Systems, Composites, Computer Aided Design (CAD), Control Systems, Design, Energy, Ergonomics, Human health, Manufacturing and additive manufacturing, Mechanics, Nanotechnology, Production planning and control, quality control and assurance, Robotics, Structural analysis etc.

Programmes at MRSPTU

BTech – Mechanical Engineering,
MTech - Mechanical Engineering
Ph.D.

Scope of Mechanical Engineering: There are variety of fields where a mechanical engineer can contribute:

In statics, research focuses on how forces are transmitted to and throughout a structure. Once a system is in motion, mechanical engineers look at dynamics, or what velocities, accelerations and resulting forces come into play. Kinematics then examines how a mechanism behaves as it moves through its range of motion.

Materials science delves into determining the best materials for different applications. A part of that is materials strength—testing support loads, stiffness, brittleness and other properties—which is essential for many constructions, automobile, and medical materials.

How energy gets converted into useful power is the heart of thermodynamics, as well as determining what energy is lost in the process. One specific kind of energy, heat transfer, is crucial in many applications and requires gathering and analysing temperature data and distributions.

Fluid mechanics, which also has a variety of applications, looks at many properties including pressure drops from fluid flow and aerodynamic drag forces.

Manufacturing is an important step in mechanical engineering. Within the field, researchers investigate the best processes to make manufacturing more efficient. Laboratory methods focus on improving how to measure both thermal and mechanical engineering products and processes. Likewise, machine design develops equipment-scale processes while electrical engineering focuses on circuitry. All this equipment produces vibrations, another field of mechanical engineering, in which researchers study how to predict and control vibrations.

Engineering economics makes mechanical designs relevant and usable in the real world by estimating manufacturing and life cycle costs of materials, designs, and other engineered products.

According to US Bureau of Labour Statistics, employment of mechanical engineers is projected to grow 5 percent from 2014 to 2024.

Pathway after Mechanical Engineering: Mechanical engineers play a vital role in varied industries such as automotive, manufacturing, automation, aerospace, biotechnology,

computers and electronics, chemical, construction, energy conversion, research and more. A Mechanical Engineer can work in both private or public companies. The degree holders are acquired by many big firms both in India and abroad.

Civil Engineering

One of the oldest engineering disciplines, Civil engineering deals with the design, construction, & maintenance of man-made structures and naturally built environment, including works like roads, bridges, canals, dams, and buildings. From Transportation to Hydrology, Environmental to Construction, Civil Engineering is an area with a lot of diversity.
MRSPTU facilitates students with course curriculum widely spread over practical training, project work, expert lectures and more. While theory gives you opportunity to understand the intricacies of the subject, the well-equipped laboratories provide enriched practical understanding and real-time exposure.
Pursue Civil engineering course if you have a desire to improve quality of life through designing the infrastructure that supports our civilization and generations to follow.

Programmes at MRSPTU

BTech – Civil Engineering
MTech – Civil Engineering
Ph.D.

Scope of Civil Engineering: Disciplines within mechanical engineering include: Civil engineers help shape modern society by designing, planning and managing the construction of complex infrastructures such as bridges, roadways, and commercial developments. They would contribute to a sustainable world and improve the global quality of life.
With enhanced technical skills, management abilities, and practical knowledge, there are greater range of civil engineering careers: Construction management, Geotechnical engineering, Environmental/water resources engineering, Structural engineering, leadership roles, Design engineer, constructing infrastructure systems, research etc.

Pathway after Civil Engineering: Civil engineers are in huge demand and this demand is expected to get a boost as all the countries are upgrading its infrastructure with growing economic and political influence. This outset opens a lot of opportunities for Civil Engineers in numerous private sector firms and government departments. One can also pursue teaching as a profession or can set up its own engineering consultancy as well.
According to US Bureau of Labour Statistics, employment of civil engineers is projected to grow 8 percent from 2014 to 2024.

Computer Science & Engineering

Computer Science engineering (CSE) deals with design, implementation, and management of information system with a blend of both software & hardware processes. A computer scientist specializes in the theory of computation and design of computational systems.
Pursuing Computer Science & Engineering caters with thriving research environment, advanced industry sponsored infrastructure and stimulating teaching aid. The program covers all fundamental as well as advanced concepts of engineering and computing, paired with a chance to gain exposure in emerging technologies such as Internet of Things (IoT), Mobile Computing, and Open Source and Open Standard.

Programmes at MRSPTU

BTech – Computer Science & Engineering

MTech – Computer Science & Engineering

Ph.D.

Scope of Computer Science & Engineering: The course trains the students of the basics as well as the advanced aspects of computer engineering. It includes foundations of computer systems, computer architecture & organization, networking, the theory of computation, database systems, electronics, operating systems, programming and website designing, e-commerce & multimedia applications, principles of programming languages, software engineering, hardware engineering, etc.

The CSE professionals can work as a computer programmer, data scientist, systems analyst, software developer, hardware engineer, IT consultant, system engineer, system designer, IT specialist, networking engineer, database administrator, web developer, mobility tester, e-commerce specialist, programmer, software tester.

They can also work in artificial intelligence, embedded systems, ethical hacking, wireless network, computer manufacturing, database systems, web applications, animation, computer graphics, scientific modelling, computational biology, video games development, mobile application development, data science and network administration etc.

Computer engineers can also get numerous jobs in the government, corporate and private firms.

According to US Bureau of Labour Statistics, employment for computer engineers is projected to grow 17 percent from 2014 to 2024.

Pathway After Computer Science and Engineering: Booming IT sector in India has plenty of jobs for fresh computer science graduates. Besides, the Computer Engineers have plenty of options to work in IT companies in various departments such as design, development, assembly, manufacture, and maintenance, etc. Working as a programmer, web developer, and E- commerce specialist with telecommunications companies, automotive companies, aerospace companies, etc. can be a lucrative career option as well.

Electrical Engineering

Since the days of Edison and Tesla and electricity's emergence as a utility, electrical engineers have been at the forefront of some of the greatest technological advances.

Electrical Engineering as a career and field of study has a high scope all across globe. It is a field that drives every other one since its application in electricity is the power behind all forms of industry. It will ever continue to grow as time passes. Electrical engineering generally deals with the generation of electricity, the transmission, the distribution to the consumers and to develop efficient systems.

Electrical Engineering with intent to craft Professionals, Researchers and Entrepreneurs through the industry aligned prospectus, state-of-the-art labs and experiential learning.

Programmes at MRSPTU

BTech – Electrical Engineering

MTech-Electrical Engineering (Power System)

Ph.D.

Scope of Electrical Engineering: Electrical Engineering has a wide career opportunity in sectors like utility companies, electrical design & consultancy firms, all types of

manufacturing industries, atomic power plants, hydel or thermal power plants, power distribution companies, power plants, railways, metro rails, Electronics, Communication Technology, Radio Engineers, Electromagnet Engineers, IT consultants or Manager, Aviation Technology, Aviation Power Supply etc.

Pathway After Electrical Engineering: Job opportunities for Electrical engineers are ample in both private and public sectors like utility companies, electrical design & consultancy firms, all types of manufacturing industries, atomic power plants, hydel or thermal power plants, power distribution companies, power plants, railways, metro rails, Electronics, Communication Technology, Radio Engineers, Electromagnet Engineers, IT consultants or Manager, Aviation Technology, Aviation Power Supply etc.

Electronics & Communication Engineering

Electronics and Communication Engineering is an applied form of science that deals with principles and practical aspects related to design and development of various everyday devices like radios, televisions, laptops, mobile phones, machine robots etc. The discipline concerns with electronics devices and software interfaces. Electronics and Communication engineers engage in research, design, development and maintenance of equipments, devices and systems involved in the field of communication.

Electronics and Communication Engineering can enter the challenging industry by carrying out Basic and Applied Research.

Programmes at MRSPTU

BTech - Electronics & Communication Engineering
MTech - Electronics & Communication Engineering
Ph.D.

Scope after Electronics & Communication Engineering: By 2020, the Electronics & Communication sector in India is expected to be an USD 29 Billion consumer market. There is wide scope after ECE as: Communications Engineer, Network Planning Engineer, Desktop Support Engineer, Field Test Engineer, Electronics Device and Development Engineer, Service Engineer, Electronics Design Engineer, Network Planning Engineer. One can join IT industry, airlines, telecommunication, Indian armed forces, defence, health care, aerospace, instrumentation, automation, remote sensing, signal processing and many more.

They have wider scope in consumer electronics manufacturing organization, self-driven automotive vehicles, Robotic technology, Internet technologies, Power Electronics. ECE students also have lots of opportunities in Government and private companies in the areas of design, manufacture, installation, operation, and maintenance of electronics equipment and systems. New opportunities are opening up for ECE include self-driving cars, autonomous drone logistics, smart energy systems etc.

This sector contributes significantly to the economy of most of the countries and includes both wired and wireless communication; 3G, 4G and 5G LTE services that are widely being adopted throughout the world.

Pathway after Electronics and Communication Engineering: The students from Electronics & Communication Engineering can develop an exciting career in industries like Mobile & Telecommunication, Manufacturing & Automation, Medical Electronics, Defence Electronics, Consumer Electronics, Semiconductor Design and IT industries. But getting acquainted with these industries will not be easy as they demand engineers who are more hands-on with the latest technologies.

Textile Engineering

"Textile Engineering" is a big research field of technology that deals with all activities of producing fibre, yarn, fabrics, garments and its colour which are involved in the process of textile manufacturing. It includes process engineering that spins around the garment, colour, yarn and fabrics. Textile engineers are involved in many aspects of textile manufacturing, from process engineering, R&D, production control, technical textile, sales, quality control, and machine manufacturing that create all these fibres, fabrics, Yarns and garments.

The technology and science in Textile Engineering comprise of designing and controlling all aspects of fibre, apparel processes, clothing products, textile machinery etc. Apart from the basic processes of manufacturing of fabric, spinning, weaving, bleaching, dyeing, printing & finishing, the industry has witnessed unprecedented growth in the scope for fashion deigning & garment manufacturing in the recent past.

Programmes at MRSPTU:

B.Tech. - Textile Engineering
M.Tech. - Textile Engineering
Ph.D.

Scope after Textile Engineering: After successful completion of the Textile Engineering course, there are ample opportunities for those trained in this domain. One can find the job in quality control, sales technical, R&D, production control, process engineering, corporate management, planning and maintenance of textile machineries, medical textiles technology, Process engineer, Operations, Quality control, and Process improvement, production control, and corporate management. The fashion industry is versatile and has a scope of a lot of creativity and is one of the leading industries.

Architecture & Planning

The five-year Bachelor of Architecture program offers a thorough foundation in architecture integrating critical thinking, design, building construction, building services sustainability and social responsibility. Firmly committed to innovative design practices, the program is constantly integrating new technologies into the curriculum.

Programmes at MRSPTU

B.Arch
M.Arch (Building Engineering & Management)
M.Planning
Bachelor's in interior design
Ph.D.

Scope of Architecture and Planning:

Architects have lots of job opportunities in architect firms, universities, consultancy companies, **construction, urban planning, urban development corporations**, public works departments, interior designing, as architectural engineer, historian, building researcher, interior designer, art director, contractor, inspector, urban planning, urban development corporations, public works department, Architect firms, consultancies, spatial design, aesthetics, safety management, material management, etc. Some public and government organizations that offer jobs for architects are Archaeological Department, Central and State Public Work Departments, City Development Authorities, Department Of Railways, Housing and Urban Development Corporation, Housing Development Corporations, Ministry of

Defence, Municipalities, National Building Organization, National Institutes of Urban Affairs and Housing, Public Works Department, State Housing Boards.

Pathway after Bachelor of Architecture

Career in Architecture is attractive, high paying, and has lots of potential in terms of growth. India needs more than 10,000 trained professionals in various government and private organizations.

Physics

Master of Science in Physics (M.Sc. Physics) and Bachelor of Science in Physics (B.Sc. Physics) covers a wide range of subjects i.e. quantum optics, Optics, nonlinear optics, lasers, solid-state physics, Material Science, Astrophysics, Astronomy, Biophysics, high energy physics, classical mechanics, thermodynamics, statistical mechanics, atomic and molecular physics, quantum mechanics, classical mechanics, electromagnetism, electronics, condensed matter physics and many more.

By the end of the course, students will have knowledge of modern technologies that they can apply to physics processes. Physics course covers the latest physics techniques that can be applied to all fields of analysis and study of high energy physics.

The programs focus on providing students with the quality education in all the traditional and contemporary concepts of the field, while nurturing their problem-solving, mathematical, experimental, computational, conceptual and communicating skills and research training. One can pursue M.Phil./ Ph.D. (in Applied Physics, Biophysics, Nuclear Physics, Chemical Thermodynamics) after M.Sc. Physics, which will help you get more knowledge, experience, and a higher job role.

Programmes at MRSPTU

B.Sc. (Hons.)

M.Sc. (Physics)

Ph.D.

Scope after qualification in Physics: "Like most other nations, India is striving hard to make itself self-dependent in terms of energy, defence and medical technological advancements. It is thus in requisite of a huge work force comprising of capable scientists who can handle technology and plan nuclear waste management in a judicious way."

Physics Graduates can find ample career openings both in public as well as private sector enterprises. Career options are Research Analyst for research in Photonics, Ferroelectrics, Carbon Nano Tubes, Photonic Crystal, Meta materials and Plasmonic Solar cells, research organizations, High Tech Industries, Medical Labs, Sales & Marketing Companies, Scientific Writings, biochemistry, bioengineering, agro-physics, Pharmaceutical Companies, Environment Protection Companies, Defence Services, in Chemical industry, Nuclear Physics, nuclear power, nuclear astrophysics, archaeological dating, fundamental symmetries, magnetism, glasses, liquid crystals, thin films, semiconductors, nanostructure materials, nanotechnology, quantum field theory, quantum chromo dynamics, non-linear dynamics, quantum computing, modern quantum optics, Radiation Protection Centres, Oil and Gas Companies, Energy Companies, Chartered Physicist, Space and Astronomy, Medical physics, biomedical engineers, radiology, radiation oncology, nuclear medicine, healthcare providers, academic institutions, in the renewable or non-renewable energy sector, Geophysics and meteorology departments, as geophysicist

on the prediction of natural disasters, teacher in educational institutions, Banking, National Thermal Power Corporation, consultancy for firms, Research Fellows after clearing UGC NET & CSIR NET, Scientist, Consulting Physicist, Agricultural Research services, Aviation Industry, Observations scientist, Quality control, Astronaut, Chartered Physicist. Radiation Physicists, Postsecondary, Technical Writer.

Chemistry

Masters of Science in Chemistry (M.Sc. Chemistry) and Bachelor of Science in Chemistry (B.Sc. Chemistry) would give exclusive opportunity to increase knowledge in advanced concepts of the field such as atomic structure, chemical bonding, thermodynamics, chemistry of various elements, classes of organic compounds, electrochemistry, coordination chemistry, quantum mechanics, spectroscopy, computer applications in chemistry, Inorganic Chains, Rings and Clusters, Quantum Chemistry, Stereochemistry and Reaction Mechanism, Analytical Chemistry, Inorganic Semimicro, Synthetic Strategies and Pericyclic Reactions, Qualitative Analysis, Thermodynamics and Equilibria, Solid State Chemistry and Materials Science, Inorganic Quantitative Analysis, Bioinorganic and Organometallic Chemistry, Coordination Chemistry, Bioorganic and Heterocyclic, Spectroscopic Identification of Molecules, Electrochemistry, Organic Quantitative Analysis Lab, Medicinal Chemistry, Instrumental Methods of Analysis , Chemistry of Biomolecules, Kinetics, Photochemistry, Industrial Catalysis, Green Chemistry, Polymer Science, Surface Science, and Coating Technology, Bioanalytical Chemistry, Nano-Chemistry and Technology, Chemistry Experiments Lab and more.

It infuses an ability to tackle ethical challenges occurring in the field of modern science and technology. You will have the opportunity to work on research projects and have opportunities to make contact with the wider scientific community. The course is best suited for an individual willing to get advanced theoretical and practical knowledge in R&D, chemical reactions and experiments. It offers you an edge by providing a scientific and professional competency in the specialized fields which you may opt for.

Programmes at MRSPTU

B.Sc. (Hons.)

M.Sc. (Hons.)

Ph.D.

Scope after qualification in Chemistry: There exist enormous career opportunities for aspirants who have completed their degree in Chemistry. These courses allow candidates to get specialized in diverse areas of Chemistry. Both public as well as private sector firms recruit candidates for their varied operations. One can find various job openings in corporate sector like Dabur, Ranbaxy, Hindustan Lever, in Medical Research, Manufacturing and Processing Firms, Testing Laboratories, Technical Journals, Utility Companies, Waste-water Plant, Engineering firms, Oil and Petroleum Companies, Pharmaceutical Companies, Power Generating Companies, Pyrotechnics Manufacturers, Research and Development Firms, Agricultural Research Services, Biotechnology Firms, Chemicals Manufacturing Companies, Cosmetic Companies, Education Sector, Forensic Crime Research, Food Institutes, Health Care Providers, Heavy Chemical Industries, Hospitals, Industrial Laboratories, drug manufacturing, in quality checking, Food & Drug Inspector, Industrial Research Scientist, Research & Development Manager, Safety Health and Environment

Specialist, Production supervisor, Quality control analyst, Research officer, Lab technologist etc. Academics are another area where chemistry graduates can build up a lucrative career. Those with NET qualification can apply for permanent job positions in government colleges. Foreign nations are also in need of qualified candidates in Chemistry. Chemical firms and pharmaceutical firms in European nations often recruit candidates with proven experience. One can opt for still further education by pursuing MPhil and PhD to pursue research work more seriously with advanced-level knowledge.

Mathematics

M.Sc. (Hons.) Mathematics and B.Sc. (Hons.) Mathematics focuses on developing mathematical skills across variant areas of the subject. The candidates get a deeper knowledge of advanced mathematics through a vast preference of subjects such as geometry, calculus, algebra, number theory, dynamical systems, differential equations, trigonometry, probability, other significant mathematical theories etc. In this course, students learn to collect big data and analyse them with the help of different tools and methods. Students learn about the problem-solving skills and reasoning skills to solve the real-life problems. Computational Mathematics is one of the prominent subjects through which candidate learn to solve mathematical problems with the help of computer simulation which is opposite to the analytic methods of applied mathematics.

The students become more skilled and specialized in a particular subject after the master's degree program.

Programmes at MRSPTU

B.Sc. (Hons)

M.Sc. (Mathematics)

Ph.D.

Scope after qualification in Mathematics: This is a very vast field which provides job opportunities for the aspirants in every sector in India and abroad such as Market research firms, Manufacturing Firms, Engineering Firms, Aerospace companies, pharmaceutical companies, Research & development firms, Economic Research firms, Social research institutes, Manufacturing Firms.

There is a high demand of mathematics students in the fields of statistics, engineering, physical science, to improve the operations of the organizations, computer science, insurance, economics, astronomy, banking, accountancy.

The government sector also wants a good mathematician person. Every business requires financial activity and data management for better improvement and success. Then ICT is one of the top industry available in the market who provides great opportunities to the math's degree students.

One can pursue career as Mathematician, Statistician, Software Developer, Financial Analyst, Investment Analyst, Meteorologist, Astronomer, Research Scientist, Data Scientist, Data Analyst, Game Designer, Chartered Accountant, Teacher/Professor, academician (after UGC NET exam), Scientific Officer in research and government organizations (s**uch as** ISRO, DRDO, NAL, Bhabha atomic research Centre, Saha Institute of nuclear physics Kolkata, Bharat heavy electrical, Indian space research organization, Hindustan Aeronautics limited, Ministry of environment forest & climate change etc). Many companies **(**such as HCL, TCS, HDFC, Crayon Data, Mu Sigma, American Express, Deutsche bank, CICNA, Barclay's bank,

AIG, JP Morgan, Goldman Sachs, Amazon, Wipro, TCS, Infosys etc) look for mathematicians in the areas of information and communication technology, General Management in business organizing and employee handling, Data Science Modelers,. Job opportunity comes from varies area such as finance, Banking, Statistical Research, Quantitative Risk Analyst, Administrative Assistant, Quantitative Developer, Economist, Tax Collector. Stockbroker, Accountant, Statistician, Meteorologist, Financial Planner, Mathematician and Data Scientist, Quantitative Research Analyst, Data Science Analyst, Pricing Analyst, risk management, Data Analyst, Chartered accountant, Software engineers and Weather Forecasting.

As a Math graduate, you'll have plenty to explore. Along with exciting job profiles, you'll enjoy high annual packages and the satisfaction of contributing immensely to the development of humankind.

University Business School

MBA and BBA degrees are well defined programs which teaches business management skills paired with research focus, innovation culture and entrepreneurship zeal. The objective is to teach students the foundations of general management and develop skills in problem solving and decision making in a business environment.

Core courses of a typical program cover MBA subjects in Finance Accounting, Operations Management, Technology Management, Organizational Behaviour, Basic Economics Principles and Concepts, Introduction to Finance, Fundamentals of Marketing, Management of Information Systems/Technology Management, Essentials of Organizational Behaviour/Human Resources Management, Corporate Strategy, Big Data, Supply Chain Management, Leadership, Negotiations, Luxury Brand Management, Retail, and Sustainability.

The program combines knowledge, analytical and quantitative skills.

Programmes at MRSPTU

BBA

MBA (HR, Marketing, Finance)

Ph.D.

Scope of studying in management courses: BBA and MBA qualified managers with the appropriate experience and credentials are some of the world's highest paid professionals. There are ample opportunities as Business Analytics, Banking & Financial sector, for data processing, as data analysts, as entrepreneur or to start own business. There is great career opportunities in Sales and Marketing in retail industries as Brand Manager, Store Manager, Marketing Manager, Market Research Analyst, Sales Manager, Product Manager, Media Planner, Internet Marketing Manager in retail, banking, hospitality, media sectors. Another very popular career is in Finance in fields such as – International Finance, Taxation, Tax Planning, Investment Management, Insurance Management as well as Financial Statement Reporting and Analysis. Some popular job profiles that aspirants can pursue in Finance are Financial Manager/Analyst, Credit Analyst, Accounting Manager, Risk and Insurance Manager, Treasurer, Finance Manager, Cash Manager.

Aspirants can opt as an HR executive at a firm in the Manufacturing Sector, BPO/ IT, Corporate sectors, Service sector, Education sector, Banking sector, and the likes. An HR professional is involved in the process of recruiting, orienting, training as well as appraising

employees of a company/organization, Coordination with Employees. jobs are available In Operations in all industries like the manufacturing industry, e-commerce, IT, and telecom in the areas of Supply Chain and Logistics, Inventory Control, Project Management, Warehouse Operations, Demand Planning, Distribution and Purchase.

One can opt in IT and Systems as Project Manager, Business Development Executive/ Manager, Product Manager, Analytics Manager, System Manager, Data Processing Manager, Business Analyst, IT Manager/Consultant, Information Systems Managers and Systems Analysts.

Entrepreneurs are shaping the world today. After attaining the proper skill set, one can choose to be an entrepreneur. With it, one can start their own businesses on their own. Students get to learn the right business ethics, networking and leadership skills while developing core competencies in accounting, marketing, and licensing, among others. One can be Small Business Owner, Corporate Supervisor, Sales Manager, Fundraiser and Development Officer and Business Consultant.

There are many options available in the field of International Business for rewarding career opportunities around the globe. Business graduates in this sector get in-depth training in the market competition around the world, export and import, international finance standards, international customs laws, and work as Marketing Analyst, Administrative Service Manager, International Business Development Manager, Government Affairs Director, Export Manager, International Finance Manager, Export Coordinator etc.

One can go in the fields of Healthcare Management as students learn ethics, decision-making, policies, important day-to-day operations, and administrative tasks. Some of the broader job sectors for MBA healthcare management graduates are Healthcare IT service, Health insurance industry, pharmaceutical industry, medical equipment, Hospital administration.

Pharmaceutical Science & Technology

Approved by the Pharmacy Council of India (PCI), the University Institute of Pharma Science (UIPS) is one of the Best Pharmacy Colleges in Punjab that offers an unparalleled opportunity to experience a clinically focused & science-driven course, designed to equip you to be future healthcare professional. We provide contemporary & research-based education in sciences & applied sciences through an experience-based, collaborative, and diverse curriculum that prepares our students for leadership roles in the sector. Tie-ups with several top, prestigious national and international universities and healthcare service providers give real-time exposure to our students.

Programmes at MRSPTU

B.Pharm.

M.Pharm. (Pharmaceutics & Pharmacology)

M.Sc. (Clinical Research)

Ph.D.

Scope after pharmaceutical science: Over the years, pharmaceutical scientists have been instrumental in discovering and developing innovative drugs that save thousands of people's lives and improve the quality of life for many others. Pharmaceutical scientists can pursue a variety of jobs.

They are employed by pharmaceutical companies, they work as pharmacists, doctors, and as researchers and professors at universities, as regulatory scientists for agencies like the Food and Drug Administration (FDA), and as researchers at national laboratories such as the National Institutes of Health (NIH), Developing new medicines, improving the way medicines are delivered, investigating crimes etc.

After qualification in pharmaceutical science and technology, one can work in the pharmaceutical, medical, food, agriculture, chemical, cosmetics industries. One may work as Forensic scientist (to help investigate crimes, accidents and other incidents), in Pharmaceutical companies, for Regulatory affairs (by expanding their knowledge in the areas of marketing, project management, negotiation, finance and other business disciplines ensuring a company and its products meet government regulations), in Sales and marketing (to convey authority about the science behind the product), as Product developer/formulator (in food, biotechnology, pharmaceutical science, and medical device manufacturing industry), as Medicinal Chemist (for development and testing of potentially therapeutic compounds), in research field for patents and innovations (new discoveries need to be commercialised and a company's intellectual property protected), in the field of Quality Assurance (to shield company's reputation and for safety issues), Medical Science Liaison (to develop pharmaceutical products for that therapeutic area) as Medicines Adviser, in Skin Care and Cosmetics domain, as Science Writer (to write different scientific concepts and communicate your ideas and observations clearly), as Biomedical researcher (to find new ways to improve health), as Clinical Research Associate (for data collection, experiments and documenting the results during clinical trials).

The number of directions a career in pharmaceutical science can take is nearly limitless. Globally, pharmaceuticals are a fast growing sector. The sector has strong support from the centre and state governments too.

By 2020, India is likely to be among the top three pharmaceutical markets by incremental growth & sixth largest market globally in absolute size.

Computational Science

Computational sciences department offers BCA, MCA and integrated BCA-MCA (Master of Computer Applications) programs along with PhD program. It prepares the student for a successful career in computing, to create and disseminate computing knowledge and technology to succeed in various computing careers.

It is a professional program for individuals looking to make a career in IT and computer software development. The program is designed to deliver both theoretical and practical knowledge. The course entails developing a sound knowledge of programming languages with the development of computer applications. The Information Technology sector is on the rise, and the course aims to fulfil the gap that the sector faces in terms of the workforce.

While pursuing MCA, students have the options to choose the specializations or electives, which lets them pursue their interest areas and build a career around the same in Management Information Systems (MIS), Application Software, Data Science, Artificial Intelligence, Cloud Computing and Full-Stack Development.

The curriculum mainly focuses on computer programming, database management, and software engineering while keeping it up to date with the standards and the needs of the current world. The courses covers under this department are data representation,

basics of business, accounting and communication, C programming and advanced mathematics, Introduction in IT, Computer Organisation & Architecture, Programming & Data Structure, Introduction to Management functions, Mathematical foundations, Info Systems Analysis Design & Implementations, Operating Systems, Oral and Wireless Communications, Accounting and Management Control, Probability & Combinatorics, Database Management Systems, Computer Communication Networks, Object-Oriented Analysis and Design, Management Support System, Statistical Computing, Software Engineering II, Network Programming, Software Engineering, Organizational Behaviour, Optimisation Techniques, Project and Seminar. Candidates receive training in modern programming languages and learn how to develop fast applications for contemporary businesses.

The curriculum is designed in a way that allows the students with much-needed practical exposure. The career scope is immense, and there are many roles an individual can see themselves in after the completion of the program, be it in the private or public sector.

Although the lab requirements and project work help them attain hands-on skills, they need to supplement it with real-world experience. Therefore, internships and jobs are highly recommended for career growth.

Programmes at MRSPTU

BCA-MCA

BCA

MCA

Ph.D.

Scope after qualification in Computational Sciences: The wide range of career options include specialized profiles in software development, hardware technology, systems development, and engineering, troubleshooting, management information system, internet, and networking. One can opt to be the Software Developer (central role in building, testing, installing, and maintaining software systems), as Hardware Engineer (to innovate and design the crucial physical components of computers), Database Engineer (to create and manage databases), Cloud Architect (to handle massive amounts of data), as Data Scientist (to use large data for decision-making process), as Business Analyst (Critical thinking, problem-solving capabilities, and knowledge of analytical techniques), Technical Writer (to convey complex information in simple form), IT Architect (to review and analyse the infrastructure to optimize performance), Software Consultant (the specialists are hired on a project basis), Trouble shooter (to resolve roadblocks in the functioning of both software and hardware), Network Engineer (to maintain network connectivity in terms of data, calls, videos, and wireless services), Social Media Manager (for partnering with other brands, in addition to creating and sharing content on platforms such as Instagram, Facebook, Twitter, etc.), Ethical Hacker (to protect against malicious attacks), Quality Assurance Analyst (to devise innovative solutions, and communicate them effectively to the relevant teams throughout the development life cycle), Project Manager (to manage the complete project under leadership).

Here are some of the companies who recruits outstanding individuals with computer application skill sets i.e. Infosys, TCS, ORACLE, Wipro Systems, SAP, Cognizant, Accenture, HCL Technologies, IBM etc.

According to US Bureau of Labour Statistics, employment of all software developers is projected to grow 17 percent from 2014 to 2024.

Food Science and Technology

M.Sc. in Food Science & Technology is a 2-year program and B.Sc. in Food Science & Technology is a 3-year program. It deals with a blend of physical, chemical or microbiological techniques and processes for transforming raw ingredients into food and also other forms in food processing industry. Food processing refers to converting the raw ingredients into edible components or transforming food into other edible forms. Food Technology deals with the various chemical processes to make food products consumable and ready to market.

Food technology deals with the techniques involved in the first to last step of production of food- processing, preserving, managing quality and distributing food products. The relevance of Food Technology is because of the growing awareness in terms of safety and quality of food.

Programmes at MRSPTU

M.Sc. (Food Science and Technology)

B.Sc. (Food Science and Technology)

Ph.D.

Scope after studying Food Science and Technology: A food science degree can lead to a career in a number of different sectors, including manufacturing, engineering and healthcare. The jobs of these technologists include not just giving our stomachs delight but also taking care of our health.

One can work as Food technologist (to determine the safety of food products, associated legalities), Nutritional therapist (to deal with the food products of the patients), Product/process development scientist (to control and supervise processes involved in the final output of their products), Quality manager (to ensure that the product fulfils customer satisfaction), Chef (to cook delicious food, balancing of ingredients, blending innovation and health in recipes), Research scientist (life sciences), Toxicologist (to determine if chemicals and other substances are toxic or harmful to humans and other living organisms or the environment), Regulatory affairs officer (for licensing, marketing and legal compliances of any medical or pharmaceutical product), Scientific laboratory technician, Technical brewer (to manage the process of brewing, maintain hygiene and safety, raw materials and operations).

One can pursue the career in private sector as Production manager, Purchasing manager, Research scientist (to improve yield, nutrition, flavour and acceptability of any packaged food item using scientific knowledge), quality assurance technicians, Biochemist (to learn the insights of the chemical reactions in food products).

Major corporates recruiting Food Science and Technology graduates are food manufacturers, producers and retailers e.g. Dabur India, ITC Limited, Agro Tech Foods, Parle Products Pvt. Ltd., Cadbury India Ltd., Nestle India Pvt. Ltd., Pepsi Co India Holdings, Britannia Industries Ltd., Hindustan Unilever Limited, Godrej Industries Limited etc. Technical service providers and government departments concerned with developing food policy and enforcement processes also offer employment.

Food science graduates also work in land-based sector, which encompasses agriculture and animals as well as fresh produce, food service and retail.

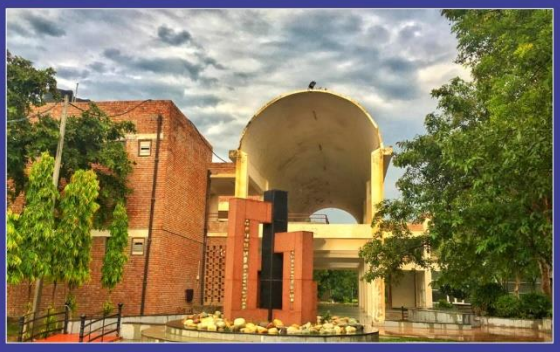
The deeper we get into the dimension of the field of Food Technology, the more professionalism and expertise is required. Therefore, a plethora of opportunities sustains for the aspirants who want to be a part of this lucrative industry.

MAHARAJA RANJIT SINGH PUNJAB TECHNICAL UNIVERSITY

Dabwali Road, Bathinda (Pb.) - 151001

(Estd. by Govt. of Punjab Vide Punjab Act No. 5 of 2015) ONLY TECHNICAL UNIVERSITY OF PUNJAB HAVING UGC APPROVAL UNDER 2(f) AND 12 B OF UGC ACT, MEMBER AIU.

Think Excellence, Live Excellence



INTERNAL QUALITY ASSURANCE CELL

MAHARAJA RANJIT SINGH PUNJAB TECHNICAL UNIVERSITY

(DABWALI ROAD, BATHINDA (PB.)- 151001)