# International Conference on Students' Progression (ICSP'2021)

**Theme: Reengineering Higher Education for Students' Progression : Skillsets that will Dominate in the Knowledge & Digital Economy**

## SESSIONS DESCRIPTION

### Track 2: Science, Engineering &Technology and Food & Agriculture

### Session 2.1: Theme: Learning skills in software's having applications in Research & Technology

**Overview:**

Arming oneself with learning skills in software having applications in Research & Technology will help explore various Career opportunities. Students' Progression is a decisive factor of successful completion of any programme at the graduate or postgraduate level. Monitoring of students' progression is a process that provides opportunities and support to the students to choose their career options on completion of their respective programmes. It also navigates the Institutions to use student performance data to continually evaluate the effectiveness of their teaching-learning process and be more informed to make decisions to develop industry-ready students.

**Session Objectives:**

The purpose of this Conference is a value addition to the knowledge gained by students during their graduation by means of imparting advanced skills useful for research and protection of the new knowledge generated out of their research work. Research plays an important role in scientific and technological building and upliftment of the society as well as helps in business development and enhances preparedness. Knowledge of basic research concepts and strong research skills can make the students, a more competitive applicant while pursuing their professional.

### Session 2.2: Future skills and Technologies in Food Sector in Industry 4.0

**Overview:**

India has moved from a position of scarcity to surplus in terms of food production, hence the opportunities in the area of increasing food processing levels are innumerable. India's food processing sector, in recent years, has been known for its high-growth and high-profits, thus, increasing its contribution to the world food trade every year. India's diverse agro-climatic conditions, which favours the production of food ingredients in bulk, and availability of promising infrastructure are the two primary factors that aided the Indian food processing industry to become the fifth largest in the world and is expected to reach USD 535 billion by 2025-26. The food processing market in India is expected to grow at a CAGR of ~12.09% during the FY 2020-FY 2024 period. The 20th century saw the mechanization of processes leading to the immense growth of all industries including the food processing industry. The 21st century is witnessing a shift towards globalization, digitization, automation, and value addition in the food industry. The stiff competition from the global players has forced the local manufacturers to adopt the change. The change

towards, digitization, automation, and value addition has created a demand for globally competitive food technologists who are well versed with advanced techniques & modern machinery, IT friendliness, excellent communication, and leadership skills.

**Session Objectives:**

- To recognize the diversity of job options .
- How can the contact between the food processing industry, researchers, and students be increased?
- To develop transferable abilities in students that will help them deal with situations that are characterized by ambiguity.
- To create in our graduates, the ability to think critically and creatively, to solve problems, and to adapt to rapidly changing conditions, frequently in front of an audience.

### Session 2.3: Harnessing Entrepreneurship & Innovation: Ecosystem for Students' Start-ups

**Overview:**

Entrepreneurship in Forensic Service and products is a relatively young field in the early stages of its developmental cycle. In existing times, the role of the human in the country seems unaccomplished due to in-house problems of fraud, financial maladministration, misappropriation, and other crimes in administration rising in the large scale business organizations. Forensic Investigation is a framework that integrates the investigation approach into financial, factual, and human anomalies in the form of crime alongside the process of managing a particular business, establishment, or organization to surface such irregularities, minimizing functioning cost and increase performance on the aggregate. As a forensic entrepreneur, one needs to understand the Place of Forensic Services in the Indian Industry and its requirements. There are multiple facets of the forensics ecosystem that will nurture these ventures: Innovation in Forensic services for Entrepreneurship, Motivational factors and triggers for entrepreneurship, economic and sociological viewpoints of forensic entrepreneurship, guidelines, and motivational factors to start a Forensic career in Pvt Sectors. One also needs to focus on industry-based organizational needs, planning and execution, team building, management concept & organizational behaviour, regulatory framework, and legal obligations. A Forensic Entrepreneur is need of the hour for every corporation to minimize their fraud and protect the company from any kind of loss.

**Session Objectives:**

- Value addition to the knowledge gained by students during their graduation by means of imparting advanced skills useful for research and protection of the new knowledge generated out of their research work.
- How can the Knowledge of basic research concepts and strong research skills make the students, a more competitive applicant, while pursuing their professional careers?
- To create in our graduates, the ability to think critically and creatively, to solve problems, and to adapt to rapidly changing conditions.
- To teach our students how to be creative entrepreneurs who see the importance of creating their chances.

## Session 2.4: The Workforce of the Future: Navigating Industry 4.0 and Beyond

**Overview:**

Tech innovation is prompting massive change - a transformation so significant it's referred to as a fourth industrial revolution, or Industry 4.0. From facial recognition software to voice-activated virtual assistants and self-driving delivery trucks, the lines between human and machine "work" continues to blur. With job growth expected to continue, the workforce of the future will likely look very different in the coming years than it does today.

Workforce of the future - the students of today will have to be very much in sync with the technology trends which are emerging at this key moment in history. A defining element of Industry 4.0 is rapid automation across all industries. Today, robots are not just replacing assembly line workers in manufacturing plants. Automation is going to be the key, as it is the most cost-effective, and also does not get negatively affected by working from home. Machine Learning and the Internet of Things (IoT) are going to be the key drivers. And while technology is undoubtedly replacing some jobs, its implementation is also creating new jobs and opportunities for employees. Harnessing the power of Industry 4.0 will require higher-skilled positions and technical talent. In a nutshell, the whole engineering fraternity will have to let go of the traditional mindset and think out of the box to find innovative solutions to the way forward.

**Session Objectives:**

- To learn from industry professionals regarding the technologies that are emerging and will emerge in the future.
- To evaluate and modify course curriculum to make it more relevant to the industry.

To help students prepare themselves with

- skill sets as required by industry.

## Session 2.5: The Future of Engineering: Re-Skilling for a New Era of Digital Transformation

**Overview:**

This is a very uncertain period – there are businesses where survival is at stake, and Organizations need to drastically reduce their costs. On the other hand, there are businesses like telecom and pharma which must scale up to unimaginable proportions within crazy timelines. The key to both the environment is out-of-the-box thinking, a highly multiskilled staff, and commitment to evolve. Actually, on a closer look, it is just multiskilled staff. Everything else follows. A basic engineering degree gives a lot of subject matter knowledge. Science background gives curiosity and structure. Here are some additions which fetch a lot of value to engineering graduates. Automation –Even if one doesn't use it in one's role, you would know when and where this can be used and will be able to initiate a lot of automation. Scripting tools also help a lot in fast-pacing day to business. Power your Points – good presentation skill: Having ideas and being able to sell those ideas are two different things; and thus, the skill is a game-changer. Business Analytics & Data Science – the objective of all corporate action is a number; the result still is a statistical figure. Excel is still used a lot –Learning a BI tool (PowerBI, Tableau) would certainly help tomorrow. Artificial Intelligence & Machine Learning – this has opened avenues that were completely unthought-of in the past. None of them will help if students are not in habit of continuous learning and keep in touch with the latest literature, remain curious, and keep adapting to change. Corporate is a lot of fun when approached with the right skills and the right mindset.

**Session Objectives:**

- To learn about the latest trends and technologies that are emerging in the field of Engineering.
- To steer our focus in the right direction and prepare ourselves to meet industry requirements.
- To faculty and students to think out-of-the-box and move ahead and change with the changing times.

## Session 2.6: Engineering Trends and Technological Advances: Future Directions for Innovation & Research

**Overview:**

The current pace of technological development is exerting profound changes in the way people live and work. It is impacting all disciplines, economies, and industries.
Engineers play a key role in our societal development, contributing to and enabling initiatives that drive economic progress, enhance social and physical infrastructures, and inspire the changes that improve our quality of life. Simultaneously, industry and manufacturing are facing unprecedented challenges due to globalization and distributed manufacturing. As a result, the business environment of manufacturing enterprises is characterized by continuous change and increasing complexity. Researchers and graduates with the ability to understand both complex technological processes and the creative arts and social skills are increasingly sought after in today's industrial and business world in areas of Manufacturing Management, Health and Service Sectors, Product Engineering and Technical Sales, Transportation, and Logistics. Using their strong technical and communication skills, engineering managers oversee a variety of team-based activities. By focusing on the critical role of engineering in solving our most complex global issues, we aspire to make the profession more attractive to both male and female students.

**Session Objectives:**

The session will educate faculty and students to learn about future subjects and avenues for research work and prepare themselves by acquiring the required skills and knowledge to contribute meaningfully in research-oriented assignments in their respective domains.

## Session 2.7: Artificial Intelligence in Agri-Horti production system

**Overview:**

Automation in agriculture is the main concern and an emerging subject across the world. Artificial intelligence (AI) technology is assisting various industries in increasing productivity and efficiency. AI is the imitation of human intelligence in robots that are designed to reason and act in the same way as humans. In every industry, AI technologies are helping in overcoming traditional hurdles. Similarly, AI in production systems of horticulture is assisting farmers in increasing efficiency while reducing negative environmental implications. AI in agriculture helps the farmers to understand the data insights such as temperature, precipitation, wind speed, and solar radiation. The population is rapidly growing, and with it, the demand for food and work. The old methods utilized by farmers/personnel in agri-horticulture are insufficient to meet these criteria. As a result, new automated procedures are developed. These new approaches meet food demands while simultaneously providing work opportunities for people around the world. People are becoming more inventive in constructing farms in small spaces while producing large yields of high-quality products.

**Session Objectives:**

- To explore the role of artificial intelligence in maintaining advancement in the agro-based sector
- To understand perspectives of youth on Technology and Agriculture
- To identify policy approaches for stimulating the adoption of technologies that can improve sustainability at the farm level

### Session 2.8: Engineering and Gig Economy: An Evolving Job Model

**Overview:**

At the present situation of the Covid-19 world, Gig economy jobs are emerging as an Evolving Job Model. The popularity of Gig economy jobs is increasing day by day due to working as a freelancer, having flexible working hours, reduced requirements of infrastructure, and not being restricted by office walls. In the present scenario, where short time and flexible Gig economy jobs are more preferred, and companies would rather hire a freelancer or independent worker than a permanent job position forms the so-called Gig economy.

In the year 2021, following broad classes of the job opportunities will be a good fit under Engineering and Gig Economy jobs for adding extra revenue in the system. Deep learning/Machine learning/Artificial Intelligence: It is one of the best Gig economy jobs which students can get in terms of higher payments and great demands for experts. Robotics: This will give you a great opportunity to excel in Robotics. Augmented Reality & Virtual Reality developers are currently required by an industry leader such as Facebook, Intel, Google, Microsoft. Blockchain Architect is gaining opportunity in the area of banking and Bitcoin or other cryptocurrency transactions.

**Session Objectives:**

- To explore the latest opportunities for Gig economy jobs in the field of engineering
- To help the students to understand the various skill sets required for these emerging opportunities
- To help faculty and students to understand the pros and cons of Gig economy which will further lead to an increase in self-employment for young engineering graduates. It will be a small big step towards becoming “Atmanirbhar Bharat”

### Session 2.10: Advanced technologies for sustainable Agri-Horti production System

**Overview:**

Exploring agricultural systems and practices that aim to maintain or enhance the health of the natural resource base within the constraints of the market-based production system. Over the last few decades, technological changes have been the major driving force for increasing agri-horticultural productivity. Agri-Horti is becoming more and more integrated with the nutritional security of the increasing population apart from providing hunger security. Global markets are demonstrating increased sensitization to issues related to environmental, food safety and quality, animal welfare, human rights, etc which are increasingly impacting the regulations and thereby technologies. The Agri-Horti sector is faced with newer challenges to meet growing demands for safe food and yet remain internationally competitive. At the same time, it must meet UN sustainability goals.

Today, farmers, advisors, and policymakers are faced with a wide range of technologies but must deal with the uncertainties of both the effects these new technologies will have throughout the agri-food chain and the sustainability of farming systems. There is also increased pressure on Agri-Horti research budgets that also need to be compromised with.

**Session Objectives:**

- To achieve the highest sustainable economic growth and employment and a rising standard of living
- To look at the roles for markets in stimulating the adoption of appropriate technologies that can improve sustainability at the farm level

### Session 2.11: Harnessing Entrepreneurship & Innovation: Ecosystem for Students' Start-ups

**Overview:**

New technologies and innovative ideas are being used to promote the Agri sector and bring it to the next level. The world population is growing and is expected to be doubled in the next few years. This will impact the urban population as it is expected that by 2030, 60% of the population will be living in urban areas. Within this context, urban and peri-urban agri-horticulture has emerged as a critical component of impoverished people's survival tactics, as well as a substantial contributor to the urban fresh food supply chain. Urban and peri-urban agri-horticulture has highly diverse production systems such as community gardens, home gardens, rooftop gardens, urban farms, guerrilla gardens, backyard gardening, poultry and livestock farming, and aquaponics farms. Urban agri-horticulture can be profitable, particularly when producing high-demand products with a competitive edge over rural farming, such as perishables products (green leafy vegetables and milk), mushrooms, flowers, and decorative plants. It is sustainable if it maintains its dynamism and versatility, adapting to changing urban conditions and demands, increasing productivity and diversifying its functions for the city, while increasing synergy and reducing conflict, and thus gaining greater social and political acceptability.

**Session Objectives:**

- To understand urban and peri-urban farming techniques
- To learn about Agri-start-ups of hydro and aeroponics
- To understand the scope of "Controlled environment agriculture" in harnessing entrepreneurship and Innovation

### Session 2.13: Employability Skills in Nanoscience & Nanotechnology graduates in Industry

**Overview:**

The 21st century has witnessed precipitous changes spanning from the way of life to the technologies that emerged. We have entered a nascent paradigm shift where science fiction has become science facts, and technology fusion is the main driver. Thus, ensuring that advancements in technology reach and benefit all is the ideal objective for everyone. The term Industry 4.0 encompasses a promise of a new industrial revolution—one that couples advanced manufacturing techniques with the Internet of Things (IoT) to create manufacturing systems that are not only interconnected, but communicate, analyze, and use the information to drive further intelligent action back in the physical world. The Fourth Industrial Revolution (Industry 4.0), however, is not only about smart and connected machines and systems, its scope is much

wider. Occurring simultaneously are waves of further breakthroughs in areas ranging from gene sequencing to nanotechnology, from renewable energies to quantum computing. It is the fusion of these technologies and their interaction across the physical, digital and biological domains that make the Fourth Industrial Revolution fundamentally different from previous revolutions.

Nanotechnology deals with the creation of materials, devices, and systems, through engineering the matter at the nanometer length scale. The nanometer length scale in the novel property is a very critical process through which it would be able to manipulate and control individual atoms and molecules. At this point, physical, chemical, mechanical, electrical, optical, magnetic, and other properties change; making use of such changes can aid in developing novel products and processes which have not been possible hitherto. The major implications of disruptive technology are the demand for new course content, employment, knowledge, and skills.

The proposed three days conference on re-engineering higher education for students' progression will help the young graduates to know about the latest developments in the field of nanotechnology that can help them to develop the skillset to match with the requirements of Industry 4.0.

**Session Objectives:**

· To foster new ideas and knowledge in students towards development and commercialization in Nanotechnology
· To provide awareness about different employments opportunities in the different industry sectors.
· To initiate and promote the adoption of novel engineered nanomaterials into various sectors.
· To explore a good collaborative academic and research relationship with the eminent speakers.