



“NIFTEM AS EMERGING PIONEER INSTITUTE FOR INDIAN FOOD PROCESSING INDUSTRY”

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NIFTEM'S BLOSSOM OF OPPORTUNITIES

India has a long and rich tradition of food as the nourishment of body, mind and soul. The country has over millennia developed, refined, nurtured and espoused the food philosophy that not only answered the questions of why, how and when related to food but also

specified the type and quality of food to be consumed by various people commensurate with their activities and health status. The boundaries of food extended to medicine such that the food and medicine constituted a continuum. If the entire world sought spices from India, it was essentially to incorporate the goodness of spices in their food to derive health benefits and pleasure. It is time, once again to bring global acclaim to Indian food and help increase Indian food trade several fold through the integration of traditional knowledge with modern food science and technology.

National Institute of Food Technology Entrepreneurship and Management, deemed-to-be university under De-novo category,

has been established with a view to meet the human resource requirement of the expanding food sector in the country. Food sector already constitutes about 10% of the manufacturing GDP of the country with contributions from about 300,000 industries at an average annual growth rate of 8.4% during the past five years. Food Processing is believed to provide a viability model to agriculture leading to the continued interest in farming and, thereby, ensuring food security in the country. The multinationals are also entering Indian Food Processing market in a big way. To the NIFTEM's graduates that should translate into tremendous opportunities to join this sector and be a part of the huge transformation that the Food Processing sector is undergoing.

NIFTEM is a role model of food technology education in India where the students interact with villagers on one hand and with institution/ industries on the other hand to comprehend the total food production to processing value chain. NIFTEM continues to be the only institution to combine technology with management to prepare techno-preneurs and techno-managers. With a fully residential campus, NIFTEM provides wholesome experience of quality education with modern amenities and global linkages.

MANDATE OF NIFTEM

NIFTEM has a mandate to work as Sector Promotion Organisation/ Business Promotion

Organisation of the food processing sector. The major objectives of NIFTEM are:

To work as One Stop Solution Provider to all the problems of the sector.

To work for Skill Development and Entrepreneurship Development for the sector.

To facilitate Business Incubation Services.

To conduct Frontier Area Research and foster Innovation for development of the sector.

To develop World Class Managerial Talent coupled with advanced knowledge in Food Science and Technology.

To function as a Knowledge Repository.

To work for up-gradation of SME food processing clusters.

To provide intellectual backing for regulations, governing food quality and safety.

To promote cooperation and networking among existing institutions within India and abroad.

ACTIVITY FOCUS OF NIFTEM

Education and Research, Skill Development, SME Upgradation, Consultancy, Extension and Outreach & Technology Enterprise Incubation

WORLD CLASS EDUCATION IN FOOD TECHNOLOGY AND MANAGEMENT

State of art infrastructure and equipment.

Teaching labs of international standards encompassing 7223 m2 area.

State-of-the-art research labs under establishment.

Modern classrooms with interactive board, projection system and lecture recording facility.

Acclaimed Faculty with Global Exposure.

Video conferencing facility for interaction with foreign teachers.

INNOVATIVE CONCEPTS IN EDUCATION AT NIFTEM

Each program is a unique blend of technology and management. Innovative, globally benchmarked curriculum. Innovative approach for teaching through e-contents. Catering socio-technical issues through a unique Village Adoption Programme. Regular Interactive sessions with top professionals and managers of food industry. Experiential learning

opportunity through industry internship. Innovation fund for students. Promoting a very wide knowledge canvas of students: from ground realities in villages of India to the latest development in the food processing industries by visits abroad.

LIFE AT NIFTEM CAMPUS

Fully residential campus with separate hostel facilities for girls and boys. Entire campus being developed as High-Tech Wi-Fi campus. Upcoming facilities include Auditorium, Amphitheatre, Recreational Area/Gymnasium, Health Club, Swimming Pool, Tennis Court, ground for outdoor games, facilities for indoor games etc. Green campus with duly planned walking/ jogging/ cycling tracks. Medical facility in the campus. Self contained campus with facilities like post office, bank, and an upcoming market complex.

ACADEMIC DEPARTMENTS**DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY**

The department aims at promoting innovations in food sector and catalyzing the growth of food processing industry in India in global context. Apart from imparting world-class education in the field of food science and technology, the department has research programmes in frontline areas of Food Science and Technology. The department is also involved in skill development of the farmers and industry personnel.

DEPARTMENT OF FOOD ENGINEERING

Department of Food Engineering prepares the prospective food entrepreneurs and food techno-managers by providing them the basic concepts and practical experience of food processing equipment design, process control and systems analysis. Equipped with this knowledge, the food engineers take up challenges in efficient and environmentally sustainable manufacturing of high quality, nutritious and safe foods using state-of-the-art process controls and incorporating the latest advancements in science and engineering.

DEPARTMENT OF FOOD BUSINESS MANAGEMENT AND ENTREPRENEURSHIP DEVELOPMENT

This department has been conceptualized to groom future leaders in Food Science and Technology who can make a difference in Agri-Food Business for India and the world. The main aim is to work for development of managerial and entrepreneurship skills for the food processing sector. The



immense knowledge potential may be channelized to function as a knowledge repository on various aspects of food processing such as product information, production and processing technology, market trends, safety and quality standards and management practices, among others.

DEPARTMENT OF BASIC AND APPLIED SCIENCES

The department encompasses different fields related to basic sciences such as Physics, Chemistry, Microbiology, Biochemistry and Mathematics. The functional areas of the department include: food safety and quality, food and human nutrition, chemical aspects of foods, application of physics in food processing, food testing (microbiological and chemical) and mathematical modelling in food processing.

DEPARTMENT OF AGRICULTURE AND ENVIRONMENTAL SCIENCE

This department looks after pre and post harvest management of food crops, fruits and vegetables. A major focus of the department is on the cutting edge production technologies such as plant tissue and cell culture and protected agriculture. The research also encompasses farm produce sustainability and profitability in Indian agriculture along with environmental issues such as climate change, waste management etc. NIFTEM's Village Adoption Programme is coordinated by the department.

ACADEMIC SUPPORT FACILITIES

LABORATORY AND PILOT PLANTS

NIFTEM houses state-of-the-art teaching and research facilities in food technology and allied areas. In addition to 14 world-class Teaching cum Research Laboratories already established & functioning, laboratories, five pilot plants covering Fruits and Vegetables, Dairy and Dairy Products, Cereal and Pulses, Meat and Poultry and Traditional Indian Foods are in process of shaping. These will be used for experiential learning by students and providing exposure of working personnel of Food Processing Industries. The pilot plants will also be used for scale up process, commercialization of business ideas and development of entrepreneurship in future.



NIFTEM KNOWLEDGE CENTRE (LIBRARY)

The NIFTEM Knowledge Centre (NKC) is a five storey building having an area of 6580 m². The state-of-the-art NKC is housed in aesthetically designed boat shaped signature building amidst the NIFTEM campus. The aim of the NKC is to cater to the needs of the undergraduate and postgraduate Students, Research Scholars and the faculty members of NIFTEM. It also caters to the needs of users through internet/intranet by providing information services to all the stakeholders relating to bibliographic, full text digital and printed resources to support the scholarly and informational needs of the NIFTEM community. It has 15000 books with 6800 volumes, 126 hardcopy, 5 journals, 16000 e-journals, 23000 e-book etc.. It is the first fully Automated & Digital Library on an educational institution in India.



INNOVATION IN EDUCATION

COLLABORATIONS ACROSS THE GLOBE

NIFTEM has entered into Memorandum of Understanding with Wagenigen University, Netherlands; Kansas State University, Manhattan, USA; University of Nebraska, Lincoln, USA and Institute for Food Safety and Health, Illinois Institute of Technology, Chicago, USA for militia/ cooperation in the field of faculty/ students exchange, research and other subjects of common interest. Similarly NIFTEM has MoU bondage with GS1 India, IARI, New Delhi and NDRI, Karnal, Haryana.

The Institute is likely to sign similar MoUs with about ten more prominent foreign Universities/Institutions.

STUDENT'S FOREIGN EXCHANGE PROGRAMME

Right from their first year itself, every year ten meritorious students from each batch of B.Tech. and two students from each of the five M. Tech. programmes are sent to foreign universities

on student exchange programme of academic learning with 100% fare. Other students in order of merit are paid 50% and 25% fare. During July to August 2014, a number of students were sent to the following foreign universities on student's exchange programme:

Details of student exchange to foreign universities during 2013 and 2014 are:-

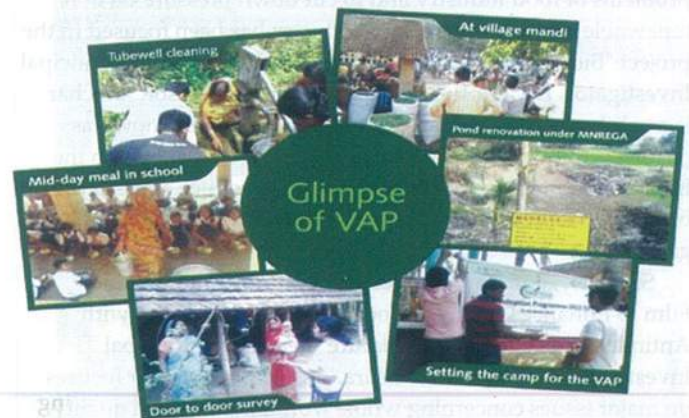
- University of Nebraska-Lincoln, USA: 02 (M. Tech.) and 08 (B. Tech.), 2013
- Kansas State University, USA: 04(M. Tech.), 2013
- University of Saskatchewan, Canada! 2(M. Tech.), 2013
- University off Saskatchewan. Canada: 10(B. Tech.), 2014
- Institute of Food Safety and Health, Illinois Institute of Technology, USA:5 (B. Tech.) and 4 (M. Tech.) 2014
- Kansas state University. USA; 5 (M. Tech.) 2014

INNOVATION FUND FOR STUDENTS

NIFTEM has conceptualized creation of an Innovation Fund for the students. Innovative projects submitted by the students costing upto Rs.15.00 lakh are normally funded. Limit can be exceeded in case of highly deserving projects.

VILLAGE ADOPTION PROGRAMME (VAP).

A unique approach to pervade Food Processing Technologies and NIFTEM's message to the least developed villages of India. Students are divided into groups of 10 to 15 immediately after their joining the B. Tech/ M. Tech. programmes at NIFTEM. Each group adopts a village of its choice anywhere in India and nurses it during their entire programme.



INNOVATION IN EDUCATION

AIMS OF VAP are to create a symbiotic learning environment for students. Enlighten the students to grass root problems of villages and of food supply chain, Inculcating the capabilities suiting to emerging job markets in food supply chain and to develop entrepreneurship spirit. Making village community acquainted with latest technologies on agro food production and processing.

CREATION OF NEW DIVISIONS

CONSULTANCY DIVISION

NIFTEM has established a Consultancy Division to

strengthen Food Processing sector by universalizing core competitiveness in the sub sector, enhance business capabilities of SMEs and single window catering across the sectors.

SKILL DEVELOPMENT DIVISION

AIMS at running large scale PAN India skill development programmes for the masses to provide skilled manpower to the food industries. It has Organised 6 one day outreach programmes benefitting 2547 participants, 30 Short Term Training Programmes (STTPs) of 3-5 days, 9 one week & 8 two weeks duration benefitting 626, 454 & 360 participants respectively. Totally benefitting 3987 persons in two years.

ACADEMIC ENDEAVOURS

To promote research & to work in emerging areas of knowledge, Ph.D. Programmes were started in 2013 in all the five PG departments besides Doctoral Fellowship.

An International Project was sanctioned to NIFTEM through USIEF to host Fulbright Specialist Dr. Ronal Noyes Emeritus Professor Okhlama State University, USA at International Grain Processing & Research Centre of NIFTEM to offer a course to M.Tech students & to promote research on bulk grain storage.

Academic Audit & Monitoring System has been established. Eminent experts are invited to deliver lectures to students & faculty.

Professor. Arun S. Majumdar, an internationally renowned scholar, has been associated as Professor Emeritus at NIFTEM.

Prof. Ravi Chibber of University of Saskatchewan, Canada has been appointed as visiting Professor.

Two African Researchers allotted by Department of Science and Technology under Indo-Africa Scholarship opted for NIFTEM. One National Young Scientist Fellow chose NIFTEM for further research work,

One DST Woman Scientist grant holder preferred to conduct research at NIFTEM.



INDUSTRY

INTERNSHIP FOR (M.TECH STUDENTS)

All the students of M. Tech. were placed in prominent food processing industries for 5 months industrial internship in 2013 as well as 2014.

NIFTEM RESEARCH AND DEVELOPMENT COUNCIL (NRDC)

Research & Development Council consisting of about 50 members drawn from industry and academia has been set up to chalk out the future research agenda of NIFTEM.

Three meetings of NRDC have been held so far.

INTERNATIONAL GRAIN PROCESSING RESEARCH AND TRAINING CENTRE

The centre has its mandate as training, teaching, research and technology transfer in the area of primary (shelling, milling, dehulling etc.) and secondary (breakfast cereals, multigrain products, whole grain products etc.) grain processing. To come up with novel uses of grains through grain starch research, modification of starch, extruded specialties, including fermentation technology applied to cereals and development of value added products etc.

The centre has organized an international short term training programme (STTP) on 'Extrusion Processing - Technology, Applications and Business Development for the Indian Food and Feed Market on April 8-10, 2013 with Kansas State University, USA & M/s Wenger, USA. The United States Educator/al Foundation in India

(USEFI) has granted a Fulbright Specialist, Dr. Ronald Noyes, Emeritus Professor, University of Oklahoma, USA to visit the centre from 8-28 February, 2014 and to discuss future research thrust of the centre.

INTERNATIONAL BAKERY RESEARCH AND TRAINING CENTRE

The International Bakery Centre aims to facilitate experiential learning and product development for the Baking Industry of India.

The centre would conduct research on the problems of the Baking Industry.

The centre would also train the people and upgrade their skills to achieve quality in the bakery units,

NIFTEM INDUSTRY FORUM

NIFTEM Industry Forum is the Apex policy advisory body.

It consists of representatives of Micro, Small, Medium and Large Industries in Food Processing sector.

It envisages the NIFTEM's Agenda for the future for Teaching, Research, Entrepreneurship Development, Skill Development and Consultancy to the Industries, as also SME Upgradation.

INTERNATIONAL CENTRE OF EXCELLENCE ON FOOD SAFETY AND QUALITY

Being a public funded institution and in its role of Single Solution Provider, NIFTEM has come forward to take initiatives to establish a state of art Centre of Excellence to work on Food Quality and Safety issues.

Functional areas of the centre are: process development and process validation, quality control and quality assurance, quality systems and systems certification, surveillance and monitoring of food borne outbreaks, risk prioritization, Food functionality, toxicity and efficacy, analysis and certifications.

RESEARCH ENDEAVOURS

NIFTEM being a National Institute of global standards aiming to inculcate knowledge creation in frontier areas of food technology and management and it sets a deep, distinctive

and leading legendary landmark in food research at global level. NIFTEM focuses on a fair balance of food upstream and downstream research conducted through internal as well as collaborative and sponsored funds headed by extremely dedicated faculties and experts. Currently, NIFTEM has 5 ongoing projects in different fields undertaken by different well competent, knowledgeable and skilled faculty members and dedicated research fellows (SRFs/JRFs) focusing on needs and demands of present world.

Micro-fluidization technique has gained popularity as a homogenization technique in food industry as it combines extremely high velocity, high pressure, frequency fluctuations, high shear and continuous treatment. A research project is being carried out in NIFTEM to study "The Effect of Micro-fluidization on the Quality on Fruit Flavoured and Low-Fat Yoghurt" under Principal Investigator, Dr. Rupesh Chavan, Assistant Professor.

Moreover, present world focuses highly on nutrient enriched safe and healthy foods. With this aim another project namely "Development of Safe Fruit and Vegetable Product Retaining Higher Nutrients using High Pressure Processing" is being pursued under the guidance of Principal investigator, Dr. Prabhat K Nema, Associate Professor. Pascalization or High Pressure Processing (HPP) is a method of preserving and sterilizing food, in which a product is processed under very high pressure, leading to the inactivation of certain microorganisms and enzymes in the food. Modification of this technique so as to retain high nutrients in food is mainly emphasized in this project.

Additionally, curbing environmental and waste disposal problems of food industry and to cut down pressure on non renewable fossil fuels in a food industry has been focused in the project "Biochar from Food Industry Waste" guided by Principal Investigator, Dr. Tripti Agarwal, Assistant Professor. Biochar is a solid material obtained from the process well known as pyrolysis of biomass. Biochar may be added to soils with the intention to improve soil functions and to reduce emissions from biomass that would otherwise naturally degrade to greenhouse gases.

Similarly, a research project on "Natural Antimicrobial Film to Enhance Quality of Food: Starch-Protein Film with Antimicrobial Agents from Nature" headed by Principal Investigator: Dr. Vijendra Mishra, Associate Professor focuses on major issues concerning whole world, that is, food quality and safety. Antimicrobial packaging technology has a significant impact on shelf life extension and food safety and this has evolved an idea to utilize natural antimicrobial film to cover food products and thereby render food safety.

In addition, a project has been undertaken to focus on human health involving resistance development and drug establishment targeted towards harmful pathogens by stress specific metabolic and genetic studies. The project "Antibiotic Resistance in Lactobacilli of Food and Faecal origin: Detention of genes, influence of stress and horizontal transfer" (ICMR funded) is guided by Principal Investigator: Dr. Vijendra Mishra, Associate Professor.

Students in NIFTEM too will be engaged in research during M.Tech and Ph.D programme and will undertake channelized

research and directed towards capture of intellectual assets, publications, technology archiving for transfer to food industry.

Additionally, a research project on development of food products fortified with cereal grasses and evaluation of their Therapeutic Characteristics headed by Dr. Komal Chauhan, Assistant Professor has been sanctioned by SERB/MoFPI.

CAREER PROSPECTS

CAREER PROSPECTS IN FOOD SECTOR

Food industry in the country looks forward to a rapid growth with change in socio-economic environment and food consumption pattern of the prospering population, in general and of the youth, in particular. Indian Food Processing Industry is growing at a rate of 15.9% per annum as compared to the total industrial growth of 3.7%, in the country. The food processing sector attracted a foreign direct investment (FDI) of 188.67 million US\$ in 2010-11. A study conducted by Institute of Applied Manpower Research (IAMR) foresees a wide skill gap at various levels in food sector touching around 35 million by 2017. Thus Food Industry is going to be a major employer in the days to come.

NIFTEM aims at expanding the food technology research and education far beyond the conventional realm, by covering upstream food technology disciplines and providing exposure to its students in cutting edge areas of relevance. The focus

of NIFTEM transcends beyond traditional technology applications, so as to provide better career prospects to students in the field of Food Technology and Management to enable them to meet the demands of high-end professionals in Food Industry.

Processing in food sector is growing and of eminent importance in today's scenario, processing will give farmers its due and NIFTEM, through Village Adoption program is providing the same. The curriculum at NIFTEM has been designed as per the Industries' feedback regarding difficulties in recruiting suitably trained manpower as there is a huge Shortage of the same.

CAREER OPTIONS IN FOOD SECTOR

Product Development Scientist, Sensory Scientist, Food Microbiologist, Food Analyst, Quality Control Supervisor, Food Process Engineer, Food Ingredient Manager, Food Regulatory Affairs Specialist Nutrition Specialist Supply Chain, Cold Chain Logistics Specialist, Food Fermentation Specialists Food Processing Sectors: snack food, beverages, meat, winery, dairy etc.

Food Service Sectors: supply chain, post harvest, food retailing, food regulations and hearth and wellness service providers. Managers, Technocrats and Consultants in Food Industry. Pursuing higher degree for careers in Academia and research.