

# **REPORTS**

**{Criterion – 3.3.2}**

**2014-2015**

**Event Report of Short Term Course "Latest Trends in Information and Communication Technologies" Conducted by the IT Dept. during 04<sup>th</sup>-08<sup>th</sup> August 2014**

Information Technology Department of Guru Nanak Dev Engineering College, Ludhiana conducted the weeklong series of lectures and hands-on practice sessions of Short Term Course (STC) on title "Latest Trends in Information and Communication Technologies". This STC was sponsored by Technical Education Quality Improvement Programme (TEQIP-II) cell of the Institute. The valediction programme of this course was organized in the seminar hall of the campus on 08<sup>th</sup> Aug. 2014 (Wed.). This programme was organized with the objective of sharing recent developments in the areas network security, bioinformatics, image processing, natural language processing, firewall implementation and configuration with practical demonstration. As many as 17 resource persons in this programme shared their views and further research areas among the participants.

Dr. O.P. Gupta, Dy. Director, School of Electrical Engineering at Punjab Agriculture University Ludhiana was invited as chief guest of the valediction programme. In his speech, chief guest emphasised that awareness of technology trends in IT and ICT is the need of the hour, but at same time security of information transferred is important area of concern. He further elaborated that security measures can be implemented at the personal level by doing simple encryption of personal data by oneself. TEQIP-II coordinator, Dr. J.N.Jha mentioned the benefits as well as wastage of resources due to updation in technology every day.

Sh. Amolak Singh Kalsi, Technical Director & District Informatics Officer at National Informatics Centre, Jalandhar was invited as Chief Guest in the Inauguration of the programme. Mr. Kalsi pointed out various innovative ideas implemented at the industry and government level for the concern of ICT. In the whole five day programme the academicians, software professional and researchers were invited to deliver the expert talk during the course. During this programme, Dr. Sarbjit Singh, Associate Prof. from Panjab University Chandigarh elaborated the **role of social media, mobility, analytics and cloud computing** in the programme. Dr. Maninder Singh, Associate Prof. from Thapar University Patiala shared his views on **social network analysis and big data deluge**. Dr. Manpreet Singh from GNDEC Ludhiana explained the topic titled "Bioinformatics: From Evolution to Computation". Dr. Anjali Garg from GNIMT Ludhiana elaborated the **Local and Global Feature based Descriptors for Shape based Image Retrieval**. Mr. Amit Kamra from GNDEC Ludhiana presented new research ideas in the filed of biomedical imaging. Mr. Vipin Gupta from U-Net solution organized the **hands on session on Firewall Implementation and Configuration and Public/ Private Key based Authentication using Secure Protocols like SSH, SFTP and HTTPS**. Mr. Sanjeev Kumar from DAV University Jalandhar and Dr. Parminder Singh from GNDEC Ludhiana delivered expert talk on Natural Language Processing with its Various Research Areas and Text to Speech Synthesis System respectively. Dr. Harish Kumar in his speech specified the role of Cyber Security and Information Retrieval.

Dr. K.S. Mann, HOD of IT Dept. and chief coordinator of this course presented the summary & feedback report of this short term course at valediction programme. He discussed the significance of these types of courses for faculties as well as researchers and congratulated the coordinators for organizing this STC. Participation Certificates were issued to 63 participants, which came from different regions of the country to attend this STC.

  
(Pardeep Bhatnagar)  
Course Coordinator

**2015-2016**

## Activity Report

### Two Day Workshop on Producing Elegant Technical Research Reports Efficiently

The Department of Civil Engineering and Computer Science & Engineering organised jointly TEQIP-II sponsored two day work on "Producing Elegant Technical Research Reports Efficiently" held from 19<sup>th</sup> and 20<sup>th</sup> January, 2016. The workshop started with inaugural sessions on 19<sup>th</sup> January, 2016, Mrs. V. Puri was the chief guest of the day and Director GNDEC, Ludhiana presided over the function. Dr. J.N Jha and Dr Parminder singh, chairman and co-chairman of the workshop emphasised on the need of efficient tools for report writing. Seventy Three research scholars (Ph.D. and M.Tech) from various institutes registered for the workshop.

The workshop sessions for both days were hands on lab sessions, where participants learnt and experimented with LaTeX software and Reference Manager software for writing research reports efficiently. The participants were be guided on the selection of tools based on the philosophy that authors should be able to focus on the content rather than achieving the required format. The tools used for conducting workshop were having superior support for automatic formatting, mathematical equations, graphics, bibliography and handling of references over the traditional tools. This workshop enabled the academicians to productively utilise their valuable time in conducting research rather than spending time in formatting their reports and thesis. The workshop ended with a quiz and feedback session. Dr. Hardeep Singh Rai (coordinator) and Mr. Sukhjit Singh Sehra (Co-coordinator) thanked the participants.





# **Guru Nanak Dev Engineering College, Ludhiana**

An Autonomous College u/s 2(f) and 12(B) of UGC Act 1956)

## **Department of Mechanical Engineering**

### **Activity report on Improved Industry institute interaction**

**(3rd Feb 2016)**

A program on industry institute interaction was organised in Mechanical and Production Engg Department of GNDEC in collaboration with QCFI Hyderabad. Dr. R.K Garg Director (Northern region, QCFI) and two experts elaborated how academia can help industries for improving productivity with small investments and data collection/handling. It was agreed upon unanimously that research initiatives need to be taken in collaboration with institutions for the overall development and growth of industries. Around 30 MDs and CEOs and officials of top industries of Ludhiana (mostly linked to FICO) and government officials attended this program. Detailed deliberations were made by Mr K.K Seth (Seth Industrial corp.), Mr Ranjodh Singh (GST group of industries), Mr G.S Kular (Kular International), Dr. M.S Saini (Director GNDEC), Dr. R.S Seehra and Dr. S.B Singh (Ex- Principals GNDEC), Dr. Sehijpal Singh -HOD -Mechanical Engg Deptt) and other faculty members of GNDEC. A MoU between Federation of Industrial and Commercial Organisation (FICO) and GNDEC was signed. The primary purpose of this MoU is to increase the mutual participation of industry and institution in technological developments. A model is envisaged in which groups of second year students will be adopted by the industries for enhancing their engineering skills. Mr G.S Kular President of FICO made a commitment that the industries shall create a healthy and sustainable link with GNDEC to consistently mentor the students from their second year. FICO and QCFI had agreed to open a chapter of QCFI in Ludhiana for providing training to the industries on quality issues and creating effective interaction between industries and GNDEC. Around 55 participants took advantage of this interactive session.



# **Guru Nanak Dev Engineering College, Ludhiana**

An Autonomous College u/s 2(f) and 12(B) of UGC Act 1956)

## **Department of Mechanical Engineering**

### **Consolidated report on Faculty development program**

The faculty development program was organized by the mechanical engineering department on dated, 31<sup>st</sup> May, 2016 to 4<sup>th</sup> June, 2016 under the guidance of Director GNDEC Ludhiana & Head of the dept. Mechanical engineering GNDEC Ludhiana (sponsorship by TEQIP-II) on topic **Research methods for engineers**. The programme was designed especially for the faculty & researcher in different fields of mechanical engineering.

The experts from IIT's, NIT's & other reputed institutions were delivered lectures followed by practice sessions on relevant software's. About forty participants from all regions were successfully attended this programme and enhanced their knowledge theoretically as well as practically. The expertise mainly focused on the practical sessions so that the researcher and academicians took the required benefits. Around 45 participants were present in this FDP.

### **Objective of the programme**

1. To enhance the capabilities of teaching faculty in the domain to choose better research methods for their research applications.
2. Practice on software applications like SPSS & MINI TAB.

### **Sessions of the programme**

Session I:	09:30 a.m. TO 11.00 a.m.
	Tea break (11:00 a.m. to 11:45a.m.)
Session II:	11:15 a.m. TO 12.45 p.m.
	Lunch (12:45 p.m. to 01:30 p.m.)
Session III:	01:30 p.m. TO 03.00 p.m.
	Tea break (3:00 p.m. to 03:15p.m.)
Session IV:	03:15 p.m. TO 4.45 p.m.



### Key points of the programme

- Introduction to engineering research
- Literature review
- Statistical analysis
- Optimization techniques
- Simulation modeling
- Survey methods
- Experimental techniques
- Design of experiments
- Research communication
- Practical sessions on different software's

### Programme schedule & topic covered

		Speaker's	Contents
Day1	Session1 Registration & inauguration	Dr. Schijpal Singh	Introduction about FDP
		Dr. A.P. Singh(Dean P.T.U)	Applications of research
		Dr. M.S. Saini(Director GNDEC)	Advancement in engineering and innovation
	Session 2	Dr. J.S. Khamba (Director COE Pbi. Uni.)	Introduction to engineering research. • What is research? •Criteria for good research •Problems in research •Research process •Research design and methodology Etc.



	Session 3	Dr. Seema Sharma.(IIT Delhi)	Hypothesis testing •ANOVA and MANOVA. •One-Way ANOVA •Factorial design
	Session 4	Dr. Seema Sharma.(IIT Delhi)	Hypothesis testing •Two way ANOVA •Hypothesis testing •Null Hypothesis •Alternative Hypothesis
Day 2	Session1	Dr. M.K. Barua(IIT Roorkee)	Multi Variate analysis(part-1) •Factor analysis •Factor analysis design process •Rotational approach
	Session2	Dr. M.K. Barua(IIT Roorkee)	Multi Variate analysis(part-1) •Scree test for HBAT •component analysis •Two sample test and ANOVA
	Session 3	Dr. Khushdeep Dharni.(PAU, Ludhiana)	Data analysis by SPSS, And excel sheet.
	Session 4	Dr. Khushdeep Dharni.(PAU, Ludhiana)	Hand on experience on excel sheet
		Dr. Harwinder singh.(GNDEC )	Implementation of ANOVA. •Statistical techniques
Day 3	Session1	Dr. R.K .Garg(NIT Jalandhar)	Design of experiments. •Design of Experiments (DOE) •Basic Idea •Factorial Design
	Session2	Dr. R.K .Garg(NIT Jalandhar)	Design of experiments. •Fractional Factorial Design •Simple Design

	Session 3	Dr. Harkesh Kumar Kansal.(UIET PU)	Hand on experience on DOE software's •Taguchi techniques. •RSM.
	Session 4	Dr. Harkesh Kumar Kansal.(UIET PU)	Hand on experience on DOE software's •Mini tab 16.0
Day 4	Session1	Dr. Jagwinder singh (NIT Jalandhar)	Multi Variate analysis(part-II) •Cluster Analysis •Discriminant analysis.
	Session2	Dr. Jagwinder singh (NIT Jalandhar)	Multi Variate analysis(part-II) •Factor analysis on SPSS. •Multiple regression
	Session 3	Dr. Inderdeep singh.(IIT Roorkee)	Imaging as a research tool •Finite modelling and analysis. •Introduction about Composite.
	Session 4	Dr. Inderdeep singh.(IIT Roorkee)	Imaging as a research tool •Applications of composites
Day 5	Session1	Dr. Rupinder Singh (GNDEC Ludhiana)	Research communication funding opportunities.
	Session2	Dr. Rupinder Singh (GNDEC Ludhiana)  Dr. S.P.Singh(IIT Delhi)	Research communication funding opportunities. •Funding agencies in India.  Modeling & Simulation. Simulation based engineering.
	Session 3	Dr. Akshay Girdhar(GNDEC)  Dr. Sehijpal singh.(GNDEC)	Handling Plagiarism issues in research.  Basics of research paper writing and publishing •Hourglass Model •Basics of research paper

			•Writing and publishing of technical paper
	Session 4	Dr. Pardeep kumar.(IIT Roorkee)	Taguchi methods •Applications of research methods

## Organizing Committee

Patron

Prof. (Dr.) M.S. Saini (Director)

Chief Co-ordinator

Prof. (Dr.) Sehijpal Singh (HOD)

Coordinators

Prof. (Dr.) Harwinder Singh

Prof. (Dr.) Paramjit Singh

Co- Coordinators

Prof. Ardamanbir Singh

Prof. Aprinder Singh

Organizing committee (Faculty GNDEC Dept. of ME)

*Handwritten signature*

**2016-2017**



**Guru Nanak Dev Engineering College, Ludhiana**  
An Autonomous College u/s 2(f) and 12(B) of UGC Act 1956  
**Department of Mechanical Engineering**

**Activity report**

**Workshop on 'Design of machine elements using NASTRAN software'**

The workshop was organized by the mechanical engineering department from 16 Sept. 2016 to 17th Sept 2016 on topic 'Design of machine elements using NASTRAN software'. The workshop was designed especially for the Faculty Members, Research Scholars, and students. Nastran workshop is designed to provide learners with the rudimentary knowledge of design and analysis. The trainees learn linear and non-linear FEA, its applications and modeling techniques. Throughout this training, concepts are systematically introduced and reinforced to help participants learn in a better way. 35 participants were present in this workshop.

11

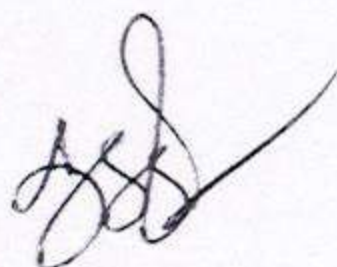


## Activity Report

### Two Day Workshop on Insights of Data Science

The Department of Computer Science & Engineering organised TEQIP-II sponsored two day workshop on 'Insights of Data Science' during 21st & 22nd October, 2016. The workshop started with inaugural sessions on 21st October, 2016, Dr. Sarabjot Singh (Founder and Chief Data Scientist at Tatra Data, New Delhi) was the chief guest of the day and Director GNDEC, Ludhiana presided over the function. Dr Parminder Singh, chairman of the workshop emphasised on the need of data science in diverse areas. Fifty Three participants including faculty and research scholars (Ph.D. and M.Tech) from various institutes registered for the workshop.

The workshop sessions were delivered by the persons from Industry, Research organisation (DRDO) and Academia. The participants learnt data science and its practical aspects and suitability to particular types of applications. During lab session the participants were be guided on the selection of tools for Data science and has hands on session with R- language using Jupyter-Notebook. This workshop enabled the academicians to direct their research deeper into data science. The workshop ended with feedback session. Er. Sumeet Kaur Sehra and Mr. Sukhjit Singh Sehra (Coordinators) thanked the participants.



(Coordinator Workshop)



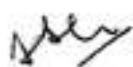
**Report on**  
**Two day TEQIP sponsored Workshop on "Effective Teaching Pedagogy and Research Methodology" held from 17-18 March, 2017**

**Coordinator, TEQIP-II,**

The department of Electronics and communication successfully organized two day workshop on "Effective Teaching Pedagogy and Research Methodology" from 17-18 March, 2017. The program was interdisciplinary in nature and had been specifically designed for all Engineering Sciences & Management PG students and newly joined Faculty members. The aim of the workshop was to impart skills for effective teaching pedagogy and research methodology. Pedagogy is the art (and science) of teaching. The word teaching is a simple word but its meaning or significant is not so and the term effective teaching demands various integrated activities in teaching-learning system. Effective teachers use an array of teaching strategies because there is no single, universal approach that suits all situations. Scientific research is a chaotic business, stumbling along amidst red herrings, errors and truly, creative insights. Research is an investigation of finding solutions to scientific and social problems through objective and systematic analysis. It is a search for knowledge, that is, a discovery of hidden truths. Only through research it is possible to make progress in a field. The results of scientific research very often force a change in the philosophical view of problems which extend far beyond the restricted domain of science itself.

The focus of the workshop was to provide the participants the advanced knowledge in the teaching and research methodology. To accomplish this aim, first day of the workshop covered the topics like essential of effective research, effective teaching, modern teaching tools, and teaching strategies. In the second day of the workshop, topics like research definition, types and framing of research problems, research design in context of engineering problems and Pedagogical analysis have been discussed.

The total participants in the workshop were around 50. The resource persons from GNDEC Ludhiana and other reputed institutions including D. C. R. Univ. of Sci. and Tech, Murthal, Sonapat, Punjab University Chandigarh have shared their expertise among the participants.



**Chief Coordinator**



**2017-2018**



## **GURU NANAK DEV ENGINEERING COLLEGE, LUDHIANA**

An Autonomous College u/s 2(f) and 12(B) of UGC Act 1956

### **Department of Production Engineering**

#### **Consolidated report on Faculty Development Program on 'Optimization, Life Enhancement of Bio-Medical Implants by Additive Manufacturing and Protective Coatings'.**

The faculty development program sponsored by QIP on 'Optimization, Life Enhancement of Bio-Medical Implants by Additive Manufacturing and Protective Coatings' was organized by the Production Engineering department from 4 – 8 September, 2017. FDP was held under the guidance of Director GNDEC, Ludhiana and HOD Production Engineering. The program was designed for industrialist, medical field representatives, researchers and faculty of Various fields of Engineering, as it was an interdisciplinary course.

The experts from the various reputed institutes were present to deliver lectures and share their experiences in Bio-Medical implants by additive manufacturing. More than 50 participants from various institutions had attended the program to take benefits of expert talks and enhanced their knowledge in the field of Bio-Medical implants by additive manufacturing and their life enhancement.

#### **Objectives of the program:**

1. Application of optimization techniques for life enhancement of biomedical implants.
2. Hand on experience for preparation of bio medical implants by additive manufacturing.
3. Lab testing of protective coatings as per ASTM standards.

#### **Sessions of the program:**

Session I: 09:15 am – 10:45 am

Tea break (10:45 am – 11:00 am)

Session II: 11:00 am – 12:30 pm

Lunch break (12:30 pm – 01:15 pm)

Session III: 01:15 pm - 02:45 pm

Tea break (02:45 pm – 03:00 pm)

Session IV: 03:00 pm – 04:30 pm

**Course contents:**

- Role of optimization for biomedical implants.
- Additive manufacturing for biomedical implants.
- Biomedical/protective coatings.
- Design of experiment (various tools for process optimization)
- Case studies on dental/ortho 4D materials.
- Practice session for lab testing as per ASTM standards.

**Speakers:**

Dr. Buta Singh (MRS Punjab Techninal University, Bathinda)

Dr. Satya Prakash (IIT Roorkee)

Dr. Bhupinder Singh Bhoop (PU, Chandigarh)

Dr. IPS Ahuja (Punjabi University, Patiala)

Dr. JS Dureja (Punjabi University, Patiala)

Dr. Sanjeev Kumar (PEC, Chandigarh)

Dr. Sandeep Grover (YMCA, Faridabad)

Dr. Rupinder Singh (GNDEC, Ludhiana)

Dr. GS Brar (GNDEC, Ludhiana)

**Organizing Committee:**

Dr. MS Saini (Chief Patron)

Dr. JS Grewal (Patron)

Dr. Rupinder Singh (Course Coordinator)

Er. Manjot Singh Bedi

Dr. Harpuneet Singh

Er. Jagdeep Singh

Er. Gauravdeep Singh

Er. Paramjit Singh

Er. Kanwalpreet Sahni

Er. Arshpreet Kaur

Er. Gulraj Singh

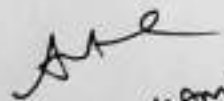
  
HOD PE

**Event Report of 2 week FDP "Research Opportunities in Medical Imaging, Biomedical Engineering and Health Informatics" held from 23/10/2017 -03/11/2017 conducted by IT Department**

Information Technology department conducted FDP on to give a brief about this course that started on 23<sup>rd</sup> Oct 2017 where Dr Sukhwinder Singh of UIET was the chief guest. The keynote address of Dr Sukhwinder Singh was based on insights of medical imaging, biomedical engineering and health informatics. An MOU with Conjoint Health care solutions was signed on FDP for providing research assistance to the M.Tech and PhD Scholars of GNDEC. Dr A S Arora from SLIET Longowal presented his views on his recent research happening in the field of biomedical engineering. Dr. Amit Kamra from GNDEC talk was on Designing Biometric authentication techniques using MATLAB. To cater the issue of plagiarism, Dr Akshay Girdhar presented a very detailed presentation on how to avoid plagiarism.

The talk of Dr. Vipul Sharma from IKGPTU was very informative as he presented how to write a world class paper. He also explained use of Mendely, how to access various database. Dr. K S Mann gave his ideas on health informatics and how to use HL7 in research purpose. Dr Ajay and Dr Manpreet Singh presented their views on recent trends on Bioinformatics. Dr Mandeep Singh from Thapar University presented his views on Liver Characterization. The participants were provided hands on session to two tools i.e WEKA and MATLAB. I hope the participants must have gained some practical knowledge from that session. A one day visit was organized to Mayo Diagnostic and Orison Hospital where Dr Sunil Mittal and his team gave live demonstration of Working of X ray Images, CT

Scan, MRI and Mammography. The FDP is designed to bring Researchers, Academia and Technocrats from different parts of the country to a common gathering for exchanging and sharing the recent developments in the field of Medical imaging, biomedical engineering and health informatics. As the course is of interdisciplinary nature, Dr Rupinder singh of Production department will be presenting a talk on biomedical implants. To inculcate research ideas among young scholars, we have managed to arrange one lecture from Mr Mandeep singh Kwatra who is visiting India from England. Dr Arvind Dhingra gave a talk on MATLAB and its applications. Dr Parminder Singh, share his research ideas on Language processing as machine learning and data mining are two pillars of any research problem. Case studies and practical examples enrich their concept in the field of Medical imaging, Biomedical Engineering, Image Processing, Data mining and it will help them to do better teaching and to conduct research activities at their institutes. HOD presented vote of thanks at valedictory ceremony.

  
(Dr. AMIT KAMRA)



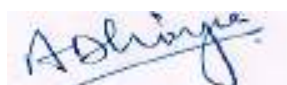
**EVENT REPORT- “Entrepreneurship & Finances for Small Scale Industries”,**  
**ELECTRICAL ENGINEERING DEPARTMENT, DATED: 27/10/17**

The purpose of the talk delivered on the topic “Entrepreneurship & Finances for small scale industries”, delivered by Er. Gaurav Ahluwalia, alumnus, GNDEC, was to provide an overview of the important issues and questions in entrepreneurial finance, and to partially understand how to survey the nascent literature on this topic. Historically, finance scholars have tended to view entrepreneurship as entirely separate from the field of corporate finance. Implicit in this approach is the idea that the issues in entrepreneurial finance are sufficiently different from those faced by public corporations so as to limit the applicability of traditional finance theory. More recently, however, financial economists have recognized that entrepreneurial situations are characterized by the same two fundamental problems that form the basis for much of corporate finance theory: agency problems and information asymmetries.

Entrepreneurial finance differs from traditional corporate finance only in the sense that the magnitude of these two problems is larger, thereby requiring contractual solutions that differ from those typically encountered in larger, more established corporations.

This main purpose of the seminar was to provide an overview of four areas of inquiry within the entrepreneurial finance literature: (i) alternative sources of capital, (ii) financial contracting issues, (iii) public policy issues, and (iv) risk and return in private equity investments. These four areas are not meant to be an exhaustive set of issues but, rather, represent the primary areas

Instead, Er. Ahluwalia’s more modest goal was to survey small scale industries economic conditions that represent the most important contributions and the “state-of-the-art” thinking on entrepreneurial finance issues. This approach will necessarily preclude the discussion of many high-quality economists and students.



Dr. Arvind Dhingra

Event Coordinator & Incharge

Dated: 27/10/2017

**EVENT REPORT- “Entrepreneurship & Start-ups”, ELECTRICAL ENGINEERING  
DEPARTMENT, DATED: 27/10/17**

The purpose of the talk delivered on the topic “Entrepreneurship & Startups”, delivered by Er. Gaurav Ahluwalia, alumnus, GNDEC, was to provide An emerging entrepreneurial view on the ventures with fast growing business, developing and/or subsequently offering an innovative product, process or service can be termed as a startup company. Startups are playing a very crucial role in the development of economies at a comparatively faster pace all around the world. The technological innovation along with process creativity as well as new product development has given rise to a huge number of startups coming up in the markets in recent times.

Observing the potential of this fast growing trend, the Indian Government launched a scheme named Startup India, to encourage and assist the young entrepreneurs in establishment of startups in the country and outside as well. Startups provide a catalyst ground for the technological development to build a strong system for nurturing innovation that can drive sustainable development and generate substantial employment opportunities for taking ahead the country.

As per Economic survey 2015-2016 tabled by Finance Minister, there are more than 19000 technology enabled startups in India. However, a huge number of startups either fail to run sustainably or they face investor’s exit due to one reason or the other.

Er. Ahluwalia’s tried to analyse the survey on statup conditions that represent the most important contributions and the “state-of-the-art” thinking on entrepreneurial business issues. This approach will necessarily preclude the discussion of many high-quality economists and students aspiring startups.



Dr. Arvind Dhingra

Event Coordinator & Incharge

Dated: 27/10/2017

**Guru Nanak Dev Engineering College, Ludhiana**  
An Autonomous College u/s 2(f) and 12(B) of UGC Act 1956  
**Department of Mechanical Engineering**

**Activity report**

**STC on Finite Element Method for Engineering Applications**

The short time course was organized by the mechanical engineering department from December 4<sup>th</sup> to 8<sup>th</sup> December, 2017 on topic **Finite Element Method for Engineering Applications**. The programme was designed especially for the Faculty Members, Research Scholars, and students. It includes numerical calculation method used in many fields of engineering and research and allows efficient and precise modelling the behavior of mechanical, thermal, or other complex systems. This method separates a complex geometry into a network of nodes and elements of simpler shape and equations, called a mesh. 55 participants were present in this session.

Hi,

## FDP Report

AICTE sponsored two week faculty development programme on 'Design Challenges in Low Power VLSI Design' was organised by Department of ECE in Guru Nanak Dev Engineering College, Ludhiana from 4<sup>th</sup> December, 2017 to 16<sup>th</sup> December, 2017. The aim of this course was to share the theoretical as well as practical concepts related to design issues in the field of low power VLSI. Chief Guest Prof. Shailendra Jain, Director SLIET addressed the participants and appreciated the initiative of conducting such kind of events which help in filling the gap between institute and industry by providing an industry focussed shape to research and teaching.

Sh. H. S. Jatana, Scientist and Group Head- Design & Process Group, Semi Conductor Laboratory, Department of Space, Govt. of India, Mohali delivered expert lectures on design of MOSFETs and various biasing techniques. Lab sessions on circuit-level tool Cadence virtuoso were conducted by Er. Uday, Scientist, SCL Mohali. Dr. Ashwani Rana from NIT, Hamirpur delivered expert talk on power evaluation in circuits, novel methodologies for MOSFET devices like FinFETs. Dr. Vinayak Hande from IIT Roorkee discussed design concepts of CMOS analog amplifiers and challenges in designing of low power analog integrated circuits. Dr. Balwinder Raj, Assistant Professor, NIT Jalandhar shared his expertise on various challenges in nanoscale era, FinFETs design etc. Dr. Kanav Kahol explained various innovations related to low power design and demonstrated various applications.

Faculty members from GNDEC, Ludhiana delivered expert lectures on various topics like optimization techniques, design of multigate MOSFETs and FinFET SRAM etc. Lab sessions on TCAD tool, one of the device specific tools, were conducted in detail by Er. Amit Saini, Cadre Design Systems. Around 50 participants from within and outside the institute attended this programme and were benefitted from the knowledge shared by experts. They found this course to be very informative as they got opportunity to interact with industry and academic experts.

  
Course Coordinator



**GURU NANAK DEV ENGINEERING COLLEGE, LUDHIANA**  
An Autonomous College u/s 2(f) and 12(B) of UGC Act 1956  
**Department of Production Engineering**

**Consolidated report on Faculty Development Program on 'Waste Management by Additive Manufacturing'.**

The faculty development program sponsored by AICTE on 'Waste Management by Additive Manufacturing' was organized by the Production Engineering department from 11 – 23 December, 2017. FDP was held under the guidance of Director GNDEC, Ludhiana and HOD Production Engineering. The program was designed for industrialist, environmentalist, researchers and faculty of various fields of Engineering, as it was an interdisciplinary course.

The experts from the various reputed institutes were present to deliver lectures and share their experiences in waste management and additive manufacturing. More than 45 participants from various institutions have attended the program to take benefits of expert talks and enhanced their knowledge in the field of waste management using additive manufacturing.

**Objectives of the program:**

1. To enhance the knowledge of participants in the field of additive manufacturing.
2. Waste management of plastic waste using additive manufacturing techniques.
3. Practice session on FDM to make samples using recycled plastic.
4. Knowledge related to blending of plastics to enhance their mechanical, electrical and thermal properties.

**Sessions of the program:**

- Session I: 09:15 am – 10:45 am  
Tea break (10:45 am – 11:00 am)
- Session II: 11:00 am – 12:30 pm  
Lunch break (12:30 pm – 01:15 pm)
- Session III: 01:15 pm – 02:45 pm  
Tea break (02:45 pm – 03:00 pm)
- Session IV: 03:00 pm – 04:30 pm

A handwritten signature, possibly 'S. Grewal', is written in black ink. To the right of the signature are two sets of initials, 'A' and 'B', also written in black ink.

**Key points of FDP:**

- Types of waste and its management
- Introduction to additive manufacturing
- Various additive manufacturing techniques
- Management of waste using additive manufacturing
- Cost reduction in waste management
- E-waste management
- Solid waste management
- Investment casting for Plastic solid waste
- Blending of plastics for enhancing the properties as compare to matric materials
- Practice session using FDM setup

**Speakers:**

Dr. Buta Singh (MRS Punjab Techninal University, Bathinda)  
Dr. Sukhpal Singh (Punjabi University, Talwandi Sabo campus)  
Dr. IPS Ahuja (Punjabi University, Patiala)  
Dr. JS Dureja (Punjabi University, Patiala)  
Dr. OP Singh (BCET, Gurdaspur)  
Dr. Sanjeev Kumar (PEC, Chandigarh)  
Dr. Sandeep Grover (YMCA, Faridabad)  
Dr. Amit Kamra (GNDEC, Ludhiana)  
Dr. Akshay Girdhar (GNDEC, Ludhiana)  
Dr. Rupinder Singh (GNDEC, Ludhiana)

**Organizing Committee:**

Dr. MS Saini (Chief Patron)  
Dr. JS Grewal (Patron)  
Dr. Rupinder Singh (Course Coordinator)  
Er. Manjot Singh Bedi (Course Co-coordinator)  
Dr. Harpuneet Singh  
Er. Jagdeep Singh



Er. Kanwalpreet Sahni

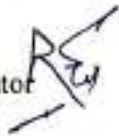
Er. Paramjit Singh

Er. Gauravdeep Singh

Er. Arshpreet Kaur

Er. Gulraj Singh

Course Coordinator

A handwritten signature in black ink, appearing to be 'Raj', with two arrows pointing outwards from the top and bottom of the letters.

HOD PE

A large, stylized handwritten signature in black ink, possibly reading 'J. Singh', written over the text 'HOD PE'.

**Department of Electronics and Communication Engineering**

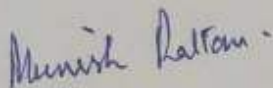
**Guru Nanak Dev Engineering College, Ludhiana**

### **ACTIVITY REPORT**

**Name of Activity: Demo on "CST Software"**

**Date: 25-01-2018**

**Report:** A demonstration of CST Microwave Studio was held in Computational Lab of ECE Department on 25.01.2018. The talk was delivered by Mr. Chandresh Dhote, Application Engineer, Jyoti Electronics, Ahmedabad. Mr. Chandresh highlighted the features of CST Microwave studio for use in Antennas and Microwave applications. Five faculty members and six students of M. Tech. ECE attended this demonstration.



**Dr. Munish Rattan**

**Incharge, Microwave Engineering Lab**



**Report on**  
**One week QIP sponsored Short Term Course on "Design Issues in Low Power Applications in Electronics" held from March 12-16, 2018**

The department of Electronics and communication successfully organized one week QIP sponsored Short Term Course on "Design Issues in Low Power Applications in Electronics" from March 12-16. Low power has emerged as a principal theme in today's electronics industry. With the remarkable success and growth of the class of personal computing devices (portable desktops, audio- and video-based multimedia products) and wireless communications systems (personal digital assistants and personal communicators), demand of high-speed computation and complex functionality with low power consumption has increased. In the past, the major concerns of the designer were area, performance, cost and reliability; power consideration was mostly of only secondary importance. In recent years, however, this has begun to change, and power is being given comparable weight along with area and speed considerations. Thus, the need for low power has caused a major paradigm shift where power dissipation has become as important a consideration as performance and area.

Many issues are faced by designers at architectural, logic, circuit and device levels which are required to be overcome by efficient techniques. This course ~~will~~ address the latest trends and future challenges that must be met to design low power, high performance electronic systems. Few topics covered in this course are Low Power VLSI design and interconnects, Technique for low power devices: Paradigm of current and upcoming wireless sensors networks etc. The total participants in the workshop were around 40. The resource persons from GNDEC Ludhiana and other reputed institutions including IIT Roorkee, IIT Ropar and Punjabi University, Patiala have shared their expertise among the participants.

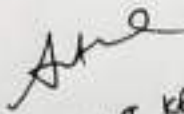


**Chief Coordinator**

**Event Report of 1 week FDP "Insights of Image Processing and their recent trends" held from 07/03/2018 - 11/03/2018 conducted by IT Department.**

Information Technology department conducted FDP on o give a brief about this course that started on 7 March 2018 where Dr Akshay Girdhar from GNDEC started with basic of Image Processing. Dr. Anjali Goyal from GNIMT Ludhiana lecture was based on CBIR, medical imaging, biomedical engineering and health informatics. Dr Jagroop Singh, from DAVIET Jalandhar spoke about image compression. Mr. Jagdeep singh from GNDEC gave hands on session for MATLAB and weka . To cater the issue of plagiarism, Dr Akshay Girdhar presented a very detailed presentation on how to avoid plagiarism.

Dr. Vipul Sharma from IKGPTU gave lecture on how to use mendeley and writing a world class paper. He also explained use of Mendely, how to access various database. Dr. Jitender Vermani, CSIO Chandigarh spoke about image resolution and his research on cancer diagnosis. Dr Mandeep Singh from Thapar University presented his views on Liver Characterization. The FDP is designed to bring Researchers, Academia and Technocrats from different parts of the country to a common gathering for exchanging and sharing the recent developments in the field of Medical imaging. Dr. Navdeep Kanwal from Punjabi university spoke on image forensics. On the final day Dr. Savita Gupta, director UIET presented some latest case studies and practical examples that enrich concept in the field of Medical imaging, Biomedical Engineering. Principal GNDEC and HOD (IT) thanks all the participants for their keen learning on image processing applications .

  
Dr. AMIT KAMEA

**2018-2019**

# GURU NANAK DEV ENGINEERING COLLEGE LUDHIANA

(Department of Electronics & Communication Engineering)

No. ECE/1747

Date: 17/9/18

## NOTICE

The department of ECE in organizing a three day **Entrepreneurship Awareness Camp (EAC)** in co-ordination with STEP, GNDEC, Ludhiana. This EAC is compulsory for all students of **B.Tech (ECE), 7<sup>th</sup> semester (section B), M.Tech (ECE) I<sup>st</sup> semester (Full time), and M.Tech (ECE) III<sup>rd</sup> Sem Full -time students**. So all students of these class are required to be present to attend the EAC during 9.45 am to 3 pm on **18-09-2018, 20-09-2018 and 21-09-2018** in STEP, GNDEC, Ludhiana. The following teachers shall accompany the students during these days.

Date	Time Schedule	Name of Teachers
18/09/2018	10 AM to 12:30 PM	Pf. Baljeet Kaur, Pf. Kuldeepak Singh
	12:30 PM to 3 PM	Pf. Narwant Singh Grewal, Pf. Gurjot Kaur
20/09/2018	10 AM to 12:30 PM	Pf. Narwant Singh Grewal, Pf. Baljeet Kaur
	12:30 PM to 3 PM	Pf. Gurjot Kaur, Pf. Gurneet Kaur
21/09/2018	10 AM to 12:30 PM	Pf. Baljeet Kaur, Pf. Avneet Kaur
	12:30 PM to 3 PM	Pf. Narwant Singh Grewal, Pf. Kuldeepak Singh

HOD (ECE)

cc:-

1. Principal for information
2. DNB
3. All Concerned Teachers
4. Prof GJK/NM for record
5. Office Copy

Have these teachers  
adjusted their classes of  
other years ??

Sek

HOD

PK / Sec  
P. Grewal

Scheduling has been  
taken care of while  
putting them on duty.  
HOD



**GURU NANAK DEV ENGINEERING COLLEGE, LUDHIANA**

**(Department of Electronics & Communication Engineering)**

No. 1754/1

Date: 21.09.2018

**Activity Report**

Three day Entrepreneurship Awareness Camp (EAC) was organized by the department of ECE in coordination with Science & Technology Entrepreneurs' Park (STEP). The target audience was final year students of B.Tech and all M.Tech students of ECE department. Department faculty members accompanied the students. The objective of this three-day camp was to enhance the entrepreneurial skills of the students. Students were exposed to different aspects of entrepreneurship, including opportunity guidance, services offered by agencies of support system etc. A visit to the industries located in the STEP-GNDEC was also arranged to bring the students in direct touch with practicing entrepreneurs.

Around 60 students participated in this camp and benefitted from it. They came to know about various practical aspects of setting up a business and becoming an entrepreneur. Resource persons Dr. Arvind Dhillon, Director, STEP and Dr. Surinderbir Singh (Expert) guided the students and made them aware of various opportunities and support provided to them at an initial stage and further, the whole process. They motivated the students to make use of available facilities and come forth with their ideas and utilize their skills. They were guided on how to make and present a business plan. Dr. V.J. Rai, CA Shalini and Sh. R. K. Parmar were the experts from MSME who shared their expertise with the students.

On the last day of camp, certificates were distributed to the participating students. Overall, it was a great learning experience for the students as well as the faculty members.

  
HOD (ECE)

## **GURU NANAK DEV ENGINEERING COLLEGE, LUDHIANA**

An Autonomous College u/s 2(f) and 12(B) of UGC Act 1956

### **Department of Production Engineering**

#### **Consolidated report on Faculty Development Program on 'Tribological Analysis on Four Dimensional Printed Engineering Materials'.**

The faculty development program sponsored by QIP on 'Tribological Analysis on Four Dimensional Printed Engineering Materials' was organized by the Production Engineering department from 9 – 13 October, 2018. FDP was held under the guidance of Principal GNDEC, Ludhiana and HOD Production Engineering the program was designed for industrialist, medical field representatives, researchers and faculty of Various fields of Engineering, as it was an interdisciplinary course.

The experts from the various reputed institutes were present to deliver lectures and share their experiences in Four dimensional printing of engineering materials. More than 40 participants from various institutions had attended the program to take benefits of expert talks and enhanced their knowledge in the field of four dimensional printing.

#### **Objectives of the program:**

1. Material development for 4D printing.
2. Hands on experience for preparation of 4D print by additive manufacturing.
3. Tribological analysis by using erosion and wear studies.
4. Lab testing of functional prototypes as per ASTM standards.

#### **Sessions of the program:**

- Session I: 09:15 am – 10:45 am  
Tea break (10:45 am – 11:00 am)
- Session II: 11:00 am – 12:30 pm  
Lunch break (12:30 pm – 01:15 pm)
- Session III: 01:15 pm – 02:45 pm  
Tea break (02:45 pm – 03:00 pm)

Session IV: 03:00 pm – 04:30 pm

**Course contents:**

- Role of 4D printed functional prototypes.
- Additive manufacturing for 4D printed components.
- Tribological analysis.
- Design of experiment (various tools for process optimization)
- Case studies on dental/ortho 4D materials.
- Practice session for lab testing as per ASTM standards.

**Speakers:**

Dr. Buta Singh (MRS Punjab Techninal University, Bathinda)

Dr. Satya Prakash (IIT Roorkee)

Dr. Bhupinder Singh Bhoop (PU, Chandigarh)

Dr. IPS Ahuja (Punjabi University, Patiala)

Dr. JS NS Vyas (IIT Kanpur)

Dr. Sanjeev Kumar (PEC, Chandigarh)

Dr. Sandeep Grover (YMCA, Faridabad)

Dr. Harpreet Singh (IIT Ropar)

Dr. Rupinder Singh (GNDEC, Ludhiana)

Dr. JS Grewal (GNDEC Ludhiana)

**Organizing Committee:**

Dr. JS Grewal (Patron)

Dr. Rupinder Singh (Course Coordinator)

Er. Manjot Singh Bedi


Dr. Harpuneet Singh

Er. Jagdeep Singh

Er. Kanwalpreet Sahni

Er. Arshpreet Kaur

Er. Gulraj Singh  
Er. Gurleen Singh

  
HOD PE



**Event Report of Quality Improvement Programme (QIP) Short Term Course (STC) on**  
**"AI, Big Data and HPC Aligned Applications - A Modern Approach of Computing"**  
**during Dec. 31<sup>st</sup>, 2018 to Jan. 04<sup>th</sup>, 2019**

Information Technology Department of Guru Nanak Dev Engineering College, Ludhiana concluded the weeklong series of lectures and hands-on practice sessions on Quality Improvement Programme (QIP) Short Term Course (STC) on title "AI, Big Data and HPC Aligned Applications - A Modern Approach of Computing". This STC was sponsored by QIP Centre of the Institute. The valediction programme of this course was organized in the consultancy seminar hall of the campus on Friday. This programme was organized with the **objective of sharing recent developments in the areas of Artificial Intelligence, Big Data and High Performance Computing with practical demonstration**. 17 resource persons of renowned institutions of the region had shared their views and further research areas among the participants.

Dr. Sarabjot Singh Anand from Sabudh Foundation, New Delhi was invited as chief guest for the valediction of this programme. In his speech, chief guest emphasised that awareness of technology trends in AI and HPC is the need of the hour, but at same time security of information transferred is important area of concern. He further elaborated that role of hidden variables in machine learning.

In the whole five day programme the academicians, software professional and researchers were invited to deliver the expert talks during the course. During this programme, **Dr. Shashi Shekhar Jha from IIT Ropar elaborated the case study of Demands and Supplies Prediction for Taxis in Singapore**. Dr. Sukhwinder Singh, Director, Computer Centre at Panjab University, Chandigarh pointed out various **innovative ideas implemented at the industry and government level for the concern of Artificial Intelligence and High Performance Computing**. Dr. Kuldeep Kumar from Dr. B.R. Ambedkar National Institute of Technology, Jalandhar discussed the topics of **Practical Approach to Research Methodologies and Industry-Academic Research Trends in Computing**. He demonstrated the contents by sharing live examples.

Er. Navjot Singh from AlertEnterprise Chandigarh shared his views on **Disruptive Applications of AI in Various Industries with Use Cases and Scientific Solutions**. He elaborated the Alignment of Academic and Research in Modern Day AI based Disruption and Opportunity for Application Oriented Research Activities. Dr. Pankaj Bhambri from GNDEC Ludhiana presented the role and need of High Performance Computing with evolving research trends in bioinformatics. Mr. Vipin Gupta from U.Net Solution organized the hands on session on **Implementation of Docker Cluster and Software Defined Networking**. Dr. Nirmal Kaur from UIET Panjab University Chandigarh and Er. Amit Deoger from NITTTR Chandigarh delivered their expert talks on Need cum Techniques for **Energy Aware Scheduling and Implementation of Load Balancer** for Big Data Applications, respectively. Er. Sandeep Kumar Singla shared his practical exposure to Big Data Analytics using the R Lab.

Dr. Pankaj Bhambri, the course coordinator of this programme conveyed that this course was organized with the objectives to expose the faculty/ research scholars/ industry based persons in emerging technologies. This programme provided the practical foundation level training to enable the audience for insight into digital disruption and accelerating machine learning on AI through performance libraries and platforms. Dr. Bhambri informed that the course contents for this STC included AI, Bigdata & HPC aligned applications; Exposure to Analysis; Interpretation of Data; AI, Big Data & HPC Research Methods; Exploration of Contemporary Research in Teaching Learning; Real Life Implementation Scenarios; Case Studies and Lab Sessions.

Dr. Kiran Jyoti, HOD of IT Dept. and faculty coordinator of this course presented the summary & feedback report of this short term course at valediction programme. She shared the roles of social media, mobility, analytics and cloud computing. Dr. Sehijpal Singh, Principal of GNDEC mentioned the benefits as well as wastage of resources due to updation in technology every day. He discussed the significance of these types of courses for faculties as well as researchers and congratulated the course coordinators for organizing this STC. Participation Certificates were issued to 41 participants, which came from different regions of the country to attend this STC.



PANKAJ BHAMBRI  
Course Coordinator

Report of  
**AICTE - ISTE Induction/Refresher Course**  
**on**  
**Advances in Antenna Theory & Techniques**  
**from 03/12/2018 to 08/12/2018**

This course started on 03/12/2018 and we have conducted 22 technical sessions for the participants which included 17 theory sessions, 3 lab cum hands on sessions and 2 sessions by industry personals. Theory sessions are conducted by resource persons from reported institutions like IIT Jammu, Thapar Institute of Engg. & Tech. Patiala, Punjabi University Patiala besides experts from our own college. During lab sessions, hands - on practice is undertaken by the participants on the electromagnetic simulator and actual measurements of the fabricated prototypes are demonstrated. One session on the demonstration of fabrication of prototypes is conducted by industry persons. The topics covered in the program include

- Antenna design for 5G communication
- Antenna array failure correction
- Antenna design using soft - computing
- Meta - materials' applications in antenna design
- Different types of antennas, etc.

We had 22 participants from various states like JK, HP, Haryana, UP, different colleges of Punjab in addition to participants from our college. A session on art of living was also organized for the participants. As per the feedback of participants, they found this course useful due to many reasons like-

- Practical knowledge
- New research directions
- Forum for discussion on their research problems
- Networking etc.

The course was inaugurated by Dr. Manoj Kumar, Principal, DAV Institute of Engg. & Tech. Jalandhar and the certificates to the participants were distributed by Dr. Ajay Sharma, Vice-Chancellor of IKG PTU, Jalandhar during valediction function.



Dr. Balwinder Singh Dhaliwal  
Course Coordinator

**AICTE-ISTE one week induction/ refresher course  
on  
"Advances in Antenna Theory and Techniques"  
(3.12.2018 – 8.12.2018)**

**List of Participants Attended the Training Program**

Sr. No.	Name	Qualification	Designation	Institute	E-Mail ID	Mobile No.
1.	Narwant Singh Grewal	Ph.D.	Assistant Professor	GNDEC, Ludhiana	<a href="mailto:narwant@gndec.ac.in">narwant@gndec.ac.in</a>	9855018703
2.	Baljeet Kaur	Ph.D.	Assistant Professor	GNDEC, Ludhiana	<a href="mailto:baljeetkaur@gndec.ac.in">baljeetkaur@gndec.ac.in</a>	9872544399
3.	Gagandeep Kaur	M.Tech	Assistant Professor	YCOE Talwandi Sabo	<a href="mailto:ergagan84@gmail.com">ergagan84@gmail.com</a>	9780016482
4.	Sunita Rani	M.Tech	Assistant Professor	YCOE Talwandi Sabo	<a href="mailto:ersunitagoval@gmail.com">ersunitagoval@gmail.com</a>	9646141566
5.	Manpreet Kaur	M.Tech	Assistant Professor	YCOE Talwandi Sabo	<a href="mailto:sketly@rediffmail.com">sketly@rediffmail.com</a>	9779567877
6.	Ghanshyam Singh	M.E	Assistant Professor	FGIET Rae Bareli	<a href="mailto:ghanshyamtanu@rediffmail.com">ghanshyamtanu@rediffmail.com</a>	9453579597
7.	Dhawan Singh	Ph.D. (Pursuing)	Assistant Professor	Eternal University	<a href="mailto:dhawan_deon@ieee.org">dhawan_deon@ieee.org</a>	7018743983
8.	Sunderjeet Singh Gill	M.Tech	Assistant Professor	BCET Bhuta	<a href="mailto:ssgill.bcet@gmail.com">ssgill.bcet@gmail.com</a>	7837913477
9.	Suman Pattnaik	M.E.	Associate professor	SSIET Dera Bassi	<a href="mailto:sumanbhagat1199@gmail.com">sumanbhagat1199@gmail.com</a>	9465124175
10.	ChintuRza Makkar	Ph.D.	Assistant Professor	DAVIET Jalandhar	<a href="mailto:chinturza78@gmail.com">chinturza78@gmail.com</a>	9417127345

*B. Mohan*



11.	Ajay Abrol	Ph.D. (Pursuing)	Associate Professor	GCET, ChakBhal wal, Jammu	<a href="mailto:ajayabrol17569@rediffmail.com">ajayabrol17569@rediffmail.com</a>	9419137081
12.	Shivani Mehta	M.Tech	Assistant Professor	DAVIET Jalandhar	<a href="mailto:shivanimantha7@gmail.com">shivanimantha7@gmail.com</a>	9876105095
13.	Gurinder Singh	M.Tech	Assistant Professor	LCET Katani Kalan	<a href="mailto:gurindersinghbal@gmail.com">gurindersinghbal@gmail.com</a>	9914179844
14.	AmeetaSee hra	M.Tech	Associate Professor	GNDEC, Ludhiana	<a href="mailto:aseehra@gndec.ac.in">aseehra@gndec.ac.in</a>	9872139597
15.	Chahat Jain	M.Tech	Assistant Professor	GNDEC, Ludhiana	<a href="mailto:chahatjain26@gmail.com">chahatjain26@gmail.com</a>	7837005620
16.	Daljit Singh	M.Tech	Assistant Professor	GNDEC, Ludhiana	<a href="mailto:gnc.daljit@gmail.com">gnc.daljit@gmail.com</a>	9855578987
17.	NaaziaMuk kar	M.Tech	Assistant Professor	GNDEC, Ludhiana	<a href="mailto:naazmakkar@gmail.com">naazmakkar@gmail.com</a>	9815666045
18.	Tarandeep Singh	M.Tech	Assistant Professor	GNDEC, Ludhiana	<a href="mailto:tarandeepsingh@gndec.ac.in">tarandeepsingh@gndec.ac.in</a>	9914705252
19.	Avneet Kaur	M.Tech	Assistant Professor	GNDEC, Ludhiana	<a href="mailto:eee.avneetkaur@gndec.ac.in">eee.avneetkaur@gndec.ac.in</a>	9465020676
20.	Rohan Gupta	M.E.	Assistant Professor	JMIT Radaur	<a href="mailto:erohangupta@gmail.com">erohangupta@gmail.com</a>	9996955892
21.	Gautam Gupta	M.Tech	Assistant Professor	JMIETI Radaur	<a href="mailto:gautamgupta@jmiet.org">gautamgupta@jmiet.org</a>	9416657541
22.	Deepika	M.E.	Assistant Professor	GGI Khanna	<a href="mailto:deepika213@gmail.com">deepika213@gmail.com</a>	7009810269

*B. Malhotra*

(Course Co-ordinator)

## PROCEEDINGS

**TITLE: MACHINE LEARNING APPLICATIONS IN ENGINEERING**

**DATE: February 04-08, 2019**

An one week QIP Short Term Course on "Machine Learning Applications in Engineering" was conducted by Department of Electronics and Communication Engineering, Guru Nanak Dev Engineering College, Ludhiana from February 04-08, 2019.

The course was aimed to introduce the participants to Machine Learning and its various applications. The course planning for the course included the introduction, followed by the algorithms and applications of machine learning. State of the art technologies with hands on exercises were also planned for the course. Course being interdisciplinary in nature, faculty and research scholars of all engineering branches were eligible to apply. Dr. Sandeep Singh Gill and Er. Tarandeep Singh coordinated the course. An organising committee including the coordinators and faculty of the department of Electronics and Communication Engineering, Guru Nanak Dev Engineering College, Ludhiana was setup for the smooth running of the course. A total no. of 58 participants from various reputed colleges/ universities such as NIT Jalandhar, GCET jammu, DKTGI Rahon, Thapar University Patiala, MRSPTU Bathinda and many more attended the course. Various experts from IIT Ropar, NIT Jalandhar, Bennett University Greater Noida and many more presented their expertise. Hands on exercises on MATLAB, WEKA and PYTHON were also provided to the participants. Experts from Guru Nanak Dev Engineering College, Ludhiana also took part in this platform to present their expertise.

The list of experts present for the course is presented in Table 1.

S. No.	Name of Expert	College/University/Company
1	Dr Kanav Kahol	Pink Rickshaw Design, New Delhi
2	Dr. Kuldeep Singh Nagla	NIT Jalandhar
3	Dr. Kuldeep Kumar	NIT Jalandhar
4	Dr. Amit Kamra	GNDEC, Ludhiana
5	Dr. Sudarshan Iyengar	IIT Ropar
6	Er. Tarandeep Singh	GNDEC, Ludhiana
7	Er. Navjot Singh	AlertEnterprise, Chandigarh
8	Dr. Suneet Kumar Gupta	Bennett University, Greater Noida, U.P.
9	Dr. Neeraj Goel	IIT Ropar
10	Dr. Mukesh Saini	IIT Ropar
11	Dr. Sandeep Singh Gill	GNDEC, Ludhiana

Table 1: List of Experts

The 5 day session workshop commenced on 04<sup>th</sup> Feb, 2019 with the inaugural ceremony and keynote address by Dr. Kanav Kahol, Chief Technical Officer, Pink Rickshaw Design, New Delhi. Everyday 3 sessions were planned for the experts. The sessions were a mixture of theory and practical.





gements for Tea and Lunch was present for the participants as well as experts. The details for the session has been listed below:

#### Session 1: Scope of Machine Learning

The session was the introductory session for the course. This session introduced the participants to machine learning and how machine learning is transforming lives nowadays. It also focused on the applications of machine learning in various disciplines. This session was aimed to create a sense of curiosity and motivation for the participants and it proved to do so.

#### Session 2 : AI in Mobile Robotics: Focused on multi sensor data fusion

This was the 2<sup>nd</sup> session in row. It was focused on the application of AI and Machine Learning in Robotics. The concept of multi sensors being fused in robotics was discussed. This session concluded with the focus of ISRO and DRDO in this area.

#### Session 3: A Practical Approach to Research Methodologies in Machine learning

This session focused on the research areas in machine learning and the practical approaches to research in this area. The present scenario in research was discussed and new Possible research areas were also listed.

#### Session 4: Transforming Machine Learning data through WEKA

This was a hands on session focused on WEKA. The participants were introduced to WEKA and were taught how to handle data in machine learning through WEKA. This session proved out to be very informative for the participants.

#### Session 5: Introduction to Machine Learning through motivational stories

This session targeted the motivation of the participants through some motivational stories in which machine learning had created a difference. A large no. of examples and proven stories were discussed with the participants where machine learning proved out to be very beneficial and large empires were setup on this concept

#### Session 6: Unsupervised learning algorithm that created a 500 billion dollar industry

This was a hands on session on Python. This session started with the basics of Python and moved towards a certain algorithm that had helped to create a 500 billion dollar industry.

#### Session 7: Essentials of Machine Learning Algorithms

This session focused on various machine learning algorithms such as Random Forest, Support Vector Machine, Linear Regression, Logistic Regression, Decision Tree, Naive Bayes, kNN, K-Means and many more. The focus of this session was to introduce the participants to the basics of the actual algorithms working behind Artificial Intelligence and Machine Learning.

#### Session 8: Disruptive applications of AI in various industries with use cases and scientific solutions

This was a hands on session on Python where various problems from industries were taken and their solutions through machine learning were taught to the participants.

#### Session 9: Alignment of Academic and Research in modern day AI based disruption and opportunity for application oriented research activities

This session was focused to understand the gap between academic and research in AI and machine learning and how both can be aligned in accordance to the modern day scenario.





#### Session 10: Basics of ML and AI

This was a hands on session in MATLAB. This session focused upon the basics of Machine Learning and Artificial Intelligence in Matlab. This session also helped a lot to the participants as majority of the participants were familiar with the environment in MATLAB. The participants also worked on some examples on machine learning that helped to enhance their knowledge on the use of this tool for AI.

#### Session 11: Hyperparameter Tuning

This session was focused on a very important topic i.e. to choose parameters on which the learning depends in machine learning algorithms. The algorithms discussed earlier were again reviewed but with an angle of learning parameters. The vision to these algorithms broadened after this session and participants were able to understand the nature of learning in various problems related to machine learning.

#### Session 12: Convolutional Neural Network, Recurrent Neural Network

This session focused upon the uses of Neural Networks in Machine Learning. Along with the theory, hands on sessions on examples based on Convolutional Neural Network and Recurrent Neural Network were discussed in this session.

#### Session 13: Hardware architecture for Deep Learning Applications

This session was focused on the Hardware Architecture in Deep Learning. Along with the software or GUI Platform that's required for Machine Learning, the participants were able to understand the hardware requirements for AI through this session.

#### Session 14: Advanced Surveillance Systems

This session focused on the applications of machine learning with focus on advanced surveillance systems. In this session, the traditional surveillance systems were discussed and light was thrown on the changes in these systems that machine learning could perform.

#### Session 15: Future of Artificial Intelligence and Machine Learning

This was the concluding session of the course. This session focused on the future aspects of Artificial Intelligence and Machine Learning. This gave the participants an idea that what could be expected from Machine Learning in the future.

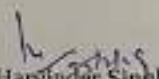
The Five day course ended on 08<sup>th</sup> Feb, 2019 with the valedictory ceremony. The participants were given certificates for their participation and feedback was taken from them. Based on the positive feedback received, this course surely helped them to broaden their vision about machine learning and will pave new paths in research areas in the future.



## **Analysis and Design of RC buildings: Concepts and Practice**

### **REPORT**

A five day short term training program on 'Analysis and Design of RC buildings: Concepts and Practice' was started at Guru Nanak Dev Engineering College, Ludhiana. It is being conducted by the Civil Engineering Department of the college under Quality Improvement Program of AICTE, Govt. of India with an aim to polish and develop the necessary structural design skills in the faculty and research scholars participating in the training program. Head of the department Professor K S Gill extended a warm welcome to the delegates and briefed the audience about the program and other associated activities. Faculty coordinator of the program Dr. Harvinder Singh informed that the outcome of the course will upgrade the skills of the participants to come up with better structural systems for new buildings coming up in the region and help the local community to build better and sustainable houses. Because, in the Ludhiana a lot of construction activities are coming up as the Smart city project being implemented by the Govt. In the city is moving toward its culmination. This becomes the need of the hour as the design is an ever evolving process and it is entirely different now-a-days than it was few decades back due to the better understanding of the material behavior and development of new materials. Nevertheless, basic aim of the structural design process remains the same, i.e. to build safe-durable structures but advances in the material technology helps greatly to reduce the associated costs. In its first day, the experts appraised the participants about the new developments in the geotechnical investigations and the minute details of the concrete production techniques and how it helps to the designers to plan their buildings to reduce the cost of the buildings without investing anything extra and ensured their durability and reduces the cost associated with the repair and maintenance.

  
Dr. Harvinder Singh  
Coordinator, STTP

Analysis and Design of RC buildings: Concepts and Practice



## Report of FDP

(TEQIP-III sponsored one week faculty development programme)

Name: "Enabling Technologies for Wireless and Optical Networks"

Date: 10<sup>th</sup> – 15<sup>th</sup> June, 2019

Venue: Testing and Consultancy seminar Hall

### Course content:

- Fundamentals of Wireless Communication
- Recent advances in wireless communication
- Introduction to Cognitive Radio and spectrum sensing
- Software Defined Radio
- Intelligent networks
- Necessity of optical communication and
- WDM/DWDM Techniques & Components
- Non Linear Effects in Optical fibers
- Optical networks-Overview and Recent Developments
- Future in home optical network using POF
- Software tools for research
- Visit to Videocon Telecom Limited Ludhiana

Nothing in the world gives us more power and confidence than having information. The ability to communicate information is essential to achieve the successful advancement of humankind. In today's world the most vital source of transferring information worldwide are optical and wireless communication media. So keeping in view the same, this FDP was organized in Twinning with Atal Bihari Vajpayee Govt. institute of engineering and technology Pragatinagar, Shimla.

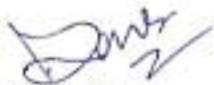
The FDP was planned for six days from 10<sup>th</sup> to 15<sup>th</sup> june. The programme was divided into 20 + technical sessions, which were engaged by the guest speakers from reputed institutes like IIT ropar, iit jammu, nit delhi, nit kurukshetra, nitttr Chandigarh besides neighbouring institutes like thapar , gndu , and Punjabi university,patiala to give insight about the trends in this field. The main topics covered in the course were Fundamentals of Wireless and optical Communication, Recent Advances in Wireless and optical networks, SDR, Optical Computing with Network of Coupled Lasers, wireless sensor networks, MIMO and Cognitive Radio and spectrum sensing.



Lab sessions were also scheduled to give the idea about latest research software tools to the participants, a field visit to Videocon telecom limited was also a one of the impactful session of this course.

Participants from many institutes of repute, host institutes and other institutes like NIT jalandhar, Punjabi University Patiala, SLIET Longowal, LPU Phagwara, LGC Chownkimaan, MIMIT Malout, KCET Amritsar, HIET Shahpur, Himachal Pradesh.

Course coordinator



Dr. Baljit Kaur

Course co-coordinator



Prof. Harjinder Kaur