The eligibility for six months certificate course in fashion designing to be run under GNDEC Autonomous status at STEP is:

10th/10+2 in any stream.

Intake: 30 students

The above is in continuation to the syllabus already submitted to your office.

Regards

Dr ARVIND DHINGRA

Executive Director-STEP

SYLLABUS

OF

FASHION DESIGNING (6 MONTHS)

DFT-103:- Theory of Fashion Designing.

- What makes good design?
- General Principles (Proportion, Repetition, 1 point of interest economy of design motifs)
- Effects of style lines on appearance(Horizontal Lines, Vertical Lines, Placement of waist line, Shape or Silhoutte)
- Dress Designing- Introduction to Designing (Children, Ladies) formal and casual wear using given material and suggesting suitable material for different season and to suit figure proportions etc. Taking into consideration the fashion trends and cost of production.
- Sources of inspiration for design.

DFT-104:- Basic Sketching.

PART-A
Block figures-normal and fashion.

Basic croqui drawing- all sizes and all poses (front, back, side, ¾)

Face analysis

Hands and feet

Features- eyes, nose, lips, ear.

PART-B
Hairstyles.

Fleshing of block figures.

Figures in Motion.

PART-C
Draping of different Garments

Illustration of Gathers, Folds, Pleats showing fullness in a garment.

DFT-105:- Drafting & Pattern making.

During the semester, exercises will be given to the student to design different costumes for a child, using varied themes and fashion details. Full scale paper patterns of select designs will be created with all markings and specifications labeled properly. A pocket file with all these paper patterns will be maintained. This file will be assessed by the external examiner. For the practical examination, a design will be given to the student for pattern making.

Semester-I

DFT-101:- Historical Costumes of India

• Traditional costumes of the people of India.

• Traditional costumes of people of Jammu & Kashmir – hindu and muslim men and women.

• Traditional costumes of people of Himachal Pradesh-male and female costumes of people of upper and lower hills (the gaddies and paharies)

• Traditional costumes of people of Punjab, - male and female costumes.

• Traditional costumes of people of Rajasthan - male and female costumes.

• Traditional costumes of people of Gujarat- male and female costumes.

• Traditional costumes of people of Madhya Pradesh- male and female costumes.

• Traditional costumes of people of Uttar Pradesh - male and female costumes.

• Traditional costumes of people of Maharashtra- male and female costumes.

DFT-102:- Design & Color Theory.

PART-A

During the semester, exercises will be given to the student to design different costumes for a child, using varied themes and fashion details. Full scale paper patterns of select designs will be created with all markings and specifications labeled properly. A pocket file with all these paper patterns will be maintained. This file will be assessed by the external examiner. For the practical examination, a design will be given to the student for pattern making.

PART-B

1. What is Color?
2. Dimensions of colour- hue, intensity and value. Color wheel and its various Color Schemes- primary, secondary, tertiary, quaternary, warm and cool colours, analogous colours, complimentary and split complimentary, tints, tones and shades, achromatic and monochromatic colours, pastels and dusty pastels - effect of these colour schemes. Effects of Colors- red, blue, green, yellow, orange, pink, purple, grey, black, white, neutrals. Colour and combination in clothes. Factors affecting the choice of colours- effect of light, texture, age, size, personality, complexion, occasion.

Curriculum for 4/6 weeks certificate program for E-vehicle mechanics

(to be conducted as skill development program at STEP, GNDEC, Ludhiana and certified under autonomous status of GNDEC, Ludhiana)

Fee: Rs.25000/- per student

Batch Size: 25 students max

Eligibility: $10^{th}/12^{th}$ pass with mathematics

Course Contents:

1. Introduction: Introduction to electric and hybrid vehicles, their parts and physical overview of an electric vehicle   20hours
2. Battery: Knowledge about types of batteries, their charging and discharging, checking of battery, maintenance of battery, charging mechanisms, charger types, basic circuits for chargers and battery charging scheme.   60hours
3. E-Vehicles basics: basics of e-vehicles, flow diagram for power transmission in e-vehicles, assembly of e-vehicles, basic checks for e-vehicles, e-bikes, e-rickshaw, e-car   60hours
4. Braking: Types of braking, braking in vehicles, maintenance schedule for brake maintenance, basic steps in maintenance
Suspension insights   20hours
5. Charger circuits: Internal circuits of chargers, trouble shooting, repair, basic testing 40hours
6. Overall maintenance of e-vehicles, their upkeep, general checkup guidelines   40hours

Note: 4 weeks course would have S.Nos. 1-4, and 6 weeks course would have 1-6 courses.

6 weeks course would be advanced certificate course

No. 45-20/390   Date 23/06/2020

To

Dean Academics
GNDEC, Ludhiana.

This is reference to your enquiry, it is to convey that the department has proposed 6 months (4 credit) certificate course on analysis & design of RC buildings.

This eligibility for this course is B. Tech civil engineering with 2 year professional experience preferably in design office.

Prof. & Head

Certificate Course by Civil Department

on

Analysis and Design of RC buildings

Credits: 04
Contact Hours : 60

Content

Principles of planning and design process; Geotechnical investigations and its use in the structural planning; Different types of footings; Selection of appropriate footing system using the soil data

Design cycle - Structural planning, load assesment, analysis, design and detailing; Its importance and illustration using a suitable example

Principles of structural stability and robustness; Equilibrium; Concept and importance of load path, its selection; Importance of redundancy in buildings; Role of standards (BIS) in the design process

Materials - Concrete and steel; their behaviour and properties; Selection of suitable material(s); Effect of reinforcement placement / position in the concrete section on its response; Design safety and structural design criteria

Load assesment - gravity loading, lateral loads; Selection of appropriate structural system for gravity loads, lateral loads; Analysis - conventional methods, computer based methods/ software; Selection of design forces

Design of structural elements - beams, slabs, stairs, columns, footings; Checks to ensure completeness of selected load path; Durability aspects; Constructability and structural control; ensuring fire protection while designing

Detailing, its importance and codal guidelines

Subject   **Eligibility for PG diploma in Machine Learning and Artificial Intelligence**
From   Parminder Singh <parminder2u@gmail.com>
To   <deanacademic@gndec.ac.in>
Date   2020-06-24 16:33

Dear Sir,

The eligibility for PG diploma in "Machine Learning and Artificial Intelligence" to be started by dept. of CSE will be as under:

B.Tech./B.E./MCA/M.Sc. (CS/IT/Mathematics)

Regards,
Dr. Parminder Singh
Professor and Head,
Department of Computer Science & Engineering,
Guru Nanak Dev Engineering College,
Gill Road, Ludhiana (Punjab) - 141 006
INDIA
Ph. +91-98555-76176 (m)
    +91-161-5064547 (o)
https://sites.google.com/view/parminder2u

Subject	**Eligibility for PG Diploma in E-Mobility**
From	Dr. Kanwardeep Singh <kds97dee@gmail.com>
To	<deanacademic@gndec.ac.in>, Dean Academic <deanacademicsgne@gmail.com>
Cc	sonia grover <soniagrover01@gmail.com>, HARMEET GILL <meetigill@gmail.com>, arvind dhingra <arvinddhingra@gmail.com>, Navneet Singh <navneetbhangu@gmail.com>
Date	2020-06-24 15:42

Eligibility for PG Diploma in E-Mobility

BE / B.Tech or equivalent in domains such as:

Electrical Engineering / Industrial Engineering/ Electrical & Electronics Engineering/ Electronics & Electrical Engineering/ Electronics & Communication Engineering/ Electronics & Instrumentation Engineering/ Electrical & Instrumentation Engineering/ Instrumentation & Control Engineering/ Instrumentation Engineering/ Automobile Engineering/ Automobile & Robotics Engineering/ Robotics Engineering/ Automotive Engineering/ Mechanical Engineering/ Mechatronics Engineering/ Industrial & Management Engineering/ Production Engineering/ Aerospace Engineering/ Aerospace & Automotive Engineering/ Petroleum Engineering/Transportation Engineering/ Power Engineering or other related domains which comes in the preview of above

--
Dr. Kanwardeep Singh
Associate Professor and Head
Electrical Engineering Department,
Guru Nanak Dev Engineering College, Ludhiana (Punjab)
(An Autonomous College u/s 2(f) and 12(B) of UGC Act 1956)
Mobile:+91-950-141-1533

Semester I

Sr.No.	Course Code	Course Name	Teaching Scheme L	T	P	Credits
1	PGEM1	Bridge Course a) Fundamentals of Automotive Electrical & Electronic Systems (for Mechanical group) b) Fundamentals of Automotive Mechanical Systems (for Electrical group)	3	0	0	3
2	PGEM2	Applied Mathematics	2	1	0	3
3	PGEM3	EV System Design and Architecture	3	0	0	3
4	PGEM4	Energy Storage Systems for Electric Vehicles	2	1	0	3
5	PGEM5	EV Motor Drives and Power Electronics	2	1	0	3
6	PGEM6	Lab 1	0	0	4	2
7	PGEM7	Mini Project 1	0	0	4	2
		Total	12	3	8	19

Total Academic Engagement and Credits   23   19

Semester II

Sr.No.	Course Code	Course Name	Teaching Scheme L	T	P	Credits
1	PGEM8	Vehicle Dynamics and Traction Systems	2	1	0	3
2	PGEM9	Sensors and Controls in Electric Vehicles	2	1	0	3
3	PGEM10	IOT for Electric Vehicles	3	0	0	3
4	PGEM11	Elective 1	2	0	0	2
5	PGEM12	Elective 2	2	0	0	2
6	PGEM13	Lab 2	0	0	4	2
7	PGEM14	Mini Project 2	0	0	8	4
		Total	11	2	12	19

Total Academic Engagement and Credits   25   19

Semester III

Sr. No.	Course Code	Course Name	Teaching Scheme L	T	P	Credits
1	PGEM14	Industrial In-Plant Training (15-18 Weeks)	0	0	0	12
		Total	0	0	0	12

Total Academic Engagement and Credits   0   12

Course Total Credit   50

Sr. No.	List of Electives
a	Thermal Design and Management of EV Systems
b	Safety and Automotive Standards
c	Energy Management and Vehicle Integration
d	Advance Electric Drives
e	Embedded Systems and in vehicle communication protocols
f	FEM and CFD for Electric Vehicles
g	Design Validation Process

GURU NANAK DEV ENGINEERING COLLEGE, LUDHIANA

Department of Information Technology

PG Diploma in Data Science and Analytics (Duration: 01 Year)

Introduction to Course: Rapid digitisation and tremendous growth in computing power have made it possible to collect and store copious amounts of data. The science of analysing this data, which is often messy and unstructured, to discern patterns and make predictions, which is continuation of data mining and predictive analytics is called Data Science. It involves different categories of analytical approaches for modelling various types of business scenarios and arriving at solution and strategies for optimal decision-making in marketing, finance, operations, organizational behaviour and other managerial aspects another related and common question is: what is Data Science and Analytics, or what is the difference between Data Science and Data Analytics? Broadly speaking, Data Analytics primarily involves the extraction of insights from various sources of data. It is thus a subset of Data Science, which also incorporates data cleaning and preparation, including through the use of machine learning, and making future predictions using the data.

Objectives of this Course: The Post Graduate Diploma in **Data Science and Analytics** a unique12 Month program offered by department of Information Technology, GNDEC, Ludhiana is an excellent blend of knowledge and practice in the field of Data Science and its industrial applications. As there is a huge demand for resources skilled in Data Science, So objective of this program is to make Data Scientists and Data Analysts. In terms of skills, data science lies at the intersection of mathematics, computing, statistics and business/domain knowledge. Therefore, a good way to start a career in Data Science is to undertake a programme which trains you in, or hones, as many of these skills as possible. In this context, it is worth mentioning that the combinations of these skills is quite scarce today, as are programmes which integrate the business/management skills of data-driven decision-making with the core quantitative skills needed to analyse data. This is what makes the Graduate Diploma in Data Science a unique programme for those wondering how to learn Data Science, or how to start learning Data Science, in order to launch a career as a data scientist.

Outcome of the Course: On completion of the Course, the Participants will learn the concept of Data Analytics using open source statistical tools like R,   Python and some very good visualization tools and techniques. Student will also learn skills like, Machine Learning, Orange, Hadoop and SQL. They will be able to implement industry oriented Data.

Course Fee: to be decided

Eligibility
- BE / B.Tech / BCA / MCA/Bsc/Msc (with mathematics)

- Candidates who have appeared in the final semester examination and awaiting results may also apply. However, they have to submit proof of passing all semester examination/final degree at the time of start of the course. Otherwise no certificate will be issued.
- On the date of counselling/admission, the candidate must produce the original mark Sheets up to the last semester/year of examination?
- **Students from background other than B.Tech CSE, IT and BCA & MCA will have one bridge course (30 hours Theory & 20 hours Practical) on Database Management System before the start of PG Diploma.**

Number of Seats: 18 (Eighteen)

Scheme of PG Diploma in Data Science and Analytics

Course Duration –one Year
Semester-I: 150 Hours (Minimum 10 weeks per semester)
Semester–II: 150 Hours (Minimum 10 weeks per semester)
Semester-I

Course Type	Subject Code	Course Title	Contact Hours		Marks Distribution		Total Marks
			Theory	Practical	Internal	External	
Theory	PGIT-101	Data Analysis and Visualization using R	3	0	40	60	100
Theory	PGIT-102	Programming using Python	2	0	40	60	100
Theory	PGIT-103	Big Data Analytics	3	0	40	60	100
Practical	LPGIT-101	Data Analysis and Visualization using R Laboratory	0	2	30	20	50
Practical	LPGIT-102	Programming using Python Laboratory	0	3	30	20	50
Practical	LPGIT-103	Big Data Analytics Laboratory	0	2	30	20	50
	Total		**8**	**7**	**210**	**240**	**450**

Semester-II

Course Type	Course Code	Course Title	Contact Hours		Marks Distribution		Total Marks
			Theory	Practical	Internal	External	
Theory	PGIT-104	Machine Learning	3	0	40	60	100
Theory	PGEIT-XXX	Elective-I	3	0	40	60	100
Practical	LPGIT-104	Machine Learning Laboratory	0	2	30	20	50
Practical	LPGEIT-XXX	Elective-I Laboratory	0	2	30	20	50
Practical	PGPRIT-101	Project	0	5	50	50	100
	Total		6	9	190	210	400

Elective-I

1. PGEIT-101 Health Care Informatics
2. LPGEIT-101 Health Care Informatics Laboratory
3. PGEIT-102 Data Science in Agriculture
4. LPGEIT-102 Data Science in Agriculture Laboratory

Examination Reforms

- External exam will be conducted at the end of course. It will contain subjective question with various sections of marks 2,5,10 as per B.Tech Pattern.
- Two internal sessional exams will be conducted in the mid and end semester of the course, internal awards, as per college B.Tech pattern.
- Project Reports are to be submitted by students in hard copy form.

Syllabus of PG Diploma in Data Science and Analytics

Programme : PG Diploma	Semester: 1
Course Code: PGIT-101	Course Name: Data Analysis and Visualization using R
Internal Marks: 40	Total Marks: 100
External Marks: 60	

Getting started with R programming: Motivation: Importance of visualization for decision making, Demo: text vs. table vs. plot, Demo: 1-variable plots, 2-variable plots and 3-variable plots, Installation of R and R Studio, Hands-on coding to get started with ggplot.

Tidy verse and data pipelining: Data Frames, Vector types: character, numeric, factors, Tidy data, Data importing basics, Data cleaning basics, Data wrangling basics,Plot themes ,Hands-on coding, assignment discussion, and project brainstorming discussion

Data manipulation: Handling missing values, Data reshaping, Data grouping operations, Vectorizations and summary functions,Built-in functions,For loops and conditional statements, Hands-on coding, assignment discussion, and project data collection discussion

Advanced Programming: String operations and regular expressions, Combining data frames, Functional programming,Map functions as an alternative to for loops,Hands-on coding, assignment discussion, and project coding help

Programme : PG Diploma	Semester: 1
Course Code: PGIT-102	Course Name: Programming using Python
Internal Marks: 40	Total Marks: 100
External Marks: 60	

Introduction To Python Installation and Working with Python Understanding Python variables Python basic Operators Understanding python blocks : Python Data Types Declaring and using Numeric data types: int, float, complex Using string data type and string operations Defining list and list slicing Use of Tuple data type

Program Flow Control Conditional blocks using if, else and elif Simple for loops in python For loop using ranges, string, list and dictionaries Use of while loops in python Loop manipulation using pass, continue, break and else Programming using Python conditional and loops block.

Python Functions, Modules And Packages Organizing python codes using functions Organizing python projects into modules Importing own module as well as external modules Understanding Packages Powerful Lamda function in python Programming using functions, modules and external packages

Python String, List And Dictionary Manipulations Building blocks of python programs Understanding string in build methods List manipulation using in build methods Dictionary manipulation Programming using string, list and dictionary in build functions.

Python File Operation Reading config files in python Writing log files in python, Understanding read functions, read(), readline() and readlines() Understanding write functions, write() and writelines() Manipulating file pointer using seek Programming using file operations.

Python Object Oriented Programming – Oops Concept of class, object and instances Constructor, class attributes and destructors Real time use of class in live projects Inheritance , overlapping and overloading operators Adding and retrieving dynamic attributes of classes Programming using Oops support

Programme : PG Diploma	Semester: 1
Course Code: PGIT-103	Course Name: Big Data Analytics
Internal Marks: 40	Total Marks: 100
External Marks: 60	

Introduction to Big Data : W hat is Data, Forms of Data Unstructured Data, Structured data and semi structured data, Big Data Overview, Big Data Fast Data, State of the Practice in Analytics, When to consider Big Data Solutions, Applications of Big Data in Industry.

Apache Hadoop : Introduction to Hadoop, Understanding distributed systems and Hadoop, Components Of Hadoop (Namenode, Datanode, JobTracker, TaskTracker, etc.),Understanding Map Reduce, Working with files in HDFS, Basic HDFS commands, Introduction to Hive, Working with Hive.

Apache Spark : Spark Overview, RDD Fundamentals, Spark SQL and Data Frames, Spark Job Execution, Cluster Architectures for Spark, Intro to Spark Streaming, Machine Learning Basics

NoSQL Databases: Introduction to NoSQL Document, Wide Column, Key Value, Graph, NoSQL Basic Operations, Working with HBase/Cassandra, Working with Document Database, Working with Titan Graph, Applications of NoSQL.

Machine Learning: Defining Machine Learning, Applications of Machine Learning, Clustering ,Classification, Association rules, Linear Regression, Logistic Regression.

Case study: Recommendation Engines, Fraud Detection, Network Analysis with Graph Database

Programme : PG Diploma	Semester: 1
Course Code: LPGIT-101	Course Name: Data Analysis and Visualization using R Laboratory
Internal Marks: 30	Total Marks: 50
External Marks: 20	

1. Install R, and RStudio

2. Install Packages Rcmdr, rattle, and Deducer. Install all suggested packages or dependencies including GUI.

3. Load these packages using library command and open these GUIs one by one.

4. familiar with basic R syntax

5. Create a github account at http://github.com

6. Learn to troubleshoot package installation above by googling for help.

7. Install package swirl and learn R programming

8. Master the packages mentioned for importing data.

9. Read and practice how to work with packages like dplyr, tidyr, and data.table.

10. Visualize spatial data and models on top of static maps from sources such as Google Maps and Open Street Maps with ggmap.

Programme : PG Diploma	Semester: 1
Course Code: LPGIT-102	Course Name: Programming using Python Laboratory
Internal Marks: 30	Total Marks: 50
External Marks: 20	

In each of the projects that follow, you should write a program that contains an introductory docstring. This documentation should describe what the program will do (analysis) and how it will do it (design the program in the form of a pseudo code algorithm). Include suitable prompts for all inputs, and label all outputs appropriately. After you have coded a program, be sure to test it with a reasonable set of legitimate inputs.

- The tax calculator program of the case study outputs a floating-point number that might show more than two digits of precision. Use the round function to modify the program to display at most two digits of precision in the output number.

- You can calculate the surface area of a cube if you know the length of an edge. Write a program that takes the length of an edge (an integer) as input and prints the cube's surface area as output.

- Five Star Retro Video rents VHS tapes and DVDs to the same connoisseurs who like to buy LP record albums. The store rents new videos for $3.00 a night, and oldies for $2.00 a night. Write a program that the clerks at Five Star Retro Video can use to calculate the total charge for a customer's video rentals. The program should prompt the user for the number of each type of video and output the total.

- Write a program that takes the radius of a sphere (a floating-point number) as input and then outputs the sphere's diameter, circumference, surface area, and volume. 5. An object's momentum is its mass multiplied by its velocity. Write a program that accepts an object's mass (in kilograms) and velocity (in meters per second) as inputs and then outputs its momentum.

- The kinetic energy of a moving object is given by the formula $KE = (1/2)mv^2$ where m is the object's mass and v is its velocity. Modify the program you created in Project 5 so that it prints the object's kinetic energy as well as its momentum.
- An employee's total weekly pay equals the hourly wage multiplied by the total number of regular hours plus any overtime pay. Overtime pay equals the total overtime hours multiplied by 1.5 times the hourly wage. Write a program that takes as inputs the hourly wage, total regular hours, and total overtime hours and displays an employee's total weekly pay.

Programme : PG Diploma	Semester: 1
Course Code: LPGIT-103	Course Name: Big Data Analytics Laboratory
Internal Marks: 30	Total Marks: 50
External Marks: 20	

List of Practical's

- SQL Operations with Python

- Working With Hadoop Ecosystem Hands On HDFS commands•

- HDFSfile I/O with Python / Java• Understand the basic Data types of MapReduce•

- Programming Paradigm

- Steps to write a mapreduce program

- Writing a Program to count number of words in a file.

- Working with Hive• & Pig

- Working with Apache Spark

- Writing MapReduce jobs in PySpark / RSpark Working with Spark RDD

- Hive with Spark (SparkSQL)

- Accessing HDFS with PySpark

Programme : PG Diploma	Semester: 2
Course Code: PGIT-104	Course Name: Machine Learning
Internal Marks: 40	Total Marks: 100
External Marks: 60	

- Introduction to Machine Learning: Difference between Machine Learning and traditional programming, Applications of Machine Learning, Why Machine Learning is the Future.

- Regression: Simple Linear Regression, Multiple Linear Regression, Polynomial Regression, Support Vector Regression, Decision Tree Regression,Random Forest Regression.

- Classification: Logistic Regression, K-Nearest Neighbors (K-NN), Support Vector Machine (SVM), Kernel SVM,Naive Bayes, Decision Tree Classification, Random Forest Classification.

- Clustering : K-Means Clustering, Hierarchical Clustering, Association Rule Learning: Apriori, Eclat, Reinforcement Learning: Upper Confidence Bound (UCB), Thompson Sampling.

- Deep Learning:Artificial Neural Networks, Training Neural Nets, Multi-Class Neural Nets, Identify the pros/cons of static and dynamic training, Convolutional Neural Networks.

- Dimensionality Reduction: Principal Component Analysis (PCA), Linear Discriminant Analysis (LDA), Kernel PCA

Programme : PG Diploma	Semester: 2
Course Code: LPGIT-104	Course Name: Machine Learning Laboratory
Internal Marks: 30	Total Marks: 50
External Marks: 20	

Programs to demonstrate*

- Simple Linear Regression
- Multiple Linear Regression
- Polynomial Regression
- Support Vector Regression
- Decision Tree Regression
- Random Forest Regression
- Interpreting Linear Regression Coefficients
- Implementing Logistic Regression
- K-Nearest Neighbors
- Randon Forest Classification
- K-Mean Clustering

Electives syllabus to be designed (Pending)

Course Name:	**P.G Diploma (Project Management)**
Rationale	Today, it is widely recognized that there is a positive correlation between project employee training and certification in project management on the one hand, and project performance on the other. This positive correlation has been reinforced by paradigm shifts in globalization, advances in technology, the emergence of large and complex projects, focus on integration, innovative practices and networking. In today's dynamic business environment, it is imperative that organizations manage their projects efficiently and effectively. The programme primarily aims to help participants in understanding the globally recognized Framework for Project Management. Take up Accountability, Strategizing, Visualization, Planning, Scheduling, Monitoring and grow to higher level of decision making.
Eligibility for Admission	A candidate who has secured more than 55% or CGPA of 3.5 in the UGC Seven Point scale [36% or Pass marks for SC/ST/Non-creamy layer OBC/SBC] or equivalent in the Bachelor degree in Science or Engineering or Technology or Medicine or Pharmaceutical Science shall be eligible for admission to First Semester of P.G. diploma in Project Management.
Duration	1 Years (2 Semester)
Detailed contents	

- Semester – I
  - Foundations of Project Management
    - Defining Project Management, Organizational Structures and Project Life cycle, Integration Management and Initiating a Project, Project Management Plan, Planning the Project Scope, Identifying Project Requirements, Defining Project Scope.
  - Productivity Management
    - Productivity and performance, Productivity Measurement, Productivity Planning, Productivity Evaluation, Productivity Improvement, Dynamic Programming of Productivity Problems
  - Advanced Project Management
    - Initiation, Planning, Execution, Monitoring, Closing.
  - Advanced Operation Research
    - Linear Programming, Transportation & Assignment Model, Queuing Models, Dynamic programming, Decision Theory, Game Theory, Simulation, Network Analysis
  - Management Information System
    - Information Technology, Data Communication and IT Enabled Services, Management and Decision Making, Decision Support System, System Analysis and Design, System Development, The Database Management System, Data Warehousing and Data Mining, Information Security and Control, Information Systems and Quality.
- Semester – II
  - Operations Management
    - Work and Job design, Facilities planning, Capacity planning, Production Planning and Control (PPC), Maintenance Management, Quality assurance, Material Management.
  - Project Human Resource and Project Communication Management
    - Resource Planning, Managing projects through people, Managing Virtual Project Teams, Project Human Resource Management, Introduction to Project Communication, Managing Communications Effectively And Efficiently, Project Management Communication Plan, Project Communication Management Process.
  - Project Procurement Management
    - Plan Procurement Management, Conduct Procurements, Control Procurements, Close Procurements.
  - Dissertation

Course Name:	**P.G Diploma (Industrial Safety)**
Rationale	Safety at the work place and in factories is a very important aspect. Neglecting safety can lead to potential injury or even death of a worker. Very often due to neglect, equipment get damaged and hazards like fire cause colossal loss to the concerned factory. As such, there can never be two opinion about the importance of safety in industries. Safety of men and material should be the first and foremost point at every work place. With rapid modernization and enhanced development activity, more and more factories are coming up. The government has also made it mandatory for every industry to follow stringent norms on all safety issues. This has made available numerous opportunities for employment in this field.
Eligibility for Admission	A candidate who has secured more than 55% or CGPA of 3.5 in the UGC Seven Point scale [36% or Pass marks for SC/ST/Non-creamy layer OBC/SBC] or equivalent in the Bachelor degree in Science or Engineering or Technology or Medicine or Pharmaceutical Science shall be eligible for admission to First Semester of P.G. diploma in Industrial Safety.
Duration	1 Years (2 Semester)
Detailed contents	

- Semester – I
  - Safety Management
    - Occupation, Safety and Management, Monitoring for Safety, Health & Environment, Education, Training and Employee Participation in Safety, Management Information System
  - Safety in Industries
    - Safety in Chemical Industries, Safety in Petroleum Refinery, Mining and Petrochemical Industry, Safety in Construction and Cement Industry, Industrial Health and Hygiene.
  - Environmental Impact Assessment and Monitoring
    - Overview of Environmental Impact Assessment (EIA), EIA Notifications, Reports for Environmental Clearance.
  - Legislation on Safety, Health and Environment
    - Background and Scope, Important Safety related Legislation, Outline of other related important Legislation, Environment Protection Legislations
  - Environmental Management System and ISO 14000
    - Environmental Management System in Industry, Environmental Pollution & Control Techniques, Environment Impact Assessment and Audits, Disasters and their management
- Semester – II
  - Hazard Identification, Assessment and Control Techniques
    - Safety Appraisal, Analysis and control Techniques, Hazard and Risk assessment Techniques, Accident and Incident Investigation, Reporting and Analysis, Major Accident Hazard (MAH) Controls.
  - Safety Engineering
    - Plant Design and Layout AND Citing criteria, Fire and Explosion, Electricity safety, lighting (illumination) and colour, Machine Guarding, Noise and Vibration.
  - Natural Disasters And Industries
    - Classification and types of Disasters, Disaster Management in Industries, Role of safety officer in disaster management in industry, Mitigation efforts.
  - Dissertation

Course Name: Rationale	**P.G Diploma (Advanced Manufacturing and Robotics)** In last one decade Advanced Manufacturing and Robotics has become popular with the rise in quantity and quality of computer systems. Since more automated tools are being used in manufacturing units it is necessary to model/ simulate and analyze all machines, tooling and input materials to optimize the manufacturing process. The P.G Diploma in Advanced Manufacturing and Robotics is in-line with the integrated approach to manufacturing which is centred on computer system. This P.G Diploma Advanced Manufacturing and Robotics course has been especially designed to full-fill goals of computer-integrated manufacturing, flexible manufacturing, lean manufacturing, and design for manufacturability.
Eligibility for Admission:	A candidate who has secured more than 55% or CGPA of 3.5 in the UGC Seven Point scale [36% or Pass marks for SC/ST/Non-creamy layer OBC/SBC] or equivalent in the Bachelor degree in Science or Engineering or Technology or Medicine or Pharmaceutical Science shall be eligible for admission to First Semester of P.G. diploma in Advanced Manufacturing and Robotics.
Duration:	1 Years (2 Semester)

Detailed contents:

- Semester – I
  - Advanced Engineering Materials
    - Metals, Polymers, Composites, Biomaterials, Testing, Characterization
  - Design for Additive Manufacturing
    - CADD, Generative Design, Finite Element Analysis, Reverse Engineering
  - Computer Programming & Applications
    - MATLAB Programming, Simulink, Toolboxes for Robotics, Overview of IoT, Data Analytics
  - Mechatronics
    - Sensors, Actuators, Controllers, Signal Conditioning, Control Systems, Digital Logic
  - Computer Integrated Manufacturing Systems
    - CNC Machines, Computer Aided Process Planning, Group Technology, Cellular Manufacturing, Flexible Manufacturing Systems
- Semester – II
  - Industrial Robotics
    - Mechanisms and their Kinematic Synthesis, Robot Configurations, Kinematics & Dynamics, Robot Programming & Control, Motion Planning
  - Industrial IoT
    - Architecture, IoT Hardware, Protocols, Cloud, IoT Analytics, Applications
  - Additive Manufacturing of Metals and Non-metals
    - 3D polymer printing, metal printing and bio printing, process parametric optimization, analysis of process, mechanical, morphological, thermal, rheological characterization for additively manufactured components
  - Dissertation