



## Value Added Courses

Offered by:

**DPG Degree College, Gurgaon**

**Session 2021-22**

Sr. No.	Course	Free	Duration
1.	Basic Mathematics For competitive exams	Free	30hrs
2.	Certificate course for communication skills Academic research and report writing	Free	30hrs
3.	MS Office, Internet and its Applications	Free	30hrs
4.	Certificate course in Yoga & Meditation	Free	30hrs
5.	Certificate course in Dynamics of Service sectors.	Free	30hrs
6.	Certificate course in Innovation & Entrepreneurship	Free	30hrs
7.	Certificate course in Academic Research and Report Writing	Free	30hrs
8.	Certificate course in Social Impacts of medicinal Plants	Free	30hrs
9.	Certificate course in Solar Energy Utilization	Free	30hrs
10.	Certificate course in Fundamental of Nanoscience & Nanotechnology	Free	30hrs

DPG Degree College  
Sector-34, Gurugram

**Course: Basic Mathematics for Competitive Examination by Department of Mathematics**

**Objectives:**

- To enable the trainee to develop inductive and deductive reasoning.
- To evaluate the participants' educational level, in order for them to become competitive professionals in future.
- To enjoy Mathematics and develop patience and persistence when solving problems.

**Course Content**

**(Basic Mathematics for Competitive Examination)**

**UNIT I**

Numbers, HCF-LCM, Decimal Fractions, Simple Problems on numbers, ages and percentage.

**UNIT II**


Area, Profit and Loss, Ratio and Proportion, Time and Distance.

**UNIT III**

Central Tendency: Mean, Median and Mode, Simple and compound interest

**Course Outcomes:**

- To raise the level of confidence and competency of the trainee carryout oral calculations with ease and speed.
- To improve the ability to solve problems involving numbers in context.
- To analyze the problem and apply the acquired knowledge.
- To give opportunities for professional growth, career improvement and lateral entry into course of technical and professional education through appropriate bridge courses.



Principal  
Gurugram College  
Gurugram

**Course: Certificate Course in Communication Skills by Department of Arts & Humanities**

This course is structured to inculcate the communication skills among the students.

**Course Objectives:**

- To think critically about the communication processes and messages.
- To write effectively for a variety of contexts and audiences.
- To interact skilfully and ethically.
- To develop and deliver professional presentations.
- To recognize the effects of diversity, access and power on communication.

**Certificate Course in Communication Skills**

**UNIT I**

Recapitulation of language skills: Parts of the speech, Grammar, Vocabulary, Phrase, Clause, Sentences, punctuation

**UNIT II**

Listening and speaking skills: Dictations, Vowels, Consonants and Pronunciation, Formal and Informal conversation, conversation in the work place, public speech

**UNIT III**

Reading and writing skills: Vocabulary strategies that help readers to interpret and retention, report writing, paragraph writing, essay writing, CV's, Resume and generating ideas.

**Course Outcomes: After completing the course the student will be able to**

- Give presentation fluently
- Describe confidently
- Understand and apply communication theory.

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**Course: Certificate Course in Solar Energy Utilization by  
Department of Physics**

**Course Objectives:**

1. To develop a comprehensive technological understanding in solar system components.
2. To provide in depth understanding of design parameters to help design and simulate the performance of a solar power system.
3. To pertain knowledge about planning project implementation and operation of solar power generation.

**Course Content  
(Certificate course in Solar Energy Utilization)**

**UNIT I**

**Solar Radiation**

The sun and the earth introduction, Formation of atmosphere, Extra-terrestrial and terrestrial region, Solar spectrum, solar constant and radiation, solar time, sun-earth angles, radiation measuring instruments, radiation measurements, radiation measurements and predictions, Elements of heat transfer; mode of heat transfer, conduction, convection: dimensionless heat convection parameters, radiative heat transfer coefficient.

**UNIT II**

**Solar thermal conversion**

Basics of solar thermal conversion, flat plate collectors- liquid and air types, theory of flat plate collectors, selective coating, advanced collectors, Solar distillation, classification of solar distillation systems, working principle of solar distillation, thermal efficiency of distiller unit.

**UNIT III**

**Solar concentrators and solar photovoltaic:**

Optical design of concentrators, solar water heater, solar dryers, solar ponds, solar cooling and refrigeration, solar thermal power generation, Solar photovoltaic: principle of photovoltaic conversion of solar energy, performance analysis of solar photovoltaic cell, solar cells, home lighting systems, solar lanterns, solar PV pumps, Solar energy storage options.

**Course Outcome:**

1. Students were known to have deeper knowledge for solar system components as per defined syllabus of this course. They were introduced with flat plate collectors, advanced collectors etc.
2. Various solar power system were introduced to students such as solar water heater, solar dryer, solar cooling etc. and the design parameters were made to calculate.
3. Basic flow for design of solar thermal power generation and solar photovoltaic principle and performance analysis of photovoltaic cell was also introduced.

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**Course: Certificate course in Fundamental of Nanoscience & Nano Technology by Department of Chemistry**

**Course Content**

(Certificate course in Fundamental of Nanoscience & Nano Technology)

**Course Objectives :**

1. To foundational knowledge of the Nanoscience and related fields.
2. To make the students acquire an understanding the Nanoscience and Applications
3. To help them understand in broad outline of Nanoscience and Nanotechnology.

**UNIT - I INTRODUCTION**

Nanoscale Science and Technology – Implications for physics, Chemistry, Biology and Engineering Classification of nanostructured materials – Nano particles – Quantum dots, nanowires-ultra-thin films multilayered materials. Length scales involved and effects on properties: Mechanical, Electronic, Optical, Magnetic and Thermal properties. Introduction to properties and motivation for study (qualitative only).

**UNIT – II GENERAL METHODS OF PREPARATION**

Bottom-up Synthesis-Top-down Approach: Co-Precipitation, Ultrasonication, Mechanical Milling, Colloidal routes, Self-assembly, Vapour phase deposition, MOCVD, Sputtering, Evaporation, Molecular beam Epitaxy, Atomic layer Epitaxy, MOMBE.

**UNIT- III NANOMATERIALS**

Nanoforms of Carbon – Buckminster fullerene graphene and carbon nanotube, Single Wall Carbon Nanotubes (SWCNT) and Multi Wall Carbon Nanotubes (MWCNT) methods of synthesis (arc growth, laser ablation, CVD routes, Plasma CVD), structure property relationships applications – Nanometal oxides – ZnO, TiO<sub>2</sub>, MgO, ZrO<sub>2</sub>, NiO, Nanoalumina, CaO, AgTiO<sub>2</sub>, Ferrites, Nanoclays-functionalization and applications Quantum dots-preparation, properties and applications.

**Course Outcomes:** After completing this course students will be able to:

1. Learn about the background on Nanoscience
2. Understand the synthesis of nanomaterials and their application and the impact of nanomaterials on environment
3. Apply their learned knowledge to develop Nanomaterial's.
4. Understood the principles and background to nanotechnology

*12/13/14*  
Principal

36/05/24, 11/08/2024