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## TOPICS OF PHYSICS PHYN000

By: Prof. Ahmed El Sadek – Dr. Borham Taher

### **1) Fundamental Concepts**

- Scientific Method (also Experiment, Observation and Testing Hypotheses)
- Units and dimensions/Dimensional Analysis
- Systems of units
- Precision, Accuracy, Rounding, and Significant figures
- Vectors
- Gravity
- Work, Power, and Energy

### **2) Fluid Mechanics**

- Force and pressure
- Hydrostatics: Fluids at Rest
- Hydrodynamics: Fluids in Motion

### **3) Heat and Thermodynamics**

- Basic Definitions
- Ideal gases
- Kinetic theory of gases
- Gas laws
- First Law of Thermodynamics

### **4) Oscillations and Waves**

- Simple Harmonic Motion
- Waves
- Light and Optics



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## **5) Atomic, Nuclear physics**

- The Atom
- Bohr's model for the atom
- Radioactivity

## **6) Electricity and Magnetism**

- Coulomb's Law
- Electric Fields and Forces
- Electric potential
- Electrical capacitors
- Electric Circuits
- Logic gates
- Magnetism
- Magnetic Fields and Forces
- Electromagnets

**\*Lecture ( 1 ) : 1 and 2**

**\*Lecture ( 2 ) : 3, 4, and 5**

**\*Lecture ( 3 ) : first part in 6**

**\*Lecture ( 4 ) : second part in 6**



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**Topics of Mechanics MECN000**  
**By: Prof. Dr. Mostafa Abdeen – Dr. Mohamed El Shabrawy**

**Lecture 1:**

Resolution and resultant of Concurrent forces (2-forces) using Sin Law & Cosine Law  
Force vectors in plane (2-D): Resolutions and Resultant

**Lecture 2:**

Equilibrium of Concurrent forces (2-D) using Sine Law & Resolutions.

**Lecture 3:**

Space representation – Force vectors in space (3-D): Direction angles

**Lecture 4:**

Space representation – Force vectors in space (3-D): resolution in space & unit vector.



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**Contents of the pre-calculus course for freshmen level: MTHN000**  
**By : Prof. Abd El Kareem – Dr. Ahmed Essam**

**Lecture 1: The real functions.**

- Definition.
- Domain, range.
- Graph of functions.
- Types of functions (Polynomials, rational, trigonometric, exponential, logarithmic...etc).

**Lecture 2: Limits and continuity.**

- Definition.
- One-sided limits.
- Two-sided limits.
- Limits properties.
- Limits at infinity.
- Continuity of functions.

**Lecture 3: Differentiation.**

- Definition.
- Differentiability of functions.
- Rules of differentiation for polynomial, trigonometric, exponential, logarithmic functions.
- Implicit differentiation.

**Lecture 4: Integration.**

- Definition.
- Indefinite integral.
- Integration by substitution.
- Definite integral.
- Calculating the area between curves using the definite integral.



## Introduction to Technical Writing & College Writing

### 8-hour Course for New Freshman Students

This eight-hour course aims at introducing freshman students to college-level writing and the expected types of writing at CUFE. The course helps students cope with freshman-level courses at CUFE.

### Course Outline:

Week #	Topics Covered	Task-oriented Activities	Assignments
Week #1	Introduction to College Writing Types of Writing Common Writing Errors Editing	Group work Editing (sentence-level)	Individual Editing Assignment
Week #2	Outlining Texts Note-taking	Group work Outlining a Text Taking notes for a brief lecture	Preparing an outline
Week #3	Business E-mail Netiquette Report Structure	Group work on editing a business e-mail	Writing a business e-mail
Week #4	Plagiarism & Academic Integrity Introduction to Documentation End of course Quiz	Exercise on Plagiarism	