Mathematical Methods I and Computation Lab I

Course Outcome:

1. Analyze and evaluate scalar and vector products in various mathematical problems, such as calculating magnitudes, angles, and projections of vectors, demonstrating the application of dot and cross products in physics problems.

2. Differentiate between scalar and vector quantities, and demonstrate an understanding of pseudo vectors, their properties, and their relevance in physical systems and calculations.

3. Interpret trajectories of particles in space using concepts of tangent and normal vectors, and apply them to solve problems related to motion and dynamics in Physics.

4. Demonstrate proficiency in utilizing different coordinate systems, such as Cartesian, polar, and spherical coordinates, in order to represent physical quantities and equations accurately.

5. Analyze and evaluate distribution functions, such as probability density functions and cumulative distribution functions, to understand the probability distribution of random variables in physics-related scenarios.

6. Apply the concept of fields in Physics, such as gravitational, electric, and magnetic fields, to analyze and solve complex problems involving interactions between objects and particles.

7. Develop critical thinking and problem-solving skills by applying mathematical methods to solve physics problems related to kinematics, dynamics, electromagnetism, and other branches of Physics.

8. Demonstrate competence in utilizing computational tools and software to perform numerical simulations, analyze data, and solve mathematical and physics problems efficiently.

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