SEMESTER 1(2)

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BOOKS LECTURES LECTURE NOTES CLASS LINK TIERCE PAPERS

DAY	8:30	10:00	11:30	2:30	4:00
MON	QUANTUM PHYSICS	MICROECO	PROBABILITY AND STATASTICS	EMPTY	EMPTY
TUE	MICROECO	LA 1 & 2	QUANTUM PHYSICS [TUT]	CAL 1 & 2	EMPTY
WED	CAL 1 & 2	QUANTUM PHYSICS	PROBABILITY AND STATASTICS [TUT]	LA 1 & 2 [TUT]	EMPTY
THU	EMPTY	CAL 1 & 2 [TUT]	LA 1 & 2	PROBABILITY AND STATSTICS	MICRO
FRI	PROBABILITY AND STATSTICS	CAL 1 & 2	QUANTUM PHYSICS	LA 1 & 2	MICRO

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Probability and Statistics

Probability spaces, conditional probability, Bayes' theorem; random variables, probability distribution functions, joint distributions, independence, mathematical expectations, Chebyshev's inequality; special distributions: binomial, hypereometric, Poisson, exponential, uniform, normal distributions. Random sampling, sample mean, sample variance, weak law of large numbers and central limit theorems; estimation of parameters, the method of maximum likelihood estimation, confidence intervals, testing of hypotheses, goodness of fit, nonparametric tests, correlation analysis.

Quantum Physics

Classical to quantum cross-over, basic principles of quantum mechanics, wave function and uncertainty principle, probability wave amplitude, probability density, wave equation and Schrodinger formalism, time-independent and time-dependent Schrodinger equations, Dirac formulation of quantum mechanics, linear vector spaces, bra and ket vectors, completeness and ortho-normalization of basis vectors, basis sets, change of basis, eigenstate and eigenvalues, expectation values.

Calculus II

Continuity, partial derivatives, directional derivatives, gradient, differentiability, chain rule; tangent planes and normals, maxima and minima for function of two variables, Lagrange multiplier method; double and triple integrals with applications to volume, surface area, moments of inertia, change of variables; vector fields, line integrals, Green's theorem and its applications, path independence; surface integrals, evaluation, Gauss's divergence theorem and its applications

Linear Algebra II

Eigenvalues, eigenvectors and some applications of eigenvalue problems, Hermitian, skewHermitian, unitary matrices and their eigenvalues; eigenbases, diagonalization, annihilating
polynomial, the minimal polynomial and the characteristic polynomial, Cayley-Hamilton
theorem; Inner product spaces, orthonormal bases, Gram-Schmidt process.
Computer lab by using appropriate software tools like Python, MATLAB etc.

Microeconomics

1. Economic way of thinking, important core principles of economics,
2. Basics of demand and supply, consumer behavior, price elasticities, government pricing
3. policies of tax and subsidy
4. Industrial production and costs, market structures such as perfect competition, monopoly,
5. imperfect competition and oligopoly,
6. Product pricing strategies of companies.