

Ph.D. Course Work, 2018

Paper I (100 marks, 12 credits)

- Research methodology + Research Ethics (4 periods, 2 credits, 20 marks)
- Quantitative Analysis (8 periods, 4 credits, 30 marks)
- Computer techniques (8 periods+2 periods(practice), 4 credits, 30 marks)
- Review of literature-to be evaluated by Mentor (2 credits, 20 marks)

Paper II - 60(written)+40(assignment) = 100 marks, 12 credits

Module I (12 periods, 6 credits)

Module II (12 periods, 6 credits)

Course Work Class Schedule-2018

Paper I

Phase 1 - Time-Table

Venue: RM.29B/computer class R.K. HALL

Date/Day	Time/Subject/ Prof. A.CHANDRA	Time/Subject/ 11 AM-1.00 PM
14.11.2018 Wednesday	10.00- 11 A.M. (QUANTITATIVE ANALYSIS)	PROF. MADHU AGARWAL: MS- EXCEL
15.11.2018 Thursday	10.00- 11 A.M. (QUANTITATIVE ANALYSIS)	DR. ARIJIT GHOSH: BASICS OF SPSS
16.11.2018 Friday		DR. ARIJIT GHOSH: BIVARIATE ANALYSIS
17.11.2018 Saturday	10.00- 11 A.M. (QUANTITATIVE ANALYSIS)	DR. ARIJIT GHOSH: REGRESSION MODEL
19.11.2018 Monday	10.00- 11 A.M. (QUANTITATIVE ANALYSIS)	DR. SAMRAT ROY: FACTOR ANALYSIS
20.11.2018 Tuesday	10.00- 11 A.M. (QUANTITATIVE ANALYSIS)	DR. SAMRAT ROY: NON-PARAMETRIC TEST
22.11.2018 Thursday	10.00- 11 A.M. (QUANTITATIVE ANALYSIS)	DR. SAMRAT ROY: CLUSTER ANALYSIS
24.11.2018 Friday	10.00- 12 A.M. (QUANTITATIVE ANALYSIS)	PRACTICAL EXAMINATION ON SPSS

Date/Day	Time/Subject (12-1PM) / RESEARCH METHODOLOGY & ETHICS
16.11.2018 THURS.	Dr. Saswati Choudhury
17.11.2018 FRIDAY	Dr. Saswati Choudhury
18.11.2018 SATURDAY	Dr. Saswati Choudhury
20.11.2018 MONDAY	Dr. Shivaji Banerjee

Syllabus of Quantitative Analysis

Lecture 1: Types of data – Qualitative and Quantitative, Frequency and Non-Frequency.

Lecture 2: Basic Characteristics – Central Tendency, Dispersion, Skewness and Kurtosis.

Lecture 3: Characteristics of Bivariate data – Correlation and Regression.

Lecture 4: Basic concepts of Probability.

Lecture 5: Binomial, Poisson and Normal distributions and their basic properties.

Lecture 6: Introduction to the theory of inference.

Lecture 7: Tests of significance concerning a single population and comparison of two populations using Normal distribution.

Syllabus on Research Methodology and Ethics

- 1. Introduction:** Meaning, process and Types of Research. Research Design: Types of research design, Exploratory Studies, Descriptive Studies, constructing an appropriate Research Design. Hypothesis; types and criteria of a statistics. Testing of hypothesis.
- 2. Source of Data:** Stimulus-Response Relationship, Forms of communication and data collection method, Nature of data under various settings. Maintaining the Data Quality under various Settings. Informal setting with written or verbal mode of communication, The Advantage and Disadvantage of the oral verbal method of communication, Content analysis, Observation, Secondary data. Errors in Data: Measurement Error Introduction, Error identification Problem of Outlier, Sources of Non sampling Error, Response and Non-Response error, other checks on data.
- 3. Experimental Technique:** Types of Experiments, Setting for Experiments, Errors in Experiment, Experimental Design Notation, and Application of experimental Design.

4. **Methods of Data Collection:** Different methods of data collection. Questionnaire Method, Questionnaire, Types of Questionnaire, Wording of Questions, Observation, Verbal Testing.
5. **Measurement and Scaling Techniques:** Introduction, Measurement scales, Scaling of Techniques, More on Specialized Scales - Ordinal scale and Thurstone Scale.
6. **Report Writing:** Chapterisation, Quantitative write-up, Qualitative Write-up, Mixed Method Write- up. Referencing.

Paper II (Commerce)

Date	Lecture 1 (1.15- 2.15)	Lecture 2 (2.30-3.30)
14.11.18(Wed)	DR. SANJIB KUMAR BASU: CONTEMPORY ISSUES IN MERERS AND ACQUISITIONS	FR. DR. DOMINIC SAVIO: IGNATIAN PEDAGOGY
15.11.18(Thurs)	DR. PARTHA PRATIM GHOSH : ACCOUNTING THEORY	DR. PARTHA PRATIM GHOSH: CORPORATE FINANCIAL REPORTING
16.11.18(Fri)	DR. SAMIR KUMAR LOBWO: FINANCIAL SYSTEM AND FINANCIAL MARKRTS	DR. SAMIR KUMAR LOBWO: FINANCIAL SYSTEM AND FINANCIAL MARKRTS
17.11.18(Sat)	DR. SUMANA GHOSH: SHAREHOLDERS' VALUE CREATION	DR. SUMANA GHOSH: SHAREHOLDERS' VALUE CREATION
19.11.18(Mon)	DR. AMITAVA ROY: BALANCE SCORE CARD	DR. AMITAVA ROY: SHAREHOLDERS' VALUE CREATION
20.11.18(Tue)	DR. SAMRAT ROY: INTERNATIONAL CAPITAL FLOW	DR. SAMRAT ROY: INTERNATIONAL CAPITAL FLOW
22.11.18(Thurs)	DR. SOHELI GHOSE: DYNAMICS OF INDIAN FINANCIAL MARKETS	DR. SOHELI GHOSE: DYNAMICS OF INDIAN FINANCIAL MARKETS
24.11.18(Sat)	DR. SREEMOYEE GUHAROY: FINANCIAL INCLUSION	DR. SREEMOYEE GUHAROY: FINANCIAL INCLUSION
26.11.18(Mon)	FR. DR. XAVIER SAVARIMUTHU: ENVIRONMENTAL ACCOUNTING	FR. DR. XAVIER SAVARIMUTHU: ENVIRONMENTAL ACCOUNTING
27.11.18(Tue)	DR. ATISH PROSAD MONDAL: INTERNATIONAL FINANCIAL	DR. ATISH PROSAD MONDAL :INTERNATIONAL FINANCIAL

	REPORTING STANDARDS	REPORTING STANDARDS
28.11.18 (Wed)	DR. SHIVAJI BANERJEE: MARKETING MANAGEMENT	DR. SUMONA GUHA: HUMAN RESOURCE MANAGEMENT
29.11.18 (Thurs)	DR. SASWATI CHAUDHURI: INTERNATIONAL FINANCE	DR. SANJIB KUMAR BASU: DERIVATIVE AND THEIR ACCOUNTING

Syllabus of Paper II -Commerce

This paper is to be divided into three parts. Part I consists of theoretical foundation, Part II relates to the studies of the emerging areas of research and Part II contents are to be left to the discretion of the Course coordinator and the Ph. D Committee

PART I: THEORETICAL FOUNDATIONS

For this part the following areas are to be covered:

- I Foundation of Accounting theory and its development stages
- II Corporate financial reporting and its regulations
- IV International financial reporting standards
- V Financial systems and Financial Market
- VI. Other Topics may be included (Depending on requirements)

PART II: STUDY OF EMERGING AREAS

For this part following areas are to be covered:

- I Shareholders Value creation
- II Balanced Score Card
- III Contemporary issues in mergers and acquisitions
- IV Derivatives and their accounting
- V Strategic financial management
- VI Indian Financial Institutions
- VII Other Topics may be included (Depending on requirements)

PART III: APPLIED AREA

For this part the study area will be decided by the Guides/ Course Coordinator and the Ph. D Committee and the areas should be specifically related to the topic of research.

Class Schedule for Ph. D. Course work in Microbiology 2018:**Paper II : Elective 1 [E1] and Elective 3 [E3]**

Date	No. of Classes	Teacher	Time
16.11.2018	2	Dr. Sudeshna Shyam Choudhury	1.30-3.30pm
17.11.2018	2	Dr. Madhumita Maitra	1.30 – 3.30 pm
19.11.2018	2	Dr. Arup Kumar Mitra	1.30- 3.30 pm
20.11.2018	2	Dr. Anindita Banerjee	1.30-3.30pm
	1	Dr. Arup Kumar Mitra	3.30 – 4.30 pm
22.11.2018	2	Dr. Jaydip Ghosh	1.30-3.30 pm
24.11.2018	2	Dr. Kasturi Sarkar	1.30-3.30 pm
26.11.2018	2	Dr. Madhumita Maitra	11-1 pm
	1	Dr. Mahashweta Mitra Ghosh	1.30 – 2.30 pm
27.11.2018	2	Dr. Riddhi Majumder	11.30 – 1.30 pm
	2	Dr. Arup Kumar Mitra	1.30 – 3.30 pm
28.11.2018	1	Dr. Madhumita Maitra	11- 12 pm
	2	Dr. Mahashweta Mitra ghosh	12 – 2 pm
29.11.2018	1	Dr. Sudeshna Shyam Choudhury	10.30 – 11.30 pm

Syllabus for Microbiology Course Work- Paper II

Unit 1: Introductory Microbiology, Biochemistry & Bioinformatics

No. of Classes: 32

Introductory Microbiology-Introduction to various types of microbes, Growth patterns of bacteria; Control of Microbes; Isolation, identification, classification and characterization of bacteria. Types of cultural methods practiced in the laboratory. The Prokaryotic cell structure and function.

Biochemistry & biochemical techniques-Concept pH, buffer, basic concept of different biomolecules, Enzyme kinetics, Thermodynamics related to biology, concept of chromatography (HPLC, gas chromatography-GC-MS), NMR, ESR

Bioinformatics-Sequence alignment study with FASTA and BLAST, Protein structural classification by SCOP, CATH, Protein structure database PDB analysis, Phylogentic analysis.

Unit 2: Medical Microbiology, Immunology, Molecular Biology

No. of Classes: 32

Medical Microbiology-The mechanism of pathogenesis in bacterial and viral diseases. Toxigenesis including mechanism of toxin production, structure and its mode of action. Types of toxins. Different mechanism by which host defence system is evaded by the pathogens.

Immunology-Roll of T cell & B cell. Antigen antibody interaction, inflammation, cytokines, Hypersensitivity, Vaccine, toxoid. Techniques like ELISA, Western blot analysis, Immunoprecipitation, Raising of antibody etc.

Molecular Biology- Nucleic acids and gene structure: Replication: Mechanism of DNA replication; mutations. Transcription and Post-transcriptional processing of mRNA
Translation: Recombinant DNA techniques: Enzymes for manipulation of DNA; PCR; plasmid and vectors; cloning and screening strategies.

Unit 3: Agricultural, Environmental, Industrial Microbiology

No. of Classes: 32

Rhizosphere and phyllosphere microorganisms and their interaction with plants. Mechanism of plant pathogenicity, Molecular basis of plant disease control. Beneficial association between plant and microorganisms. Biocontrol agents, SAR and ISR.

Biology of Hydrosphere, Biology of Atmosphere, Biology of Lithosphere
Biology of Industrial Microorganisms, Fermentation-types and processes.

Schedule for Course work in Physics

November 2018

Date	Lecture 1	Lecture 2
14.11.18(Wed)	Dr. Subhankar Ghosh (1.15 – 2.15 pm)	Dr. Saunak Palit (2.15 – 3.15 pm)
15.11.18(Thurs)	Dr. Saunak Palit (1.15 – 2.15 pm)	Dr. Tanaya Bhattacharyya (2.15 – 3.15 pm)
16.11.18(Fri)	Dr. Sarbari Guha (1.15 – 2.15 pm)	Dr. Subhankar Ghosh (2.15 – 3.15 pm)
17.11.18(Sat)	Dr. Tanaya Bhattacharyya (11.00 – 12.00)	Dr. Subhankar Ghosh (12.00 – 1.00 pm)
19.11.18(Mon)	Dr. Subhankar Ghosh (1.15 – 2.15 pm)	Dr. Sarbari Guha (2.15 – 3.15 pm)
20.11.18(Tue)	Dr. Tanaya Bhattacharyya (1.15 – 2.15 pm)	Dr. Saunak Palit (2.15 – 3.15 pm)
22.11.18(Thurs)	Dr. Sarbari Guha (1.15 – 2.15 pm)	Dr. Saunak Palit (2.15 – 3.15 pm)
24.11.18(Sat)	Dr. Subhankar Ghosh (11.00 – 12.00 noon)	Dr. Tanaya Bhattacharyya (12.00 – 1.00 pm)
26.11.18(Mon)	Dr. Saunak Palit (1.15 – 2.15 pm)	Dr. Sarbari Guha (2.15 – 3.15 pm)
27.11.18(Tue)	Dr. Sarbari Guha (1.15 – 2.15 pm)	Dr. Tanaya Bhattacharyya (2.15 – 3.15 pm)
28.11.18 (Wed)	Dr. Sarbari Guha (1.15 – 2.15 pm)	Dr. Subhankar Ghosh (2.15 – 3.15 pm)
29.11.18 (Thurs)	Dr. Saunak Palit (1.15 – 2.15 pm)	Dr. Tanaya Bhattacharyya (2.15 – 3.15 pm)

Syllabus for Course Work Physics –Paper II

Physics of Graphene – (Dr. Subhankar Ghosh) – 6 lectures

1. The wonder material: structural aspects
2. Electronic transport
3. Test of relativistic Quantum Mechanics: emerging issue

Photonics – Dr. Saunak Palit – 6 lectures

1. Introduction

- 1.1 Fabrication of Photonic Crystals
- 1.2 Applications of Photonic Crystals

2. Hamiltonian Formulation of Maxwell's equations (frequency considerations)

- 2.1 Plane wave solutions for uniform dielectrics
- 2.2 Methods of quantum mechanics in electromagnetism
- 2.3 Properties of harmonic modes of Maxwell's equations
- 2.4 Symmetries of Electromagnetic eigenmodes

3. One dimensional photonic crystals – multilayer stacks

3.1 Transfer matrix technique

3.2 Reflection from a finite multilayer (dielectric mirror)

3.3 Reflection from semi-infinite multilayer (dielectric photonic crystal mirror)

Quantum Mechanics- Dr. Tanaya Bhattacharya - 6 lectures

Schedule for Course work in Biotechnology

November 2018

Date	Lecture 1 (1.15- 2.15)	Lecture 2 (2.30-3.30)
14.11.18(Wed)	DC (Plant Biotechnology 1)	ARC (Plant Biotechnology 2)
15.11.18(Thurs)	Guest Lecturer	Guest Lecturer
16.11.18(Fri)	DC (Plant Biotechnology 3)	ARC (Plant Biotechnology 4)
17.11.18(Sat)	DC (Plant Biotechnology 5)	ARC (Plant Biotechnology 6)
19.11.18(Mon)	DC (Plant Biotechnology 7)	ARC (Plant Biotechnology 8)
20.11.18(Tue)	DC (Plant Biotechnology 9)	ARC (Plant Biotechnology 10)
22.11.18(Thurs)	Guest Lecturer	Guest Lecturer
24.11.18(Sat)	DC (Plant Biotechnology 11)	ARC (Plant Biotechnology 12)
26.11.18(Mon)	DC (Plant Biotechnology 13)	ARC (Plant Biotechnology 14)
27.11.18 (Tue)	DC (Plant Biotechnology 15)	ARC (Plant Biotechnology 16)
28.11.18 (Wed)	DC (Plant Biotechnology 17)	ARC (Plant Biotechnology 18)
29.11.18 (Thurs)	Guest Lecturer	Guest Lecturer

The above class schedule may be subjected to changes depending on availability of Guest Lecturers, the invigilation duties and unavoidable circumstances and also subject to inclusion of other Faculties of the Department.