Prasanta Chandra MahalanobisMahavidyalaya

Lesson Plan- 2022-23

Semester I Programme Course

Name of the Department: CHEMISTRY

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teacher assigned
September -November	**Programme Course**	CEMGCOR01T	Atomic Structure Chemical Periodicity Fundamentals of OrganicChemistry Stereochemistry	Notesprepared and EResources ICT	ClassTest	15 8 10	KN KM KM
		CEMGCOR01P	Estimation Qualitative Analysis of Single Solid Organic Compound	Experimental Instructions and Demonstratios	Laboratory Work	15 15	KN KM
December-January	**Programme Course**	CEMGCOR01T	Nucleophilic Substitution and Elimination Reactions Aliphatic Hydrocarbons Acids and bases Redox reactions	Notesprepared and EResources ICT	ClassTest	8 12 15	KM KM KN
		CEMGCOR01P	Estimation Qualitative Analysis of Single Solid Organic Compound	Experimental Instructions and Demonstrations	Laboratory Work	15 15	KN KM

Recommended Text books:

1. Sen Gupta, Subrata. *Basic Stereochemistry of Organic molecules.*
2. Kalsi, P. S. *Stereochemistry Conformation and Mechanism*, Eighth edition, New Age International, 2014.
3. Bahl, A. & Bahl, B.S. *Advanced Organic Chemistry,* S. Chand, 2010.

Prasanta Chandra MahalanobisMahavidyalaya

Lesson Plan- 2021-22

Semester III Programme Course

Name of the Department: CHEMISTRY

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teacher assigned
August-September	**Programme Course**	CEMGCOR03T	Chemical Energetics Organic Chemistry Chemical Equilibrium	Notesprepared and EResources ICT	ClassTest	10 15 7	KN KM KM
		CEMGCOR03P	Physical Chemistry Organic Chemistry	Experimental Instructions and Demonstrations	Laboratory Work	10 10	KM KN
November-January	**Programme Course**	CEMGCOR03T	ChemicalEnergetics Ionic Equilibria Organic Chemistry	Notesprepared and EResources ICT	ClassTest	8 8 15	KN KM KM
		CEMGCOR03P	Physical Chemistry Organic Chemistry	Experimental Instructions and Demonstrations	Laboratory Work	10 16	KM

Recommended Text books:

1. Palit, S. R., *Elementary Physical Chemistry* Book Syndicate Pvt. Ltd.
2. Mandal, A. K. *Degree Physical and General Chemistry* Sarat Book House
3. Pahari, S., *Physical Chemistry* New Central Book Agency
4. Pahari, S., Pahari, D., *Problems in Physical Chemistry* New Central Book Agency

Prasanta Chandra MahalanobisMahavidyalaya

Lesson Plan- 2021-22

Semester V Programme Course

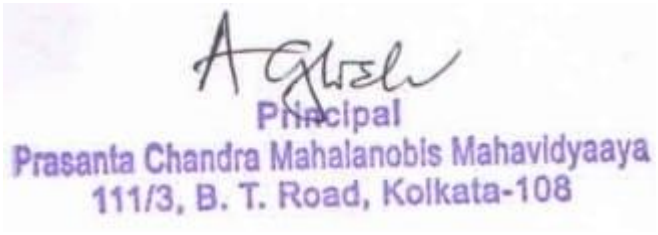
Name of the Department: CHEMISTRY

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teacher assigned
August-September	**Programme Course**	CEMGDSE01T	Introduction and history of polymeric materials Functionality Crystallization Glass transition temperature	Notes prepared and E Resources ICT	ClassTest	4 4 4 8	KM KN KM KM
		CEMGDSE01P	Polymer synthesis	Experimental Instructions and Demonstration	Laboratory work	16	KM
		CEMSSEC001	Basic analytical chemistry	Notes prepared and E Resources	ClassTest	6	KM
November-January	**Programme Course**	CEMGDSE01T	Kinetics of Polymerization Determination of molecularweight PolymerSolution Properties of Polymers	Notes prepared and E Resources ICT	ClassTest	8 8 8 10	KM\ KM KN KM
		CEMGDSE01P	Polymer characterization	Experimental Instructions andDemonstration	Laboratory work	16	KM
		CEMSSEC001	Basic analytical chemistry	Notesprepared and E Resources ICT	ClassTest	6	KM

Recommended Text books:

1.Billmeyer, F.W. *Textbook of Polymer Science*, 2nd Ed. Wiley Interscience, 1971. Ghosh, P. *Polymer Science & Technology,* Tata McGraw-Hill Education, 1991.

2. Lenz, R.W. *Organic Chemistry of Synthetic High Polymers.* Interscience Publishers, New York, 1967.



Prasanta Chandra Mahalanobis Mahavidyalaya

Lesson Plan- 2022-23

Semester I Honors. & Programme Course

Name of the Department: COMPUTER SCIENCE

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teacher assigned
September-November	**Hons.**	**CMSACOR01T**	1.Introduction to C and C++ 2.Data types, variables, constants, operators and Basic I/O 3. Expressions, Conditional Statements and Iterative Statements 4. Functions and Arrays 5. Derived Data Types (Structures and Unions)	offline	Internal Assesment	30	IT1 IT2
		CMSACOR01P		offline	Internal Assesment	20	IT1 IT2
		CMSACOR02T	1. Introduction 2. Data Representation and Basic Computer Arithmetic 3. Basic Computer Organization and Design	offline	Internal Assesment	30	SD DC
		CMSACOR02P		Offline		20	DC

September-November	**Programme Course**	CMSGCOR01T	Computer Fundamentals Planning the Computer Program Techniques of Problem Solving Overview of Programming	offline	Internal Assesment	20	SD DC
		CMSGCOR01P		offline	Internal Assesment	20	DC
December-January	**Hons.**	**CMSACOR01T**	6. Pointers and References in C++ 7. Memory Allocation in C++ 8. File I/O, Preprocessor Directives 9. Using Classes in C++ 10. Overview of Function Overloading and Operator Overloading 11. Inheritance, Polymorphism and Exception Handling	offline	Internal Assesment	30	IT1 IT2
		CMSACOR01P		offline	Internal Assesment	20	IT1 IT2
		CMSACOR02T	4. Central Processing Unit 5. Memory Organization 6. Input-output Organization	offline	Internal Assesment	30	SD DC
		CMSACOR02P		offline	Internal Assesment	20	DC
December-january	**Programme Course**	CMSGCOR01T	Creating Python Programs Structures Introduction to Advanced	offline	Internal Assesment	30	DC SD

			Python				
		CMSGCOR01P		offline	Internal Assesment	20	DC SD

Recommended Text books:

1. E Balaguruswamy , " Object Oriented Programming with C++", Tata McGraw-Hill Education, 2008.
2. M. Mano, Computer System Architecture, Pearson Education, 1992
3. T. Budd, Exploring Python, TM H, 1st Ed, 2011

Prasanta Chandra MahalanobisMahavidyalaya

Lesson Plan- 2021-22

Semester III Honors. &Programme Course

Name of the Department: COMPUTER SCIENCE

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teacher assigned
		SEC	Planning the Computer Program Techniques of Problem Solving Overview of Programming			10	SD
August-September	**Programme Course**	CMSGCOR03T	Introduction Types of Operating Systems Operating System Organization Process Management			20	SD DC
		SEC	Introduction to Python Creating Python Programs			10	SD
November-january	**Programme Course**	CMSGCOR03T	Scheduling Memory Management			20	SD DC

Recommended Text books:

A Silberschatz, P.B. Galvin, G. Gagne, Operating Systems Concepts, 8th Edition, John Wiley Publications 2008

Prasanta Chandra MahalanobisMahavidyalaya

Lesson Plan- 2021-22

Semester V Honors. &Programme Course

Name of the Department: COMPUTER SCIENCE

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teacher assigned
August-September	**Hons**	**CMSACOR011T**	Java Java Script JDBC			30	IT1
		CMSACOR012T	Languages Finite Automata and Regular Languages			30	SD
		CMSADSE01T	Microprocessor architecture			30	IT2
		CMSADSE02T	Overview			30	DC
August - September	**Programme Course**	CMSGDSE01T	Introduction to Java Object oriented programming concept Java programming Fundamental Classes and Objects Arrays and Strigs			30	DC IT1
November -January	**Hons**	**CMSACOR011T**	JSP Java Beans			30	IT1

		CMSACOR012T	Context free languages Turing Machines and Models of Computations			30	SD
		CMSADSE01T	Microprocessor programming Interfacing			30	IT2
		CMSADSE02T	Data mining techniques			30	DC
November-January	**Programme Course**	CMSGDSE01T	Abstract Class, Interface and Packages Exception Handling File Handling Applet Programming			30	DC IT1

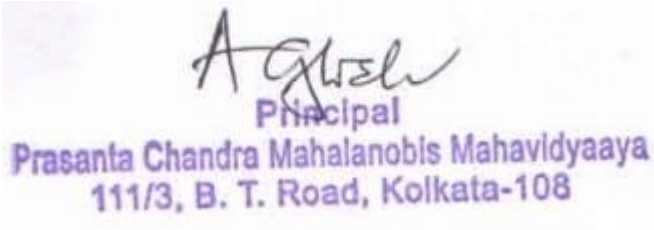
Recommended Text books:

Herbert Schildt, Java 7, The complete Reference, 8th Edition, 2009

Hoperoft, Aho, Ullman, Introduction to Automata Theory, Language & Computation- 3rd Edition, Pearson Education. 2006

Microprocessor Architecture, Programming, and Applications with the 8085, Ramesh Gaonkar, 5th Edition

G.K. Gupta, Introduction to Data Mining with Case Studies, PHI, 2006



Prasanta Chandra MahalanobisMahavidyalaya

Lesson Plan- 2022-23

Semester I Honors. &Programme Course

Name of the Department: ____ECONOMICS_____

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teache assigne
September-November	**Hons.**	**ECOACOR01T**	UNIT- 1 UNIT -3 UNIT- 4	ICT CLASSROOM, U TUBE LECTURE VIDEO, OFFLINE METHODS WITH CHALK AND DUSTER	OFFL[NE INTERNAL EXAM[NATIOS TWO EXAMINATIOS 10 MARKS EACH	10 HOURS 12 HOURS 15 HOURS	PB SS SBC
September-November		**ECOACOR02T**	UNIT- 1 UNIT -3 UNIT- 6	ICT CLASSROOM, U TUBE LECTURE VIDEO, OFFLINE METHODS WITH CHALK AND DUSTER	OFFL[NE INTERNAL EXAM[NATIOS TWO EXAMINATIOS 10 MARKS EACH	10 HOURS 15HOURS 15 HOURS	PB SS SBC
September-November	**Programme Course**		UNIT- 2 UNIT-1 UNIT-3	U TUBE LECTURE VIDEO, OFFLINE METHODS WITH CHALK AND DUSTER	OFFL[NE INTERNAL EXAM[NATIOS TWO EXAMINATIOS 10 MARKS EACH	15 HOURS 10 HOURS 15 HOURS	PB SS SBC
December-January	**Hons.**	**ECOACOR01T**	UNIT -2 UNIT-5 UNIT-3 UNIT-4	ICT CLASSROOM, U TUBE LECTURE VIDEO, OFFLINE METHODS WITH CHALK AND DUSTER	OFFL[NE INTERNAL EXAM[NATIOS TWO EXAMINATIOS 10 MARKS EACH	12 HOURS 10 HOURS 30 HOURS 15 HOURS	PB SS SBC

December-January	**Hons**	**ECOACOR02T**	UNIT-5 UNIT-6 UNIT-7	ICT CLASSROOM, U TUBE LECTURE VIDEO, OFFLINE METHODS WITH CHALK AND DUSTER	OFFL[NE INTERNAL EXAM[NATIOS TWO EXAMINATIOS 10 MARKS EACH	15 HOURS 15 HOURS 15 HOURS	PB SS SBC
December-january	**Programme Course**	ECOGCOR01T	UNIT-5 UNIT-6 UNIT-4	U TUBE LECTURE VIDEO, OFFLINE METHODS WITH CHALK AND DUSTER	OFFL[NE INTERNAL EXAM[NATIOS TWO EXAMINATIOS 10 MARKS EACH	10 HOURS 15 HOURS 10 HOURS	PB SS SBC

Recommended Text books:

ECOACORO1T: Suggested Readings:

K. Sydsaeter and P. Hammond, *Mathematics for Economic Analysis*, Pearson Educational Asia: Delhi, 2002.

Blume, Lawrence and Carl Simon (1994), *Mathematics for Economists*, Norton. Chiang, Alpha and Kevin Wainwright (2005), *Fundamental Methods of Mathematical Economics*, Fourth Edition, McGraw-Hill

Baldani, Bradfield and Turner, An Introduction to *Mathematical Economic*, CengageLeaening: 2007.

ECOACOR02T. Suggested Readings:

K. Sydsaeter and P. Hammond, *Mathematics for Economic Analysis*, Pearson Educational Asia: Delhi, 2002.

Blume, Lawrence and Carl Simon (1994), *Mathematics for Economists*, Norton. Chiang, Alpha and Kevin Wainwright (2005), *Fundamental Methods of Mathematical Economics*, Fourth Edition, McGraw-Hill

Baldani, Bradfield and Turner, An Introduction to *Mathematical Economic*, CengageLeaening:

Prasanta Chandra MahalanobisMahavidyalaya

Lesson Plan- 2021-22

Semester III Honors. &Programme Course

Name of the Department: _____

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Nam th Teac assig
August-September	**Hons**	**ECOACORO5T**	UNIT- 2 UNIT- 3 UNIT- 1	ICT CLASSROOM, U TUBE LECTURE VIDEO, OFFLINE METHODS WITH CHALK AND DUSTER	OFFL[NE INTERNAL EXAM[NATIOS TWO EXAMINATIOS 10 MARKS EACH	15HOURS 15 HOURS 15 HOURS	PB SS SBC
		ECOACORO6T	UNIT -1 UNIT -4 UNIT -2	ICT CLASSROOM, U TUBE LECTURE VIDEO, OFFLINE METHODS WITH CHALK AND DUSTER	OFFL[NE INTERNAL EXAM[NATIOS TWO EXAMINATIOS 10 MARKS EACH	15 HOURS 10 HOURS 10 HOURS	PB SS SBC
		ECOACORO7T	UNIT-3 UNIT-1 UNIT-4	ICT CLASSROOM, U TUBE LECTURE VIDEO, OFFLINE METHODS WITH CHALK AND DUSTER	OFFL[NE INTERNAL EXAM[NATIOS TWO EXAMINATIOS 10 MARKS EACH	10 HOURS 12 HOURS 15 HOURS	PB SS SBC
		ECOSSECO1M	UNIT -1,2 UNIT-3	OFFLINE METHODS WITH CHALK AND DUSTER LECTURES	OFFL[NE INTERNAL EXAM[NATIOS TWO EXAMINATIOS 10 MARKS EACH	5HOURS 5HOURS	PB SBC
August-September	**Programme Course**	ECOGCORO3T	UNIT-1,5 UNIT-4 UNIT-2	U TUBE LECTURE VIDEO, OFFLINE METHODS WITH CHALK AND DUSTER	OFFL[NE INTERNAL EXAM[NATIOS TWO EXAMINATIOS 10 MARKS EACH	25 HOURS 10 HOURS 15 HOURS	PB SS SBC

November-January	**Hons**	**ECOACORO5T**	UNIT- 2,4 UNIT- 3 UNIT- 1	ICT CLASSROOM, U TUBE LECTURE VIDEO, OFFLINE METHODS WITH CHALK AND DUSTER	OFFL[NE INTERNAL EXAM[NATIOS TWO EXAMINATIOS 10 MARKS EACH	10 HOURS 10 HOURS 10 HOURS	PB SS SBC
		ECOACORO6T	UNIT- 3 UNIT-4 UNIT-2	ICT CLASSROOM, U TUBE LECTURE VIDEO, OFFLINE METHODS WITH CHALK AND DUSTER	OFFL[NE INTERNAL EXAM[NATIOS TWO EXAMINATIOS 10 MARKS EACH	20 HOURS 10 HOURS 10HOURS	PB SS SBC
		ECOACORO7T	UNIT-6 UNIT-2 UNIT-5	ICT CLASSROOM, U TUBE LECTURE VIDEO, OFFLINE METHODS WITH CHALK AND DUSTER	OFFL[NE INTERNAL EXAM[NATIOS TWO EXAMINATIOS 10 MARKS EACH	11 HOURS 12 HOURS 15 HOURS	PB SS SBC
		ECOSSECO1M	UNIT -5 UNIT-4	OFFLINE METHODS WITH CHALK AND DUSTER LECTURES	OFFL[NE INTERNAL EXAM[NATIOS TWO EXAMINATIOS 10 MARKS EACH	5 HOURS 5 HOURS	PB SS SBC
November-january	**Programme Course**	ECOGCORO3T	UNIT- 6 UNIT -4 UNIT-3	U TUBE LECTURE VIDEO, OFFLINE METHODS WITH CHALK AND DUSTER	OFFL[NE INTERNAL EXAM[NATIOS TWO EXAMINATIOS 10 MARKS EACH	7 HOURS 10 HOURS 10 HOURS	PB SS SBC

Recommended Text books:

1. **ECOACORO5T:** Hal R. Varian, *Intermediate Microeconomics, a Modern Approach*,
2. Pindyck&Rubinfeld – Microeconomics
3. Koutsoyiannis – Modern Microeconomics
4. Henderson &Quandt – Microeconomic Theory- A Mathematical Approach (3rd Edition)

1. **ECOACORO6T:** N. Gregory Mankiw. *Macroeconomics,* Worth Publishers, 7th edition, 2010.
2. Dornbusch, Fischer and Startz, *Macroeconomics*, McGraw Hill, 11th edition, 2010.
3. Olivier Blanchard, *Macroeconomics*, Pearson Education, Inc., 5th edition, 2009.
4. Errol D'Souza, *Macroeconomics*, Pearson Education, 2009

5. Branson, Macroeconomics (2nd) edition 6.SoumyenSikdar - Principles of Macroeconomics (OUP)

6. R. T. Froyen. *Macroeconomics*-Theories and Policies, Prentice Hall; 9th Edition, 2008

***Plz mention Approximate month of Mid term / Internal examination**

Prasanta Chandra MahalanobisMahavidyalaya

Lesson Plan- 2021-22

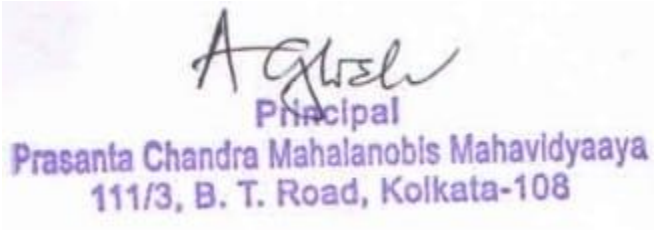
Semester V Honors. &Programme Course

Name of the Department: __ECONOMICS_____

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teache assigne
August-September	**Hons**	**ECOACORO13T**	NO STUDENT				
		ECOACORO14T					
		DSE					
		DSE					
August - September	**Programme Course**		UNIT-1 UNIT 2 UNIT-3	U TUBE LECTURE VIDEO, OFFLINE METHODS WITH CHALK AND DUSTER	OFFL[NE INTERNAL EXAM[NATIOS TWO EXAMINATIOS 10 MARKS EACH	15 HOURS 10 HOURS 15 HOURS	PB SS SBC
November -January	**Hons**	**ECOACORO13T**					
		ECOACORO14T					
		DSE					
		DSE					

November-January	**Programme Course**		UNIT-5 UNIT-2 UNIT-4	U TUBE LECTURE VIDEO, OFFLINE METHODS WITH CHALK AND DUSTER	OFFL[NE INTERNAL EXAM[NATIOS TWO EXAMINATIOS 10 MARKS EACH	15 HOURS 5 HOURS 15 HOURS	PB SS SBC

Recommended Text Books



Prasanta Chandra MahalanobisMahavidyalaya

Lesson Plan- 2022-23

Semester I Honors. &Programme Course

Name of the Department: Food and Nutrition

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teacher assigned
September - November	**Hons.**	**FNTACOR01T: HUMAN NUTRITION (THEORY)**	1**. Introduction to Food and Nutrition** Foods: Energy giving, body building and protective. Nutrients: macro and micro nutrients, Diet and balanced diet, Menu. Health and nutritional status. Malnutrition, functional food, prebiotics, probiotics, Phytochemicals, nutraceuticals. Fibre. Functions of foods: physiological, psychological, social. Food groups, food pyramid, Relation between food and nutrition, health and diseases.	Lecture method; Chalkboard, power point presentation and e-resources available on SWAYAM (Inflibnet Centre); E-PG Pathshala, Egyankosh, e-book	Class Assignment	4 hrs	Juthi Saha

			2. Foods, Nutrients and cooking of food Foods and their nutrient contents: Nutrients present in cereals and millets, pulses, nuts and oil seeds, fruits and vegetables, milk and milk products, flesh food, eggs, Condiment and spices, salt. Nonnutrient components of foods: phytate, tannins, oxalate, trypsin inhibitor,goitrogens and other toxic agents in food. Cooking: Beneficial and adverse effects of cooking. Different methods of cooking- dry, moist, frying, and micro wave cooking- advantage, disadvantage and the effect of various methods of cooking on foods, Solar cooking.			10 hrs	

		FNTACOR01P: HUMAN NUTRITION (PRACTICAL)	1. Process involved in cooking, microwave, steaming, grilling, deep fat frying. 2. General concepts of weights and measures, Eye estimation of raw cooked foods 3. Preparation of food from different food groups and their significance in relation to health	Offline hands on practical class	Assignments	10hrs 3hrs 12hrs	JuthiSaha
		FNTACOR02T : PHYSIOLOGY IN NUTRITION (THEORY)	**1.Unit of Life: Cell and Tissue Structure** Difference between prokaryotic and eukaryotic cells & plant and animal cells, Structure and basic functions of animal cell organelles, Structure and functions of plasma membrane, Role of membrane in transport and communications, Importance of cell junction- tight, gap and desmosome, Types of human tissue- location,	Lecture method; Chalkboard, PDF	Assignments	10hrs	Sahin Sultana

			structure and functions. Structure of muscles, bones, teeth and joints. **2.Blood and body fluids** Blood and its composition, Morphology, formation and functions of formed elements, Blood groups and its importance in transfusion, hazards of mismatch blood transfusion. Mechanism of blood coagulation, Haemoglobin-structure and function. Extracellular fluid, lymph.			10hrs	
		FNTACOR02P: PHYSIOLOGY IN NUTRITION(PRACTICAL)	1. Determination of pulse rate in Resting condition and after exercise (30 beats/10 beats method) 2. Determination of blood pressure by Sphygmomanometer (Auscultatory method).	Offline hands on practical class	Assignments	5hrs 4hrs	Sahin Sultana

			3. Interpretation of normal ECG curve with 6 chest leads.			10hrs	

September - November	**Programme Course**	**FNTGCOR01T :FOOD AND NUTRITION (THEORY)**	**1. Introduction to Food and Nutrition** Definition of Food, Nutrition, Nutrient, Nutritional status, Dietetics, Balance diet, Malnutrition, Energy (Unit of energy – Joule, Kilocalorie). **2. Food and Nutrients** Carbohydrate, Protein, Fat, Vitamins and Minerals (calcium, phosphorus, sodium, potassium, iron, iodine, fluorine)- sources, classification, functions, deficiencies of these nutrients. Functions of water and dietary fibre. **3. Five food groups** Basic 5 food groups: Types, composition, nutritional significance, role of	Lecture method; Chalkboard, PDF	Assignments	4 hrs 6 hrs 10 hrs	JuthiSaha

			cookery of cereals, pulses, milk & milk products, meat, fish, egg, vegetables & fruits, nuts, oil & sugar. **4. Food Chemistry** Chemistry of carbohydrate, proteins and fats. Vitamins and minerals			8 hrs	

		FNTGCOR01P : FOOD AND NUTRITION (PRACTICAL)	1. Elementary idea of weights & measures. 2. Preparation of cereals, pulses, vegetable, egg, milk, fish, nuts dishes. 3. Planning and preparation of diet of an adult male/female.	Offline hands on practicals	Assignments	4hrs 6hrs 6hrs	JuthiSaha
November - January	**Hons.**	**FNTACOR01T : HUMAN NUTRITION (THEORY)**	**3.Food energy and energy requirements** The energy value of foods: Physical and physiological calories. Bomb calorimeter Energy requirement of an individual: Basal metabolic rate (BMR) and physical activity. . BMR: Measurement (direct and indirect), factors affecting BMR, SDA of foods. physical activity ratio (PAR). Classification of activities based on occupations. Nutritional requirements and Recommended dietary allowances	Lecture method; Chalkboard, power point presentation and e-resources , e-books , text books, reference books, journals and notes	Class Assignment	15 hrs	**Dr. Priyadarshini Chakraborty**

			(RDA): factors affecting RDA, Application of RDA, Reference man and woman.. **4. Digestion of Foods** Components of gastrointestinal tract. Structure of different segments of GI tract. Digestive glands: structure of salivary glands, gastric glands and intestinal glands. Structure of pancreas and liver., Digestive secretions: salivary juice, gastric juice, pancreatic juices and intestinal juices. Bile and bile secretion. Digestion and absorptions of carbohydrate, protein, lipid, fat soluble vitamins, water soluble vitamins(thiamine, riboflavin, niacin, pyridoxine, folate, vit B12, vit C), minerals (Ca, Fe, I, F, Cu, Zn)	Lecture method; Chalkboard, power point presentation and e-resources , e-books , text books, reference books, journals and notes	Class Assignment	20 hrs	**Dr. Tanima Paul(Das)**

		FNTACOR01P: HUMAN NUTRITION (PRACTICAL)	4. Preparation of supplementary food from different age group and their nutritional significance 5. Planning and preparation of low cost diet for Grade I and Grade II malnourished child .	Offline hands on practical class	Assignments	12hrs 4hrs	**JuthiSaha**
		FNTACOR02T : PHYSIOLOGY IN NUTRITION (THEORY)	**3. Cardiovascular system** Structure of heart, artery, vein and capillary, Properties of cardiac muscle, Cardiac cycle, cardiac output, heart rate, heart sounds, ECG- normal and abnormal. Systemic and pulmonary circulation. Blood pressure, pulse pressure Radial pulse, coronary circulation	Lecture method; Chalkboard, PDF	Assignments	10hrs	**Sahin Sultana**

			4. Respiratory system Structure of lungs: alveoli and airways. Respiratory volumes and capacities,Mechanics of breathing. Oxygen and carbon dioxide transport, Neural and chemical control of breathing. **5. Renal Physiology, skin and body temperature** Anatomy of renal system: kidney, ureter, urethra and urinary bladder, Nephron: structure, Juxtaglomeralarapparatus GFR and GFI, Tubular functions, Urine formation: Counter current exchanger andmultiplier. Role of kidney in water and electrolyte balance. pHregulation by kidney. Structure of skin. Sweat and sweat glands. Sebum. Core body			10hrs 10hrs	

			temperature, heat loss and heat gain, Regulation of body temperature.				
		FNTACOR02P: PHYSIOLOGY IN NUTRITION(PRACTICAL)	4. Measurement of Peak Expiratory flow rate.(By spirometer) 5. Determination of Bleeding Time (BT) and Clotting Time (CT). 6. Detection of Blood group (Slide method).	Offline hands on practical class	Assignments	6hrs 6hrs 6hrs	**Sahin Sultana**

	Programme Course	**FNTGCOR01T :FOOD AND NUTRITION (THEORY)**	**5. Nutrients Metabolism** Elementary idea of metabolism, enzymes and hormones- name and their important functions. Metabolism in brief (Glycolysis, Glycogenesis, Gluconeogenesis, Cori's cycle, Kreb's cycle, Deamination, Transamination. Role of hormones in carbohydrate metabolism. **6. Basic Metabolism Rate (B.M.R)** B.M.R: Definition, factors affecting B.M.R. and Total Energy Requirement (Calculation of energy of individuals). **7. Deficiency diseases** Deficiency diseases (Nutritional anaemia, PEM, IDD, VAD)- Aetiology, Prevalence, Clinical findings, Prevention & Treatment.	Lecture method; Chalkboard, PDF	Assignments	12 hrs 6hrs 7hrs	**JuthiSaha**

		FNTGCOR01P : FOOD AND NUTRITION (PRACTICAL)	4. Planning of a day's diet for pregnant & lactating mother. 5. Preparations of supplementary foods for infants.	Offline hands on practical class	Assignments	6hrs 6hrs	**JuthiSaha**

Recommended Text books:

For FNTACOR01T:

1. B.Srilakshmi : Nutrition Science, New Age International Publishers

2. Guthrie, A.H.: Introductory Nutrition, 6th Ed. The C.V. Mosby Company

3. Robinson, C.H.Lawer, M.R.; CheiToweth, W.L. and Garwick, A.E.: Normal and Therapeutic Nutrition.17th Ed. Mac Milan Publishing Co.

4. Swaminathan, M : Essentials of Foods and Nutrition, Vols-1and II. Ganesh and Co. Madras.

For FNTGCOR01T:

1. B.Srilakshmi : Nutrition Science, New Age International Publishers

2. Guthrie, A.H.: Introductory Nutrition, 6th Ed. The C.V. Mosby Company

3. Robinson, C.H.Lawer, M.R.; CheiToweth, W.L. and Garwick, A.E.: Normal and Therapeutic Nutrition.17th Ed. Mac Milan Publishing Co.

4. Swaminathan, M : Essentials of Foods and Nutrition, Vols-1and II. Ganesh and Co. Madras.

5. Chatterjee CC (1988). Text Book of Physiology – Vol I & II.

6.Murray, R. K. Grannen, D. K.; Mayes, P. A. and Rodwell. V. W: Harper's Biochemistry. Lange Medical Book

Prasanta Chandra MahalanobisMahavidyalaya

Lesson Plan- 2022-23

Semester III Honors. &Programme Course

Name of the Department: ___Food and Nutrition_____

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teacher assigned
August-September	**Hons**	**FNTACOR05T: NUTRIENTS METABOLISM(THEORY**	**1.Carbohydrate Metabolism** Glycolysis & its regulation. Glycogen metabolism. Metabolism of pyruvate. Outline of pentose phosphate pathway. Anaplerotic reactions. Importance of gluconeogenesis. **2. Lipid Metabolism** Fatty acid synthase and de novo biosynthesis of fatty acid; regulation and mechanism of chain elongation. Metabolism of cholesterol, its control and pathophysiological importance. β-oxidation of fatty acids. **3.Amino acid Metabolism** Essential amino acids.Transamination. Deamination. Transmethylation.	Lecture method; Chalkboard, power point presentation and e-resources , e-books , text books, reference books, journals and notes	Class Assignment/ class tests	12hrs 10hrs 6hrs	**Dr. Tanima Paul (Das)**

			Decarboxylation. glucogenic and ketogenic amino acids. Outline of urea cycle. Inborn errors of Metabolism.				
		FNTACOR05P: NUTRIENTS METABOLISM(PRACTICAL)	1. Estimation of Vitamin C in citrus fruits. 2. Estimation of calcium in blood (using kit) and drinking water (Complexometry). 3. Estimation of sodium and potassium in blood (using kit).	Offline hands on practical class	Class assignment/class test/ submission of notebooks	10hrs 10hrs 6hrs	
		FNTACOR06T: NUTRITION THROUGH LIFE SPAN(THEORY)	**1.Basics of Meal Planning** Principles of meal planning, Food groups and Food exchange list, Factors affecting meal planning and food related behavior **2.Nutrition in Adults and Elderly** Physiological changes in elderly. .RDA and nutritional guidelines, nutritional concerns and healthy food choices for: Adult man and woman, Elderly. **3.Nutrition during Pregnancy**	Lecture method; Chalkboard, pdf, ppt, ict class	Assignments	3hrs 6hrs 10hrs	Dr. Guddi Tiwary Dr. Guddi Tiwary Dr. Guddi Tiwary

			Nutrition During Pregnancy: Factors (non-nutritional) affecting pregnancy outcome, importance of adequate weight gain during pregnancy, antenatal care and its schedule, Nutritional requirements during pregnancy and modification of existing diet and supplementation, Deficiency of nutrients, specially energy, iron folic acid, protein, calcium, iodine. Common problems of pregnancy and their managements, specially - nausea, vomiting, pica, food aversions, pregnancy induced hypertension, obesity, diabetes. Adolescent pregnancy.				
		FNTACOR06P: NUTRITION THROUGH LIFE SPAN(PRACTICAL)	Meal planning and preparation of adequate meal for different age groups with special reference to different physiological conditions: infants, pre-schooler, school children, adolescents	Offline hands on practical	Assignment	20hrs	Dr. Guddi Tiwary
		FNTACOR07T: ELEMENTARY DIETETICS AND MENU PLANNING (THEORY)	**1.Dietetics and Dietician** Definition and objective of dietetics, Dieticians- Definition, Classification and Responsibility **2.Food groups** Four food groups (Caribbean Food Guide; Canadian Food	Lecture method; Chalkboard, power point presentation and e-resources , e-book, journals and texts. Demonstratio	Assignment	4hrs 12hrs	Dr. Priyadarshini Chakraborty Dr. Priyadarshini Chakraborty

			Guide; USA Food Pyramid; British Food Guide; Recommended Nutrient Intake (RNI); Dietary Value Intake; Dietary Reference Value, Five food group system of ICMR. Structure and composition of cereals. Wheat- structure and composition, types (hard, soft/ strong, weak) ,Diagrammatic representation of longitudinal structure of wheat grain. Malting, gelatinization of starch, types of browning- Maillard & caramelization. Rice- structure and composition, parboiling of rice- advantages and disadvantages. Structure and composition of pulses, toxic constituents in pulses, Milk and Milk Products- composition, classification and processing, Eggs- com[position, Meat, fish & poultry- Types, composition, Sugar & Sugar products- Types and composition, Fats & Oils-Types & sources, Food adjuncts- spices, condiments, herbs, extracts;concentrates essences, food colours, origin, classification, convenience foods, Bevarages-Tea, Coffee, Chocolate , cocoa poeder- composition	n of models and videos			

			2.Dietary guidelines Nutritive values as a basis for classification of food, Recommended Daily Allowances (RDA), Dietary guidelines for Indians and food pyramids.	Lecture method; Text books and e-book		4hrs	Dr. Priyadarshini Chakraborty
		FNTACOR07P: ELEMENTARY DIETETICS AND MENU PLANNING (PRACTICAL)	1. Planning and preparation of normal diets. 2. Planning and preparation of different fluid diets.	Offline hands on practical class	Assignment	10hrs 10hrs	Dr. Priyadarshini Chakraborty
	Hons and Programme course	**FNTSSEC01M: INSTRUMENTATION**	**1.Microscopy** Brightfield and darkfield microscopy, Optical Microscopy, Phase contrast Microscopy, Inverted Microscopy **2.Chromatography** Principles and applications of paper chromatography (including Descending and 2-D), Thin layer chromatography, HPLC. Separation of mixtures by paper / thin layer chromatography **3.Spectrophotometry**	Powerpoint presentation, lecture method, Chalkboard, e-book referred	Assignment	4hrs 6hrs 6hrs	JuthiSaha Dr. Tanima Paul(Das) JuthiSaha

			Principle and use of study of absorption spectra of biomolecules, Analysis of biomolecules using UV and visible range, Colorimetry. Protein concentration of spectrophotometer/ colorimeter ,				
Das	**Programme Course**	**FNTGCOR03T: COMMUNITY, NUTRITION AND HEALTH ASSESSMENT (THEORY)**	**1.Concept on Community** Concept and types of Community. Concept of community nutrition, Community health, Factors affecting community health. **2.Nutritional Assessment** Nutritional Assessment: Meaning, need, objectives and importance. Method of assessment of nutritional status – Anthropometry, Clinical, Biochemical, Dietary surveys, Vital health statistics	Lecture method; Chalkboard, power point presentation and e-resources , e-book, journals and texts. Demonstration of models and videos	Assignment	4hrs 15hrs	
		FNTGCOR03P: COMMUNITY, NUTRITION AND HEALTH ASSESSMENT(PRACTICAL)	1. Anthropometric Measurement of infant - Height, weight, circumference of chest, mid - upper arm circumference. Calculation of BMI. 2. Clinical assessment and signs of nutrient deficiencies.	Offline practical class	Assignment/ Projects/field visits	10hrs 10hrs	
November-January	**Hons**	**FNTACOR05T: NUTRIENTS METABOLISM(THEORY)**	**4.Biological oxidation** Mitochondrial electron transport chain. High energy	Lecture method; Chalkboard, power point	Assignment/ class test	2hrs	Dr. Tanima Paul Das

			phosphate bond. Formation of ATP. **5.Nucleic acid metabolism** Chemical structure of purine and pyrimidine, Catabolism and anabolism of pyrimidines. Gout - occurrence, prognosis, progression and therapy. **6. Vitamins** Classification, charcateristics and chemical properties of fat and water soluble vitamins. Functions of fat and water soluble vitamins.Hypervitaminosis. Role of vitamins A, D, C,B1,B2B6, B12 and folic acid in metabolism. **7.Mineral Metabolism** Role of minerals in physiology. Trace elements. Sodium potassium balance. Role of calcium, iron and zinc in human body - metabolism, functions, deficiency and toxicity.	presentation and e-resources , e-book, journals and texts. Demonstration of models and videos Powerpoint presentation, Lecture method, e-book referred, study material Powerpoint presentation, Lecture method, e-book referred, study material		5hrs 8hrs 8hrs	JuthiSaha **Dr. Tanima Paul (Das)** **JuthiSaha**
		FNTACOR05P: NUTRIENTS METABOLISM(PRACTICAL)	4. Estimation of iron in vegetables by spectrophotometry. 5. Estimation of DNA (PDA method) and RNA (Orcinol	Offline hands on practical class	Class assignment/ class test/ submission of notebooks	10hrs 10hrs	**Dr. Tanima Paul (Das)**

			method) in tissues by spectrophotometry.				
		FNTACOR06T: NUTRITION THROUGH LIFE SPAN(THEORY)	**4.Nutrition during Lactation** Nutrition during Lactation: Nutritional requirements during lactation, dietary management, food supplements, galactogogues, preparation for lactation. Care and preparation of nipples during breast feeding. **5.Nutrition during Infancy** Nutrition during Infancy: Infant physiology relevant to feeding and care, Breast feeding, colostrum, its composition and importance in feeding, Initiations of breast feeding. Advantages of exclusive breast feeding. Basic principles of breast feeding. Introduction of supplementary foods, initiation and management of weaning, Baby-led weaning. Bottle feeding-circumstances under which bottle feeding is to be given. Care & sterilization of bottles. Preparation of formula. Mixed feeding, breast feeding and artificial feeding, Management of preterm and low birth weight babies.	Lecture method; Chalkboard,	Assignment	8hrs 12hrs	**Dr. Guddi Tiwary** **Dr. Guddi Tiwary**

			6. Nutrition for Children and Adolescents Growth and development in children, RDA, nutritional guidelines, nutritional concerns and healthy food choices for: Preschool children, School children, Adolescents			8hrs	
		FNTACOR06P: NUTRITION THROUGH LIFE SPAN(PRACTICAL)	Meal planning and preparation of adequate meal for different age groups with special reference to different physiological conditions: adults, pregnancy, lactation and elderly.			20hrs	**Dr. Guddi Tiwary**
		FNTACOR07T: ELEMENTARY DIETETICS AND MENU PLANNING (THEORY)	**4.Menu Planning** Menu Planning: Rationale for menu planning, Factors affecting food choice, Nutritional factors, other factors; Exchange list and food composition tables for menu planning, Steps in the development of exchange list, Factors to be considered when planning the regular balanced diet: adequacy, balance caloric control, moderation, variety and aesthetics. **5.Basics of diet therapy** Basic concepts of diet therapy: Therapeutic	Lecture method; Chalkboard, power point presentation and e-resources , e-book, journals and text books.	Assignment	8hrs 10hrs	**Dr. Priyadarshini Chakraborty** **Dr. Priyadarshin**

			adaptations of normal diet, principles and classification of the therapeutic diets, Nutrient modifications. **6. Diet for health care** Team approach to health care. Assessment of Patient's needs. **7. Routine Hospital Diet** Routine Hospital Diets: Regular, light, soft, fluid, parenteral and enteral feeding.			4hrs 5hrs	**i Chakraborty** **Dr. Priyadarshini Chakraborty**
		FNTACOR07P: ELEMENTARY DIETETICS AND MENU PLANNING (PRACTICAL)	3. Planning and preparation of different soft/semi solid diets. 4. Planning and preparation of different nutrient modified diet	Offline practical class	Assignment	15hrs 15hrs	**Dr. Priyadarshini Chakraborty**
	Hons and Programme course	**FNTSSEC01M: INSTRUMENTATION**	**4.Electrophoresis** Principle and applications of native polyacrylamide gel electrophoresis **5.Centrifugation** Preparative and analytical centrifugation, density gradient centrifugation and ultracentrifugation Separation of components of a given	Lecture method; Chalkboard, power point presentation and e-resources , e-book, journals and text books	Project work	3hrs 6hrs	**Dr. Priyadarshini Chakraborty** **Dr. Tanima Paul(Das)**

			mixture using a laboratory scale centrifuge **6. ECG and EEG** Principles of ECG and EEG, application of ECG and EEG **7. ELISA** Principle and applications of ELISA test			1hr 1hr	**Dr. Priyadarshini Chakraborty** **Dr. Tanima Paul(Das)**
	Programme Course	**FNTGCOR03T: COMMUNITY, NUTRITION AND HEALTH ASSESSMENT (THEORY)**	**3.Concept of surveillance system** Elementary idea of health agencies - FAO, WHO, ICMR, ICDS, ICAR, CSIR, ANP, VHAI, NIN and CFTRI. Role of voluntary health organisation in the improvement of Community health. **4.Nutrition Intervention Programmes** Current National Nutrition Intervention Programmes in India- SNP, ANP, ICDS, Midday meal, NIDDCP, NPPNB, NNAPP. **5.Nutrition Education** Nutrition Education: Definition, objectives of nutrition education. Methods	Lecture method; Chalkboard, power point presentation and e-resources , e-book, journals and text books	Assignment/ class tests	12hrs 12hrs 8hrs	**Dr. Guddi Tiwary**

			of imparting nutrition education.				
		FNTGCOR03P: COMMUNITY, NUTRITION AND HEALTH ASSESSMENT(PRACTICAL)	3. Diet survey by 24 hours recall method. 4. Preparation of homemade ORS. 5. Preparation of low cost and medium cost school tiffin.	Offline practical Class	Assignment	10hrs 2hrs 10hrs	**Dr. Guddi Tiwary**

Recommended Text books:

Recommended Text books:

For FNTACOR05T:

1. Lehninger, A.L.; Nelson, D. L. and Cox, M. M. Principles of Biochemistry. CBS Publishers and Distributors.
2. A.C Deb, (2001) Fundamental of Biochemistry, New Central Book Agency (p) Ltd; 9th edition.
3. Debajyoti Das, Biochemistry, 14th Ed, Academic publishers.

Prasanta Chandra MahalanobisMahavidyalaya

Lesson Plan- 2022-23

Semester V Honors. &Programme Course

Name of the Department: _Food and Nutrition _____

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teacher assigned
August-September	**Hons**	**FNTACOR11T: CLINICAL NUTRITION AND DIET FOR SPECIAL SITUATIONS IN LIFE**	**1. Nutritional management of physiological stress** Nutrition in wound healing, Surgery: Pre and post surgical dietary management, Burns, Classification, Complication, Dietary management, Trauma: Dietary management, Sepsis: Dietary management**.** **2.Dietary Modification in febrile Condition** Acute, chronic and recurrent fevers, typhoid, rheumatic fever, tuberculosis, malaria, H1N1, dengue fever and chikun guinea.	Lecture method; Chalkboard, power point presentation and e-resources available on SWAYAM (Inflibnet Centre); E-PG Pathshala, Egyankosh;	Assignment/ class tests	4hrs 4hrs	JuthiSaha

			3.Nutritional management of GI diseases Diseases of Esophagus and stomach: Esophagitis(GERD), Dyspepsia, Peptic ulcer, Gastritis, Gastrectomy, Dumping syndrome . Intestinal diseases: Flatulence, Diarrhea, Constipation, Hemorrhoids, Diverticular disease,Duodenal ulcer, Inflammatory Diseases of Bowl: Crohn's disease and ulcerative colitis, IrritablebowlSyndrome, Colostomy,Ileostomy **4.Malabsorption syndrome** Celiac disease (Tropical sprue),Steatorrhoea, Intestinal Brush border diseases,Protein losing enteropathy			12hrs 4hrs	
		FNTACOR11P: CLINICAL NUTRITION ANDDIET FOR SPECIAL SITUATIONS	Planning and preparation of Diets for the following diseases: i) Peptic ulcer ii) Viral hepatitis	Offline hands on practical	Assignment	15hrs	JuthiSaha

		IN LIFE(PRACTICAL)					
		FNTACOR12T: FOOD MICROBIOLOGY AND IMMUNOLOGY (THEORY)	**1.General Introduction to microbes (Bacteria, Fungus, and Algae)** Classification, Nomenclature and Morphology (external and internal features). Principles of staining. **2.Growth kinetics of bacteria** Growth kinetics, Factors affecting growth, different nutritional mediafor growth, methods of media sterilization**.** **3. Microbiology of food** Microbes commonly present in food and the diseases caused by them, microflora present in milk, cereals, vegetables, flesh food. Seafood and Shell fish poisoning. Mycotoxins, Foodborne Diseases, Prions. **4.Microbial Food Spoilage**	ICT,Lecture method; Chalkboard, power point presentation and e-resources available on SWAYAM (Inflibnet Centre); E-PG Pathshala, Egyankosh; video demonstrations	Assignment/ class tests	4hrs 4hrs 4hrs 8hrs	Dr. Tanima Paul(Das)

			Sources of Microorganisms in foods, Some important food spoilage microorganisms, Spoilage of specific food groups - Milk and dairy products, Meat, poultry and seafoods, Cereal and cereal products, Fruits and vegetables and Canned products.				
		FNTACOR12P: FOOD MICROBIOLOGY AND IMMUNOLOGY (PRACTICAL)	1. Introduction to microbiology: Use of equipments Understanding and use of compound microscope Use of Autoclave Use of Incubator and Inoculation chamber 2. Preparation of different types of media (complex, differential and selective) 3. Preparation of slant, stab and plates using nutrient agar 4. Morphological study of bacteria and fungi using permanent slides .	Hands on offline practical	Assignment/ class tests/practical demontration/notebooks	10hrs 8hrs 8hrs	Dr. Tanima Paul(Das)
		FNTADSE02T: ENTREPRENEURSHIP IN FOOD INDUSTRY (THEORY)	1.**Entrepreneurial Development** Case studies of successful entrepreneurs, Exercises on ways of sensing opportunities – sources of idea, creating	ICT, chalkboard, pdf ppt	Assignment	15hrs	Dr. Guddi Tiwary

			efforts, SWOT 49 Analysis, Entrepreneurial skill assessment test, Techniques of development of entrepreneurial skills, positive self image and locus of control. **2.Food Business management** Case studies of Food Processing Business and its aspects, Business opportunity Identification and Assessment techniques, Business Idea Generation and evaluation exercise, Market Assessment study Analysis of competitive situation			15hrs	
		FNTADSE02P: ENTREPRENEURSHIP IN FOOD INDUSTRY(PRACTICAL)	1. Preparation of business plan. 2. Preparation of project report.	Field visit, assessment	Assignment	10hrs 10hrs	Dr. Guddi Tiwary
		FNTADSE03T: FOOD BORNE DISEASES AND FOOD TOXICOLOGY(THEORY)	**1.Food borne diseases** Definition related to food borne diseases, types of diseases with example (Pandemic, Endemic and Epidemic). Infection, contamination, decontamination, disinfection, transmission (direct and indirect).	Lecture method; Chalkboard, power point presentation and e-resources , e-books , text books, reference books,	Class assignments	12hrs	Dr. Priyadarshini Chakraborty

			Brief idea about different vector borne diseases, mode of transmission prevention and control of following diseases: Salmonella, Shigella, Typhoid, Botulism, Cholera, E. coli food poisoning, Staphylococcal food poisoning, Clostridium infection, Bacillary infection. **2.Lactose intolerance** Lactose intolerance-its mechanism and enzyme deficiency. **3.Mechanism of food borne diseases** Molecular mechanism of food borne diseases. **4.Food safety** Definition: Food safety, types of hazards (Biological, chemicaland physical hazards), impact on health, control measures, factors affecting food safety.	journals and notes Lecture method; Chalkboard, power point presentation and e-resources , e-books , text books, reference books, journals and notes		2hrs 4hrs 8hrs	Dr. Priyadarshini Chakraborty Dr. Priyadarshini Chakraborty
		FNTADSE03P: FOOD BORNE DISEASES AND	1. Assessment of surface sanitation by swab and rinse method.	Offline hands on practical	Assignment/ project report/	5hrs	Dr. Priyadarshini

		FOOD TOXICOLOGY(PRACTICAL)	2. Assessment of personal hygiene. 3. Designing of various food processing systems and food service areas. 4. Design and layout of cold storage and ware house.	and visit to Dairy Industry	Notebooks	5hrs 5hrs 5hrs	Chakrabo rty
	Programme Course	**FNTGDSE01T-PUBLIC HEALTH NUTRITION (THEORY)**	1.**Introduction on Health** Health and its importance: Definition of health (WHO), Dimension of health, Positive health. Determinants of health. Concept of disease and its causations. 2.**Public health** Definition of public health, relation between health and nutrition. **3.Maternal and Child health** Maternal and Child mortality: Definitions and causes, Role of health workers in the improvement of maternal and child health. **4.Immunization**	Chalkboard, pdf ptt	Assignment	6hrs 4hrs 8hrs	Dr. Guddi Tiwary

			Immunization: Importance and Immunization schedule for children and adults.Hazards of immunization			10hrs	
		FNTGDSE01P-PUBLIC HEALTH NUTRITION (PRACTICAL)	1. Growth charts - plotting of growth charts for growth monitoring. 2. Formulation and demonstration of nutrition education tools such as charts, posters, models related to health and nutrition education.	Field visit, chart/ poster preparation, handson practical work	Assignment	15hrs 15hrs	Dr. Guddi Tiwary
November-January	**Hons**	**FNTACOR11T: CLINICAL NUTRITION AND DIET FOR SPECIAL SITUATIONS IN LIFE (THEORY)**	**5.Diseases of Gall bladder and pancreas** Pathophysiologic changes, etiology and dietary management - (Biliary dyskinesia , Cholelithiasis, Cholecystitis, Cholecystectomy ,Pancreatitis **)** **6. Liver diseases** Pathophysiology, Progression of liver disease, Role of specific nutrients and alcohol in liver diseases. Nutritional care in liver disease in the context of results of specific liver function	Lecture method; Chalkboard, power point presentation and e-resources available on SWAYAM (Inflibnet Centre); E-PG Pathshala, Egyankosh;	Assigment	6hrs 5hrs	JuthiSaha

			tests, Viral hepatitis , cirrhosis of Liver, Hepatic encephalopathy, Wilsons disease. **7. Nutrition Management of Renal Disease** Etiology and pathogenesis, Clinical and metabolic manifestations Diagnostic tests, Acute and chronic nephritis, Nephrotic syndrome, Renal Failure: Acute and chronic, Nnephroletheasis,ESRD **8. Nutritional management in Allergy** Definition, symptoms mechanism of food allergy, Biochemical and immune testing (short), Elimination diets, Food selection, Food allergy in infancy: Milk sensitive enteropathy, intolerance to breast milk, Prevention of food allergy. **9.Neurological diseases** Alzheimer's, Parkinson's disease and Epilepsy, Anorexia nervosa and bulimia.			6hrs 4hrs 2hrs	

		FNTACOR11P: CLINICAL NUTRITION ANDDIET FOR SPECIAL SITUATIONS IN LIFE(PRACTICAL)	Planning and preparation of Diets for the following diseases: iii) Fever iv) Acute and chronic renal failure	Offline hands on practical	Assignment	15hrs	JuthiSaha
		FNTACOR12T: FOOD MICROBIOLOGY AND IMMUNOLOGY (THEORY)	**5.Food Fermentations** Fermentation –definition and types, Microorganisms used in food fermentations, Dairy Fermentationsstarter cultures and their types , concept of probiotics, Fermentated Foods-types, methods of manufacture for vinegar, sauerkraut, tempeh, miso , soya sauce, beer, wine and traditional Indian foods. **6. Immune system** Cells & Organs of the immune system, Innate and Acquired, Primary and secondary immune response, Active and Passive, Antigen, Antibody, Haptens, Adjuvants, Immunoglobulin-classification, polyclonal and monoclonal, basic structure and function,	Lecture method; Chalkboard, power point presentation and e-resources , e-books , text books, reference books, journals and notes	Assignment/ class tests	10hrs 20hrs	**Dr. Tanima Paul(Das)**

			antigenand antibody reactions- RIA, ELISA, Immunoblot. Antibody production -processing and presentation of antigen, MHC, Humoral immune response. Cell mediated immunity, Formation, maturation and activation of B and T cells, Immune effectors system- cytokines complement system, K cells and NK cells, Cell mediated effectors response, Interferons, Immunopathology - basic principles of auto immune disease , Vaccine, toxins, toxoids, antiserum. Basic principles ofimmunological detection of pregnancy and immunohistochemistry.				
		FNTACOR12P: FOOD MICROBIOLOGY AND IMMUNOLOGY (PRACTICAL)	4.Gram staining 5.Bacteriological Analysis of Water by MPN method 6.Ouchterlony double diffusion test in agar-gel. .	Hands on offline practical	Assignment/ class tests/practical demontration/notebooks	8hrs 10hrs 8hrs	Dr. Tanima Paul(Das)
		FNTADSE02T: ENTREPRENEURSHIP IN	**2.Food Business management**	PDF, PPT, ICT	Assignment	10hrs	Dr. Guddi Tiwary

		FOOD INDUSTRY (THEORY)	SWOT Analysis for business and for competitors, Preparation of business plan, Preparation of project report, Methods of Arrangement of inputs – finance and material, Tax planning. **3.Personality development and communication skills** Communication skills and Personality Development, Intra personal communication and Body Language, Inter personal Communication and Relationships , Leadership Skills , Team Building and public speaking, Corporate Grooming, Dressing Etiquette, Preparing for Interview, Emotional Quotient.			20hrs	
		FNTADSE02P: ENTREPRENEURSHIP IN FOOD INDUSTRY(PRACTICAL)	3. Tax Planning under the head Salary. 4. Visit to a food industry.	Field Visit, assessment	Assignment	10hrs 10hrs	Dr. Guddi Tiwary
		FNTADSE03T: FOOD BORNE DISEASES AND FOOD	**5.Hygiene and sanitation**	Lecture method; Chalkboard, power point	Class assignments	8hrs	Dr. Priyadarshini

		TOXICOLOGY(THEORY)	Hygiene and sanitation: Contamination, control methods using physical and chemical agents, use of preservatives, pest control management, personal hygiene. **6. Food safety management** Food safety management: Concept of safety management, prerequisites- GHPs, GMP, HACCP etc**.** **7. Toxic agents in food** Toxic agents in food: Botulism, lathyrism, Ciguatoxins, Tetrodotoxins, Saxotoxins, conotoxins, Antivitamins, Haemagglutins, Cyanogenicglycosides, Strychnine, Solanine, atropine, Muscarine	presentation and e-resources , e-books , text books, reference books, journals and notes		6hrs 8hrs	Chakraborty Dr. Priyadarshini Chakraborty

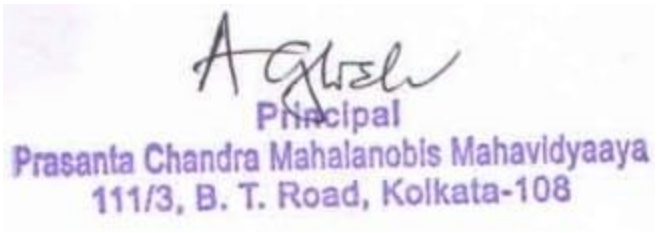
		FNTADSE03P: FOOD BORNE DISEASES AND FOOD TOXICOLOGY(PRACTICAL)	5. Assessment of physico chemical properties of waste water. 6. Isolation and enumeration of bacteria from rotten food bread and vegetables. 7. Testing of sanitizers and disinfectants. 8. Study of phenol coefficient of sanitizers. 9. Visit to Food industry and preparation of report.	Offline hands on practical	Assignments	5hrs 5hrs 5hrs 5hrs 5hrs	Dr. Priyadarshini Chakraborty
	Programme Course	**FNTGDSE01T-PUBLIC HEALTH NUTRITION (THEORY)**	**4.Contamination of food** General idea about the contamination of food (Chemical and microbial)-Sources and transmission,Elementary ideas about food toxins, aflatoxin& food toxicology with reference to Lead, Cadmium & Zinc. **6.Contamination of water** Contamination of water and prevention of contamination, different methods of water purification, water –	study material, Chalkboard, Lecture method	Assignment/ class tests	8hrs 12hrs	Dr. Guddi Tiwary

			borne diseases, elementary idea of microbiology of water-borne pathogens, diarrhoea, dysentery, typhoid, hepatitis, preventive measures and dietary management of such diseases. **7. Community waste management** Community waste management: types and methods of disposal of wastes, sewage disposal and treatment.			5hrs	
		FNTGDSE01P-PUBLIC HEALTH NUTRITION (PRACTICAL)	3. Field visit (health centre, immunization centre, ICDS, MCH centre, NGOs etc.)	Field visit	Assignment	15hrs	Dr. Guddi Tiwary

Recommended Text books:

For FNTACOR11T:

1. Anderson, L., Dibble, M.V., tukki, P.R., Mitchall, H.S., and Rynbergin H.J.: Nutrition in Health and Disease, 17th edition, J. B. Lipincott& Co. Philadelphia.
2. Antia F. P.: Clinical Dietetics and Nutrition, Second Edition, Oxford University Press, Delhi.
3. Mahan, L. K., Arlin, M. T.: Krause's Food, Nutrition and Diet Therapy. 8th edition, W. B. Saunders Company, London.
4. Robinson. C.H. Lawler, M.R. Chenoweth, W. L., and Garwick, A. E. (1986): Normal and Therapeutic Nutrition. 17th edition, MacMilian Publishing Co.
5. Williams. S. R.: Nutrition & Diet Therapy, 6th edition, Times Mirror/Mosby College Publishings, St. Louis.
6. Raheena, Begum: A textbook of food, nutrition and dietetics Sterling Publishers, New Delhi. 7. Joshi, S. A.: Nutrition and Dietetics, Tata McGraw Hill, Publications, New Delhi



Prasanta Chandra Mahalanobis Mahavidyalaya

Lesson Plan (2022-23)

GEOGRAPHY HONOURS/ PROGRAMME COURSE

SEMESTER-I HONS

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teacher assigned
October-November	**Hons.**	**GEOACOR01T**	1. Earth's tectonic and structural evolution with reference to geological time scale 2. Earth's interior with special reference to seismology. Isostasy: Models of Airy and Pratt 3. Development of river network and landforms on uniclinal and folded structures 4. Coastal processes and landforms 5. Glacial and glacio-fluvial processes and landforms 6. Models on landscape evolution: Views of Davis, Penck and King	PPT and ICT mode of Teaching	Continuous evaluation & class Test	20 Hours	SR, SC, AR &RB
		GEOACOR01P	7. Identification of Rocks and Minerals 8. Geological map-Uniclinal Structure	Black board teaching & hands On Practice	Continuous Evaluation & Class test	16 hours	SC & RB
		GEOACOR02T	9. Map Classification, Types and Components 10. Scale -Plain & Comparative 11. Map Projection Classification- Continued 12. Reference scheme of old and open series of	PPT Presentation and ICT mode of teaching	Class tests- & Internal Evaluation	16 hours	AR & RB

			Topographical Map. Information on the margi of maps 13. Polar and Rectangular Coordinate System				
		GEOACOR02P	14. Construction of Scale-Plain, Comparative and Diagonal 15. Construction of Projection -Polar Zenithal Stereographic & Simple Conic with Two standard Parallel 16. Delineation of drainage basin from Survey of India topographical map. Construction and interpretation of relief profiles relative relief map, slope map (Wentworth), and stream ordering (Strahler) on a drainage basin.	Black Board Teaching & Hands- on Practice	Continuous Evaluation & Class test	16 Hours	AR, SR
December-January	**Hons.**	**GEOACOR01T**	1. Plate Tectonics as a Processes and landforms at plate margins and hotspots 2. Folds and Faults—origin and types 3. Development of landforms on granites, basalts and limestones. 17. Aeolian and fluvio-aeolian processes and landforms	PPT and Black Board Teaching	Internal Examination and / Class Test	30 hours	SC, AR AND SR
		GEOACOR01P	4. Identification of Rocks and Minerals - Continued 18. Geological map _Folded	Hands on Practice & Field Visit in Geological survey of India, Kolkata	Continous Evaluation & Class test	30 hours	RB & SC
		GEOACOR02T	5. Scale-Diagonal & Vernier	PPT Presentation	Class Test	25 Hours	AR, RB

			6. Map Projection _ Classification & properties 7. Concept of Generating Globe and UTM projection 19. Angular and Linear System of Measurement				
		GEOACOR02P	8. Cylindrical equalArea Projection, Mercator's Projection and polar Zenithal stereographic Projection 20. Correlation between physical and cultural features from Survey of India topographical Maps using Transect Chart	Hand-on Practice	Continuous Evaluation & Class test	32 hours	AR, SC & SR
		Total				185 Hours	

Recommended Text books:

- Monkhouse, F.J., Wilkinson, H.R. 1971. Maps and Diagrams: Their Compilation and Construction, 3rd ed (2017 reprint), Alphaneumera-Kolkata.
- Robinson, A.H., Morrison, J.L., Phillip, C.M., Kimerling, A.J., Guptill, S.C. 1995. Elements of Cartography, 6th ed, Wiley.

Semester-I General & Programme Course

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teacher assigned
October-November	**General**	GEOGCOR01T - Physical Geography	6. Physical Geography – Definition and Scope, Components of Earth System. 7. Internal Structure of Earth based on Seismic Evidence, Plate Tectonics and its associated Features. 10. Formation of erosional and depositional landforms by coastal and aeolian processes 15.Hydrological Cycle, Ocean Bottom Relief Features, ocean currents.	Black board teaching, PPT Presentation and ICT mode of teaching	Class Test	30 Hours	SR, SC, IT1
December – January	**General**	GEOGCOR01T - Physical Geography	Influence of rocks on topography**:** Limestone and Granite 9. Evolution of landforms under fluvial process, Normal Cycle of Erosion of Davis Insolation and Heat Balance. 12. Horizontal and Vertical distribution of temperature and pressure 13. Planetary wind system, characteristics of Monsoon and Tropical Cyclone 14. Climatic Classification: Köppen	Black board teaching, PPT Presentation and ICT mode of teaching	Class Test	35 Hours	SR, SC, IT1
		Total				65 Hours	

Recommended books:

- Kale, V.S., Gupta, A. 2001.Introduction to Geomorphology, Orient Longman.
- Lal, D.S. 2012. Climatology. Sharda PustakBhawan.
- Raghunath, H.M. 2006. Hydrology: Principles, Analysis, Design, 3rd ed, New Age International Publishers

SEMESTER-III HONS

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teacher assigned
August - October	**Hons.**	**GEOACOR05T**	1. Nature, composition and layering of the atmosphere 4. Greenhouse effect and importance of ozone layer 8. Weather: stability and instability; barotropic and baroclinic conditions 12. Climatic classification after Köppen, Thornthwaite (1955) and Oliver	PPT and ICT mode of Teaching	Class Test	22 Hours	AR, IT1 & IT2
		GEOACOR05P	**1.** Interpretation of daily weather map of India (any two): Pre-Monsoon, Monsoon and Post Monsoon **2.** Construction and interpretation of hythergraph and climograph (G. Taylor) **3.** Construction and interpretation of wind rose	Black board teaching & hands On Practice	Continuous Evaluation & Class test	20 hours	AR & SC
		GEOACOR06T	1. Tectonic and stratigraphic provinces, physiographic divisions 2. Climate, soil and vegetation: Characteristics and classification 3. Population: Distribution, growth, structure and policy 4. Tribes of India with special reference to Gaddi, Toda, Santal and Jarwa	Black board teaching, PPT Presentation and ICT mode of teaching	Class Tests	28 hours	SC
		GEOACOR07T	1. Importance and significance of statistics in Geography 2. Discrete and continuous data, population and samples, scales of	Black board teaching, PPT Presentation and ICT mode of teaching	Class tests- & Internal Evaluation	32 hours	RB & SR

			measurement (nominal, ordinal, interval and ratio), 3. Sources of geographical data for statistical analysis 4. Collection of data and formation of statistical tables 6. Theoretical distribution: frequency, cumulative frequency, normal and probability 7. Central tendency: Mean, median, mode, partition values				
		GEOACOR07P	2. Based on the above, a frequency table, measures of central tendency and dispersion would be computed and interpreted using histogram and frequency curve	Black Board Teaching & Hands- on Practice	Continuous Evaluation & Class test	16 Hours	SR
November-January	**Hons.**	**GEOACOR05T**	2. Insolation: controlling factors. Heat budget of the atmosphere 3. Temperature: horizontal and vertical distribution. Inversion of temperature: types, causes and consequences 5. Condensation: Process and forms. Mechanism of precipitation: Bergeron-Findeisen theory, collision and coalescence. Forms of precipitation 6. Air mass: Typology, origin, characteristics and modification 7. Fronts: warm and cold; frontogenesis and frontolysis 9. Circulation in the atmosphere: Planetary winds, jet stream, index	PPT and ICT mode of Teaching	Class Test	28 hours	AR, RB & IT1

			cycle 10. Tropical and mid-latitude cyclones 11. Monsoon circulation and mechanism with reference to India				
		GEOACOR05P	**1.** Interpretation of daily weather map of India (any two): Pre-Monsoon, Monsoon and Post Monsoon **2.** Construction and interpretation of hythergraph and climograph (G. Taylor) **3.** Construction and interpretation of wind rose	Black board teaching & hands On Practice	Continuous Evaluation & Class test	25 hours	AR & SC
		GEOACOR06T	5. Agricultural regions. Green revolution and its consequences 6. Mineral and power resources distribution and utilisation of iron ore, coal, petroleum and natural gas 7. Industrial development: Automobile and information technology 8.Regionalisation of India: Physiographic (R.L. Singh) and economic (P. Sengupta) 9. Physical perspectives: Physiographic divisions, forest and water resources 10. Resources: Agriculture, mining, and industry 11. Population: Growth, distribution and human development 12. Regional Issues: Darjeeling Hills and Sundarban	Black board teaching, PPT Presentation and ICT mode of teaching	Class Tests	40 Hours	RB & SC

		GEOACOR07T	5. Sampling: Need, types, and significance and methods of random sampling 10. Regression: Linear and non-linear 11. Time series analysis: Moving average	Black board teaching, PPT Presentation and ICT mode of teaching	Class Tests	30 hours	RB & SR
		GEOACOR07P	3. From the data matrix a sample set (20%) would be drawn using, random, systematic and stratified methods of sampling and locate the samples on a map with a short note on methods used 4. Based on the sample set and using two relevant attributes, a scatter diagram and linear regression line would be plotted and residual from regression would be mapped with a short	Black Board Teaching & Hands- on Practice	Continuous Evaluation & Class test	24 hours	RB & SR
		Total				265 Hours	

Recommended Text books:

- Critchfield, H. J. 1983. General Climatology. Prentice Hall India Ltd (2010 Reprint).
- Lal, D.S. 2012. Climatology. Sharda PustakBhawan.
- Khullar, D.R. 2011. India: A Comprehensive Geography, Kalyani Publishers
- Tiwari, R.C. 2007.Geography of India, PrayagPustakBhawan.
- Monkhouse, F.J., Wilkinson, H.R. 1971. Maps and Diagrams: Their Compilation and Construction, 3rd ed (2017 reprint), Alphaneumera-Kolkata.
- Sarkar, A. 2015. Practical Geography: A Systematic Approach, 3rd ed, Orient Blackswan.
- Singh, R.L., Singh, R.P.B. 2008.Elements of Practical Geography, Kalyani Publishers.
- Pal S. K., 1998. Sstatistics for Geoscientists: Techniques and Applications, Concept Pub Co.

Semester-III General & Programme Course

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teacher assigned
August-November	**General**	GEOGCOR 03T – General Cartography	1. Concept of map scale: Types and Application. Reading distances on a map 3. Survey of India topographical maps: Information on the margin of maps 4. Representation of Data – Symbols, Dots, Choropleth, Isopleth and Flow Diagrams, Interpretation of Thematic Maps	Black board teaching	Class Test	15	RB, SC, IT1
		GEOGCOR 03P – General Cartography	7.Construction and interpretation of relief profiles from Survey of India topographical map — superimposed, projected and composite, relative relief map, slope map (Wentworth), and Correlation between physical and cultural features from Survey of India topographical maps using transect chart	Black board teaching & hands On Practice	Continuous Evaluation & Class Test	15	RB
December – January	**General**	GEOGCOR 03T – General Cartography	2. Map Projections: Criteria for choice of projections. Attributes and properties of: Zenithal Gnomonic Polar Case, Zenithal Stereographic Polar Case, Cylindrical Equal Area, Mercator's Projection, Bonne's Projection. Concept of UTM projection 3. Survey of India	Black board teaching	Class Test	15	RB, SC, IT1

			topographical maps: Reference scheme of old and open series.				
	General	GEOGCOR 03P – General Cartography	5. Graphical construction of scales: Plain and comparative 6. Construction of projections: Zenithal Gnomonic Polar Case, Zenithal Stereographic Polar Case, Cylindrical Equal Area, Mercator's Projection, Bonne's Projection 7. Construction and interpretation of relief profiles from Survey of India topographical map —and Correlation between physical and cultural features from Survey of India topographical maps using transect chart	Black board teaching & hands On Practice	Continuous Evaluation & Class Test	20	RB, SC, IT1
		Total				65 Hours	

Recommended books:

- Monkhouse, F.J., Wilkinson, H.R. 1971. Maps and Diagrams: Their Compilation and Construction, 3rd ed (2017 reprint), Alphaneumera-Kolkata.
- Sarkar, A. 2015. Practical Geography: A Systematic Approach, 3rd ed, Orient Blackswan.
- Singh R. L. and Singh R. P. B., 1999: *Elements of Practical Geography*, Kalyani Publishers

SEMESTER-V HONS

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teacher assigned
August-November	**Hons.**	**GEOACOR11T**	1. Research in Geography: Meaning, types and significance 4. Research materials and methods 6. Fieldwork in Geographical studies: Role and significance. Selection of study area and objectives. Pre-field academic preparations. Ethics of fieldwork 7. Field techniques and tool Observation (participant, nonparticipant), questionnair (open, closed, structured, non structured). Interview	Black board teaching, PPT and ICT mode of Teaching	Class Test	26 Hours	SR, AR & RB
		GEOACOR11P	Field report	Black board teaching & hands On Practice	Continuous Evaluation	30 hours	AR & RB
		GEOACOR12T	7. Principles of GNSS positioning and waypoint collection 8. Transferring waypoints t GIS. Area and length calculations from GNSS data	Black board teaching, PPT and ICT mode of Teaching	Class Tests	18 hours	SR
		GEOACOR12P	1. Georeferencing of maps and images using Open Source software 2. Preparation of FCC and identification of features usin standard FCC and other band combinations	Hands- on Practice	Continuous Evaluation & Class Tests	20 Hours	SR
		GEOADSE01T	1. Factors of soil formation. Man as an active agent of soil	Black board teaching,	Class Test	15 Hours	SC, IT1 & IT2

			transformation. 2. Soil profile. Origin and profile characteristics of Lateritic, Podzol and Chernozem soils 7. Concepts of biosphere, ecosystem, biome, ecotone, community, niche, succession and ecology 8. Concepts of trophic structure, food chain and food web. Energy flow in ecosystems 10. Bio-geochemical cycles with special reference to carbon dioxide and nitrogen	PPT and ICT mode of Teaching			
		GEOADSE02T	1. Scope and content of Settlement Geography; rural, urban and peri-urban areas 2. Rural Settlement: Definition, nature and characteristics 3. Morphology of rural settlements: site and situation, layout-internal and external 6.Urban Settlements :Census definition (Temporal) and categories in India 7.Urban morphology: Classical models: Burgess, Homer Hoyt, Harris and Ullman Metropolitan concept	Black board teaching, PPT and ICT mode of Teaching	Class Test	18 Hours	
December-January	**Hons.**	**GEOACOR11T**	2. Literature review and formulation of research design 3. Defining research problem, objectives and hypothesis 8. Field techniques and tools: Landscape survey	Black board teaching, PPT and ICT mode of Teaching	Class Test	20 hours	RB, AR & SR

			using transects and quadrants, constructing a sketch, photo and video recording. 9. Positioning and collection of samples. Preparation of inventory from field data. 10. Post-field tabulation, processing and analysis of quantitative and qualitative data				
		GEOACOR11P	Field report	Hands- on Practice	Continuous Evaluation	28 hours	
		GEOACOR12T	1. Principles of Remote Sensing (RS): Types of RS satellites and sensors 2. Sensor resolutions and their applications with reference to IRS and Landsat missions 3. Preparation of False Colour Composites from IRS LISS-3 and Landsat TM and OLI data. 4. Principles of image correction and interpretation. Preparation of inventories of landuse land cover (LULC) features from satellite images 5. Concept of GIS and its applicability ; GIS data structures: types: spatial and non-spatial, raster and vector 6. Principles of preparing attribute tables and data manipulation and overlay analysis	Black board teaching, PPT and ICT mode of Teaching	Class Test	25 Hours	RB & SC
		GEOACOR12P	3. Digitisation of features. Data attachment, overlay and preparation of annotated thematic maps (choropleth, pie chart and bar graphs)	Hand-on Practice	Continuous Evaluation & Class Test	22 hours	SR

		GEOADS E01T	3. Definition and significance of soil properties: Texture, structure and moisture, 4. Definition and significance of soil properties: pH, organic matter and NPK 5. Soil erosion and degradation: Factors, processes and mitigation measures 6. Principles of soil classification: Genetic and USDA. Concept of land capability and its classification 9. Geographical extent and characteristic features of: Tropical rain forest, Taiga and Grassland biomes 11. Spatial distribution of world fauna. 12. Measures for conservation of bio-diversity in India: Man and Biosphere Programme	Black board teaching, PPT and ICT mode of Teaching	Class Test	26 Hours	RB, SC & IT1
		GEOADS E02T	4. Rural house types with reference to India, Social segregation in rural areas; Census categories of rural settlements. 5. Problems and policies related to rural infrastructure with reference to India 8. City-region and Conurbation , Functional classification of cities: Harris, Nelson and McKenzie 9. Aspects of urban places: Location, site and situation, Size and spacing of cities: the rank size rule,	Black board teaching, PPT and ICT mode of Teaching	Class Test	22 Hours	AR, SC & IT1

			the law of the primate city 10. Urban hierarchies : Central Place Theory; August Löch's theory of market centres				
		Total				270 Hours	

Recommended Text books:

- Bhatta, B. 2011. Global Navigation Satellite Systems: Insights into GPS, GLONASS, Galileo, Compass and Others, CRC Press
- Joseph, G. and Jegannathan, C. 2018. Fundamentals of Remote Sensing, 3rd ed, Universities Press.
- Lillesand, T.M., Kiefer, R.W. and Chipman, J.W., 2015. Remote Sensing and Image Interpretation, 7th ed, Wiley.
- Sarkar, A. 2015. Practical Geography: A Systematic Approach. 2nd ed, Orient Black Swan Private Ltd.
- Biswas, T.D. and Mukherjee, S.K. 1997: Textbook of Soil Science, TataMcGraw Hill,
- Daji, J.A., Kadam, J.R., Patil, N.D. 1996.A Textbook of Soil Science, Media Promoters and Publishers Pvt Ltd.
- Dey, N. K., Ghosh.P. 1993. India: A Study in Soil Geography, Sribhumi Publishing Company.
- Kormondy, E.J. 1996. Concept of Ecology, 4th edition, Prentice- Hall, India, New Delhi
- Sharma, P.D. 2011. Ecology and Environment, Rastogi Publications.
- Ghosh, S. 1998. Introduction to Settlement Geography, Sangam Books Ltd.
- Hussain, M. 2007. Models in Geography, Rawat Publication
- Mandal, R.B. 2001. Introduction to Rural Settlement, 2nd ed, Concept Publishing Company.
- Singh, R.Y. 2000. Geography of Settlements, Rawat Publication.
- Singh, S. 2015. Environmental Geography, Pravalika Publications, Allahabad

Semester-V General & Programme Course

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teacher assigned
August-November	**General**	GEOGDSE01T	1. Factors of soil formation. 2. Soil profile. Origin and profile characteristics of Lateritic and Chernozem soils 5. Concepts of biosphere, ecosystem, biome, ecotone, community, niche and succession. 6. Concepts of food chain and food web. Energy flow in ecosystems	Black board teaching, PPT Presentation and ICT mode of teaching	Class Test	20	AR & SC
December – January	**General**	GEOGDSE01T	3. Definition and significance of soil properties: Texture, structure and moisture, pH and organic matter 4. Principles of soil classification: Genetic and USDA. Concept of land capability and its classification. 7. Geographical extent and characteristic features of: Tropical rain forest and Grassland biomes 8. Bio-geochemical cycles with special reference to carbon dioxide and nitrogen.	Black board teaching, PPT Presentation and ICT mode of teaching	Class Test	22	AR & SC
		Total				42 Hours	

Recommended books:

- Biswas, T.D. and Mukherjee, S.K. 1997: Textbook of Soil Science, TataMcGraw Hill,
- Singh, S. 2015. Environmental Geography, Pravalika Publications, Allahabad
- Kormondy, E.J. 1996. Concept of Ecology, 4th edition, Prentice- Hall, India, New Delhi

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Prasanta Chandra MahalanobisMahavidyalaya

Lesson Plan- 2021-22

Semester I Honors. &Programme Course

Name of the Department: MATHEMATICS

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teacher assigned
November-December	**Hons.**	**01T**	Reduction Formulae, derivative and illustration of reduction formulae for the integration of sin^nx, Cos^nx, tan^nx, sec^nx, (logx)^n, sin^nxsin^mx, parametric equations, Parametrizing a curve, arc length, arc length of parametric curves, area of surface of revolution.	Chalk and Duster, PDF	Assignment	24	Mrs. NehaGhorui (Mundhra)
		01T	Hyperbolic functions, higher order derivatives, Leibnitz rule and its applications to problems of type $e^{ax+b}\sin x$, $e^{ax+b}\cos x$, $(ax+b)^n\sin x$, $(ax+b)^n\cos x$, concavity and inflection points, envelopes, asymptotes, curve tracing in Cartesian	Chalk and Duster, PDF	Assignment	24	Ms. PiyaliSaha

			coordinates, tracing in polar coordinates of standard curves, L'Hospital's rule, applications in business, economics and life sciences.				
		02T	Equivalence relations and partitions, Functions, Composition of functions, Invertible functions, One to one correspondence and cardinality of a set. Well-ordering property of positive integers, Division algorithm, Divisibility and Euclidean algorithm. Congruence relation between integers. Principles of Mathematical Induction, statement of Fundamental Theorem of Arithmetic. Systems of linear equations, row reduction and echelon forms, vector equations, the matrix equation Ax=b, solution sets of linear systems, applications of	Chalk and Duster, PDF	Assignment	42	Dr. Trisha Maitra

			linear systems, linear independence. Matrix, inverse of a matrix, characterizations of invertible matrices. Rank of a matrix, Eigen values, Eigen Vectors and Characteristic Equation of a matrix. Cayley-Hamilton theorem and its use in finding the inverse of a matrix.				
	Programme Course	**01T**	Tangents and normals, Curvature, Asymptotes, Singular points, Tracing of curves. Parametric representation of curves.	Chalk and Duster, PDF	Assignment	15	Mrs. NehaGhorui(Mundhra)
		01T	Rolle's theorem, Mean Value theorems, Taylor's theorem with Lagrange's and Cauchy's forms of remainder, Taylor's series, Maclaurin's series of sin x, cos x, e x , log(l+x), (l+x)n ,	Chalk and Duster, PDF	Assignment	15	Dr. Trisha Maitra
		01T	Limit and Continuity (ε and δ definition), Types of discontinuities, Differentiability of functions.	Chalk and Duster, PDF	Assignment	15	Ms. PiyaliSaha

January	**Hons.**	**01T**	Reflection properties of conics, translation and rotation of axes and second degree equations, classification of conics using the discriminant, polar equations of conics. Spheres. Cylindrical surfaces. Central conicoids, paraboloids, plane sections of conicoids, Generating lines, classification of quadrics, Illustrations of graphing standard quadric surfaces like cone, ellipsoid.	Chalk and Duster, PDF	Assignment	12	Mrs. NehaGhorui(Mundhra)
		01T	Differential equations and mathematical models. General, particular, explicit, implicit and singular solutions of a differential equation. Exact differential equations and integrating factors, separable equations and equations reducible to this form, linear equation and Bernoulli equations, special integrating factors and transformations.	Chalk and Duster, PDF	Assignment	12	Ms. PiyaliSaha

		02T	Polar representation of complex numbers, n-th roots of unity, De Moivre's theorem for rational indices	Chalk and Duster, PDF	Assignment	18	Dr. Trisha Maitra
	Programme Course	**01T**	Tracing of parametric curves, Polar coordinates and tracing of curves in polar Co-ordinates.	Chalk and Duster, PDF	Assignment	8	Mrs. NehaGhorui(Mundhra)
		01T	Maxima and Minima, Indeterminate forms.	Chalk and Duster, PDF	Assignment	6	Dr. Trisha Maitra
		01T	Successive differentiation, Leibnitz's theorem, Partial differentiation, Euler's theorem on homogeneous functions.	Chalk and Duster, PDF	Assignment	8	Ms. PiyaliSaha

Recommended Text books:

- K.B. Dutta, Matrix and linear algebra.
- K. Hoffman, R. Kunze, Linear algebra.
- S.K. Mapa Higher Algebra Abstract and Linear
- S.K. Mapa Classical Algebra
- T. Apostol, Calculus, Volumes I and II.
- S. Goldberg, Calculus and Mathematical analysis.
- Advanced Analytical Geometry By J.G.Chakravorty and P.R. Ghosh
- Integral Calculus by Maity and Ghosh.
- Differential calculus by Maity & Ghosh.
- Differential Equations by Maity &Ghosh.

Programme Course:

- H. Anton, I. Birens and S. Davis, Calculus, John Wiley and Sons, Inc., 2002
- G.B. Thomas and R.L. Finney, Calculus, Pearson Education, 2007

Prasanta Chandra MahalanobisMahavidyalaya

Lesson Plan- 2021-22

Semester III Honors. &Programme Course

Name of the Department: MATHEMATICS

Period	Hons/ Programme Course	Paper Name and Paper Code		Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teacher assigned
August-November	**Hons**	**05T**	Limits of functions (ε - δ approach), sequential criterion for limits, divergence criteria. Limit theorems, one sided limits. Infinite limits and limits at infinity. Continuous functions, sequential criterion for continuity and discontinuity. Algebra of continuous functions. Continuous functions on an interval, intermediate value theorem, location of roots theorem, preservation of intervals theorem. Uniform continuity, non-uniform continuity criteria, uniform continuity theorem.	Chalk and Duster, PDF	Assignment	48	Ms. PiyaliSaha
		06T	Symmetries of a square, Dihedral groups, definition and	Chalk and Duster, PDF	Assignment	48	Dr. Trisha Maitra

			examples of groups including permutation groups and quaternion groups (through matrices), elementary properties of groups. Subgroups and examples of subgroups, centralizer, normalizer, center of a group, product of two subgroups. Properties of cyclic groups, classification of subgroups of cyclic groups, Cycle notation for permutations, properties of permutations, even and odd permutations, alternating group, properties of cosets, Lagrange's theorem and consequences including Fermat's Little theorem. External direct product of a finite number of groups, normal subgroups, factor groups, Cauchy's theorem for finite abelian groups.				
		7T	Algorithms, Convergence, Errors: Relative, Absolute. Round off, Truncation. Transcendental and Polynomial equations: Bisection method, Newton's method, Secant method, Regula-falsi method, fixed point iteration, Newton-Raphson method. Rate of convergence of these methods. System of linear algebraic	Chalk and Duster, PDF	Assignment	48	Mrs. Neha Ghorui(Mundhra)

			equations: Gaussian Elimination and Gauss Jordan methods. Gauss Jacobi method, Gauss Seidel method and their convergence analysis, LU Decomposition. Interpolation: Lagrange and Newton's methods, Error bounds, Finite difference operators. Gregory forward and backward difference interpolations. Numerical differentiation: Methods based on interpolations, methods based on finite differences				
		SEC (01M)	Basics of Computer Programming, Fundamentals of Programming, Statements, Arrays, Multi-dimensional arrays	Desktop	Assignment	20	Ms. PiyaliSaha & Mrs. Neha Ghorui(Mundhra)
	Programme Course	**(C03T)**	Real Sequence, Bounded sequence, Cauchy convergence criterion for sequences. Cauchy's theorem on limits, order preservation and squeeze theorem.	Chalk and Duster, PDF	Assignment	20	Dr. Trisha Maitra
			Finite and infinite sets, examples of countable and uncountable sets. Real line, bounded sets, suprema and infima, completeness property of R, Archimedean property of R.	Chalk and Duster, PDF	Assignment	20	Mrs. Neha Ghorui(Mundhra)

			Infinite series. Cauchy convergence criterion for series, positive term series, geometric series, comparison test, convergence of p-series, Root test, Ratio test, alternating series, Leibnitz's test(Tests of Convergence without proof). Definition and examples of absolute and conditional convergence.	Chalk and Duster, PDF	Assignment	20	Ms. Piyali Saha
December - January	**Hons**	**5T**	Differentiability of a function at a point and in an interval, Caratheodory's theorem, algebra of differentiable functions. Relative extrema, interior extremum, theorem. Rolle's theorem. Mean value theorem, intermediate value property of derivatives, Darboux's theorem. Applications of mean value theorem to inequalities and approximation of polynomials. Cauchy's mean value theorem. Taylor's theorem with Lagrange's form of remainder, Taylor's theorem with Cauchy's form of remainder, application of Taylor's theorem to convex functions, relative extrema. Taylor's series and Maclaurin's series expansions of exponential and	Chalk and Duster, PDF	Assignment	30	Ms. PiyaliSaha

			trigonometric functions, ln(1 + x), 1/ax+b and (1 +x)n .Application of Taylor's theorem to inequalities.				
		06T	Group homomorphisms, properties of homomorphisms, Cayley's theorem, properties of isomorphisms, First, Second and Third isomorphism theorems	Chalk and Duster, PDF	Assignment	30	Dr. Trisha Maitra
		7T	Numerical Integration: Newton Cotes formula, Trapezoidal rule, Simpson's 1/3rd rule, Simpsons 3/8th rule, Weddle's rule, Boole's rule. Midpoint rule, Composite Trapezoidal rule, Composite Simpson's 1/3rd rule, Gauss quadrature formula. The algebraic eigen-value problem: Power method. Ordinary Differential Equations The method of successive approximations, Euler's method, the modified Euler method, Runge-Kutta methods of orders two and four.	Chalk and Duster, PDF	Assignment	32	Mrs. Neha Ghorui (Mundhra)
		SEC (01M)	Functions	Desktop	Assignment	8	Ms. PiyaliSaha & Mrs. Neha Ghorui (Mundhra)
	Programme Course	**(C03T)**	Monotone sequences and their convergence (monotone convergence theorem without proof).	Chalk and Duster, PDF	Assignment	8	Dr. Trisha Maitra

			Concept of cluster points and statement of Bolzano-Weierstrass theorem.	Chalk and Duster, PDF	Assignment	8	Mrs. Neha Ghorui (Mundhra)
			Sequences and series of functions, Pointwise and uniform convergence .Mn-test, M-test, Statements of the results about uniform convergence and integrability and differentiability of functions, Power series and radius of convergence.	Chalk and Duster, PDF	Assignment	8	Ms. Piyali Saha

Recommended Text books:

Hons:

- Real Analysis, S. K. Mapa.
- R.G. Bartle and D. R Sherbert, Introduction to Real Analysis, John Wiley and Sons (Asia) P.Ltd., 2000.
- M. Artin, Abstract Algebra, 2nd Ed., Pearson, 2011.
- Joseph A. Gallian, Contemporary Abstract Algebra, 4th Ed., 1999.
- D.S. Malik, John M. Mordeson and M.K. Sen, Fundamentals of Abstract Algebra, 1997.
- B. W. Kernighan and D. M. Ritchi : The C-Programming Language, 2nd Edi.(ANSI Refresher), Prentice Hall, 1977.
- C. Xavier : C-Language and Numerical Methods, New Age International.
- M.K. Jain, S.R.K. Iyengar and R.K. Jain, Numerical Methods for Scientific and Engineering, 2012. Computation, 6th Ed., New age International Publisher, India, 2007.
- Numerical Analysis and computational Procedures by S.A. Mollah.
- John H. Mathews and Kurtis D. Fink, Numerical Methods using Matlab, 4th Ed., PHI Learning Private Limited, 2012.

Programme Course:

- T. M. Apostol, Calculus (Vol. I), John Wiley and Sons (Asia) P. Ltd., 2002.
- R.G. Bartle and D. R Sherbert, Introduction to Real Analysis, John Wiley and Sons (Asia) P.Ltd., 2000

Prasanta Chandra MahalanobisMahavidyalaya

Lesson Plan- 2021-22

Semester V Honors. &Programme Course

Name of the Department: MATHEMATICS

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teacher assigned
August-November	**Programme Course**	**DSE (01T)**	R, R2, R3 as vector spaces over R. Standard basis for each of them. Concept of Linear Independence and examples of different bases. Subspaces of R2, R3. Translation, Dilation, Rotation, Reflection in a point, line and plane. Matrix form of basic geometric transformations.	Chalk and board, Pdf for reference	Assignment	20	Dr. Trisha Maitra
			Types of matrices. Rank of a matrix. Invariance of rank under elementary transformations.	Chalk and board, Pdf for reference	Assignment	20	Mrs. Neha Ghorui (Mundhra)
			Matrices in diagonal form, Reduction of Diagonal form, Computation of matrix inverses using elementary row operations.	Chalk and board, Pdf for reference	Assignment	20	Ms. Piyali Saha.
December-January	**Programme Course**	**DSE (01T)**	Interpretation of eigen values and eigen vectors for such transformations and eigen spaces as invariant subspaces.	Chalk and board, Pdf for reference	Assignment	8	Dr. Trisha Maitra
			Reduction to normal form, Solutions of linear homogeneous and non-homogeneous equations with number of equations and unknowns upto four.	Chalk and board, Pdf for reference	Assignment	8	Mrs. Neha Ghorui (Mundhra)
			Rank of a Matrix, Solutions of system of linear equations using matrices. Illustrative examples of above concepts from Geometry, Physics,Chemistry, Combinatorics and Statistics.	Chalk and board, Pdf for reference	Assignment	8	Ms. Piyali Saha.

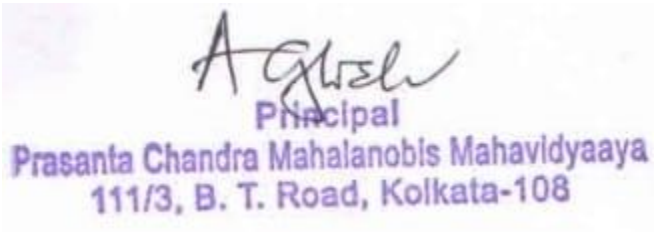
Recommended Text books:

Hons:

- M. Artin, Abstract Algebra, 2nd Ed., Pearson, 2011.
- Joseph A. Gallian, Contemporary Abstract Algebra, 4th Ed., 1999.
- David S. Dummit and Richard M. Foote, Abstract Algebra, 3rd Ed., John Wiley and Sons (Asia) Pvt. Ltd., Singapore, 2004.
- I.N. Herstein, Topics in Algebra, Wiley Eastern Limited, India, 1975.

Programme Course:

- S. K. Mapa, Higher Algebra: Abstract and Linear
- P.R. Halmos, Naive Set Theory, Springer, 1974



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Lesson Plan- 2022-23

Semester I Programme Course

Name of the Department: Physics

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teacher assigned
September - November	**Programme Course**	Mechanics PHSGCOR01T	1. Mathematical Methods 2. Particle Dynamics 3. Oscillations	Offline Notes prepared and E Resources	Assignment and class test	12 12 12	AH SS AN
		Mechanics Lab PHSGCOR01P	1. Young's modulus 2. Rigidity modulus 3. Determination of g	Experimental instructions and Demonstration	Laboratory Work	12	
December - January	**Programme Course**	Mechanics PHSGCOR01T	2. Particle Dynamics 3. Oscillations 4. Gravitation 5. Elasticity 6. Special Theory of Relativity	Offline Notes prepared and E Resources	Assignment and class test	12 12 24	SS AN AH
		Mechanics Lab PHSGCOR01P	4. Moment of inertia 5. Spring constants	Experimental instructions and Demonstration	Laboratory Work	12	AH

Recommended Text books:

1. Theoretical Mechanics - MR Spiegel.
2. Classical Mechanics & General Properties of Matter - SN Maity and DP Raychowdhury.
3. Feynman Lecture vol I.

4. A text book of practical physics - Prakash & Ramakrishna.
5. Advance practical physics - Flint & Worsnop.

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Lesson Plan- 2022-23

Semester III Programme Course

Name of the Department: Physics

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teacher assigned
August - September	Programme Course	Thermal Physics & Statistical Mechanics PHSGCOR03T	1. Laws of Thermodynamics 2. Thermodynamic Potential	Offline Notes prepared and E Resources	Assignment and class test	24	AH
		Thermal Physics and Statistical Lab PHSGCOR03P	1. Verification of Stefan's law 2. To determine the coefficient of thermal conductivity of a bad conductor by Lee's method	Experimental instructions and Demonstration	Laboratory Work	08	SS
		Thermal Physics & Statistical Mechanics PHSGCOR03T	3. Kinetic theory of gases 4. Theory of Radiation 5. Statistical Mechanics	Offline Notes prepared and E Resources	Assignment and class test	36	AH

November - January	**Programme Course**	Thermal Physics and Statistical Lab PHSGCOR03P	3. To determine the temperature coefficient of resistance by PRT 4. Measurement of unknown temperature using diode sensor 5. Thermocouple	Experimental instructions and Demonstration	Laboratory Work	12	SS

Recommended Text books:

1. Thermal Physics - S Garg, R bansal & C Ghosh.
2. Concept in Thermal Physics - Blundell & Blundell.
3. Thermal Physics - A Kumar & S P Taneja.
4. A text book of practical physics - Prakash & Ramakrishna.
5. Advance practical physics - Flint & Worsnop.

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Lesson Plan- 2022-23

Semester V Programme Course

Name of the Department: PHYSICS

Period	Hons/ Programme Course	Paper Name and Paper Code	Topics	Methods and materials	Methods of Evaluation	Number of classes allotted in hours	Name of the Teacher assigned
August - September	**Programme Course**	Digital, Analog Circuits & Instrumentation PHSGDSE01T	1. Digital Circuits 2. Operational Amplifier	Offline Notes prepared and E Resources	Assignment and class test	16 8	AH AN
		Digital, Analog Circuits &	1. To verify & design AND, OR, NOT and XOR	Experimental instructio	Laboratory Work	8	AH

		Instrumentation Lab PHSGDSE01P	gates using NAND gate 2. To minimise a given logic circuit	ns and Demonstration			
November - January	**Programme Course**	Digital, Analog Circuits & Instrumentation PHSGDSE01T	3. Semiconductor Devices & Amplifiers 4. Instrumentation	Offline Notes prepared and E Resources	Assignment and class test	24	AH
		Digital, Analog Circuits & Instrumentation Lab PHSGDSE01P	3. OP-AMP: inverting, non-inverting, differential & differentiator. 4. Half adder, Full adder and 4-bit binary adder. 5. To study IV characteristics of PN diode, Zener diode & Light emitting diode. 6. Adder - Subtractor using IC.	Experimental instructions and Demonstration	Laboratory Work	12 12	AN AH

Recommended Text books:

1. Electronic devices and Circuits - S Sailvahanan & N S Kumar.
2. Fundamentals of Digital Circuits - A Anand Kumar.
3. Electronics: Fundamentals & Applications - J D Ryder.
4. Electronic Principle - Albert Malvino.