KONGU ARTS AND SCIENCE COLLEGE

(An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore)

ERODE – 638 107

PROGRAM NAME

B.Sc. (Biochemistry)

KONGU ARTS AND SCIENCE COLLEGE

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2022-2021

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SYLLABUS

Programme Code:	AP	Programme Title: B.Sc	Biochemistry	
Course Code:	19UAPCT302	Title: CORE V - MICROBIOLOGY	Batch:	2019 -2020 Onwards
			Semester:	III
Hours/Week:	3		Credits:	3

Objectives

- To define the science of microbiology and describe some of the general methods used in the study of microorganisms.
- To discuss the historical concept of spontaneous generation and the experiments that was performed to disprove this erroneous idea
- To establish the causal link between a suspected microorganism and disease.
- To learn the various activities of microorganisms that is beneficial to humans.

Course Outcomes

On the successful completion of the course, students will be able to

K1	CO1	Know the principal areas of the Microbiology like microbial physiology (Bacteria, Fungi & Algae).
K2	CO2	Acquire the basic concepts to operate the different varieties of Microscopes and methods of Sterilization.
K3	CO3	Develop basic skills necessary to work with microbial cultures in Microbiological Laboratory.
K4	CO4	Explain the basic genetic systems of Virus and Bacteriophage.
K5	CO5	Understanding of the normal and common pathogenic organisms associated with human infectious diseases and the role of microbes in fermentation process.

Syllabus

Unit	Content	Hours
I	**Microbiology Overview** **Prokaryotes:** General Morphology and Sub cellular structures of Bacteria, Bacterial reproduction - Vegetative, Asexual and Sexual **Microbial Growth:** Bacterial Growth curve and Generation time. **Eukaryotes:** Morphological characteristics and Importance of Algae. Structural Characteristics, Reproduction and Importance of Fungi.	6
II	**Sterilization:** Definition, Types – Autoclave, Pasteurization. Methods of Sterilization (dry heat, moist heat, filtration, radiation, Tyndallization), Chemical Sterilization (Phenol, Detergents, Aldehydes, and Gaseous agents). **Microscopy:** Light microscopy – Bright Field, Dark field, Fluorescent and Phase Contrast. Electron Microscopy - SEM and TEM (Principle and Applications).	7
III	**Culture Media:** Types, Culture Media - Selective and Enrichment media. Culture methods – Batch and Continuous culture. **Isolation and Maintenance of Microorganisms:** Pure Culture - Definition, Methods of Pure Culture - Serial Dilution technique, Pour Plate, Spread Plate, Streak Plate. Maintenance of Pure Culture. **Staining techniques:** Principle and technique of Simple, Negative, Differential (Gram, Acid fast and Endospore staining) and Fungal staining (Lactophenol Cotton Blue).	

IV	**Viruses:** General characteristics and structure of Virus. Plaque assay. **Bacteriophage:** Structure and Life cycle (Lytic cycle) of T4 Phages and Lambda Phages (Lytic and Lysogenic cycle). **DNA Virus:** Adeno virus - Morphology and pathophysiology. **RNA Virus:** SARBECO Family - Morphology and pathophysiology.	6
V	**Microbial Diseases in Humans:** Normal human micro flora; Host - Parasitic interaction; Epidemics, Intoxications – Types. **Air borne Diseases:** Tuberculosis, Influenza and Aspergillosis. **Water borne Diseases:** Typhoid and Hepatitis. **Food borne Diseases:** Botulism and Salmonellosis. **Direct contact Disease:** Rabies. **Microbiology of Water:** Bacteriological examination of water; Sewage and its treatment; Purification of drinking water. **Industrial Microbiology:** Microorganisms involved in fermentation processes (Alcoholic and Lactic acid fermentation).	7
	TOTAL	**33**

Teaching Methodology:
Chalk and Talk, PPT, Demonstration

Books for Study:

1. E.C.S. Chan, Michael J. Pelczar, Jr.,Noel R. Krieg, Microbiology, 5th Edition, MC Graw Hill Book Company, 1998.
2. Gerard J. Tortora, Berdell R. Funke and Christine L. Cas, Microbiology - An Introduction, 13th Edition, 2020.
3. Prescott L M, Harley J H and Klein D A, Microbiology, 7th Edition, C. Brown Publishers, 2007.

Books for Reference:

1. Ronald M. Atlas, Microbiology-Fundamentals and Applications, 2nd Edition, Macmillan Publishing Company, New York, 1998.
2. Ananthanarayanan. R. and Yayaraman Panikar, Text book of Microbiology, 10th Edition. Universities Press, 2017.

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Name and Signature	Name and Signature	Name and Signature	HOD
Name: S. Natarajan Signature:	Name: R. Rasu Signature:	Name: T. Radha Signature:	Name: Dr. A. K. Vidya Signature:

Programme Code:	AP	Programme Title: B.Sc	Biochemistry	
Course Code:	19UAPST304	Title: SKILL BASED COURSE I - NUTRITIONAL BIOCHEMISTRY	Batch:	2019 -2020 Onwards
			Semester:	III
Hours/Week:	3		Credits:	3

Objectives

- To acquire knowledge of various concepts of nutrition – facts and principles
- To inculcate students for healthy attitudes
- Update knowledge about essential nutrients

Course Outcomes

On the successful completion of the course, students will be able to

K1	CO1	Acquire detailed knowledge regarding the biological basis of nutrition.
K2	CO2	Develop laboratory skills required for a modern biochemical study of nutrition includes the quantitative analysis and interpretation of results.
K3	CO3	Attain the mechanisms by which diet can influence our health.
K4	CO4	Integrate biochemical mechanisms with disease pathology and clinical treatment options.
K5	CO5	Gain the principles, knowledge and application of integrative nutrition in the areas of whole foods & food as a medicine.

Syllabus

Unit	Content	Hours
I	**Nutrient and Health** – Definition of Food and Nutrition. Classification of Food groups: Nutritional importance of Carbohydrates, Fibers, Proteins and Fats. Source and Functions of Vitamins and Minerals – An overview. **Water:** Distribution of water in body, Factors influencing distribution, Physiological functions of water. **Electrolytes:** Sodium, Potassium and Chloride. Acid - Base Balance and its regulation in human body.	7
II	**Energy:** Definition of Energy, Kilocalories, Joule, Biological value, NPU, Digestibility coefficient, PER, RDA, Balanced diet. Calorific Value of foods. Thermogenic effects (SDA) of food. BMR – Definition, measurement and factors affecting BMR. Nutrigenetics and Nutrigenomics (Definition and Application only)	7
III	**Functional foods** Probiotics – Definition, Types, Mechanism of Action, Applications and Commercial Probiotics. Prebiotics - Definition, Sources and Functions.	6

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IV	Therapeutic diets for Anemia, Cardiovascular diseases, Diabetes Mellitus, Cancer, Covid disease (WHO Norms). **Disorders related to Nutrition**: Protein Malnutrition, Obesity and Starvation. **Nutritional disorders of the Nervous system**: Burning feet syndrome, Spinal ataxia. **Nutritional disorders of Skin**: Follicular hyperkeratosis, Xeroderma. **Nutritional disorders of Eye**: Night Blindness, Bitot's Spot. **Nutritional disorders of Mouth**: Nutritional glossitis, Parotid gland enlargement.	7
V	**Naturally occurring Antioxidants:** Walnuts, Broccoli and Tomatoes. **Nutrient loss:** Loss of nutrients during processing and cooking. **Naturally occurring toxicants:** Toxicants from pathogenic Microorganisms, Contamination of foods with toxic chemicals and pesticides. **Food Allergy:** Definition, Food as Allergens – Types, Symptoms, Diagnosis and Treatment.	6
	TOTAL	**33**

Teaching Methodology:
Chalk and Talk& PPT

Books for Study:

1. A.C. Deb, Fundamentals of Biochemistry, 7th Edition, New Central Book Agency (P) Ltd, 2001.
2. Tom Brody, Nutritional Biochemistry, 2nd Edition, Elsevier Publishers, 1999.
3. Satyanaryana U, Biochemistry, 4thRevised Edition, Books and Allied (P) Ltd, 2013.

Books for Reference:

1. Staci Nix, William's Basic Nutrition and Diet Therapy, 12thEdition, Elsevier Publishers, 2005.
2. Mahan L. K, Stump S.E, Food, Nutrition and Diet Therapy, 9th Edition, W. B. Saunders Company, 2006.
3. B. Srilakshmi, Diabetes, 5th Edition, New Age International (P) Limited Publishers, 2005.
4. S. Ramakrishnan, S.VenkatRao, Nutritional Biochemistry, 1st Edition, T.R. Publications, 1995.
5. Macdonald & Rock, Nutrition and Metabolism, 2ndEdition, Blackwell Publishing, 2004.

Course Designed by	Verified by	Checked by	Approved by
Name and Signature	Name and Signature	Name and Signature	HOD
Name: Dr. N. Sangeetha Signature:	Name: R. Rasu Signature:	Name: T. Radha Signature:	Name: Dr. A. K. Vidya Signature:

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Programme Code:	AP	Programme Title: B.Sc	Biochemistry	
Course Code:	19UAPCP402	Title: CORE BIOCHEMISTRY PRACTICALS - II	Batch:	2019 -2020 Onwards
			Semester:	III & IV
Hours/Week:	2 (ODD) & 3 (EVEN)		Credits:	3

(EXAMINATION AT THE END OF FOURTH SEMESTER)

Objectives

- To understand and get familiarized with the Microbial, Enzymological and Nutritional experiments.

Course Outcomes

On the successful completion of the course, students will be able to

K1	CO1	Know the media preparation and pure culture techniques
K2	CO2	Differentiate the microorganisms using staining techniques
K3	CO3	Get familiarized with the assay of enzyme kinetics.
K4	CO4	Acquire knowledge ofnutritional content in food samples
K5	CO5	Understand the protocol for determination of lipids and bioactive compound

Syllabus

Unit	Content	Hours
I	**MICROBIOLOGY EXPERIMENTS** **1. Media preparation (Group)** Preparation of Culture Media: Nutrient Agar, Nutrient Broth, Potato Dextrose Agar. Serial Dilution Technique & Pure Culture Techniques: Pour Plate, Spread Plate and Streak Plate Methods	6
II	**2. Staining Techniques** Simple staining Gram staining Endospore staining Negative staining Fungal staining	6
III	**ENZYMES KINETIC STUDIES - Salivary Amylase / Catalase assay** (Group Experiment) Effect of pH on enzyme activity. Effect of Temperature on enzyme activity. Effect of Substrate Concentration on enzyme activity. Effect of Enzyme concentration.	8

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IV	**Estimation of Nutritional Content in Food Samples** Estimation of Iron from Plant source by Wong's method Estimation of Fructose from Fruits by Seliwanoff method Estimation of Ascorbic acid (Vitamin C) from Citrus Fruits by Dye Method Estimation of Calcium in Milk Determination of Casein from Milk	15
V	**Demonstration Experiments** Isolation of Lecithin from Egg Yolk Estimation of Oil in Oil seeds Determination of Caffeine from Tea leaves	9
	TOTAL	**49**

Teaching Methodology:
Demonstration following individual Practicals

Books for Study:

1. Sashidhar Rao B and Deshpande V, Experimental Biochemistry: A Student companion, IK International (P) Ltd Publications, 2005.
2. Dr. N. Kannan, Laboratory Manual in General Microbiology, Panima Publishing Corporation, 2002.

Books for Reference:

1. Boyer R, Modern Experimental Biochemistry, 3rd Edition, Pearson Education, 2001.
2. Sadasivam S and Manickam A, Biochemical Methods, 3rd Edition, New Age International Publishers, 2018.
3. Plummer, D. T. Tata, An Introduction to Practical Biochemistry, 3rd Edition, McGraw Hill, 2006.
4. Sawhney, S. K. Randhir Singh, Introductory Practical Biochemistry, 2nd Updated Edition, Alpha Science, 2005.

Course Designed by	Verified by	Checked by	Approved by
Name and Signature	Name and Signature	Name and Signature	HOD
Name: Dr. A. K. Vidya Signature:	Name: S. Natarajan Signature:	Name: R. Rasu Signature:	Name: Dr. A. K. Vidya Signature:

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Programme Code:	AP	Programme Title: B.Sc	Biochemistry	
Course Code:	19UAPST405	Title: SKILL BASED COURSE II - NANOTECHNOLOGY AND CLINICAL TRIALS	Batch:	2019 -2020 Onwards
			Semester:	IV
Hours/Week:	3		Credits:	3

Objectives

- To understand and get familiarized with the fundamentals of Nanotechnology
- To give a general introduction to different classes of nanomaterials and impart basic knowledge on characterization techniques involved in Nanotechnology
- To make the learner familiarize with the applications of nanotechnology in various fields
- To identify key operational requirements, data management and regulatory affairs in clinical trials

Course Outcomes

On the successful completion of the course, students will be able to

K1	CO1	Gain the fundamentals of Nanotechnology and to get knowledge familiarize with the new concepts of Nano science and Technology.
K2	CO2	Ability to manipulate matter at molecular scale and attain the principal classes of biomaterials and their functionalities in modern medical science.
K3	CO3	Impart basic knowledge on various synthesis and characterization techniques involved in Nanotechnology
K4	CO4	Acquire the outline interest of research about health care and study population.
K5	CO5	Attain general basics related to document development used in clinical trials.

Syllabus

Unit	Content	Hours
I	**Nanotechnology:** Introduction, Definition, Nanoscale. **Classification of Nanomaterials:** Based on Origin, Dimension and Structural configuration. **Applications:** Nanotechnology in Medicine, Textile, Food and Agriculture.	5
II	**Properties of Nanostructured Materials:** Size and Shape dependent properties – Colour, Optical properties, Electrical Conductivity, Magnetic properties, Thermal properties and Band Gap. **Nanomaterials:** Quantum Dots, Nanowires, Carbon-based Nanomaterials (CNTs), Metal based nanomaterials – Nanogold and Nanosilver, Metal oxide Nanoshells – Zirconia and Silica Nanoshells.	6
III	**Synthesis of Nanomaterials:** Top – Down (Ball Milling), Bottom – Up (Sol-Gel Processing), Chemical and Green synthesis of Nanoparticles. **Characterization of Nanophase materials:** XRD, FTIR, EDX, FESEM, FETEM	5

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IV	**Research Design and Overview of Clinical Trials:** Definition of Clinical Trial. Types of Clinical Trials. Planning and execution of Clinical trials - formulating research questions, Study population – Sample size determination. **Various Phases of Clinical trials:** Phase-I, Phase-II, Phase-III and Phase-IV trials.	6
V	**Documents in clinical study:** Essential Documents in Clinical Trial - Investigator Brochure (IB), Case Report Form (CRF), Good Clinical Practice: ICH Guidelines, ICMR Guidelines. **Clinical Trial Applications:** New Drug Application (NDA). Clinical Trial Applications in India.	5
	TOTAL	27

Teaching Methodology: Chalk and Talk, PPT, Oral Discussion, Demonstration

Books for Study:

1. Pradeep T, Nano: The Essentials Understanding Nanoscience and Nanotechnology, 1st Edition, Tata McGraw – Hill Publishing Company Limited, 2007.
2. Lakshman Desai, Nanotechnology, 1st Edition, Paragon International Publishers, 2007.
3. BhaskarMazumder, Nanotechnology: Therapeutic, Nutraceutical, and Cosmetic Advances, 1st Edition, CRC Press, 2019.

Books for Reference:

1. R Bruce Weisman, Handbook of Carbon Nanomaterials (Volumes 9-10) (World Scientific Carbon Nanoscience), 1st Edition, World Scientific Publishing Company, 2019.
2. Design and Analysis of Clinical Trials Concepts and Methodologies, Second Edition Shein-Chung Chow, Jen-Pei Liu, Wiley – Interscience, A John Wiley & Sons, Inc Publication

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Name and Signature	Name and Signature	Name and Signature	HOD
Name:Dr. N. Sangeetha Signature:	Name: G. Karthikeyan Signature:	Name: S. Natarajan Signature:	Name: Dr. A. K. Vidya Signature:

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Programme Code:	AP	Programme Title: B.Sc	Biochemistry	
Course Code:	20UAPCT501	Title: CORE VII - HUMAN PHYSIOLOGY AND ENDOCRINOLOGY	Batch:	2018 - 19 Onwards
			Semester:	V
Hours/Week:	5		Credits:	4

Objectives

- Learn about the Structure and Function of different organs in the body system
- Describe the principal structural features, Functions and location of each component organ of the endocrine, Cardiovascular, Respiratory, Digestive, Renal and Reproductive system
- Able to demonstrate a basic understanding of the mechanisms of human body
- Learn more specific on the endocrinal activities

Course Outcomes

On the successful completion of the course, students will be able to

K1	CO1	Understand the in-depth vision of blood, skeletal muscles and heart.
K2	CO2	Recognize the importance of nervous system and eye.
K3	CO3	Develop the basic knowledge of the Digestive tract and Respiratory system.
K4	CO4	Tell the impacts of the endocrine system.
K5	CO5	Understand the involvement of hormones in reproduction system.

Syllabus

Unit	Content	Hours
I	**Blood and Body fluid:** Composition and Functions of blood, Hemoglobin, Blood groups and Blood transfusion, Mechanism of blood coagulation. Formation and functions of Lymph. **Physiology of Skeletal muscle:** Structure of Skeletal muscle, Process of Muscle contraction, Chemical changes during Muscle contraction. **Cardiovascular system:** Structure and Functions of Heart, Electrical and mechanical events in Cardiac cycle, Regulation of Heart pumping.	11
II	**Physiology of Vision:** Structure of Eye, Receptor mechanism (Rod and Cones), Photo pigments, Defects of eye and Colour adaptation. **Nervous system:** Structure and Functions of Neurons, Resting potential and Action potential, Synaptic transmission (Chemical and Electrical Transmission). Mechanism of Neuromuscular transmission, Neurotransmitters. **Stress Physiology:** Definition, factors influencing response to stress, Stress Indicators.	11
III	**Digestive system:** General outlines of the Digestive tract. Composition, Function and Mechanism of Secretion of Saliva, Gastric, Pancreatic, Intestinal and Bile juice. Digestion and Absorption of Carbohydrates, Fats and Proteins.	11

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	Respiratory system: Structure and Function of Respiratory tract. Diffusion of Gases in lungs. Transport of Oxygen, Factors influencing the Oxygen transport. Transport of Carbon dioxide, Factors influencing the CO_2 transport.	
IV	**Excretory system:** Structure and Functions of kidneys, Structure of Nephron, Mechanism of formation of Urine, Micturition, Renal regulation of Acid base balance, Hormones of Kidneys. **Endocrine system:** Definition of Hormones, Classification - Chemical nature of Hormones and Mechanism of action of hormones (Intracellular and Cell surface receptor mechanism). Structure, Functions and Deficiency symptoms of hormones of Pituitary (Anterior and Posterior), Thyroid, Parathyroid, Adrenal glands.	11
V	**Male reproductive system**: Structure and functions of Testis, Process of Spermatogenesis, Structure and Physiological Functions of Androgen. **Female reproductive system**: Structure and function of Ovary, Ovarian cycle, Menstrual cycle, Physiological changes and Hormones involved in Pregnancy and Lactation.	11
	TOTAL	**55**

Teaching Methodology:
Chalk and Talk, PPT

Books for Study:

1. Dr. C.C. Chatterjee, Human Physiology - Volume I (2016) and II (2017), 11th Coloured Edition, CBS Publishers and Distributors Pvt. Ltd.
2. Sarada Subramanyam, K. Madhavan Kutty and H.D. Singh -Text Book of Human Physiology, Fifth Edition, S.Chand& Company Ltd, 2014.

Books for Reference:

1. Arthur C.Guyton and John Hall, Textbook of Medical Physiology, 12th edition, Saunders of ElsevierInc.2010.
2. Robert K. Murray, Harper's Biochemistry, 26th edition, McGraw Hill, 2003.
3. M. M. Muthiah, Lecture notes on Human Physiology Volume II, 1991.

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Name and Signature	Name and Signature	Name and Signature	HOD
Name: Dr. N. Sangeetha Signature:	Name: T. Radha Signature:	Name: S. Natarajan Signature:	Name: Dr. A. K. Vidya Signature:

Programme Code:	AP	Programme Title: B.Sc	Biochemistry	
Course Code:	20UAPCT502	Title: CORE VIII - CLINICAL BIOCHEMISTRY	Batch:	2018 - 19 Onwards
			Semester:	V
Hours/Week:	5		Credits:	4

Objectives

- To realize the importance of Clinical aspects of various disorders associated with Carbohydrate, Lipids, Proteins and Amino acids, Purine and Pyrimidine metabolism.
- To understand the significance of the Organ function test.

Course Outcomes

On the successful completion of the course, students will be able to

K1	CO1	Clearly understand the pathological regulations of carbohydrate metabolism.
K2	CO2	Make the learner aware of lipid metabolic changes.
K3	CO3	Realize the disease state of amino acid, purine and pyrimidine metabolism.
K4	CO4	Know the problems related to the preparation of the patient, the collection and knowledge of the samples.
K5	CO5	Identify the meaning and use of laboratory investigations in connection with diseases of the liver and kidneys.

Syllabus

Unit	Content	Hours
I	**Disorders of Carbohydrate metabolism** **Blood Sugar Regulation**: Normal, Random and Renal threshold level in blood and Mechanism of Regulation of Blood Sugar. **Diabetes Mellitus:** Definition, Symptoms, Types - I & II, Diagnosis - Urine test and GTT. **Complications of Diabetes mellitus:** Diabetic Hypoglycemia and Diabetic Ketoacidosis. **Other Carbohydrate Metabolic disorders:** Glycosuria, Fructosuria, Pentosuria, Galactosemia and Glycogen Storage diseases.	11
II	**Disorders of Lipid metabolism** Introduction - Plasma lipids and Lipoproteins. Hyperlipoproteinemia - Types I, II, III, IV, V and Hypolipoproteinemia – Alphalipoproteinemia & Abetalipoproteinemia. **Metabolic Disorders**: Atherosclerosis, Fatty liver, Xanthomatosis, Tangier's disease, Tay Sach's disease, Niemann's Pick disease.	11
III	**Disorders of Amino acid metabolism** **Inborn Errors of Metabolism:** Cysteinuria, Phenylketonuria, Maple syrup disease, Alkaptonuria, Albinism, Hartnup disease, Tyrosinemia. **Abnormalities of Non-protein nitrogen:** Urea, Uric acid, Creatinine, Ammonia. **Disorders of Purine metabolism**: Types and Treatment of Gout. **Disorders of Pyrimidine metabolism**: Oroticaciduria & Reye's Syndrome.	11

IV	**Gastric and Pancreatic Function Test** **Gastric function test:** Fractional gastric analysis, Stimulation test – Alcohol, Caffeine, Histamine, Insulin, Pentagastrin: Tubeless gastric analysis. **Pancreatic function test:** Serum Amylase and Lipase assay **Intestinal function Test** - Xylose excretion test	11
V	**Liver disease and Liver function test:** Introduction, Abnormal Bilirubin metabolism (Jaundice), Estimation of Bilirubin in serum (Diazomethod), Bile salt in serum (Fouchet's test, Hay sulfur test, Thymol turbidity test), Prothrombin time, Serum enzymes in liver diseases. **Kidney function test:** Clearance test - Definition, Urea, Creatinine and Inulin Clearance test. Renal blood flow and Filteration fraction - Water elimination test. **Tumor Markers:** Definition, Carbohydrate marker and Clinical importance -. PSA (Prostate specific antigen) and CEA (Carcino embryonic antigen).	11
	TOTAL	55

Teaching Methodology:
Chalk and Talk, PPT

Books for Study:

1. L Mukherjee, Kanai, SwarajitGhosh , Medical Laboratory Technology (Volume I): Procedure Manual for Routine Diagnostic Tests, 3rd edition, Mcgraw Hill publishers, 2010.
2. L Mukherjee, Kanai, SwarajitGhosh , Medical Laboratory Technology (Volume II): Procedure Manual for Routine Diagnostic Tests, 2nd edition, Mcgraw Hill publishers, 2010
3. Chatterjea M N and RanaShinde, Textbook of Medical Biochemistry, 5th Edition, Jaypee Brothers Medical Publishers (P) Ltd, 2002.
4. R. Swaminathan, Handbook of Clinical Biochemistry, 2nd Edition, World Scientific Publishers, 2011.
5. Varley H, Practical Clinical Biochemistry, 4th Edition,Boca Raton, Fla: CRC Press; London: Heinemann Medical Books, 1988.

Books for Reference:

1. Dr.S.Rajan, Manual for Medical Laboratory Technology, Anjanaa Book House, First Edition, 2012.
2. Teitz, Textbook of Clinical Chemistry and Molecular Diagnostics, 4th Edition, Elsevier Publisher, 2006.
3. Michael J. Stewart, James Shepherd, Allan Gaw , Michael Murphy, Robert A. Cowan, Denis St. J. O'Reilly, Clinical Biochemistry E-Book: An Illustrated Colour Text, 4th Edition, Churchill Livingstone, 2011.
4. Norbert W. Tietz, Fundamentals of Clinical Chemistry, 3rd Edition, W. B. Saunders Company, 1986.
5. Joan F. Zilva and Pannall P.R. Clinical Chemistry in Diagnosis and treatment, 6th Edition, Taylor & FrancisLtd, 1994.

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Name and Signature	Name and Signature	Name and Signature	
Name: S. Natarajan Signature:	Name: R. Rasu Signature:	Name: S. Natarajan Signature:	Name: Dr. A. K. Vidya Signature:

Programme Code:	AP	Programme Title: B.Sc	Biochemistry	
Course Code:	20UAPCT504	Title: CORE BIOCHEMISTRY PRACTICALS - III	Batch:	2018 - 19 Onwards
			Semester:	V
Hours/Week:	5		Credits:	3

(EXAMINATION AT THE END OF FIFTH SEMESTER)

Objectives

- To understand and get familiarized with the analysis of urine and blood samples.

Course Outcomes

On the successful completion of the course, students will be able to

K1	CO1	Understand the abnormal constituents in urine.
K2	CO2	Quantify the calcium and creatinine in 24 hour urine sample.
K3	CO3	Analyze the NPN compounds in urine samples.
K4	CO4	Gain knowledge about kidney function tests in blood.
K5	CO5	Familiarize with cancer marker enzymes.

Syllabus

Unit	Content	Hours
I	**COMPLETE URINE ANALYSIS** **Dipstick analysis (Macro & Microscopic examination)** Appearance, Colour, Urine PH, Specific gravity, Urinary glucose, Urinary protein, Urobilinogen, Bile salt, Ketone Bodies, Occult Blood, Pus cells, Epithelial cells, Cast & crystals and others	5
II	**Quantitative analysis ofurine** Estimation of Calcium by Permanganate method. Estimation of Creatinine by Picric acid method.	10
III	**Quantitative analysis ofurine** Estimation of Urea by DAM-TSC method. Estimation of Uric acid by Carraway's method.	10
IV	**BLOOD ANALYSIS** Estimation of Urea in serum by DAM –TSC method Estimation of Uric acid in serum by Carraway's method Estimation of Glucose in serum by O-Toluidine method	15
V	**Demonstration Experiment** Estimation of Alkaline phosphatase in serum Estimation of Acid phosphatase in serum	5
	TOTAL	55

Teaching Methodology:
Demonstration following individual Practicals

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Books for Study:

1. Dr. S. Rajan. Manual for Medical Laboratory Technology. 1st Edition. Anjanaa Book House, 2012.

Books for Reference:

1. Ranjna Chawla. Practical Clinical Biochemistry - Methods and Interpretation, 3rd Edition. Jaypee Brothers Medical Publishers (P) Ltd, 2019.
2. Alan H.Gowenlock, Janet R.Mc Murray and Donald M.Mc Lauchlan, Varley's Pracical Clinical Biochemistry. CBS Publishers and Distributors, 2006.

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Name and Signature	Name and Signature	Name and Signature	HOD
Name: Mr. S. Natarajan Signature:	Name: R. Rasu Signature:	Name: T. Radha Signature:	Name: Dr. A. K. Vidya Signature:

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NANJANAPURAM, ERODE - 638 107.

Programme Code:	AP	Programme Title: B.Sc	Biochemistry	
Course Code:	20UAPET506	Title: ELECTIVE I: PLANT AND ANIMAL BIOTECHNOLOGY	Batch:	2018 - 19 Onwards
			Semester:	V
Hours/Week:	4		Credits:	4

Objectives

- To understand the basic concepts of Plant tissue culture and Plant transformation techniques
- To learn the techniques of maintaining animal cells/tissues in in-vitro cultures and use of cell cultures in production of biological products

Course Outcomes

On the successful completion of the course, students will be able to

K1	CO1	Basic knowledge with Plant Tissue culture and its methods.
K2	CO2	Knows the techniques plant genetic engineering.
K3	CO3	Gain basic information for animal tissue culture techniques
K4	CO4	Provide broad foundation about the cell transformation techniques.
K5	CO5	Learn methods of animal biotechnology

Syllabus

Unit	Content	Hours
I	**Introduction to Plant Tissue Culture and Culture methods** **Plant Tissue culture:** Terms used in PTC, Explant - Types and Sterilization, Glassware Sterilization, Establishment of PTC laboratory. **PTC Medium:** Composition, Preparation, Sterilization (MS Medium). **Culture methods**: Callus culture and Suspension Culture. **Micro propagation (Clonal Propagation):** Organogenesis and Somatic Embryogenesis. Production of Haploid Plants, Production of Phytochemicals from PTC.	8
II	**Plant Transformation Techniques** **Protoplast Culture and Somatic Hybridization:** Protoplast Isolation, Culture and Regeneration. Fusion of Protoplasts, Selection and Identification of Somatic hybrids. **Gene transfer in Plants** **Vector mediated gene transfer methods:** Agrobacterium mediated gene transfer: Ti Plasmid, Mechanism of T-DNA transfer. **Direct gene transfer methods:** Electrophoration, Biolistics, Microinjection, PEG and Calcium phosphate coprecipitaion mediated gene transfer. **Application of PTC:** Transgenic Plants - Herbicide, Insecticide and Virus Resistant plants. Flavr-Savr Tomato, Golden Rice, Bt Cotton.	9

III	**Introduction to Animal cell culture** Terms used in ATC, Facilities for ATC, Contamination, Aseptic Condition and Sterilization. **Culture Media for Animal Cells** Types of Media – Natural and Artificial Media, Physicochemical Properties of Media, BSS, Complete culture medium, Importance of Serum in Media, Serum-free media.	9
IV	**Establishment of Cells in Culture**: Primary cell culture – Mechanical disaggregation, Enzymatic disaggregation and Primary Explant Techniques. Cell lines – Finite and Continuous Cell lines. **Cell transformation:** Properties of Transformed cells. Measurement of growth parameters of cultured cells. Cell Synchronization.	9
V	**Gene transfer in Animals:** Production of Transgenic Mice – Microinjection and Embryogenic Stem cell method. **Animal Biotechnology:** Invitro fertilization (IVF): Stages, Advantages and Limitations. **Recombinant proteins from Cell cultures:** Viral Vaccines (Vaccinia Virus Vaccine) and Production of Monoclonal Antibodies **Application and Ethical Issues:** ELSI of biotechnology - Risks, Ethics and Patenting.	9
	TOTAL	**44**

Teaching Methodology:
Chalk and Talk, PPT

Books for Study:

1. U. Satyanarayana, Biotechnology, 12th Edition, Books and Allied (P) Ltd, 2018.
2. D. Balasubramanian et al., Concepts in Biotechnology, Revised Edition, Universal Press, 2018.

Books for Reference:

1. R. Ian Freshney, Culture of Animal Cells -- A manual of Basic Techniques, 7th Edition, A John Wiley & Sons Inc. Publications, 2016.
2. Michael J. Waites, Industrial Microbiology - An Introduction, I edition, Blackwell Publishing, 2002.

Course Designed by	Verified by	Checked by	Approved by
Name and Signature	Name and Signature	Name and Signature	Name and Signature
Name: T. Radha Signature:	Name: Dr. N. Sangeetha Signature:	Name: R. Rasu Signature:	Name: Dr. A. K. Vidya Signature:

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS) ERODE 638 107

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Programme Code:	AP	Programme Title: B.Sc	Biochemistry	
Course Code:	20UAPST508	Title: SKILL BASED COURSE III - MEDICAL CODING	Batch:	2018 - 19 Onwards
			Semester:	V
Hours/Week:	3		Credits:	3

Objectives

- To help meet the demands for industry-current professionals with the knowledge and skills to pursue Career opportunities in the growing Health care industry.
- To acquire knowledge in Medical terminology, computerized billing procedures and Medical coding.
- To develop skills to accurately report diagnoses and procedure codes through the application of official coding guidelines in ICD, CPT and HCPCS.
- To effectively identify, understand, and utilize medical codes as they will be applicable to hospital reimbursement in the field of health care.

Course Outcomes

On the successful completion of the course, students will be able to

K1	CO1	Attain the knowledge of Basic terminologies in Medical profession.
K2	CO2	Understand the terms in Medical world.
K3	CO3	Know the importance of documentation.
K4	CO4	Gain an idea about coding system.
K5	CO5	Learn concepts of reimbursement methodologies, Fraud and abuse.

Syllabus

Unit	Content	Hours
I	**Medical Terminology** Fundamentals of the language for the medical profession, Diagnostic procedures, Laboratory tests. **Terminology: (Definitions only) Hematology** - Aplastic anemia, Erythrocytapheresis, Hematocrit, Thrombosis, Hemostasis, Hypoxemia, Neoplastic disease, Thrombocytopenia, Extracarponeal Circulation and Von Willebrand disease. **Terminology: (Definitions only) Cardiology** – Arrhythmias, Flutter, Fibrillation, Varicose vein, Hemorrhoids, Coronary Artery Disease, Endocardilis, Endarterectomy, Thrombolytic therapy and Coronary Bypass Surgery (CABG). **Terminology: (Definitions only) Gastroenterology** - Achlorhydria, Hematochesis, Achalasia, Diverticulitis, Ulcerative Colitis, Colonic Polyposis, Abdominoperineal Resection, Anastomosis, Aneurysm and Colostomy. **Terminology: (Definitions only) Pulmonology** – Croup, Pertussis, Cystic Fibrosis, Atelectasis, Emphysema, Pneumoconiosis, Pulmonary abscess, Pleural Effusion, Tracheostomy and Mediastinoscopy.	7

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II	**Terminology: (Definitions only) Neurology** – Alzheimer's disease, Dementia, Cerebral Thrombosis, Cryothalamotomy, Electroencephalogram (EEG), Encephalitis, Guillain-Barré Syndrome, Myelogram, Pallidotomy and Positron Emission Tomography (PET) Scan. **Terminology: (Definitions only) Opthamology** - Glaucoma, Macular degeneration, Retinal detachment, Retinitis pigmentosa, Astigmatism, Hyperopia, Myopia, Presbyopia, Tonometry and Otolaryngology. **Terminology: (Definitions only) Musculoskeletal system** – Muscular Dystrophy, Cerebral Palsy, Dermatomyositis, Myasthenia Gravis, Mitochondrial myopathies, Myotonia, Bursitis, Osteoporosis, Adduction and Palpation **Terminology: (Definitions only) Urology and Nephrology** – Nephritis, Nephrosis, Cystitis, Urethritis, Urethral Stricture and Cystometry, **Terminology: (Definitions only) Gynecology and Obstetrics** **Male Reproductive system** – Coitus interruptus, Gonadal dysgenesis, Hypoestrogenism, VaricoceleandVasectomy. **Female Reproductive system** - Amenorrhea, Psychogenic pain, Amniocentesis, Antepartum, Uteroplacental circulation, Hysterectomy and Colpocytogram.	7
III	**Health Information Management** Introduction to Health Information Management - Content and structure of Healthcare data - Content of medical records - Documentation requirements for medical records. Healthcare Delivery Systems -Types of healthcare organizations and healthcare workers.	7
IV	**Clinical Classification Systems** Basic Diagnosis Coding Systems - Introduction to ICD-9-CM: Overview, General Structure, Basic Operating Guidelines. Introduction to Current Procedural Terminology (CPT) - Purpose, History, General Structure, Basic Operating Guidelines.	6
V	**Reimbursement Methodologies** Ambulatory Surgery Center reimbursement - Third-party payers - Billing and Insurance procedures - Quality Improvement Organizations (QIO) and their role in the Payment process. **Issues with Fraud and Abuse** Regulatory issues and guidelines - Department of Health and Human Services on Healthcare Fraud and Abuse. Standardization in Coding HIPAA Background and Explanation	6
	TOTAL	33

Teaching Methodology:
Chalk and Talk, PPT

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Books for Study:

1. Barbara A. Gylys Mary Elen Wedding - Medical Terminology Systems, Davis plus International Publisher, 6th Edition, 2008.
2. Betsy J Shiland (2017), 'Medical Terminology & Anatomy for Coding', 3rdEdition, Elsevier Science Publisher Ltd.

Books for Reference:

1. Optum, Guide to Clinical Validation, Documentation and Coding, First Edition, Kindle Book Publishers, 2020.
2. http://www.icd9data.com
3. Coders' Dictionary 2013 byIngenix.

Course Designed by	Verified by	Checked by	Approved by
Name and Signature	Name and Signature	Name and Signature	HOD
Name: Dr. N. Sangeetha Signature:	Name: R. Rasu Signature:	Name: T. Radha Signature:	Name: Dr. A. K. Vidya Signature:

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Programme Code:	AP	Programme Title: B.Sc	Biochemistry	
Course Code:	20UAPCT601	Title: CORE X - MEDICINAL BIOCHEMISTRY	Batch:	2018 - 19 Onwards
			Semester:	VI
Hours/Week:	5		Credits:	4

Objectives

- Understood the development of the traditional and modern methods used for Drug discovery; of how molecules interact.
- Learnt the fact that the pharmaceutical industry is by far the largest employer of medicine.
- Learnt and developed skills in the use of reaction mechanisms and how knowledge of reaction mechanisms can aid in understanding the mode of action of a drug and the method by which it can be synthesized and developed.

Course Outcomes

On the successful completion of the course, students will be able to

K1	CO1	Gain knowledge for the concepts of drug and its specified receptors.
K2	CO2	Knows the fundamentals about drug metabolism.
K3	CO3	Identify the drug for chemotherapy.
K4	CO4	Obtain an idea about recurring cardio vascular diseases and Diabetes Mellitus.
K5	CO5	Expose with the effects of Drug abuse and basics of Drug Design.

Syllabus

Unit	Content	Hours
I	**Basic concepts of Drug and Receptor** **Basic concept of Drug:** Introduction to drugs, Classification of drugs, Passage of drugs across biological membrane; Absorption and Distribution of drugs; Binding of drugs to Plasma Proteins. **Drug Receptor:** Types of receptors, Receptor theories, Isolation of receptors, Drug receptor interaction, Binding forces in drug receptor interaction.	9
II	**Drug Metabolism and Elimination** **Drug Metabolism:** **Microsomal drug metabolism** - Metabolism via Hydroxylation, Conjugation (Glucuronic acid and Sulfate conjugation), Deamination, N-Oxidation, Azo and Nitro reduction. **Non-microsomal drug metabolism** - Non-microsomal oxidation, Oxidative deamination, Purine oxidation, Dehalogenation, Hydrolysis. **Elimination of Drugs:** Elimination of drugs from the body with reference to renal system.	9
III	**Chemotherapy** **Antimetabolites:** Anti-metabolites of folate, purines and pyrimidines. **Antibacterial drugs:** Mode of action and resistance to Sulfonamides, Penicillin, Streptomycin, Tetracycline and Chloramphenicol.	9

	Antiviral drugs: Classification and mechanism of action of Acyclovir and Zidovudine. **Antimalarial drugs:** Classification. Life cycle of malarial parasites in man and Mechanism of action of antimalarial drugs.	
IV	**Drugs acting on Cardio-vascular system and Diabetes Mellitus** **Cardio-vascular system:** Cardio-vascular disease, Structure and mode of action of Cardiac glycosides, Heparin and Coumarin. **Diabetes Mellitus:** Insulin, Oral hypoglycemic agents - Sulphonylureas, Biguanides, Thiazolidinodiones and Alpha - glucosidaseinhibitors.	9
V	**Drug Abuse and Drug Discovery** Drugs from Plant origin, Definition of drug dependence and Drug abuse. **Drug Discovery** – Ligand based drug designing and computer based drug designing. Applications of Computational biology and Artificial Intelligence in drug discovery.	9
	TOTAL	**45**

Teaching Methodology:
Chalk and Talk, PPT

Books for Study:

1. K. D. Tripathi, Essentials of Medical Pharmacology, 7th Edition, Jaypee Brothers Medical Publications (P) Ltd, 2013.
2. Salil K Bhattacharya, ParantapaSen and Arunabha Ray. Pharmacology 2 nd Edition, Elsevier Publication,NewDelhi,2004.

Books for Reference:

1. Satoskar R. S. Bhandarkar, S.D and S.S. Ainapure, Pharmcologyand Pharamacotherapeutics, 14thEdition,Popular PrakashnanBombay, 2017.
2. William Foye, Principles of Medicinalchemistry, 3rd edition, Wolters Kluwer Publications, 2012.
3. Grahame D. G. Smith and Aronson. J.K. Oxford T.B of Clinical Pharmacology and Drug therapy, 2nd Revised Edition, Oxford University Press, 1992..

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Course Designed by	Verified by	Checked by	Approved by
Name and Signature	Name and Signature	Name and Signature	HOD
Name: R. Rasu Signature:	Name: T. Radha Signature:	Name: Mr. S. Natarajan Signature:	Name: Dr. A. K. Vidya Signature:

Programme Code:	AP	Programme Title: B.Sc	Biochemistry	
Course Code:	20UAPCT602	Title: CORE XI - PLANT BIOCHEMISTRY AND PLANT THERAPEUTICS	Batch:	2018 - 19 Onwards
			Semester:	VI
Hours/Week:	5		Credits:	4

Objectives

- To gain knowledge on basic physiological aspects of transpiration, respiration and photosynthesis
- To acquire knowledge on the applied aspects of plant
- To gain a holistic approach on research related to plant genetic manipulation and Plant-Environment interaction.

Course Outcomes

On the successful completion of the course, students will be able to

K1	CO1	Know basic physiological aspects of transpiration, respiration.
K2	CO2	Gain the fundamentals idea about photosynthesis machinery in plants.
K3	CO3	Recognize and understand the importance of nutrition for plant growth.
K4	CO4	Describe the practical applications of plant growth regulators.
K5	CO5	Learn about the functions of secondary metabolites.

Syllabus

Unit	Content	Hours
I	**Absorption of Water and Transpiration** **Plant Cell:** Structure and Functions. **Water absorption by plants:** Mechanism of water absorption (Active & Passive)and factors affecting the rate of water absorption. **Transpiration:** Types of transpiration, Mechanism of transpiration, Opening and closing of stomata; Factors affecting the rate of transpiration.	9
II	**Photosynthesis:** Definition, Photosynthetic apparatus, Photosynthetic pigment – Chlorophyll, Carotenoids and Phycobilins, Mechanism of Photosynthesis. **Light reaction:** Photo system I and II. Photo oxidation of Water. Cyclic and Non – Cyclic Photophosphorylation. Light reaction - Hill's reaction, Arnon's work and Emerson effect. **Dark reaction:** Calvin cycle (C3 Plants), Hatch Slack cycle (C4 Plants) and CAM Plants, Photorespiration (C2 Plants)	9
III	**Cycle of elements** **Nitrogen cycle:** Ammonification, Nitrification, Nitrate reduction and Denitrification. **Nitrogen fixation:** Symbiotic and Non Symbiotic nitrogen fixation. Sulphur cycle, Phosphorous cycle and Carbon cycle.	9

	Plant Nutrition: Specific roles of essential elements and their deficiency symptoms in plants. **Micronutrients:** Manganese, Boron, Copper, Zinc, Molybdenum and Chlorine **Macronutrients:** Carbon, Hydrogen, Oxygen, Nitrogen, Sulphur, Phosphorous, Calcium, Potassium, Magnesium and Iron.	
IV	**Plant growth regulators** Chemistry, Biosynthesis, Mode of action and Practical applications of Auxin, Gibberellin, Cytokinin, Absicic acid and Ethylene. Biochemical Changes during Fruit Ripening. Photo morphogenesis: Phytochrome and its function.	9
V	**Life cycle of plants and its biochemical changes** Seed Dormancy - Causes, Methods of breaking Dormancy; Seed Germination and Senescence - Biochemical changes. **Secondary metabolites** Nature, Distribution and biological functions of Alkaloids, Flavonoids and Terpenes. Role of secondary metabolites in pathogens, insects, animals and mankind.	9
	TOTAL	**45**

Teaching Methodology:
Chalk and Talk, PPT

Books for Study:

1. S. K. Verma, A Textbook of Plant physiology and Biochemistry, 6th Edition, S. Chand &Company Ltd, 2007

Books for Reference:

1. Devlin N. Robert and Francis H. Witham, Plant physiology, 2nd Edition, CBS Publications, 2017
2. Bob, Buchannan, "Biochemistry and Molecular biology of plants", 2nd Edition, I.K International Pvt. Ltd, 2015
3. Lea and Lea woods Plant Biochemistry and Molecular Biology, 2nd Edition, John Wiley and sons, 1999.

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Course Designed by	Verified by	Checked by	Approved by
Name and Signature	Name and Signature	Name and Signature	HOD
Name: T. Radha Signature: Radha	Name: R. Rasu Signature: R. Rasu	Name: Dr. A. K. Vidya Signature: dd Dy	Name: Dr. A. K. Vidya Signature: dd Dy

Programme Code:	AP	Programme Title: B.Sc	Biochemistry	
Course Code:	20UAPCT604	Title: CORE BIOCHEMISTRY PRACTICALS - IV	Batch:	2018 - 19 Onwards
			Semester:	V & VI
Hours/Week:	3 (ODD) & 5 (EVEN)		Credits:	3

(EXAMINATION AT THE END OF SIXTH SEMESTER)

Objectives

- To understand and get familiarized with the Physiology, Immunology, Plant and Molecular studies.

Course Outcomes

On the successful completion of the course, students will be able to

K1	CO1	Understand the serological parameters.
K2	CO2	Acquire knowledge about Antigen - Antibody Reaction.
K3	CO3	Get better knowledge with screening of secondary metabolites.
K4	CO4	Acquire practical exposure with analysis of biochemical constituents in plants.
K5	CO5	Gain knowledge in molecular techniques.

Syllabus

Unit	Content	Hours
I	**PHYSIOLOGY EXPERIMENTS** 1. Bleeding & clotting Time 2. Prothrombin Time 3. Estimation of Hemoglobin in Whole blood (Cyanmethemoglobin method)	9
II	**IMMUNO TECHNIQUES: (Qualitative Kit Method)** 1. Identification of Blood group and Rh factor. 2. RA factor. 3. Pregnancy test. 4. WIDAL test. 5. VDRL test. 6. CRP test. 7. Immuno Diffusion (Group Experiment)	27
III	**PLANTBIOCHEMISTRY** Qualitative analysis of Secondary Phytochemicals in Five Medicinal Plants	20
IV	**PLANTBIOCHEMISTRY** Quantitative analysis 1. Estimation of Chlorophyll 2. Estimation of Starch from Potato - Anthrone Method 3. Total Antioxidant activity of medicinal plants - DPPH Assay	15
V	**MOLECULAR TECHNIQUES** (Group Experiment) 1. Buccal Smear - Identification of BARR BODY 2. Separation of DNA by Agarose Gel Electrophoresis	5
	TOTAL	78

Teaching Methodology:
Demonstration following individual Practicals

Books for Study:

1. Dr. S. Rajan. Manual for Medical Laboratory Technology, 1st Edition, Anjanaa Book House, 2012.
2. Verma S K, A textbook of Plant Physiology and Biochemistry, 3rdRevised Edition. S.Chand& Company,2000.

Books for Reference:

1. RanjnaChawla, Practical Clinical Biochemistry, Third Edition, Jaypee Brothers Medical Publishers (P) Ltd., New Delhi 2014.
2. Alan H.Gowenlock, Janet R.McMurray and Donald M.McLauchlan, Varley'sPracical Clinical Biochemistry, CBS Publishers and Distributors, New Delhi 4th Edition 2010.

Course Designed by	Verified by	Checked by	Approved by
Name and Signature	Name and Signature	Name and Signature	HOD
Name: T. Radha Signature:	Name: R. Rasu Signature:	Name: S. Natarajan Signature:	Name: Dr. A. K. Vidya Signature:

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KONGU ARTS AND SCIENCE COLLEGE

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ERODE – 638 107

ACTIVITIES

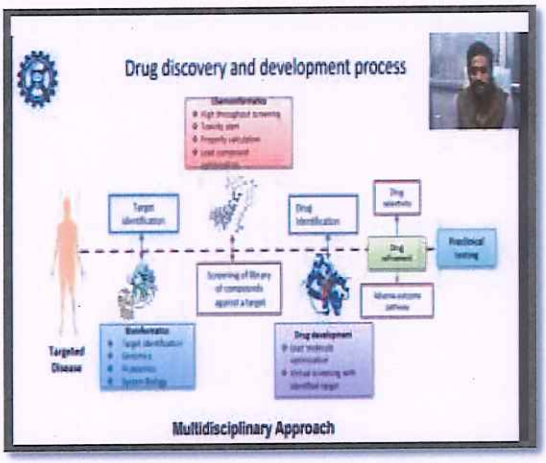
KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF BIOCHEMISTRY

DBT STAR COLLEGE SCHEME

Webinar Series on Practicing Biochemical Applications using Computational Biology (05.05.2020)

REPORT



Department of Biochemistry conducted a Guest Lecture on **Practicing Biochemical Applications using Computational Biology**under DBT Star College scheme.The meeting platform was Google meet.Nearly 180students from Biochemistry Department participated in the Programme.

Dr.ParthasarathiRamakrishnan (Alumni), Principal Scientist, CSIR- Indian Institute of Toxicology Research, Lucknowwas the Resource Person.

Through this Program Participants gained knowledge on recent developments and application of data-analytical tools in computational biology to explore biological

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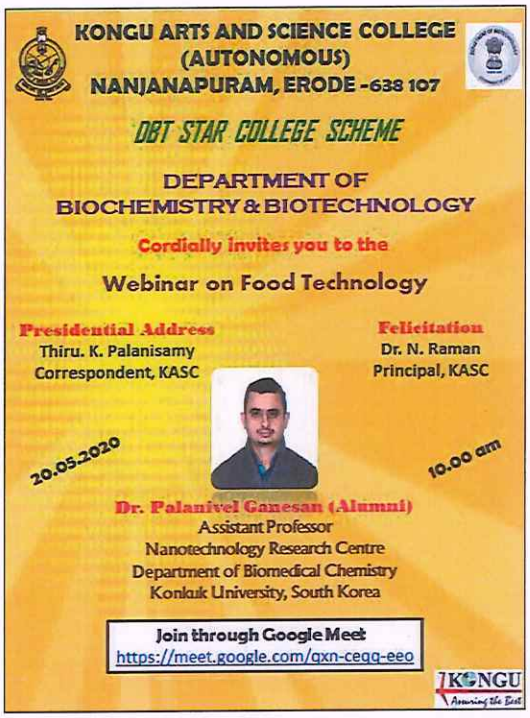
KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF BIOCHEMISTRY

DBT STAR COLLEGE SCHEME

Webinar on Food Technology on 20.05.2020

REPORT



Department of Biochemistry and Biotechnology organized **Webinar on Food Technology**under DBT Star College scheme.The meeting platform was Google meet.Nearly 180students from Biochemistry and BiotechnologyDepartment participated in this Programme.

Dr.PalanivelGanesan,Assistant Professor,Nanotechnology Research Centre,Department of Biomedical Chemistry, Konkuk University, South Koreawas the Resource Persons.Through this Program Students were benefited with the information on the latest approaches in Food Technology

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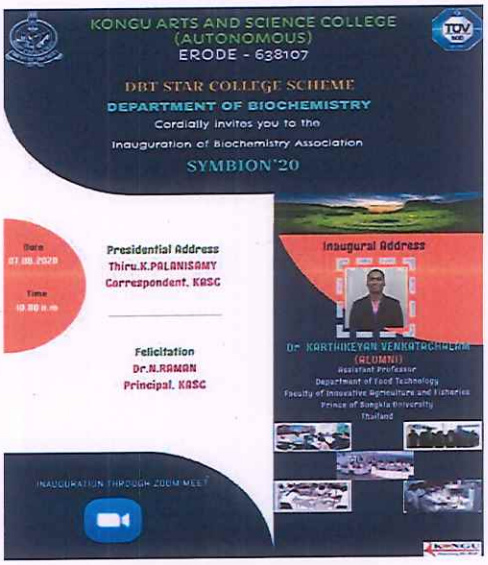
KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

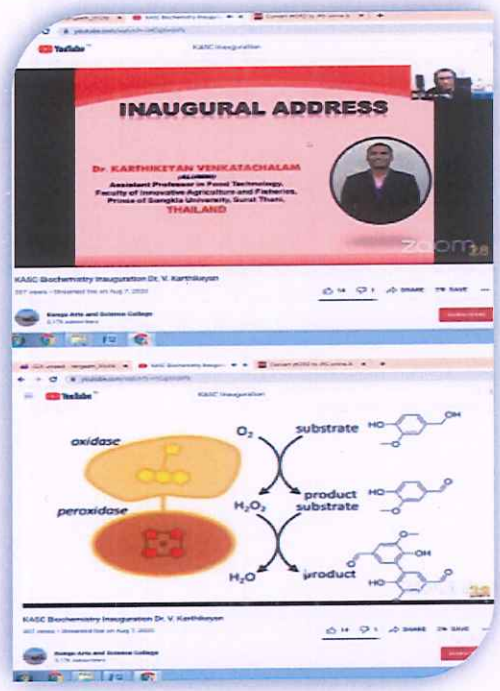
DEPARTMENT OF BIOCHEMISTRY

DBT STAR COLLEGE SCHEME

Guest lecture on Biochemistry-The Backbone of Food Science and technology (07.08.2020)

REPORT





Department of Biochemistry organizeda Guest Lecture on **Biochemistry - The Backbone of Food Science and technology** under DBT Star College scheme. The meeting platform was Google meet.Nearly180students from Biochemistry Department participated in the Programme.

Dr. Karthikeyan Venkatachalam (Alumni), Assistant Professor, Department of Food Technology, Faculty of Innovative Agriculture and Fisheries,Prince of Songkla University, SuratThani, Thailand was the Resource Person.

Dr. V. Karthikeyan in his lecture presented a new insight about the role and importance of Biochemistry in Nutrition Food Technology.TheProgram proved to be highly valuable for the students and they gained a new perspective on the current trend of Research progressing in Food Science.

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DEPARTMENT OF BIOCHEMISTRY

DBT STAR COLLEGE SCHEME

Alumni Webinar Series on Functional Biochemistry - Applied Strategies in FMCG Industry (26.11.2020)

REPORT

Department of Biochemistry organized **Alumni Webinar Series on Functional Biochemistry - Applied Strategies in FMCG Industry on 26.11.2020 under** DBT Star College scheme.The meeting platform was Google meet.Nearly 100students from Biochemistry Department participated in the Programme.

Ms. IndhiraKumaresan (Alumni), (2003-2006 Batch) Cosmetic Researcher and Fragrance expert Michigan, USA was the Resource Person. This lecture helped Students to acquire knowledge on the relevance of Biochemistry in the Fast Moving Consumer Goods Industry(FMCG) right from product development to performance testing and fine tuning of existing and new products.

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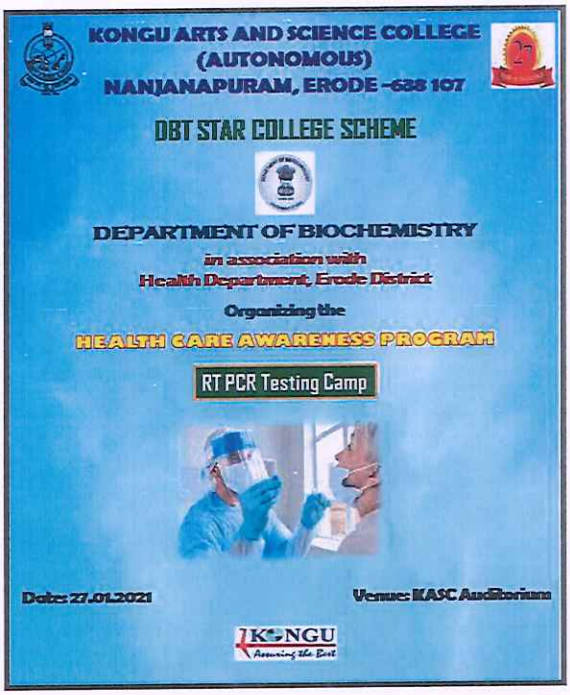
DEPARTMENT OF BIOCHEMISTRY

DBT STAR COLLEGE SCHEME

Health Care Awareness program on 27.01.2021

REPORT



Department of Biochemistry organized**Health Care Awareness program in association with Health Department, Erode District**under DBT Star College scheme. The Program was organized in the College Auditorium. Nearly 200 members participated in the Programme.

This camp was conducted for teaching, non teaching staff, Research scholars and students as a preventive step at organization and Swab were collected for RT-PCR Testing by Health Department, Erode District.

Doctors gave an awareness talk on spread of Covid-19 virus, and explained how wearing mask and social distancing checks spread of corona virus.

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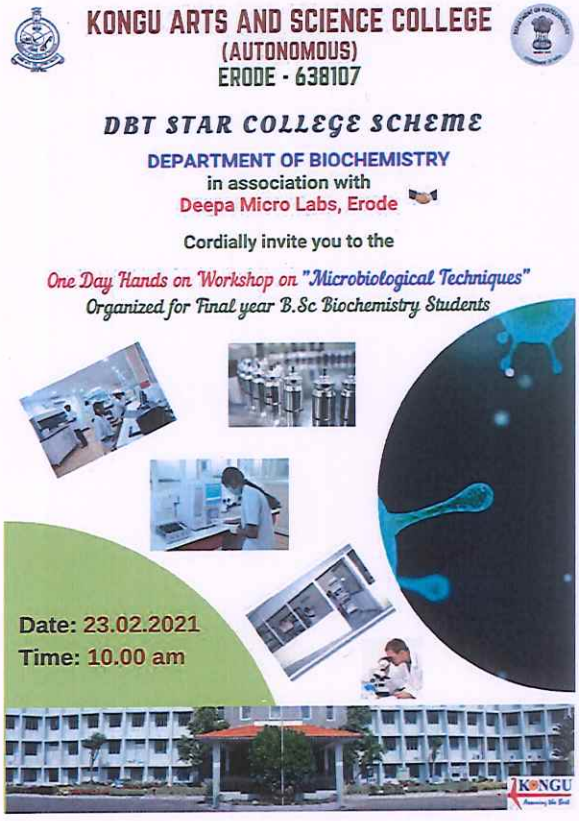
DEPARTMENT OF BIOCHEMISTRY

DBT STAR COLLEGE SCHEME

ONE DAY WORKSHOP ON "MICROBIOLOGICAL TECHNIQUES"

(23.02.2021)

REPORT



Department of Biochemistry in associated with Deepaa Micro Lab, Erode organized the **One Day Workshop On Microbiological Techniques**under DBT Star College scheme. Nearly 45 students and 7 faculty members participated in this Programme. The venue is UG Biochemistry Laboratory.

Mr. A. Krishnamoorthy, Ms. M. Valarmathi& Mr. A. Ajith, Deepaa Micro Lab, Erode was Trainer for this programme. Students learnt about sterilization of culture media, glassware and plastic ware to be used for microbiological work. They were also trained in the basic skills of Handling and use of microscopes for the study of

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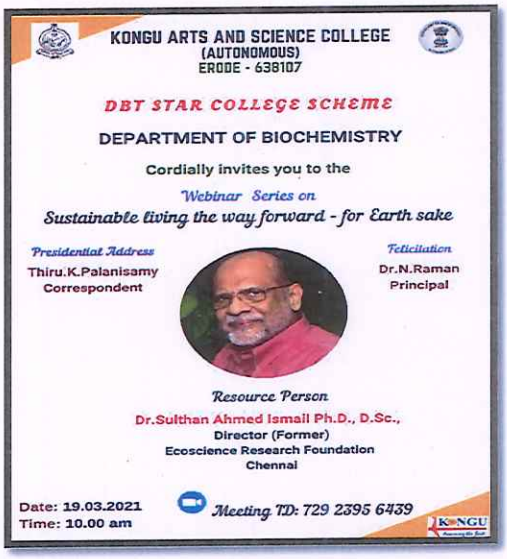
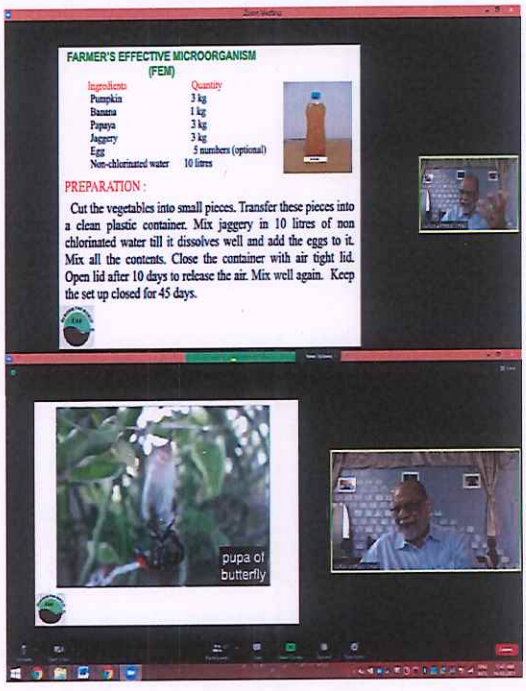
DEPARTMENT OF BIOCHEMISTRY

DBT STAR COLLEGE SCHEME

Webinar Series on Sustainable Living the Way forward for Earth Sake (19.03.2021)

REPORT





Department of Biochemistry conducted a Guest Lecture on **Sustainable Living the Way forward for Earth Sake** under DBT Star College scheme. The meeting platform was Google meet.Nearly 180students from Biochemistry Department participated in the Programme.

Dr. Sulthan Ahmed Ismail, Director (Former) Ecoscience Research foundation, Chennaiwas the Resource Person.

The program enlightened Students about our association with nature and provided great insights on protecting the environment from ecological imbalance.

The program also voiced concern over the important responsibility of every single human to safeguard the environment for earth's sake.

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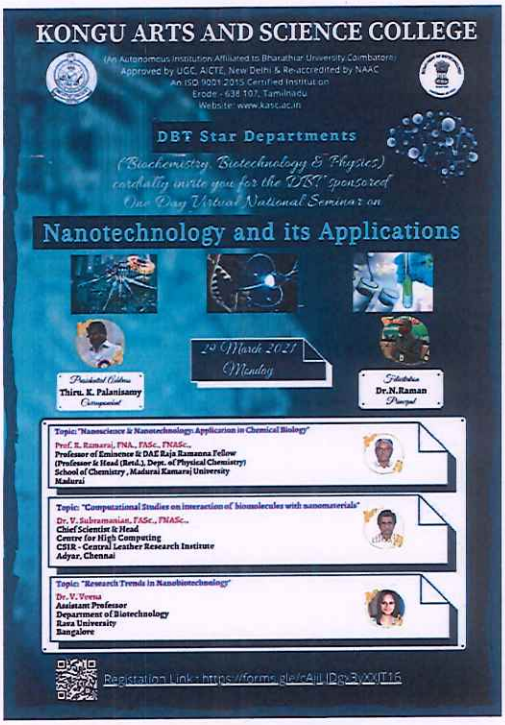
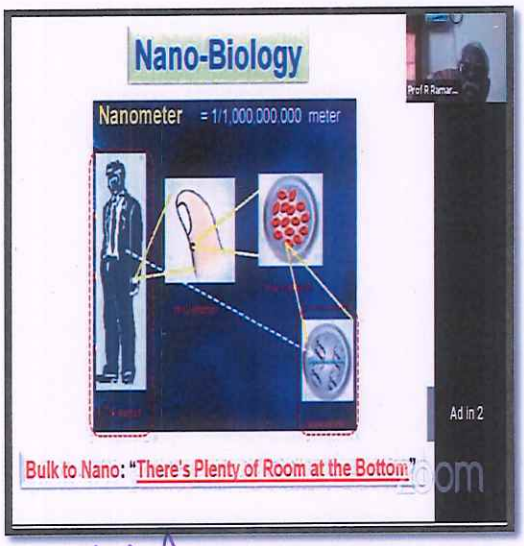
DEPARTMENT OF BIOCHEMISTRY

DBT STAR COLLEGESCHEME

One Day Virtual National Seminar On Nanotechnology and its Applications (29.03.2021)

REPORT





Department of Biochemistry organized a **One Day Virtual National Seminar on Nanotechnology and its Applications** under DBT Star College scheme. The meeting platform was Google meet.Nearly Faculty and Students from various Institutionsparticipated in the Programme.

Prof. R. Ramaraj, Madurai Kamaraj University, Madurai,**Dr. V. Subramanian**, CSIR - Central Leather Research Institute, Adayar Chennai, **Dr. V. Veena,**Rava University, and Bangalorewere the Resource Persons.

Students were able to understand that Nanotechnology can solve major health problems, increase the efficiency of energy consumption and aid in cleaning the environment.

Researchers were motivated to explore further in the current trending research areas in the Nanotechnology field.

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