Ch. Charan Singh University, Meerut –250004

DEPARTMENT OF BIOTECHNOLOGY (SFS COURSE)

M.Sc. BIOTECHNOLOGY, 2009

Distribution of Marks in different courses:

I Semester	Course Title	Theory External	Theory Internal	Total Marks
Course I	Fundamental of Genetics	50	50	100
Course II	Cytogenetics and Molecular Genetics	50	50	100
Course III	Statistical Methods and Bioinformatics in Biology	50	50	100
Course IV	Tools and Techniques in Biotechnology	50	50	100
Practical I (4 hours)		100(External)	100(Internal)	200
Total Marks		300	300	600

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

II Semester	Course Title	Theory External	Theory Internal	Total Marks
Course V	Fundamentals of Biochemistry	50	50	100
Course VI	Plant Genetic Resources: - Conservation and Sustainable use	50	50	100
Course VII	Biotechnology in Crop improvement	50	50	100
Course VIII	Recombinant DNA Technology and Genetic Engineering	50	50	100
Practical II (4 hours)		100 (External)	100(Internal)	200
Total Marks		100	300	600

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

III Semester	Course Title	Theory External	Theory Internal	Total Marks
Course IX	Microbial, Industrial and Environmental Biotechnology	50	50	100
Course X	Concepts of Nanotechnology	50	50	100
Course XI	Animal biotechnology and Immunology	50	50	100
Course XII	Genomics and Proteomics	50	50	100
	Practical III (4 hours)	100(external)	100(Internal)	200
Total Marks		300	300	600

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

IV Semester	**Course Title**	Dissertation, presentation, viva-voce	**Total Marks**
	Project	400	400
Grand Total of Marks		2200	2200

A minimum of 30% marks separately in internal and external assessment of each course and an aggregate of 40% marks in all the courses is required for passing. In case of failing to obtain 30 % marks in internal assessment of any paper, the candidate will not be eligible to appear in external examination of that course.

CURRICULUM: M.Sc. BIOTECHNOLOGY (2009)

I Semester

1. Fundamental of Genetics

2. Cytogenetics and Molecular Genetics

3. Statistical Methods and Bioinformatics in Biology

4. Tools and Techniques in Biotechnology

Lab.: Fundamental of Genetics; Cytogenetics and Molecular Genetics; Statistical Methods and Bioinformatics in Biology; Tools and Techniques in Biotechnology

II Semester

5. Fundamentals of Biochemistry

6. Plant Genetic Resources: - Conservation and Sustainable use

7. Biotechnology in Crop improvement

8. Recombinant DNA Technology and Genetic Engineering

Lab.: Fundamentals of Biochemistry; Plant Genetic Resources: - Conservation and Sustainable use; Biotechnology in Crop improvement; Recombinant DNA Technology and Genetic Engineering

III Semester

9. Microbial, Industrial and Environmental Biotechnology

10. Concepts of Nanotechnology

11. Animal biotechnology and Immunology

12. Genomics and Proteomics

Lab.: Microbial, Industrial and Environmental Biotechnology; Concepts of Nanotechnology; Animal Biotechnology and Immunology; Genomics and Proteomics

IV Semester

Project: 1. Report of work

2. Presentation of work.

3. Viva-voce examination.

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Course-I

Fundamental of Genetics

Unit-I

Introduction: History of Genetics, its scope and significance, Mendel's experiments, Principles of Segregation and Law of Independent Assortment, Lethality and Interaction of genes.
(4)

Unit-II

Linkage and crossing over: Linkage in higher eukaryotes, Coupling and Repulsion Hypothesis, measurement of Linkage, Detection of linkage, Breakdown of Linkage, Four- strand crossing over, Three-Point Test cross, cytological basis of crossing over, Interference and Coincidence, Crossing over and Chisma formation, Factor affecting recombination frequencies.
(4)

Unit-III

Genetics of Sex Determination and Differentiation: Sex-linked, Sex- limited and Sex- influenced traits in *Drosophila* and Human beings, Theories of Sex-determination- Chromosomal theory, environmental theory and genic balance theory, Sex- determination in dioeciously plants, Sex reversal and Gynandromorphs, Human sex anomalies (Klinefelter's Syndrome and Turner's Syndrome), brief idea of Dosage Compensation and Lyon's hypothesis. **(6)**

Unit-IV

Mutation and Mutagenic Agents: Brief history of mutation, physical and chemical Mutagens, Detection of mutation in *Drosophila* (CIB method, Muller-5 method), Detection of mutation in plants and their practical application in crop improvement.

(6)

Unit-IV

Multiple Alleles: Concepts of multiple alleles, self incompatibility alleles in Nicotiana, coat color in rodents, Blood group in Humans, antigen-antibody interaction in inheritance of A, B, AB and O blood groups, H-antigens, MNS system, Rh Factor, Epitasis and multiple allelism (Bombay blood group).
(6)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Unit-V

Genetics of Inbreeding Depression and Heterosis: Definition and Historical aspects of heterosis and Inbreeding depression, manifestation and application of heterosis, apomixis and fixation of heterosis, application of molecular marker in heterosis breeding. **(8)**

Unit-VI

Extra -chromosomal Inheritance: Criteria for extra- chromosomal inheritance, plastid inheritance in *Mirabilis,* iojapa in corn, Kappa particles in *Paramecium,* Coiling in snails, male sterility in plants. **(6)**

Unit-VII

Biochemical Genetics: Inborn errors of Metabolism in man, eye transplantation in *Drosophila,* biochemical mutations in Neurospora, biosynthetic pathways and biochemical mutations. **(4)**

Unit-VIII

Concepts of Genes: Classical and modern gene concepts, Pseudoallelism, position effects, intragenic crossing over and complementation (cistron, recon, muton), Benzer's work on rII locus in T4 phases. **(6)**

Course-II

Cytogenetics and Molecular Genetics

PART-A: - Cytogenetics

Unit-I

Cell Division: Cell Cycle, differences between mitosis and meiosis, mechanism of chromosome moment, reduction division and equational division, double reduction. **(6)**

Unit-II

Duplication and deficiencies: Classification, methods of production, meiotic pairing and Phenotypic effects. (4)

Unit-III

Translocation: - Classification, methods of production, identification, meiotic pairing and role in evolution. (4)

Unit-IV

Inversion: Classification, methods of production, identification, meiotic pairing and crossing over in different regions, Role in evolution. (6)

Unit-V

Trisomic and Tetrasomic: - Classification, methods of production, Identification, meiotic pairing and utility in Chromosome mapping. (2)

Unit-VI

Monosomic and Nullisomic: - Methods of Production, Identification, meiotic behavior, monosomic analysis, alien additions/substitution lines. (2)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

PART-B: - Molecular Genetics

Unit-VII

Genetic Material: DNA and RNA as genetic material (experimental evidences), structure of DNA(including Z-DNA and 5- hasisekharan's RL model), super coiling of DNA, Different type of RNAs and their roles, difference between DNA and RNA. (6)

Unit-VIII

DNA Duplication (in prokaryotes and Eukaryotes):- Unwinding proteins, Role of RNA Polymerases and DNA polymerases in prokaryotic and eukaryotic DNA replication, Semi-conservative, Discontinuous and Bi-directional replication, RNA primers, Role of proteins in prokaryotic and eukaryotic DNA replication, Models of replication. (8)

Unit-IX

Organization of Genetic Material: Chromosome ultra structure and nucleosome concept, packing of DNA as nucleosomes in eukaryotes, techniques used for discovery of nucleosome, structure and assembly of nucleosomes, solenoid, phasing of nucleosomes, DNA concept and C-value paradox, repetitive and unique sequences, overlapping, pseudo, crying and split genes, satellite DNA's, selfish DNA. (8)

Unit-X

Genetic Code (including mitochondrial genetic code):- Deciphering of code in vitro and in vivo (use of mutations-base replacement, frame-shift and suppressor mutation). (4)

Course-III

Statistical Methods and Bioinformatics in Biology

PART-I: Statistical Methods

Unit-I

Presentation of Data: Frequency distributions, graphical presentation of data by histogram, frequency polygon, frequency curve, and cumulative frequency curves. (4)

Unit-II

Measures of central tendency and dispersion: - Mean, Median, Mode and their simple properties (without derivations), and calculation of median by graphs, range, mean derivation, standard deviations, coefficient of variation. (6)

Unit-III

Test of Significance: - Sampling distribution of mean and standard error, large scale sample tests(tests for an assumed mean and equality of two population means with known S.D.), small sample tests(t-tests for an assumed mean and equality of means of two populations when sample observations are independent, paired and unpaired t- test, t- test for correlation and regression coefficients), t-test for comparison of variances of two populations, chi-square test for independent of attributes, goodness of fit and homogeneity of samples. (10)

Unit-IV

Experimental Designs: Principles of experimental designs, completely randomized, randomized block and Latin square designs, simple factorial experiments (mathematical derivation not required), analysis of variance (ANOVA) and its uses. (8)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

PART-II: Bioinformatics

Unit-V

Introduction: - History, aims of Bioinformatics, Definition and Concepts, Components of Bioinformatics, Basic tools, Scope of Bioinformatics in molecular biology and Computers, Role of internet in Bioinformatics, Applications of Bioinformatics. (6)

Unit-VI

Bioinformatics- Approaches and applications: - Introduction, DNA-the staff of life, molecular sequence alignments, databases, molecular visualization integrated molecular biology database. (8)

Unit-VII

Protein and Nucleic acid databases: - Introduction, Protein and Nucleic acid databases, databases accession, database searching, NCBI based study. (8)

Course-IV

Tools and Techniques in Biotechnology

Unit-I

Microscopy: Principles, Resolving Power and applications of Light Microscopy, Electron Microscopy (SEM, TEM) and Confocal Microscopy. (6)

Unit-II

Centrifugation: Brief history, type of centrifugation, theory of centrifugation, types of centrifuges and centrifugation techniques, Types of rotors. (8)

Unit-III

Electrophoresis: - History, Principles, Application and factor affecting of electrophoresis with detail reference to Agarose, PAGE, PFGE, Capillary electrophoresis, continuous, 2D-PAGE, IEF. (8)

Unit-IV

Nuclear Magnetic Resonance Spectroscopy: - History of NMR, theory and principles of NMR, NMR spectrometer, Detection of frequencies and Measurement by NMR. (6)

Unit-V

Radioisotope Technique: - Nature of Radioactivity, characteristics of different radiolabels, detection and measurement in Radioactivity, applications of radioisotopes in biological sciences. (6)

Unit-VI

Spectroscopy: - Introduction, theory and principles of different types of Spectroscopy and their applications in biotechnology. (6)

Unit-VII

Chromatography: - General principles and techniques of HPLC, LPLC, GLC, Adsorption Chromatography, partition chromatography, IEC, permeation Chromatography, Affinity Chromatography. (10)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Course-V

Fundamentals of Biochemistry

Unit-I

Structural and Biochemical Organization: - Amino Acids, Carbohydrates, Lipids and Fatty Acids and Nucleotides. (6)

Unit-II

Secondary metabolites: - Hormones, Alkaloids, Porphyrins. (6)

Unit-III

Enzymology: - Enzymes, Elementary Kinetics, Mechanism of enzymes action, assay types, reaction rates, Extremozymes engineering, enzyme activity and substrate specificity, Non-aqueous enzymology, coenzymes and vitamins, Isozymes and allosteric enzymes. (12)

Unit-IV

Protein as base unit: - Structure and function, Protein folding, Protein sequencing, Ramachandran's plot and Protein catabolism (10)

Unit-V

Major intermediary metabolic pathways, biosynthesis and catabolism of saturated and unsaturated fatty acid, nucleotides. (8)

Unit-VI

Glycolysis, Kreb's cycle, ETS of respiration and oxidative phosphorylation substrate level phosphorylation, Anaplerotic pathway. (8)

Course-VI

Plant Genetic Resources: - Conservation and Sustainable use.

Unit-I

Biological species: Concepts and its limitation. (2)

Unit-II

Centers of Diversity and Centers of Origin. (2)

Unit-III

A brief idea of the evolution of crop plants: - Wheat, Barley, Rice, Maize, Cotton, Sugarcane, Potato, Cole crops, Rapeseeds and mustard. (6)

Unit-III

Biodiversity vs. Genetic Resources: - Definition and Explanation, alpha vs. beta biodiversity and methods of their study, present levels of Biodiversity and rate of loss of biodiversity, causes for the loss of biodiversity, uses of biodiversity, extent of biodiversity in plants, exploration and germplasm collection, introduction and exchange of PGR, Red Data Books and Endangered plant species. (8)

Unit-IV

Plant Genetic Resources: - Different kinds of PGR, Taxonomical Classification of PGR, Basic, derived and molecular, core collections, principles of germplasm characterization, evaluation, maintenance and regeneration, Plant quarantine aspects- Sanitary and Phytosanitary Systems (SPS). (8)

Unit-V

Techniques for conservation of plant germplasm: - *In-situ* and *Ex-situ* methods of conservation, Cryopreservation of genetic materials. Gene banks and Cryobanks. (2)

Unit-VI

IPGRI, NBPGR, FAO and CGIAR: - Their role is conservation of PGR. (6)

Unit-VII

Future Harvest Centers and CBD: -A Brief Idea, CBD and Cartagena protocol. (6)

Unit-VIII

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

UPOV, Plant Breeders Rights (PBRs) and farmers Right (FRs), Protection of plant varieties and farmers right act (PPV and FRA) 2001. (4)

Unit-IX

PGR and IPRs (Intellectual Property Rights):- Patents, copyrights, Trademarks, GATT and TRIPs, Terminator and Traitor Techniques (v-GURT and t- GURT), Biodiversity Bill 2002, Geographic indicator bill. (6)

Course-VII

Biotechnology in Crop improvement

Unit-I

Plant organ, tissue and cell culture: - Somaclonal variation and its use in crop improvement, embryo culture and its utility in hybridization programmes, Anther culture, haploid production and their uses, micro propagation in horticultural crops and forestry and its uses, artificial seeds, techniques of protoplast culture, regeneration and somatic cell hybridization, achievements , limitations, utility in improvement of crop plants. (12)

Unit-II

Biofertilizers, Bioinsecticides and Molecular Farming. Concept and utility (4)

Unit-III

Methods of Gene Transfer in Plants: *Agarobacterium* mediated gene transfer, direct DNA delivery methods (microinjection, particle gun, electrophoration). (6)

Unit-IV

Hybridization: - Distant hybridization and Somatic hybridization in crop improvement. (4)

Unit-V

Transgenic Plants in dicots and monocots: - Utility of Transgenic in basic studies and in crop improvement (resistance for herbicides, viruses, insects and abiotic stresses, Barnase and Barstar for hybrid seed production), Biosafety issues including risks associated with transgenic crops, biosafety regulations. (8)

Unit-VI

Improvement of Nutritional quality of plants: - seed storage proteins e.g. Glycinin, Conglycinin, Legumin, Phytohaemaglutinin, Phaseolin, Prolamins, Albumins and Designer-proteins, Engineering for vitamins and Iron-Deficiency, Engineering Traits related to hybrid seed Production (e.g. Male Sterility) (8)

Unit-VII

Plant genome Programs: - Impact of genetically modified crops and genomics research in agriculture and biology, Evaluation of Transgenic plants as to their commercial value, Efficacy and Environmental concerns, Legislation for Transgenic plants, Economic viability of Transgenic plants (8)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

M.Sc. (Biotechnology)

Course-VIII

Recombinant DNA Technology and Genetic Engineering

Unit-I

Genetic Engineering: - Definition and explanation, scope of GE, Concept and importance of GE, RDT in prokaryotes and eukaryotes, Restriction enzymes, modifying enzymes, Isoschizomers and cloning into mutagenesis, DNA Fingerprinting. (12)

Unit-II

Cloning and expression vectors:-Plasmid, Phage, M13, Phagemid, BAC, YAC, MAC, Expression vectors, Use of Promoters, Expression through Strong and Regulatable Promoters, Binary and Shuttle Vectors. (8)

Unit-III

Libraries and molecular probes: - Construction and Screening of genomic and cDNA libraries, BAC libraries and assembly of BACs into contigs, Molecular probes and their preparation, labeling and applications, Southern, Northern, Western blotting, Chromosome walking, Chromosome jumping. (12)

Unit-IV

Polymerase Chain Reaction: - Basic principles and its modifications, designing of primers, Different schemes of PCR, application of PCR, RACEs, Electronic PCR (e-PCR), RT- PCR, Real- Time PCR (8)

Unit-V

Gene Sequencing: - Different methods of gene isolation, techniques for sequencing (Maxam & Gilbert degradation method, Sanger's Dideoxy method), Organo-chemical gene synthesis mechanism, cDNA using reverse transcriptase. (10)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Course-IX

Microbial, Industrial and Environmental Biotechnology

Unit-I

Introduction: - Concepts, Growth curve, sterilization techniques, Isolation and Characterization. (2)

UNIT II

Microbes: - Definition, classification, sources of useful microbes and their characteristics. (4)

Unit-III

Use of Microbes in food and dairy, single cell proteins, physiological aspects SCP from CO_2, waste materials and renewable resources, improvement in single cell protein production, Probiotic foods. (8)

Unit-IV

Industrial source of enzymes: - Cellulases, Xylanases, Pectinases, Amylase, Lipase and Proteases their production and applications. (6)

Unit-V

Commercial production of important antibiotics, amino acids, insulin, steroids, Fermentation and production of Ethanol, Acetone, Butanol, Glycerol, Vitamins and Alkaloid (8)

Unit-VI

Pollution: - Types, causes, Prevention and Control, methods of reducing environmental impacts of chemicals, weedicides, Pesticides and fertilizers, Biotechnological advances in pollution control through GEMs, Sewage treatment, Newer approaches to sewage treatment, treatment of solid waste, Energy production- Bio-fuels. (8)

Unit-VII

Bioremediation and pollution control through microbes and plants, Biodegradation of Natural Products, microbial desulphurization, biodegradation of xenobiotics, hydrocarbons. (8)

Unit-VIII

Biotechnology of fermentation: Methods and types of fermentation, dual/multiple fermentation, continuous fermentation and late nutrient addition, growth kinetics of microorganisms, fermenter systems and fermentation. (6)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Course-X

Concepts of Nano-biotechnology

Unit-I

Introduction: - Concept, scope, vision, application, present and future prospects in biological sciences. (6)

Unit-II

Applications of Quantum Dots in Biology: - An overview, Introduction, General properties, applications. (6)

Unit-III

Assembly and Characterization of Bio-molecules: - Gold Nano-particle conjugates and their use in intracellular imaging (introduction, different methods). (6)

Unit-IV

Surface-functionalized Nano-particles for controlled drug delivery: - Introduction and different Methods. (4)

Unit-V

Structural DNA nanotechnology- An overview: - Introduction, DNA objects, DNA Arrays, DNA nanomechanical devices, DNA based computational studies. (8)

Unit-VI

Nanostructure DNA templates: - Introduction, synthesis and purification of Plasmid templates, Fabrication and preparation of ultrathin carbon-coated TEM Grids, Preparation of Q-Cds/pUCLen4 or Q-Cds/Φx174 RF11 samples, their characterization. (8)

Unit-VII

Probing DNA structure with Nanoparticles: -Introduction, Different methods. (4)

Unit-VIII

Synthetic Nanoscale Elements for Delivery of Material into Viable cells: - Introduction, different Material required, Different methods. (8)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Course-XI

Animal biotechnology and Immunology

Part-A: Animal Biotechnology

Unit-I

Introduction: - Animal Tissue and Organ Culture, Plasma clot method, Raft method, Agar-gel method, Grid method, cyclic exposure to medium and Gas phase, advantages, limitations and applications, artificial skin. (6)

Unit-II

Cell Culture: - Substrate and suspension culture, Culture Media, natural and artificial, initiation of cell culture, sub-cultures, Evaluation and Maintenance of cell culture lines, Large scale culture of cell lines, Monolayer, Suspension culture, Immobilized cultures, Somatic cell fusion, mechanism and applications, cell culture products and their applications, Interferon's. (8)

Unit-III

Cloning: -In-vitro Fertilization and Embryo transfer, Application of Embryo transfer technology, Embryo transfer in cattle, , Animal cloning, Ethical and Social Issues relating to Human cloning, Transgenic and their future Prospective. (8)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

PART B: Immunology

Unit-IV

Introduction: - History, concept and Scope of Immunology. (2)

Unit-V

Immunity: - Innate and Acquired immunity, Passive and Active Immunity, Lymph and organs, Humoral and Cell Mediated immunity, Specificity and Memory, Transplantation immunity, Major Histocompatibility Complex (MHC) and Complements. (6)

Unit-VI

Interactions: - Antigen-Antibody reactions, Antigen type-hapten, Immunoglobulin's (fine structure of IGg and diversity), serological reactions, Agglutination, Precipitation, Immuno-electrophoresis, ELISA, RIA, Immuno-electromicroscopy. (6)

Unit-VII

Hybridoma Technology: - Monoclonal antibody production, myeloma cell lines, Fusion of myeloma cells without antibody producing B-cells, selection and screening methods for positive hybrids, production, purification and characterization of monoclonal antibodies without Hybridoma, Genetic manipulation of immunoglobins. (6)

Unit-VIII

Diseases and Vaccines: - T-cell cloning, mechanism of antigen recognition by T-and B-lymphocytes, Genetic control of immune response, autoimmune diseases, immunodiagnosis, AIDS, types of vaccines, Strategies for the development of vaccines, infectious diseases. (8)

Course-XII

Genomics and Proteomics

PART A: Genomics

Unit-I

Origin and Evolution of genomics: - Origin of genomics, the first DNA genomes, microcollinearity and lack of it, DNA based phylogenetic trees, genomes and human evolution, evolution of nuclear and organellar (mitochondrial and Chloroplast genome, the concept of minimal genome and possibility of synthesizing it. (6)

Unit-II

Molecular maps of genomes and comparative genomics: - Genetic maps, physical maps, EST and transcript maps, functional maps, comparative genomics and collinearity/synteny in maps.(4)

Unit-III

Whole Genome sequencing: - Whole genome shotgun sequencing, clone-by-clone or 'hiererchical stotgun' sequencing, microbial genomes (including yeast), plant genomes (Arabidopsis and rice), Animal genomes (fruit fly, mouse, human). (6)

Unit-IV

Annotation of whole genome sequence and functional genomics: - *In silico* methods, insertion mutagenesis (T-DNA and transport insertion), TILLING, management of data, gene expression and transcript profiling, EST contigs and unigene sets, use of DNA chips and microarrays. (6)

Unit-V

Pharmacogenomics: - Use in biomedicine involving diagnosis and treatment of diseases, genomics in medical practice, personalized medicine, DNA polymorphism and treatment of diseases, use of SNP in pharmacogenomics, pharmacogenomics and industry. (6)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

PART B: Proteomics

Unit-VI

Study and Scope: - Introduction, definition concepts and approaches of proteomics studies and activities. (2)

Unit-VII

Quantitative and Qualitative proteome analysis technique: - Separation technique- 2D-PAGE, 2-DE (BN-PAGE), image analysis, Mass- spectrophotometery, LC-TMS, MALDI, and SALDI (8)

Unit-VIII

Protein interaction and Protein complex: - Protein interaction, DNA- Protein interaction, Yeast two hybrid system and their applications. (4)

Unit-IX

Drug Discovery and Development: - Current issues, drug targets, Drug efficacy, Drug toxicology, Protein chips and Antibody Microarray. (4)

Unit-X

Cancer Proteomics: - An overview of cancer, origin and types of cancer, proteomics in cancer research, techniques of proteomics in cancer research, future approaches of proteomics and cancer research. (4)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Ch. Charan Singh University Meerut
SHRI RAM COLLEGE
MUZAFFARNAGR
DEPARTMENT OF MICROBIOLOGY (SFS COURSE)
M.Sc. MICROBIOLOGY

S.N.	Name of the course		Internal (M.M.)	External(M.M.)
		FIRST SEMESTER		
1	AM 101	Instrumentation and Microbial Techniques	50	50
2	AM 102	Microbial Diversity- Prokaryotes and Viruses	50	50
3	AM 103	Microbial Diversity Eukaryotes	50	50
4	AM 104	Biostatistics, Computer Applications and Bioinformatics	50	50
5	AM 105	**Practical**		100
		SECOND SEMESTER		
6	AM 201	Microbial Physiology and Biochemistry	50	50
7	AM 202	Microbial Genetics, Molecular Biology and Genetic Engineering	50	50
8	AM 203	Agricultural Microbiology	50	50
9	AM 204	Microbial Environmental Technology	50	50
10	AM 205	**Practical**		100
		THIRD SEMESTER		
11	AM 301	Medical Microbiology	50	50
12	AM 302	12 Molecular and Clinical Microbiology	50	50
13	AM 303	Food and Dairy Microbiology	50	50
14	AM 304	Industrial Microbiology	50	50
15	AM 305	**Practical**		100
16	AM 401	**FOURTH SEMESTER**	400	
17	AM 402	Project Report including Viva-voce		
18	AM 403	Medical Microbiology Any		
19	AM 404	Industrial Microbiology one		
20	AM 405	Agricultural Microbiology of }Any One Of 4 Environmental Microbiology		
		Total Marks	**2000**	

A minimum 30% marks separately in internal and external assessment of each course and aggregated of 40% marks in all ɔurse is required for passing .in case of falling to obtain marks in internal assessment of any paper ,the candidate will not ɛ eligible to appear in external examination of that course

Course 1, Code- AM 101: Instrumentation and Microbial Techniques

Unit I: Microscopy and Staining techniques: Basic principles for the examination of microbes by light, dark field, phase contrast, confocal, fluorescent and electron (transmission and scanning) microscopy; Micrometry; Specimen preparation and basic principles of Simple, Gram's stain, Capsule, Endospore, Flagella, Acid fast and Nuclear/Geimsa's staining.

Unit II: Basic principles and methods of sterilization: control of microorganisms by physical methods: heat, filtration and radiation; chemical methods: phenolics, alcohols, halogens, heavy

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

metals, quaternary ammonium compounds, aldehydes and sterilizing gases; evaluation of antimicrobial agent effectiveness (evaluation of efficacy of disinfectants, determination of phenol coefficient), Principle and functioning of LAF.

Unit III: Basic principles and methods of media preparation: types of culture media: simple media, complex media, synthetic media, enriched media, selective media, indicator media, differential media, anaerobic media; pH and buffers; Pure culture techniques: streak plate, dilution plate and spread plate method; maintenance of pure cultures; methods of preservation of various microbes. maintenance of anaerobic bacteria, and accessing non-culturable bacteria.

Unit IV: Basic principles and applications of spectrophotometry and Chromatography: Beer-Lambert law; interaction of radiation with matter, absorption of radiation, emission of radiation; UV-Vis spectrophotometry, Fluorimetry, Flame photometry and atomic absorption spectrophotometry; Chromatography (paper, thin layer, column, gel filtration, ion-exchange and affinity chromatography); GLC, HPLC, HPTLC and FPLC.

Unit V: Miscellaneous techniques: Principles and applications of Electrophoresis for protein and DNA; Iso-electric focusing and 2-D gel electrophoresis; Autoradiography, X-Ray diffraction; Centrifugation; Ultracentifugation; Dialysis, Ultrafiltration; Lyophilization.

Suggested Readings (Latest Editions):

1. Nelson D and Cox MM. (2010). Lehninger's Principles of Biochemistry. W.H. Freeman and Company, New York.
2. Wilson K. and Walker J. (2013). Principles and Techniques of Biochemistry and Molecular Biology. Cambridge University Press.
3. Willey J, Sherwood L. and Woolverton C (2014). Prescott's Microbiology, 9th edi McGraw Hill.
4. Upadhyaya and Nath (2015) Biophysical chemistry, Himalaya pub. House.
5. T.A.Brown (2016). Gene cloning and DNA analysis, an introduction,Wiley Blackwell pub.
6. B.D.Singh (2015). Biotechnology, Kalyani publication.

Practical based on the course Instrumentation and Microbial Techniques

1. To study the various equipments and apparatus used in microbiology.
2. To prepare and sterilize various culture media used in experimental microbiology.
3. Preparation of Basic Liquid Medium (Broth), Solid medium (Agar)
4. To prepare and sterilize nutrient agar, slants, stabs, deep tubes and Petri plates.
5. Techniques of pure culture isolation-pour plate, spread plate, streak plate.
6. Isolation of Microbial colony from soil, water, air and milk.
7. To determine total viable cells in a bacterial culture by plate count method or serial dilution method.
8. To study the bacterial morphology by simple (monochrome) staining.
9. To study the bacterial morphology by negative staining.
10. To study the bacterial morphology by Gram's staining.
11. To study the bacterial morphology by acid fast or Ziehl-Neelsen staining method.
12. To carry out thin layer chromatography (mixture of amino acids).
13. Isolation of plasmid DNA from *E. coli*.
14. Electrophoresis of isolated DNA sample.
15. TLC separation of amino acids.

Course 2, Code- AM 102: Microbial Diversity- Prokaryotes and Viruses

Unit I: Discovery of microbial world; History, Scope and relevance of Microbiology; Current thoughts on microbial evolution including the origin of life; Introduction to microbial biodiversity distribution, abundance, ecological niche of bacteria and archaea.

Unit II: Principles of classification of microbes: Morphological, metabolic and molecular criteria for the classification, a brief introduction to major group of bacteria. Molecular and recent approaches to bacterial taxonomy, evolutionary chronometers, rRNA oligonucleotide sequencing, signature sequences, and protein sequences. Salient features of Bergey's Manual of Systematic bacteriology. General characteristics including Ultra-structure of Bacteria, Archaea and Cyanobacteria.

Unit III: Extreme environments and extremophiles; Microbial diversity in different ecosystems (thermophiles, halophiles, mesophiles, thermophiles, acidophiles, alkalophiles, barophiles and other extremophiles) and their biotechnological applications. A brief account of genetic recombination in bacteria (transformation, conjugation and transduction).

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Unit IV: General characters, nomenclature, classification, morphology and ultra-structure of viruses; Capsid and their arrangement; Cultivation of viruses using embryonated eggs, experimental animals and cell cultures (Cell-lines, cell strains and transgenic systems). Purification of viruses by adsorption, precipitation, enzymes, serological methods (haeme-agglutination and ELISA). Assay of viruses (physical and chemical methods).

Unit V: Bacteriophages: Structure and life cycle patterns of T-even phages; One step growth curve; Bacteriophage typing; Structure of Cyanophages, Mycophages; General characters and structure of viroids, satellites and prions and major diseases caused by them.

Suggested Readings (Latest Editions):

1. Bergey's manual systematic Bacteriology(2011) 2nd edition
2. Prakash S. Bisen (2012). Microbes-concepts and applications, Wiley-Blackwell.
3. J.D.S.Panwar (2012)-Fundamentals of Microbilogy-S.R.S Pub
4. Willey J, Sherwood L. and Woolverton C (2014). Prescott's Microbiology, 9th edi McGraw Hil
5. Bisen, P.S. (2014). Microbes in Practices, I K international publication house pvt Ltd.
6. Sharma P.D. (2015-16). Microbilogy, 3rd edn, Rastogi publications
7. J.G.Black(2015) –Microbiology, 9th edition, Wiley publication

Practical Based on the course Microbial Diversity- Prokaryotes and Viruses

1. Preparation of various models based on History of Microbiology.
2. Determination of growth of bacteria by spectrophotometrically.
3. Demonstration of pour plate, spread plate and streak plate methods.
4. Preparation of bacterial growth curve.
5. Isolation and characterization of thermophiles.
6. Isolation and characterization of psychrophiles.
7. Isolation and characterization of osmophiles.
8. Isolation and characterization of acidophiles.
9. Isolation and characterization of alkalophiles.
10. Isolation and characterization of halophiles.
11. Isolation and characterization of cyanobacteria.
12. Demonstration of bacteriophage typing.
13. Preparation of various models based on structure of viruses.
14. Study of virus infected plant material.

Course 3, Code- AM 103: Microbial Diversity-Eukaryotes

Unit I: General characteristics of eukaryotic microbes; Ultrastructure and organization of a typical eukaryotic cell (membrane structure and functions, cytoskeleton, intracellular compartments--- nucleus, mitochondria, chloroplast and their genetic organization); Structure and organization of chromatin; cell cycle; Classification of eukaryotic microbes; Evolutionary relationship of each group based on modern systems of classification.

Unit II: Current status of fungi and their classification including organisms belonging to Protozoa, Stramimipila (Chromista) and Eumycota (true fungi), Thallus organization, asexual and sexual reproduction in Myxomycota, Oomycota, Zygomycota, Ascomycota and Basidiomycota.

Unit III: Heterothallism; sex hormones in fungi; physiological specialization and phylogeny of fungi. Parasexual life cycle; Economic importance of fungi. Lichen and their symbiotic relationship. Economic importance of lichens

Unit IV: General characteristics of algae; Classification of algae; Somatic structure, asexual and sexual reproduction of microbiologically important genera of Chlorophyceae, Phaeophyceae, Bacillariophyceae, Rhodophyceae and Dinophyceae. Algal nutrition, ecology and biotechnology; Economic importance of algae.

Unit V: General characteristics of Protozoans; and Nematodes; Difference between protozoans and nematodes; Structure and reproduction of microbiologically important genera of protozoans (*Entamoeba, Giardia, Trichomonas, Leishmania, Trypanosoma, Plasmodium) and* Nematodes: *Ancylostoma, Ascaris lumbricoides, Necator;* Cestodes: *Taenia solium, Taenia saginata, Diphyllobothrium, Echinococcus granulosus* and Trematodes: *Paragonimus, Fasciola hepatica, Schistosoma;* Difference between Protozoans and Nematodes. .

Suggested Readings (Latest Editions):

1. Chatterjee K.D. (2015). Parasitology, Calcutta publication.
2. David Greenwood (2015). Medical Microbiology, 18th edition.
3. Willey J, Sherwood L. and Woolverton C (2014). Prescott's Microbiology, 9th edi McGraw Hill.
4. J.G. Black(2015) –Microbiology, 9th edition, Wiley publication

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

5. Lee. R. E. (Latest Edition). Phycology, Cambridge University Press, Cambridge.
6. Talaro K.P. & Talaro A. (Latest Edition). Foundations in Microbiology (6th Ed.), McGraw-Hill College Dimensi.
7. Sharma, P.D. (2016). Mycology and Phyotopathology, Rastogi Publications, Meerut

Practical Based on the course Microbial Diversity- Eukaryotes

1. Preparation of moist chamber for fungal isolation.
2. Isolation of fungi from soil.
3. Isolation of fungi from rhizospehere.
4. Isolation of fungi from different food sources.
5. To isolate fungi present in soil samples and calculate their relative abundance and frequency of occurrence
6. To study the fungal morphology by lactophenol cotton blue staining.
7. To study the fungal morphology by potassium hydroxide mounting.
8. Preparation of permanent fungal mounts.
9. Collection of different types of lichens.
10. Study of dimorphism in yeast.
11. Demonstration of permanent slides of mitosis and meosis.
12. Demonstration of permanent slides of *Entamoeba, Giardia, Trichomonas*, *Leishmania, Trypanosoma,* and *Plasmodium.*
13. Isolation of various algae from different habitats.

Course 4, Code- AM 104: Biostatistics, Computer Applications and Bioinformatics

Unit I: Presentation of data; Frequency distributions; Graphical representation of data by histogram, polygon, frequency curves and pie diagram. Measures of central tendency: Mean, median and mode; Measures of dispersion: Mean deviation, standard deviation, variance, standard error, coefficient of variation; Correlation and regression: properties, nature, coefficient of correlation, rank correlation, linear regression and regression equations and multiple linear regression, significance of correlation and regression.

Unit II: Probability: Basic concepts related to probability theory, classical probability. Probability Distributions: Introduction and simple properties of Binomial, Poisson and Normal Distributions and their applications in biology. Sampling: Concept of sampling and sampling techniques.

Unit III: Testing of hypotheses: Some basic concepts, Errors in hypothesis testing; critical region; Students t-test for the significance of population mean and the difference between two population means; Paired t-test; Chi square test for population variance, goodness of fit and for the independence of two attributes in a contingency table; F-test for the equality of two population variance; Analysis of variance- One-way and two-way analysis of variance.

Unit IV: Introduction to Computers: Definition, Components of computer, Classification of Computers, Generation of Computers; Number system; Introduction to Software; Translators (Compiler and Interpreter); Basics for operating systems (MS-DOS, Windows, Unix and Linux); Introduction to MS Office (MS-Word, MS-Excel, MS-Power Point); Introduction to Networking, Internet (E-Mail, File Transfer Protocol, Usenet, Telnet).

Unit V: Introduction to Bioinformatics: Definition and scope; Search engines: tools for web search; Introduction to biological databases (NCBI, EBI, DDBJ, GenBank, PDB, NDB and MMDB), Introduction to BLAST and FASTA; Brief idea about important softwares for microbiological studies.

Suggested Readings (Latest Editions):

1. Bailey, NT J (2000). Statistical Methods in Biology. English Univ. Press.
2. Campbell R.C (Latest Edition). Statistics for Biologist. Cambridge University Press, UK.
3. Sinha PK (Latest Edition). Fundamentals of computers. BPB Publication, New Delhi
4. Jonathan, P. 2008. Bioinformatics & Functional Genomics.
5. B.D.Singh(2015). Biotechnology, Kalyani Publication.
6. Sharma and Munjal(2015). A test book of Bioinformatics, Rastogi publication.

Practical Based on course Biostatistics, Computer Applications and Bioinformatics

1. Representation of statistical data by
1. Histogram
2. Curves
3. Pie diagrams
2. Determination of averages or Central tendencies (Mean, Mode, Median)
3. Determination of measures of dispersion (Mean deviation, Standard deviation and Coefficient of variation, Quartile deviation)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

4. Application of Tests of significance (Chi-Square test, student t-test, Standard error)
5. Applications of computers in biology using MS-office (MS-Word, Excel, Power point)
6. Introduction to LAN Networking
7. Introduction to Internet (E-Mail, File Transfer Protocol, Usenet, Telnet).
8. Introduction to different primary and secondary databases.
9. To access scientific data from Literature data bases (PUBMED, LITDB, Medline)
10. To access nucleic acid databases for retrieval of gene sequence.
11. To access protein databases for retrieval of amino acid sequence of target protein.
12. To perform multiple sequence alignment using BLAST.

Course 5, Code- AM 105: Practical based on the above courses

Course 6, Code- AM 201: Microbial Physiology and Biochemistry

Unit I: Nutritional groups of microbes, nutritional uptake; transport across the membranes and cell wall (diffusion, passive diffusion, active transport, group translocation and iron uptake); Physiology of growth and kinetics, Growth curve, measurement of growth (biomass, turbidity, dry weight, protein content); environmental factors affecting microbial growth.

Unit II: Photosynthesis: Adsorption light, photosynthetic and accessory pigments, (chlorophyll, bacteriochlorophyll, carotenoides, phycobilliproteins); Oxygenic and non-oxygenic photosynthesis in prokaryotes, electron transport chain and phosphorylation; Calvin cycle; effect of light, temperature, pH, and CO2 on the rate of photosynthesis; Photosynthetic yield and Photorespiration.

Unit III: Respiratory metabolism: Glycolytic pathway of carbohydrates breakdown, Embden Meyer Hoff pathway, Kreb's cycle, and Entner-Duodoroff pathway, Phospho-ketolase pathway; Pentose phosphate pathway; oxidative and substrate level phosphorylation; Gluconeogenesis, glyoxylate cycle, reverse TCA cycle; Fermentation of carbohydrates, homo- and heterolactic fermentation.

Unit IV: Carbohydrates: Structure and properties of starch, cellulose, hemicellulose, glycogen and their derivatives; structure of lignin; General characters of fats, saturated and unsaturated fatty acids, biosynthesis of fatty acids, oxidation of fatty acids; distribution and functions of lipids in microbes.

Unit V: Classification, structure and properties of proteins, Structure of amino acids, Classification of essential amino acids based on polarity, protein sequencing, peptide synthesis; methods of protein purification. Classification and nomenclature of enzymes; mechanism of enzyme action, enzyme inhibition, allosteric enzymes, enzyme kinetics. Principles of Physical chemistry; Thermodynamic principles in biology; Energy rich bonds; Weak interactions; Bioenergetics.

Suggested Readings (Latest Editions):

1. Nelson D and Cox MM. (2010). Lehninger's Principles of Biochemistry. W.H. Freeman and Company, New York.
2. Voet D and Voet JG. (2013). Principle's of Biochemistry. John Wiley and sons New York.
3. Moat AG and Foster J W (Latest Edition). Microbial Physiology. John Wiley and Sons, New York.
4. Stryer. L (2003). Biochemistry. W. H. Freeman and Co.
5. Willey J, Sherwood L. and Woolverton C (2014). Prescott's Microbiology, 9th edi McGraw Hil
6. J.L. Jain(2015).Fundamentals of Biochemistry, S. Chand and Co.
7. U. Satyanarayan(2015). Biochemistry, Elsevier

Practical based on course Microbial Physiology and Biochemistry

1. To carry out qualitative analysis of Carbohydrates
2. To carry out qualitative analysis of Lipids
3. To carry out qualitative analysis of amino acids
4. To carry out qualitative analysis of Proteins
5. To perform biochemical test of starch hydrolysis.
6. To perform biochemical test of casein hydrolysis.
7. To carry out estimation of DNA by Diphenylamine method
8. To carry out estimation of RNA by Orcinol method
9. To carry out estimation of protein by Biuret method.
10. To carry out separation of amino acid by Paper Chromatography and determination of Rf value TLC of fatty acids/lipids
11. To detect presence of reducing sugar using Benedict's test.
12. Determination of absorption maxima of given sample using spectrophotometer.
13. To demonstrate carbohydrate metabolism (oxidation and fermentation of Glucose) in microorganisms

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

14. To demonstrate Fat hydrolysis (lipase activity) by bacteria
15. To study ability of microorganisms to hydrolyze gelatin
16. To demonstrate degradation of sulphur containing amino acids by bacteria

Course 7, Code- AM 202: Microbial Genetics, Molecular Biology and Genetic Engineering

Unit I- Nucleic acids as genetic information carriers, DNA structure, types of DNA. DNA replication in prokaryotes and eukaryotes. Structural features of RNA (mRNA, tRNA, rRNA). Transcription in prokaryotes and eukaryotes.

Unit II- Regulation of gene expression. Basic features of the genetic code. Protein synthesis in prokaryotes and eukaryotes. Recombination: general principles. Plasmids (types of plasmids- F plasmids, R plasmids, Col plasmids and Ti plasmid). Gene transfer mechanisms: transformation, transduction, and conjugation.

Unit III- Mutations: spontaneous mutation, Induced mutagenesis- mutagens (physical mutagens: non ionizing and ionizing radiations; chemical mutagens: Base analogues, alkylating agents, deaminating agents, intercalating agents and others), molecular mechanism of mutagenesis. DNA repair mechanism: repair by direct reversal, excision repair, recombinational repair and SOS repair.

Unit IV- Basic steps of r-DNA technology. Restriction endonucleases. Cloning vectors: general properties, plasmids, bacteriophages, cosmids, shuttle vectors, bacterial artificial chromosomes. Eukaryotic cloning vectors for yeast, and animal cells. Gene libraries: genomic library (Shot gun approach), c DNA library (Different methods for synthesizing c DNA molecules).

Unit V- Molecular Techniques; Principles, methods and their applications in medical diagnosis - such as PCR, Southern Blotting, Northern Blotting, RFLP, RAPD, Western Blotting, DNA finger printing and DNA sequencing. Microbial genetic and design of vaccines; for TB and leprosy. DNA vaccines design and advantages. Recombinant vaccines.

Suggested Readings (Latest Editions):

1. David P Clark (2010). Cell and Molecular Biolgy
2. Robert J. Brooker (2011). Genetics, Analysis and principles, Mc Graw Hill.
3. J.E. Krebs (2011). Lewin's Genes X, Jones Pub.
4. T.A.Brown (2010). Gene cloning of DNA Analysis. Wiley Blackwell.
5. J D Watson (2008), Molecular biology
6. Jeff Hardin, Gregory Bertoni, Lewis J. Kleinsmith (2012). Becker's Word of the cell.
7. William. D Stans Field (2012). Molecular and cell Biolgy, Mc Graw Hill pub.
8. Gerald Karp (2014). Cell Biology, Wiley Blackwell, Pub.

Practical based on course Microbial Genetics, Molecular Biology and Genetic Engineering

1. Isolation of plasmid DNA from *E. coli*.
2. Determination of Tm of DNA and RNA.
3. Electrophoresis of isolated DNA sample.
4. Isolation of bacteria from various samples by enrichment techniques and their identification by conventional biochemical and molecular methods.
5. Restriction digestion analysis by agarose gel electrophoresis.
6. Restriction digestion analysis by polyacrylamide gel electrophoresis.
7. Isolation of plasmid from mix cultures.
8. Isolation of genomic DNA.
9. Amplification of DNA by PCR
10. RAPD analysis
11. RFLP analysis
12. Separation and analysis of proteins by SDS-PAGE

Course 8, Code- AM 203: Agricultural Microbiology

Unit I: Soil microbiology: Soil as a habitat for microorganisms; Soil enzymes, Soil water and microbial activity, Soil microorganisms and nutrient cycle. Soil fertility and management of agricultural soils; Microbiology of composting; Reclamation of barren lands using microbial technology; Microbiology of plant surfaces; Rhizoplane, phylloplane and rhizosphere microbes, their interaction with plants.

Unit II: Disease forecasting and basic principles of plant disease control. Etiology, causal organism, disease cycle and control of economically important crop diseases of wheat (Tundu, Rusts and smuts), rice (BLB, BLS and false smut) barley (stripe, powdery mildew), maize (downy mildew), sugarcane (red stripe, ratoon stunting, grassy shoot),

vegetables (downy mildew of crucifers and cucurbits, white rust of crucifers) and pulses (wilt of pigeon pea, Phytophthora blight of pigeon pea).

Unit III: Microorganisms as biopesticides: Principles and mechanism of biological control; Biocontrol agents of pathogen insect pests and weeds. Commercial reality of biopesticides limitations for Indian agriculture; integrated pest management.

Unit IV: Microorganisms as biofertilizers: Biofertilizers and symbiotic associations: *Rhizobium*, ***Bradyrhizobium***, *Azospirillum*, ***Frankia***, *Azotobacter*, Mycorrhiza and actinorrhiza in plant nutrition and stress tolerance; Commercial production of biofertilizers. Biological Nitrogen fixation (mechanism), nitrification, denitrification, ammonification, transamination and deamination reactions. Plant growth promoting rhizobacteria; (PGPR), BGA, SRB and PSB.

Unit V: Biodeterioration of agricultural produce; Mycotoxins; Diseases of food products during transmit and storage and their management. Microbes in agriculture waste management.

Suggested readings (Latest edition)

1. Sharma, P.D. (2016). Plant Pathology, Rastogi publications
2. Rao, N.S.S. (2015). Soil Microbiology. Oxford & IBH Publishing Co., New Delhi.
3. Jeffery C. Pommerville (2014). Alcamo's Fundamental Microbiology, Jones pub.
4. Ghulam Hassan Dar (2010).Soil Microbiology and Biochemistry
5. Agrios G. N. 2005. Plant Pathology. 5th Edition, Academic Press, San Diego.
6. Christon J. H. 2001. A Manual of Environmental Microbiology. ASM Publications.
7. Forster C. F. & John DA 2000. Environmental Biotechnology. Ellis Horwood Ltd.Publication.

Practical based on course Agricultural Microbiology

1. To study the effect of moisture content and organic matter on microbial activity, by estimating hydrolysis of FDA
2. To determine microbial activity in the soil by measuring CO2 evolution, and to study the effect of moisture content and organic matter on microbial activity
3. To determine the following enzyme activities in the soil sample: Amylase, Cellulase, Xylanase, Protease, and Phosphatase
4. Laboratory methods for studying soil-borne diseases

a. Isolation of soil-borne pathogens from plant tissue and soil.
b. Physical extraction of pathogens from soil.
c. Molecular methods for detection and identification of pathogens in plants and soil. By monoclonal antibody based tests and PCR.
d. Quantification of population of pathogens in soil and estimation of inoculum potential by MPN and dilution end point methods.
e. Chemical control of soil-borne pathogens using Acylanilide and Alkyl phosphonates.

5. Isolation of pathogen from vegetables and fruits.
6. Biochemical and physiological tests for detection of pathogens in fruits and vegetables, e.g; Arginine hydrolysis for Pseudomonas.
7. To determine biological control activity of microbes against plant pathogens.
8. To demonstrate different processes of composting.
9. To study the microflora of rhizosphere and phyllosphere.
10. To study the different plant microbe interactions.

Course 9, Code- AM 204: Environmental Microbial Technology

Unit I: Microbial Ecology versus Environmental Microbiology; Historical perspectives; Major fields and modern Environmental Microbiology; Overall role of microbes in ecosystem. Aeromicrobiology; Allergic disorders; Bioaerosols; Biowarfare agents; Air sampling of bioaerosols; microbial indicators for air pollution.

Unit II: Soil microorganisms and their significance in soil quality management. Microbial successions within and above the soil; biogeochemical cycles- C, N, S, P, Fe, Mn, Hg. Factors affecting microbial community in soil. Microbiomics and microbial interactions: Microflora of ruminants; Microbe-microbe interactions (Symbiosis, mutualism, commensalism, amensalism, competition, antibiosis)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Unit III: Microbes and heavy metal tolerance; Biocorrosion of metals; Microbe metal interactions (bioleaching, biomining, biohydrometallurgy); Containment of acid mine drainage applying biomining, abatement of heavy metal pollution, degradation of pesticides. Biosorption.

Unit IV: Microbial degradation, deterioration and bioremediation; Biodegradation of xenobiotics (biomagnifications) including pesticides and military chemicals (explosives and gases); Enhanced petroleum recovery; Integrated microbial bioremediation including oil spills; Role of biosurfactants. Role of microorganisms in organic matter decomposition (cellulose, hemi cellulose, lignin).

Unit V: Microbes and water potability- Microbial growth patterns in aquatic environments. Purification of potable water; Sanitary analysis of water (indicator microbes and methods of their detection); Standards (tolerable levels) of water quality of fecal contamination. Microbes in solid waste and sewage management; Sanitary landfills and composting; Methods of sewage management (composition of sewage, small scale and modern sewage treatment methods – oxidation ponds, trickling filters, biodisc system); Measurement of water quality after sewage removal.

Suggested Readings (Latest Editions):

1. Sharma, P.D. (2016). Environmental Microbiology, Rastogi Publications.
2. Prakash S. Bisen (2014). Microbes in practice-I K international publication house pvt ltd.
3. Prakash S. Bisen (2012). Microbes-concepts and applications Willey BlackWell Pub.
4. Pepper IL, Gerba CP and Brusseau ML (2006). Environmental and Pollution Science. Academic Press. USA
5. Forster CF and John DA (2000). Environmental Biotechnology. Ellis Horwood Ltd. Publication.
6. Christon JH (Latest Edition). A Manual of Environment al Microbiology. ASM Publications.
7. Maier RM, Pepper IL and Gerba CP (2000). Environmental Microbiology. Academic Press. USA
8. Michel R (Latest Edition). Introduction of Environmental Microbiology.

Practical Based on course Microbial Environmental Technology

1. To measure the D.O. of the given water samples.
2. To measure the BOD of the given water samples.
3. To measure the COD of the given water samples.
4. To determine the effect of temperature on microbial growth.
5. To determine the effect of pH on microbial growth.
6. To determine the effect of oxygen on microbial growth.
7. To study the production of lignocellulolytic enzymes (cellulases, hemicellulases and lignin degrading enzymes such as Lip, Mnp and Laccase.
8. To study the fungal degradation of lignocellulosic biomass (Crop byproducts).
9. To study the use of cellulases in saacharification of cellulosic material.
10. To study the microbiological quality of water samples from different sources.
11. To study the decolorization of distillery or textile industrial waste.
12. Determination of potability of water by MPN method.

Course 10, Code- AM 205: Practical based on the above courses

Course 11, Code- AM 301: Medical Microbiology

Unit I: Classification of medically important bacteria; Normal microflora of human body, role of the resident flora; collection of clinical samples and laboratory diagnosis of important bacterial infections, pathogenic microorganisms. Brief account of major air, water and soil borne diseases of microbial origin and their prevention and control measures.

Unit II: Bacteriology: Important human diseases caused by *Staphylococcus; Streptococcus*; *Neisseria*; *Bacillus; Corynebacterium*; *Clostridium*; Organisms belonging to Enterobacteriaceae (*Escherichia coli*, *Klebsiella, Salmonella, Shigella and Proteus*); *Pseudomonas*; *Haemophilus*; *Mycobacterium*; Antibacterial drugs and susceptibility test; Bacterial vaccines. Mechanism of drug resistance in pathogenic bacteria and fungi

Unit III: Virology: Collection of clinical samples and laboratory diagnosis of important viral diseases; Mumps; Measles; Influenza; Adenovirus; Enterovirus; Rhinovirus; Poxvirus; Hepatitis; Herpesvirus; AIDS; Antiviral drugs; Viral vaccines; Interferons; Tumor viruses; antiviral agents and susceptibility test.

Unit IV: Mycology: Classification of medically relevant fungi: Collection of clinical sample and laboratory diagnosis of important human fungal diseases: Phycomycosis; Candidiasis; Dermatophytosis; Aspergillosis; Otomycosis; Cutaneous and subcutaneous mycoses; Systemic mycoses; Opportunistic mycoses; Antifungal agents and susceptibility test.

Coordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Unit V: Parasitology: Important diseases caused by intestinal and urogenital protozoa: *Entamoeba*; *Giardia*; *Trichomonas*; Blood and tissue protozoa; *Plasmodium; Trypanosoma*; *Leishmania*; Cestodes: *Taenia*; Trematodes: *Schistosoma; Paragonimus*; Nematodes: Ascaris; *Ancylostoma; Necator*; their laboratory diagnosis, treatment and prevention; anti-parasitic agents and susceptibility test.

Suggested Readings (Latest Editions):

1. Kenneth. J. Ryan (2010) Sheris's Medical Microbiology,Mc Graw Hill.
2. Willey J, Sherwood L. and Woolverton C (2014). Prescott's Microbiology, 9th edi McGraw Hill.
3. Greenwood D (2015). Medical Microbiology, 18th Edition, Elsvier.
4. Murray PR, Pfaller MA, Tenover FC and Yolken RH (2007). Clinical Microbiology. ASM Press.
5. K.D Chattergy (2015). Parasitology, CBS Pub.
6. Harvey, R.A., Champe, P.C. and Fisher, B.D. (Latest Edition). Lippincott's Illustrated Reviews: Microbiology. Lippincott Williams and Wilkins, New Delhi/New York.

Practical Based on course Medical Microbiology

1. To prepare various basic, selective, enrichment and enriched media used for isolation of medically important bacteria from clinical samples.
2. To perform various biochemical tests (IMVIC, oxidase, catalase, urea utilization test, sugar utilization and H2S production on TSI agar slant) used for identification of medically important bacteria.
3. To perform sugar fermentation tests for identification of medically important bacteria.
4. Demonstration normal microbial flora of skin, mouth and throat.
5. Isolation and identification of Staphylococcal species using suitable media, staining techniques and biochemical tests.
6. Isolation and identification of Streptococcal species using suitable media, staining techniques and biochemical tests.
7. Isolation and identification of enteric fever causing bacteria (*Salmonella typhi*) using suitable media and biochemical tests.
8. Microbiological analysis of urine specimens.
9. Microbiological analysis of stool specimens.
10. Microbiological analysis of blood specimens.
11. Microbiological analysis of sputum specimens
12. To determine antibiotic sensitivity for Gram negative and Gram positive bacteria by disc diffusion method
13. To determine Minimal Inhibitory Concentration (MIC) and Minimal Bactericidal concentration of an antibiotic for test bacteria.
14. To evaluate antimicrobial chemical agents by log reduction method.

Course 12, Code Course AM 302: Molecular Immunology

Unit I: Introduction to the immune system: Innate immunity; anatomic, physiological, phagocytic and inflammatory barriers. Adaptive immunity; natural and artificial immunity. Cells involved in immune response: lymphoid lineage (producing B and T lymphocytes) and Myeloid lineage (phagocytes: macrophages, neutrophils and eosinophils and auxillary cells; basophils, mast cells and platelets). Organs involved in immune system: primary and secondary lymphoid organs.

Unit II: Antigens: preparation of antigens, types of antigens- haptens, superantigens and cluster of differentiation molecules (CDs), Processing and presentation of antigens. Immunoglobulins: structure and types of immunoglobulins, genetic diversity of immunoglobulins, catalytic antibodies. B-cell biology and T-cell biology (major histocompatibility complex (MHC) molecules). HLA and H-2 systems.

Unit III: Vaccines immunizations: types of vaccines (DNA vaccines, recombinant DNA vaccines, synthetic peptide vaccines, multivalent subunit vaccines) and their characteristics. Immunization of test animals, hyperimmune antisera; Prophylactic immunization; Immune Disorders: hypersensitivities, autoimmune diseases, transplantation (tissue) rejection, immunodeficiency's.

Unit IV: Complement: Classical alternative and lectin pathway of complement activation, regulation of complement system, biological consequence of complement activation. Cytokines: interferons (α, β and γ), TNF, interleukins (1-16), hematopoietins and chemokines, Regulation of immune response.

Unit V: Monoclonal antibodies: hybridoma technology, applications of monoclonal antibodies. Antigen-Antibody reactions in vitro: agglutination reactions (Widal, Haemagglutination).

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

precipitation reactions (Immunodiffusion, Immuno electrophoretic method), Immunoblotting, ELISA, RIA, fluorescence immunosorbent assay, immuno-electronmicroscopy.

Suggested Readings (Latest Editions):

1. Riott I M (2003). Essentials of Immunology. Blackwell Scientific Publishers, London.
2. Claus D (2005). Immunology- Understanding of Immune System. Wiley - Liss, New York.
3. William P (Latest Edition). Fundamentals of Immunology.
4. Abbas (2004). Cellular and Molecular Immunology.
5. Benjamin (2004). Immunology- A short Course.
6. Tizard Ian R (2009). Immunology. An introduction, 4th Edition.
7. Kindt, Goldsby and d Osborne (2013). Kuby Immunology. MacMillan Higher Education.

Practical Based on course Molecular Immunology

1. Preparation of different models based on immunology.
2. Slide agglutination test.
3. Tube agglutination test / Passive agglutination.
4. To prepare soluble antigen by different methods.
5. To seperate serum and plasma from blood.
6. To precipitate immune-globulins by ammonium sulphate and to determine total protein contents.
7. To determine Blood group and Rh factor by slide agglutination test
8. To perform Ouchterlony double diffusion test for detection of antigen and antibody reaction And to demonstrate relationship between antigens.
9. To perform Radial immuno-diffusion test for detection of antigen and antibody reaction and for quantification of antigens.
10. To perform immune-electrophoresis for separation of antigens and for detection of antigen and antibody reaction
11. To perform ELISA for assay of antibodies in serum sample against given antigen.
12. Demonstration of Widal test.
13. Demonstration of haem-agglutination test.

Course 13, Code - AM 303: Food and Dairy Microbiology

Unit I: Important microbes involved in spoilage of food, meat, poultry, vegetables and dairy products; food preservation. Microbial deterioration of cereals, pulses, fish and sea-foods during storage; Common food borne pathogens, diseases caused by them and their symptoms, food borne illness, prevention and complication of food borne diseases outbreaks, epidemiology, HACCP, Indices of food sanitary quality and sanitizers, Cultural and rapid detection methods of food borne pathogens in foods and introduction to predictive microbiology.

Unit II: Bacterial and mycotoxins, Important microbes secreting toxins, chemical nature of important toxins; their role in food poisoning; physiology and mechanism of action, modification and detoxification; prevention and control of toxin contamination.

Unit III- Microbial biomass: Single cell proteins and myco-protein; Use of microbial enzymes in food; Food quality monitoring, Fermented foods and traditional fungal foods (shoya, miso, tempe *etc.*). Fermented vegetable, meat and milk products (cheeses, butter and yoghurt), Bacteriocins

Unit IV- Use of microbial enzymes in food; low calorie sweeteners, Flavour modifiers; Food additives; Food quality monitoring, biosensors and immune-assays, Indian fermented foods. Probiotics: Health benefits, types of microorganisms used, probiotic foods available in market.

Unit V- Role of microbes in milk and dairy products, Microbiological examination of milk, standardplate count, direct microscopic count and reductase test, composition of milk, sources of contamination of milk, types of microbes in milk, pasteurization of milk, ability of milk to cause disease; Manufacture of cheeses, butter, yoghurt and fermented milk,

Suggested Readings (Latest Editions):

1. Butt, TM, Jackson CW and Magan N (2004). Fungi as Biocontrol agent. CABI Publishing, UK.
2. Adams (2004). Food Microbiology.
3. Prajapati (2007). Fundamentals of Dairy Microbiology.
4. John C, Ayres OM, William ES (2004). Microbiology of Foods. W. H. Freeman and Co.
5. Robinson (Latest Edition). Dairy Microbiology.
6. Jay JM (2000). Modern Food Microbiology. Van Nostraaand Reinhold Co., New York.

7. Andrew Proctor (2011). Alternatives to conventional food processing, RSC pub.
8. Frazer WC and Westhoff DC (2014). Food Microbiology. Mcgraw Hill, New York.
9. B.D. Singh (2015). Biotechnology, Kalyani Publication
10. Lund BM, Baird Parker AC, and Gould GW. (2000). The Microbiological Safety and Quality of Foods. Vol. 1-2, ASPEN Publication, Gaithersberg, MD.

Practical based on course Food and Dairy Microbiology

1. Microbiological examination of foods.
2. Bacterial counts of food samples.
3. Quantitative analysis of milk by standard plate count method.
4. Isolation and counting of faecal bacteria in water.
5. Test of quality of milk by methylene blue reduction test.
6. Isolation of lactobacillus from curd.
7. Isolation of bacteria and fungi from spoiled food.
8. Microbial populations in fruit juices, soft drinks and ice cream.
9. Isolation of lipolytic organisms from butter.
10. Detect the presence of antibiotic in milk samples.
11. Production of sauerkraut by microbial fermentations.
12. To prepare yoghurt in laboratory.
13. Production of citric acid from whey.
14. Production of single cell protein.

Course 14, Code AM 304: Industrial Microbiology

Unit I (a): Sources and characters of industrial microbes, their isolation, purification and maintenance. Screening of useful strains: primary screening and secondary screening. Strain improvement through random mutation (random and rational selection), genetic recombination and genetic engineering.

Unit I (b): Fermentation technology: microbial growth kinetics in batch, continuous and fed-batch fermentation process. Stirred aerobic bioreactor: principles and designing. Airlift, Fluidized Bed, Packed Bed, Photobioreactor, and Membrane bioreactor. Raw materials used in fermentation media. Solid state fermentation and submerged fermentation: their advantages and disadvantages.

Unit II: Microbial transformations with special reference to steroids and alkaloids. Primary and secondary metabolites. Commercial production of antibiotics with special reference to penicillin, streptomycin and their derivatives.

Unit III: Microbiology and production of alcoholic beverages: malt beverages, distilled beverages, wine and champagne. Commercial production of organic acids like acetic, lactic, citric, and gluconic acids. Commercial production of important amino acids (glutamic acid, lysine and tryptophan), insulin and vitamins (vitaminB12, riboflavin and vitamin A).

Unit IV: Immobilization of microbial enzymes and whole cells and their applications in industries. Food fermentations: bread, vinegar, fermented vegetables, fermented dairy products and their spoilage. Bioprocess Engineering: Downstream processing, various steps for large scale protein purification. Single cell proteins, Physiological aspects, SCP from waste materials and renewable resources.

Unit V: Industrial enzymes production: Cellulases, Xylanases, Proteases, Amylases, Lipases and Pectinases and their applications. Bioconversion of waste for fuels (ethanol and methane). Mushroom cultivation. Petroleum microbiology. Patent protection for biological inventions.

Suggested Readings (Latest Editions):

1. Reed G (2004). Industrial Microbiology. CBS Publishers (AVI Publishing Co.)
2. Stanbury PF, Whitekar A. and Hall (2006). Principles of Fermentation Technology. Pergaman. McNeul and Harvey.
3. Creuger and Creuger (2005). Biotechnology- A textbook of Industrial Microbiology, Panima pub.
4. Casida LE (2010). Industrial Microbiology, Wiley Eastern.
5. Atlas RM (Latest Edition). Petroleum Microbiology. Macmillan Publishing Co.
6. Willey J, Sherwood L. and Woolverton C (2014). Prescott's Microbiology, 9th edi McGraw Hil
7. B.D. Singh (2015). Biotechnology, Kalyani Publication

Practical Based on course Industrial Microbiology

1. To demonstrate strain improvement of industrially important bacteria or yeast by mutagenesis and selection of improved strains.
2. Introduction of fermenter (Assembly and dismantling).

Co-ordinator
IQAC, Shri Ram College,

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

3. Production of alcohols in shake flask cultures at laboratory scale.
4. Production of citric acid in shake flask cultures at laboratory scale.
5. To study the effect of salt concentration, metal and dyes on microbial growth.
6. Isolation of amylase producing microorganisms from Soil and their detection
7. To isolate antibiotic producing microorganisms form soil.
8. To isolate Penicillium species producing penicillin and to evaluate its activity.
9. Demonstration of SSF techniques.
10. Production of wine from grapes.
11. Production of bio-ethanol from agricultural waste.
12. To study mushroom production.
13. Production and application of various enzymes.

Course 15, Code- AM 305: Practical based on the above courses
AM 401: Project Report including Viva-voce 400 marks
AM 402: Medical Microbiology (specialization) 100 marks
AM 403: Industrial Microbiology (specialization)
AM 404: Agricultural Microbiology (specialization)
AM 405: Environmental Microbiology (specialization)
The candidate will opt any of the above mentioned four specializations which will be based on his/her project/thesis coupled with a written examination based on short questions including objective type to test his thorough knowledge in the field of specialization opted by him/her.

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE

(Affiliated to CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

CERTIFICATE

This is to certified that the project work entitled **STUDIES ON PHYTOCHEMICAL PROFILING MICROSCOPIC – MACROSCOPIC ANALYSIS OF BLOOD PURIFIER TREE *AZADIRACHTA INDICA* (NEEM)** By **SACHIN (Roll no: 190855227016)** under the supervision of **Dr. Ashwani Kumar Dean of Bioscience and Co-supervision of Er.Darshika sharma Assistant Professor of Bioscience Department.** The matter embodied in this project work has been submitted in partially fulfillment of the requirement for the award of degree of Master of science in Biotechnology, CCS University, Meerut. The Project/ Dissertation work not used for award for any other Degree/Diploma course in any other University/Institution.

Darshika

(Er.Darshika sharma)
Co-Supevisor

(Dr. Ashwani Kumar)
Dean of Biosciences
Supervisor

(Dr. Aditya Gautam)
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE

(Affiliated to CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

19/11/2021

CERTIFICATE

This is certified that the project work entitled "**UV VIS Spectrophotometric Profiling of Secondary Metabolites & Genomic DNA of Antiallergic caster oil plant (*Ricinus communis L.*)**" successfully completed and submitted under the supervision Dr. Ashwani Kumar, Dean, faculty of Bioscience,& Co Supervision of Er Darshikha Sharma Submitted by **Mr. Rizwan [Roll No. 190855227015]** for partial fulfillment of Master of science in Biotechnology from CCS University, Meerut. The Project /Dissertation work not used for award for any other degree/diploma course in any other University/Institution.

(Darshikha Sharma)
(Co Supervisor)

Dr. Ashwani Kumar
Dean and Supervisor
Faculty of Bioscience

Dr. Aditya Gautam
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No. : 0131-2660212, 9927028908
Web : www.srgcmzn.com ♦ E-mail : src_mzn@rediffmail.com

SHRI RAM COLLEGE

(Affiliated To CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

4/12/2021

CERTIFICATE

This is certified that the project work entitled "**Formulation Development of Paracetamol Tablet using natural plant based Excipient as a Bindar**" successfully completed and submitted under the supervision Dr. Ashwani Kumar, Dean, faculty of Bioscience. Submitted by **Mr. Surya Kant Saini (Roll No 190855227019)** for partial fulfillment of Master of Science in Biotechnology from CCS University, Meerut. The Project /Dissertation work not used for award for any other degree/diploma course in any other University/Institution.

Dr. Ashwani Kumar
Dean and Supervisor
Faculty of Bioscience

Dr. Aditya Gautam
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No.: 0131-2660738, 2620899, 9927028908

OCUND
INDIA LTD.

Plot No. 27-28-29-30, Sector-6A,
Integrated Industrial Estate, BHEL,
Ranipur, HARIDWAR (UTTARAKHAND)
Tel.: 01334-239269, 239271
E-mail: jocund6a@gmail.com

CERTIFICATE

It is to be certified that the project entitled **"Formulation Development of Paracetamol Tablet Using Natural Plant Based Excipient as a Binder"** submitted by **Mr. Suryakant Saini** is a record of canditate's own work carried out bu him under our supervision and guidance. The Matter embodied in this project work has been submitted in partial fulfillment of the requirement of the award of degree of Master of Science in Biotechnology in Choudhary Charan Singh University, Meerut. Also the same has not been used for any other purpose. The assistance and help received during the course of the investigation of project work have been fully acknowledged.

Ms. Pooja Saini	Deepak Kumar	Mr. Atul Prakash Pathak
QC Executive	QC Manager	Production Manager

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE

(Affiliated To CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

29/11/2021

CERTIFICATE

his is certified that the project work entitled " **TLC, UV Spectrophotometric Analysis of hytochemicals and genomic DNA OF Immunity Bosting Herb Holy Basil (*Ocimum nuiflorum L.*)** " successfully completed and submitted under the supervision Dr. Ashwani umar, Dean, faculty of Bioscience, Submitted by **Ms Deepshikha (Roll No 190855227004)** or partial fulfillment of Master of science in Biotechnology from CCS University, Meerut. The roject /Dissertation work not used for award for any other degree/diploma course in any other niversity/Institution.

Dr. Ashwani Kumar
Dean and Supervisor
Faculty of Bioscience

Dr. Aditya Gautam
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No.: 0131-2660738, 2620899, 9927028908
Web: www.srgcmzn.com E-mail: src_mzn@rediffmail.com

)CUND
INDIA LTD.

Plot No. 27-28-29-30, Sector-6A,
Integrated Industrial Estate, BHEL,
Ranipur, HARIDWAR (UTTARAKHAND)
Tel.: 01334-239269, 239271
E-mail: jocund6a@gmail.com

CERTIFICATE

It is to be certified that the project entitled **"Formulation Development and In Vitro Evalution of Intra Floating Drug Delivery System of OFLOXACIN Tablet"** submitted by **Mr. Lavi Saini** is a record of canditate's own work carried out bu him under our supervision and guidance. The Matter embodied in this project work has been submitted in partial fulfillment of the requirement of the award of degree of Master of Science in Biotechnology in Choudhary Charan Singh University, Meerut. Also the same has not been used for any other purpose. The assistance and help received during the course of the investigation of project work have been fully acknowledged.

Ms. Pooja Saini
QC Executive

Deepak Kumar
QC Manager

Mr. Atul Prakash Pathak
Production Manager

Co-ordinator
IQAC, Shri Ram College,

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE

(Affiliated to CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

29/11/2021

माँ ज्योतिर्गमय

CERTIFICATE

This is certified that the project work entitled "**Formulation and Physiochemical Analysis of Probiotic health drink by using Lactic Acid Bacteria** " successfully completed and submitted under the supervision Dr. Ashwani Kumar, Dean, faculty of Bioscience, Submitted by **Mr. Rajneesh Kumar [Roll No. 190855227014]** for partial fulfillment of Master of science in Biotechnology from CCS University, Meerut. The Project /Dissertation work not used for award for any other degree/diploma course in any other University/Institution.

Dr. Ashwani Kumar
Dean and Supervisor
Faculty of Bioscience

Dr. Aditya Gautam
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No. : 0131-2660212, 9927028908
Web : www.srgcmzn.com ♦ E-mail : src_mzn@rediffmail.com

RAPTURE BIOTECH

Let's renovate life

CERTIFICATE

This is to certify that **Mr. Rajneesh Kumar,** S/o. **Mr. Satish Pal,** student of **M.Sc. Biotechnology 4th Semester, Enrollment no.– M16155643,** from **Shri Ram College Muzaffarnagar,** has successfully completed his 6 months Dissertation/Project, from 1st March 2021 to 31st August 2021, under the guidance of Dr. Vinod Kumar Gupta in our Biotechnology Division at **NOIDA Campus** with **A+ Grade** on the topic:

"Formulation and Physiochemical analysis of Probiotic Health Drink by using Lactic acid bacteria"

We wish for his bright future. **Certificate Number:RPTN-2108/105**

For RAPTURE BIOTECH

Chief Executive Officer

Mr. Mayank Raj Bhardwaj
Chief Executive Officer
Rapture Biotech, India

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Coordinator
IQAC, Shri Ram College,

SHRI RAM COLLEGE

(Affiliated to CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

24/11/2021

CERTIFICATE

This is certified that the project work entitled "**Physiochemical and Shelf-life Evalution of Jaggery in Different Packaging Materials at Various Storage Time "** successfully completed and submitted under the supervision Dr. Ashwani Kumar, Dean, faculty of Bioscience, Submitted by **Ms. Saniya Zaidi [Roll No. 190855227017]** for partial fulfillment of Master of science in Biotechnology from CCS University, Meerut. The Project /Dissertation work not used for award for any other degree/diploma course in any other University/Institution.

Dr. Ashwani Kumar
Dean and Supervisor
Faculty of Bioscience

Dr. Aditya Gautam
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No. : 0131-2660212, 9927028908
Web : www.srgcmzn.com ✦ E-mail : src_mzn@rediffmail.com

SHRI RAM COLLEGE

(Affiliated to CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

24/11/2021

CERTIFICATE

This is certified that the project work entitled "**Qualitative Evaluation of Different Jaggery Samples Collected From Muzaffarnagar District** " successfully completed and submitted under the supervision Dr. Ashwani Kumar, Dean, faculty of Bioscience, Submitted by **Ms. Anjali Bhandari [Roll No. 190855227001]** for partial fulfillment of Master of science in Biotechnology from CCS University, Meerut. The Project /Dissertation work not used for award for any other degree/diploma course in any other University/Institution.

Dr. Ashwani Kumar
Dean and Supervisor
Faculty of Bioscience

Dr. Aditya Gautam
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No. : 0131-2460212, 9927028908
Web : www.srcmzn.com • E-mail : src_mzn@rediffmail.com

SHRI RAM COLLEGE

(Affiliated To CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

24/11/2021

CERTIFICATE

This is certified that the project work entitled "**Identification of drought responsive genes in *Oryza sativa* by GEO dataset analysis"** successfully completed and submitted under the supervision Dr. Ashwani Kumar, Dean, faculty of Biosciénce, Submitted by **Ms Isha Bhardwaj (Roll No 190855227005)** for partial fulfillment of Master of Science in Biotechnology from CCS University, Meerut. The Project /Dissertation work not used for award for any other degree/diploma course in any other University/Institution.

Dr. Ashwani Kumar
Dean and Supervisor
Faculty of Bioscience

Dr. Aditya Gautam
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No.: 0131-2660738, 2620899, 9927028908
Web: www.srcmzn.com E-mail: src_mzn@rediffmail.com

SARV

SARV BIOSCIENCE

CENTRE FOR ADVANCED TRAINING & RESEARCH

+91-9410474081; +91-9045928003
6th Street , Phase 2, Shivam Vihar,
Muradnagar, U.P. - 201206

Dr. Kamal Rathi
PhD (Genomics)

PROJECT SCIENTIST

ir 2021/01/003

Dated:- 2nd Sep, 2021

TO WHOM SOEVER IT MAY CONCERN

It is to certify that **Ms. Isha Bhardwaj D/O Mr. Satish Kumar Sharma**, student of M.Sc. (Biotechnology) in Shri Ram College, Muzaffarnagar (**Enrol. No. 16155624**), has successfully completed her dissertation project from this organization on the topic "**Identification of Drought Responsive Genes in *Oryza sativa* by GEO dataset analysis**" under supervision of Dr. Kapil Rathi, Project Scientist. Her duration of project was from 1st March 2021 to 31st August 2021.

She was found to be sincere, dedicated and hardworking student. I wish her all the success for her future endeavors.

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

(Dr. Kamal Rathi)
Director

SHRI RAM COLLEGE

(Affiliated to CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

Date 19.08.2021

CERTIFICATE

This is certified that the project work entitled **"Amplification and Quantitation of Hepatitis C Virus (HCV) in clinical isolates and its medical importance"** has successfully completed by **Miss. Lovepreet Kaur (Roll No- 190855227011)** under the supervision of **Dr. Ashwani Kumar**, Professor of Biosciences Department. The matter embodied in this project work has been submitted in partially fulfillment of the requirement for the award of degree of Master of Science in Biotechnology, CCS University, Meerut. The Project/Dissertation work not used for award for any other Degree/Diploma course in any other University/Institution.

(Dr. Ashwani Kumar)
Supervisor
~~Assistant~~ Associate **Professor**
Faculty of Biosciences

(Dr. Aditya Gautam)
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No. : 0131-2660212, 9927028908
Web : www.srgcmzn.com ♦ E-mail : src_mzn@rediffmail.com

Shaping Minds to Scientific Approach

DNA Labs
A Centre for Applied Sciences

ISO 9001:2015

DNA Labs-A Centre for Applied Sciences (DLCAS) Dehradun, Uttarakhand

NABL (National Accreditation Board for Testing and Calibration) Accredited, ICMR (Indian Council for Medical Research) Approved and ISO 9001:2015- Certified Laboratories

Ref No: DLCAS/T/2021/T-ND/80 **Date: 01/07/2021**

Certificate

This is to certify that **Miss. Lovepreet Kaur (Roll No. 190855227011)** student of **M.Sc Biotechnology** from **Shri Ram College, Muzaffarnagar, India** did training from DNA Labs- A Centre for Applied Sciences, Dehradun, Uttarakhand, on the topic; **"Amplification and Quantitation of Hepatitis C Virus (HCV) in Clinical isolates and its medical importance"**, for the duration of 06 Months from 5th January 2021 to 05th July 2021.This work should not be published, even in part without the prior written permission of the undersigned. Her work and conduct during the period was good.

DNA Labs- A Centre for Applied Sciences, Dehradun wishes a great academic growth for the future.

DNA Labs - A Centre For Applied Sciences (DLCAS) Dehradun (U.K.)

Mr. Divy Prakash Pandey,
Deputy Director,
DNA Labs-A Centre for Applied Sciences

Dr. Narotam Sharma
Senior Scientist
DNA Labs - A Center for Applied Sciences, Dehradun (U.K.)

Dr. Narotam Sharma
Senior Scientist & Head Laboratories
DNA Labs-A Centre for Applied Sciences

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE

(Affiliated To CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

CERTIFICATE

4/DEC/21

This is certified that the project work entitled " **Analysis of Phytochemicals and Microscopic – Macroscopic Characteristic of Anti aging Tree Country Fig** ***(Ficus racemosa L.)*** " successfully completed and submitted under the supervision Dr. Ashwani Kumar, Dean, faculty of Bioscience, ,& Co Supervision of Er Darshikha Sharma Submitted by **Mr. Vinod Kumar [Roll No. 190855227021]** for partial fulfillment of Master of science in Biotechnology from CCS University, Meerut. The Project /Dissertation work not used for award for any other degree/diploma course in any other University/Institution.

(Darshikha Sharma)
(Co Supervisor)

Dr. Ashwani Kumar
Dean and Supervisor
Faculty of Bioscience

Dr Aditya Gautam
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No.: 0131-2660738, 2620899, 9927028908
Web: www.srgcmzn.com E-mail: src_mzn@rediffmail.com

SHRI RAM COLLEGE

(Affiliated to CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

Date : 12/11/21

CERTIFICATE

This is to certify that the project work Entitled ***"Role of Bacteriophage HK022 in Carcinogenesis of Brain"*** *has successfully completed by* **Ms. Rabia Parveen** ***(Roll No.190855227013)*** *under the supervision of* ***Dr. Ashwani Kumar*** *Associated Prof. Bioscience Department. The matter embodied in this project work has been submitted in partially fulfillment of the requirement for the award of degree of Master of Science in Biotechnology, CCS University, Meerut.*

The project/ Dissertation work not used for award any other Degree/ Diploma course in any other university/ Institution.

(Dr. Ashwani Kumar)
Associated Prof.
Faculty of Bioscience

(Dr. Aditya Gautam)
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No. : 0131-2660212, 9927028908
Web : www.srgcmzn.com ♦ E-mail : src_mzn@rediffmail.com

PIONEER CENTRE OF BIOSCIENCES
FOR ADVANCED TRAINING AND RESEARCH
Mohan Nagar, Ghaziabad, U.P.
Contact no: +91-9015076699; +91-996-802-3660
www.pioneerbioscience.com

Manish Sharma
, PhD
ctor
No.AAD-2611

Phone: +91-9015076699
+91-9968023660
Email: manishatrey@hotmail.com
manishatrey@gmail.com

of Issue: 30st June, 2021

TO WHOMSOEVER IT MAY CONCERN

This is to certify that ***Ms. Rabia Parveen***, a student of M.Sc. Biotechnology) from Shri Ram College, Muzaffarnagar completed her 6 months issertation project on **"Role of Bacteriophage HK022 in Carcinogenesis of rain"**. During this period, she learned the extraction of DNA from blood and umor, Gel electrophoresis and amplification of DNA using PCR. She has also earnt the use of bioinformatics tools to design primers.

She sincerely learned the theory and carried out all the experiments ecessary to understand her work. I am quite happy about her work performance in ie lab and wish her all the best in future endeavor.

Manish Sharma

Dr. Manish Sharma

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE

(Affiliated To CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

29/11/2021

CERTIFICATE

This is certified that the project work entitled **Macroscopic " Miscroscopie" Phytochemicals and Biochemical Profiling of Anti covid -19 Herb Amrita (*Tinospora cordifolia*)"** successfully completed and submitted under the supervision Dr. Ashwani Kumar, Dean, faculty of Bioscience, Submitted by **Ms. Jyoti [Roll No. 190855227007]** for partial fulfillment of Master of science in Biotechnology from CCS University, Meerut. The Project /Dissertation work not used for award for any other degree/diploma course in any other University/Institution.

Dr. Ashwani Kumar
Dean and Supervisor
Faculty of Bioscience

Dr. Aditya Gautam
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No.: 0131-2660738, 2620899, 9927028908
Web: www.srgcmzn.com E-mail: src_mzn@rediffmail.com

Shaping Minds to Scientific Approach

DNA Labs
A Centre for Applied Sciences

ISO 9001:2015

DNA Labs-A Centre for Applied Sciences (DLCAS) Dehradun, Uttarakhand
Approved and ISO 9001:2015- Certified Laboratories

Ref No: DLCAS/T/2021/T-ND/156

Date: 30/10/2021

Certificate

This is to certify that **Ms. Apurva (Roll No. 190855227003)** student of **M.Sc. Biotechnology** from **Shri Ram College, Muzaffarnagar, India,** did dissertation from **DNA Labs- A Centre for Applied Sciences, Dehradun, Uttarakhand**, on the topic; **"Study of Phytochemicals Properties of a Medicinal Herb Bacopa Monnieri Associated with Urinary Tract Infection "**, for the duration of 06 Months from 06th January 2021 to 06th July 2021. This work should not be published, even in part without the prior written permission of the undersigned. Her work and conduct during the period was good.

DNA Labs- A Centre for Applied Sciences, Dehradun wishes a great academic growth for the future.

DNA Labs - A Centre For
Applied Sciences (DLCAS)
Dehradun (U.K.)

Mr. Divy Prakash Pandey,
Deputy Director,
DNA Labs-A Centre for Applied Sciences

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Dr. Narotam Sharma
Senior Scientist
DNA Labs - A Center for
Applied Sciences, Dehradun (U.K.)

Dr. Narotam Sharma
Senior Scientist & Head Laboratories
DNA Labs-A Centre for Applied Sciences

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

LABORATORY- : Main Kargi Road, Near Vidya Vihar Phase I, Pathri Bagh Chowk, Dehradun-248001, Uttarakhand.
+91-9557650069, +91-8894943074, +91-9027312357, Email:dnalabscas@gmail.com, Website:www.dnalabscas.com

ging
es to
ntific
roach

DNA Labs
A Centre for Applied Sciences

DNA Labs-A Centre for Applied Sciences (DLCAS) Dehradun, Uttarakhand
NABL (National Accreditation Board for Testing and Calibration) Accredited, ICMR (Indian Council for Medical Research) Approved and ISO 9001:2015- Certified Laboratories

No: DLCAS/T/2021/T-ND/144 **Date: 30/07/2021**

Certificate

is to certify that **Ms. Vaishali Namdev (Roll no. 190855227020)** student of M.Sc. echnology from **Shri Ram College, Muzaffaranagar, (C.C.S. University Meerut), India,** did dissertation from **DNA Labs- A Centre for Applied Sciences, radun, Uttarakhand**, on the topic; **"Quality Control for the Assessment and luation in Cellular and Molecular Diagnostic Laboratories "**, for the duration of 06 nths from 06th January 2021 to 07th June 2021. This work should not be published, even part without the prior written permission of the undersigned. Her work and conduct ing the period was good.

IA Labs- A Centre for Applied Sciences, Dehradun wishes a great academic growth the future.

DNA Labs - A Centre For
Applied Sciences (DLCAS)
Dehradun (U.K.)

Mr. Divy Prakash Pandey,
Deputy Director,
IA Labs-A Centre for Applied Sciences

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Dr. Narotam Sharma
Senior Scientist
DNA Labs - A Center for
Applied Sciences, Dehradun (U.K.)

Dr. Narotam Sharma
Senior Scientist & Head Laboratories
DNA Labs-A Centre for Applied Sciences

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE

(Affiliated To CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

24/11/2021

CERTIFICATE

is is certified that the project work entitled "**Quality Control for the Assessment and aluation in the Cellular and Molecular Diagnostic Laboratories**" successfully completed d submitted under the supervision Dr. Ashwani Kumar, Dean, faculty of Bioscience, bmitted by **Ms Vaishali Namdev (Roll No 190855227020)** for partial fulfillment of Master Science in Biotechnology from CCS University, Meerut. The Project /Dissertation work not ed for award for any other degree/diploma course in any other University/Institution.

r. Ashwani Kumar
ean and Supervisor
aculty of Bioscience

Dr. Aditya Gautam
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No.: 0131-2660738, 2620899, 9927028908
Web: www.srgcmzn.com E-mail: src_mzn@rediffmail.com

SHRI RAM COLLEGE

(Affiliated to CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

15/11/2021

CERTIFICATE

This is certified that the project work entitled "**To Isolate Respiratory Tract is Infections Bacteria from the suspected H1N1 Surine flu Negative Samples** " successfully completed and submitted under the supervision Dr. Ashwani Kumar, Dean, faculty of Bioscience, Submitted by **Ms. Akanksha [Roll No. 190855227008]** for partial fulfillment of Master of science in Biotechnology from CCS University, Meerut. The Project /Dissertation work not used for award for any other degree/diploma course in any other University/Institution.

Dr. Ashwani Kumar
Dean and Supervisor
Faculty of Bioscience

Dr. Aditya Gautam
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No. : 0131-2660212, 9927028908
Web : www.srgcmzn.com ♦ E-mail : src_mzn@rediffmail.com

Shaping Minds to Scientific Approach

DNA Labs
A Centre for Applied Sciences

ISO 9001:2015

DNA Labs-A Centre for Applied Sciences (DLCAS) Dehradun, Uttarakhand
Approved and ISO 9001:2015- Certified Laboratories

f No: DLCAS/T/2021/T-ND/161 **Date: 29/10/2021**

Certificate

is is to certify that **Ms. Akanksha student** of M.Sc. **Biotechnology** from **Shri Ram llege, Muzaffarnagar, India,** did dissertation from **DNA Labs- A Centre for plied Sciences, Dehradun, Uttarakhand**, on the topic; **"To Isolate Respiratory Tract fectious Bacteria from the Suspected H1N1 Swine Flu Negative Samples ",** for the ration of 06 Months from 06th January 2021 to 06th July 2021. This work should not published, even in part without the prior written permission of the undersigned. Her rk and conduct during the period was good.

NA Labs- A Centre for Applied Sciences, Dehradun wishes a great academic growth the future.

DNA Labs - A Centre For
Applied Sciences (DLCAS)
Dehradun (U.K.)

Mr. Divy Prakash Pandey,
Deputy Director,
A Labs-A Centre for Applied Sciences

Dr. Narotam Sharma
Senior Scientist
DNA Labs - A Center for
Applied Sciences, Dehradun (U.K.)

Dr. Narotam Sharma
Senior Scientist & Head Laboratories
DNA Labs-A Centre for Applied Sciences

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

L LABORATORY- : Main Kargi Road, Near Vidya Vihar Phase I, Pathri Bagh Chowk, Dehradun-248001, Uttarakhand.
+91-9557650069, +91-8894943074, +91-9027312357, Email:dnalabscas@gmail.com, Website:www.dnalabscas.com

SHRI RAM COLLEGE

(Affiliated to CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

29/11/2021

CERTIFICATE

This is certified that the project work entitled *"**Formulation and evolution of diclofenec dispersion** "* has successfully completed by ***Mr. Vishal Kumar Rana*** under the supervision of ***Dr. Ashwani Kumar***, associate professor of Biosciences Department. The matter embodied in this project work has been submitted in partially fulfillment of the requirement for the award of degree of **Master of Science in Biotechnology, CCS University, Meerut.** The Project/Dissertation work not used for award for any other Degree/Diploma course in any other University/Institution .

Dr. Ashwani Kumar
(Supervisor & Associate Professor)
Faculty of Biosciences

Dr. Aditya Gautam
(Director)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No. : 0131-2660212, 9927028908
Web : www.srgcmzn.com ♦ E-mail : src_mzn@rediffmail.com

JOCUND
INDIA LTD.

Plot No. 27-28-29-30, Sector-6A,
Integrated Industrial Estate, BHEL,
Ranipur, HARIDWAR (UTTARAKHAND)
Tel.: 01334-239269, 239271
E-mail: jocund6a@gmail.com

CERTIFICATE

It is to be certified that the project entitled "Formulation and evalution of diclofenec dispersion" submitted by Mr. Vishal Kumar Rana is a record of candidate's own work carried out by him under our supervision and guidance. The matter embodied in this project work has been submitted in partial fulfillment of the requirement of the award of degree of Master of Science in Biotechnology in Choudhary Charan Singh University, Meerut. Also the same has not been used for any other purpose. The assistance and help received during the course of the investigation of project work have been fully acknowledged.

Ms. Pooja Saini	Deepak Kumar	Mr. Atul Prakash Pathak
QC Executive	QC Manager	Production Manager

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE

(Affiliated To CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

CERTIFICATE

1/12/2021

This is certified that the project work entitled " **A Study of Water Analysis By Chemicals** " successfully completed and submitted under the supervision Dr. Ashwani Kumar, Dean, faculty of Bioscience, Submitted by **Mr. Nitin Kumar (Roll No1908552270l2)** for partial fulfillment of Master of science in Biotechnology from CCS University, Meerut. The Project /Dissertation work not used for award for any other degree/diploma course in any other University/Institution.

Dr. Ashwani Kumar
Dean and Supervisor
Faculty of Bioscience

Dr. Aditya Gautam
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No.: 0131-2660738, 2620899, 9927028908
Web: www.srgcmzn.com E-mail: src_mzn@rediffmail.com

JOCUND
INDIA LTD.

Plot No. 27-28-29-30, Sector-SA,
Integrated Industrial Estate, BHEL,
Ranipur, HARIDWAR (UTTARAKHAND)
Tel.: 01334-239269, 239271
E-mail: jocund6a@gmail.com

CERTIFICATE

It is to be certified that the project entitled "Water Analysis by Chemicals" submitted by Mr. Nitin Kumar is a record of candidate's own work carried out by him under our supervision and guidance. The matter embodied in this project work has been submitted in partial fulfillment of the requirement of the award of degree of Master of Science in Biotechnology in Choudhary Charan Singh University, Meerut. Also the same has not been used for any other purpose. The assistance and help received during the course of the investigation of project work have been fully acknowledged.

Ms. Pooja Saini	Deepak Kumar	Mr. Atul Prakash Pathak
QC Executive	QC Manager	Production Manager

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE

(Affiliated to CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

08-11-2021

CERTIFICATE

This is certified that the project work entitled "**Value Addition of Jaggery by Herbal Coating of Neem to Increase its shelf life** " successfully completed and submitted under the supervision Dr. Ashwani Kumar, Dean, faculty of Bioscience, Submitted by **KM NAINA SWAROOP [Roll No. 190855227009]** for partial fulfillment of Master of science in Microbiology from CCS University, Meerut. The Project /Dissertation work not used for award for any other degree/diploma course in any other University/Institution.

Dr. Ashwani Kumar
Dean and Supervisor
Faculty of Bioscience

Dr. Aditya Gautam
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No. : 0131-2660212, 9927028908
Web : www.srgcmzn.com ♦ E-mail : src_mzn@rediffmail.com

SHRI RAM C
(Affiliated to CCS University, Meerut & Approved By NCTE)
'A' Grade Accredite

CERTIFICATE

This is certified that the project work entitled **"Studies on Microscopic, Physiochemical and Phytochemical Profiling of Liver Protective Plant Gulf Leaf-flower (*Phyllanthus fraternus* L.)"** has successfully completed by **Miss. Aaliya Fatima (Roll No. - 190855254001)** under the supervision of **Dr. Ashwani Kumar; Dean Faculty of Bioscience and Co-supervision of Mr. Rajat Dhariwal; Assistant Professor of Bioscience.** The matter embodied in this project work has been submitted in partially fulfillment of the requirement for the award of degree of Master of Science in Microbiology, CCS University, Meerut. The Project/Dissertation work not used for award for any other Degree/Diploma course in any other University/Institution.

Mr. Rajat Dhariwal	Dr. Ashwani Kumar	(Dr. Aditya Gautam)
Co-supervisor	Dean & Supervisor	Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No. : 0131-2660212, 9927028908
Web : www.srgcmzn.com ♦ E-mail : src_mzn@rediffmail.com

SHRI RAM COLLEGE

(Affiliated To CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

4-Dec-2021

CERTIFICATE

This is certified that the project work entitled **"Environment Monitoring and Microbial Examination of water in pharmaceutical Industry)"** successfully completed and submitted under the supervision Dr. Ashwani Kumar, Dean, faculty of Bioscience, Submitted by **Mr. Ajay Pratap Singh Rana (Roll No 190855254002)** for partial fulfillment of Master of Science in Microbiology from CCS University, Meerut. The Project /Dissertation work not used for award for any other degree/diploma course in any other University/Institution.

Dr. Ashwani Kumar
Dean and Supervisor
Faculty of Bioscience

Dr. Aditya Gautam
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No.: 0131-2660738, 2620899, 9927028908
Web: www.srgcmzn.com E-mail: src_mzn@rediffmail.com

SARV

SARV BIOSCIENCE

CENTRE FOR ADVANCED TRAINING & RESEARCH

+91-9410474081; +91-9045928003
6th Street, Phase 2, Shivam Vihar,
Muradnagar, U.P. - 201206

Dr. Kamal Rathi
PhD (Genomics)

PROJECT SCIENTIST

ref:- 2021/01/010

Dated; 2nd sep, 2021

TO WHOM SOEVER IT MAY CONCERN

It is to certify that **Mr. Anit Kumar S/O Mr. Jasveer Singh**, student of M.Sc. (Microbiology) in Shri Ram College, Muzaffarnagar **(Enrol. No. 15741343)**, has successfully completed his dissertation project from this organization on the topic **"Microbial Testing and Environmental Monitoring of Pharmaceutical Products"** under supervision of Dr. Kapil Rathi, Project Scientist. His duration of project was from 1st March 2021 to 31st August 2021.

He was found to be sincere, dedicated and hardworking student. I wish him all the success for his future endeavors.

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

(Dr. Kamal Rathi)
Director

+91-94104740[illegible], +91-[illegible]
6th Street, Phase 2, Shivam Vihar
Muradnagar, U.P. – [illegible]

SARV BIOSCIENCE

CENTRE FOR ADVANCED TRAINING & RESEARCH

Dr. Kamal Rathi
PhD (Genetics)

PROJECT SCIENTIST

y:- 2021/01/010

Dated; 2nd Sep, 2021

TO WHOM SOEVER IT MAY CONCERN

It is to certify that **Mr. Anit Kumar S/O Mr. Jasveer Singh**, student of M.Sc. (Microbiology) in Shri Ram College, Muzaffarnagar **(Enrol. No. 15741343)**, has successfully completed his dissertation project from this organization on the topic **"Microbial Testing and Environmental Monitoring of Pharmaceutical Products"** under supervision of Dr. Kapil Rathi, Project Scientist. His duration of project was from 1st March 2021 to 31st August 2021.

He was found to be sincere, dedicated and hardworking student. I wish him all the success for his future endeavors.

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College
Muzaffarnagar

(Dr. Kamal Rathi)
Director

SHRI RAM COLLEGE

(Affiliated to CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

25/11/2021

CERTIFICATE

This is certified that the project work entitled "**Microbial testing and Environmental monitoring of pharmaceutical products**" has successfully completed by **Mr. Anit Kumar (Roll No.- 190855254003)** under the supervision of **Dr. Ashwani Kumar;** Dean Faculty of Bioscience. The matter embodied in this project work has been submitted in partially fulfillment of the requirement for the award of degree of Master of Science in Microbiology, CCS University, Meerut. The Project/Dissertation work not used for award for any other Degree/Diploma course in any other University/Institution.

(Dr. Ashwani Kumar)
Dean & Supervisor
Faculty of Bioscience

(Dr. Aditya Gautam)
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SARV
ARV BIOSCIENCE
NTRE FOR ADVANCED TRAINING & RESEARCH

+91-9410474081; +91-9045928603
6th Street, Phase 2, Shivam Vihar,
Muradnagar, U.P. - 201206

Dr. Kamal Rathi
PhD (Genomics)

PROJECT SCIENTIST

2021/01/010

Dated: 2nd sep, 2021

TO WHOM SOEVER IT MAY CONCERN

It is to certify that **Mr. Anit Kumar S/O Mr. Jasveer Singh**, student of M.Sc. (Microbiology) in Shri Ram College, Muzaffarnagar **(Enrol. No. 15741343)**, has successfully completed his dissertation project from this organization on the topic **"Microbial Testing and Environmental Monitoring of Pharmaceutical Products"** under supervision of Dr. Kapil Rathi, Project Scientist. His duration of project was from 1st March 2021 to 31st August 2021.

He was found to be sincere, dedicated and hardworking student. I wish him all the success for his future endeavors.

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

(Dr. Kamal Rathi)
Director

SHRI RAM COLLEGE

(Affiliated to CCS University, Meerut & Approved By NCTE)

'A' Grade Accredited by NAAC

25/11/2021

CERTIFICATE

This is certified that the project work entitled "**Microbial testing and Environmental monitoring of pharmaceutical products**" has successfully completed by **Mr. Anit Kumar (Roll No.- 1908552540003)** under the supervision of **Dr. Ashwani Kumar**, Dean Faculty of Bioscience. The matter embodied in this project work has been submitted in partially fulfillment of the requirement for the award of degree of Master of Science in Microbiology, CCS University, Meerut. The Project Dissertation work not used for award for any other Degree Diploma course in any other University Institution.

(Dr. Ashwani Kumar)
Dean & Supervisor
Faculty of Bioscience

(Dr. Aditya Gautam)
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE
(Affiliated to CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR
'A' Grade Accredited by NAAC

25/11/2021

CERTIFICATE

This is certified that the project work entitled "**Microbial testing and Environmental monitoring of pharmaceutical products**" has successfully completed by **Mr. Anit Kumar (Roll No.- 190855254003)** under the supervision of **Dr. Ashwani Kumar**, Dean Faculty of Bioscience. The matter embodied in this project work has been submitted in partially fulfillment of the requirement for the award of degree of Master of Science in Microbiology, CCS University, Meerut. The Project/Dissertation work not used for award for any other Degree/Diploma course in any other University/Institution.

(Dr. Ashwani Kumar)
Dean & Supervisor
Faculty of Bioscience

(Dr. Aditya Gautam)
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE

(Affiliated To CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

04/12/21

CERTIFICATE

This is certified that the project work entitled **"Environment Monitoring and Microbial Examination of water in pharmaceutical Industry)"** successfully completed and submitted under the supervision Dr. Ashwani Kumar, Dean, faculty of Bioscience, Submitted by **Mr. Aaheesh Kumar (Roll No 190855254005)** for partial fulfillment of Master of Science in Microbiology from CCS University, Meerut. The Project /Dissertation work not used for award for any other degree/diploma course in any other University/Institution.

Dr. Ashwani Kumar

Dean and Supervisor

Faculty of Bioscience

Dr. Aditya Gautam

Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No.: 0131-2660738, 2620899, 9927028908
Web: www.srgcmzn.com E-mail: src_mzn@rediffmail.com

NITIN LIFESCIENCES LTD.

NITIN

Date: 05/07/2021

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr. Asheesh Kumar S/O Shri. Kanwar Pal student of M.Sc. (Microbiology) final year Shri Ram College Muzaffarnagar, Haryana has undergone industrial Project in our company Nitin Lifesciences Limited. Karnal Karnal form 02/07/2021 to 05/11/2021, her completed for a stipulated period due to covid-19 pandemic lockdown during the project period we found their sincere honest hardworking and discipline.

We wish her all success in her future endeavors

FOR NITIN LIFESCIENCE LTD.

[AUTHORIZED SIGNATORY]

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Karnal Unit-1: 92-93, Sector-3, H.S.I.I.D.C., Industrial Area, Karnal-132001 (Haryana)
Tel.: +91-184-2221590, 92 , 93 Fax: +91-184-2221591 email: info@nitinlifesciences.com

Paonta Unit-I, Unit-II & Unit-III : Rampur Road, Paonta Sahib, Distt. Sirmour-173025 (H.P.) - (Regd Office)
Phone: +91-1704-222827, 61 Fax: +91-1704-225857 email: lifesciences@nitinlifesciences.com
www.nitinlifesciences.com
CIN No. U73100HP2005PLC28049

SHRI RAM COLLEGE

(Affiliated To CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

29/11/2021

CERTIFICATE

This is certified that the project work entitled **"Analysis of Macroscopic, Microscopic and TLC based Phytochemical characteristic of *Melia azedarach* L."** successfully completed and submitted under the supervision Dr. Ashwani Kumar, Dean, faculty of Bioscience, and Co- Supervision of Mr. Rajat Dhariwal Assistant Professor of Bioscience Submitted by **Ms. Fadak Zehra (Roll No190855254006)** for partial fulfillment of Master of Science in Microbiology from CCS University, Meerut. The Project /Dissertation work not used for award for any other degree/diploma course in any other University/Institution.

Mr. Rajat Dhariwal
Co-Supervisor

Dr. Ashwani Kumar
Dean & Supervisor

Dr. Aditya Gautam
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No.: 0131-2660738, 2620899, 9927028908
Web: www.srgcmzn.com E-mail: src_mzn@rediffmail.com

SHRI RAM COLLEGE

(Affiliated to CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

19-11-2021

CERTIFICATE

This is certified that the project work entitled "**Qualitative analysis of genomic DNA and Phytochemicals of " Antistress plant "** ***Morus alba L.***" successfully completed and submitted under the supervision Dr. Ashwani Kumar, Dean Faculty of Bioscience, Submitted by **Ms. Farha [Roll No. 190855254007]** for partial fulfillment of Master of science in Microbiology from CCS University, Meerut. The Project /Dissertation work not used for award for any other degree/diploma course in any other University/Institution.

Dr. Ashwani Kumar

Dean and Supervisor

Faculty of Bioscience

Dr. Aditya Gautam

Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No. : 0131-2660212, 9927028908
Web : www.srgcmzn.com ♦ E-mail : src_mzn@rediffmail.com

SWAMI VIVEKANAND SUBHARTI UNIVERSITY-MEERUT

ENDORSEMENT BY THE HEAD OF DEPARTMENT

This is to certify that **Mr. Jahangeer Alam (Roll No. 190855254008)** Student of **M.Sc Microbiology** from **Shri Ram College, Muzaffarnagar, India** did this thesis entitled ***"A STUDY ON BACTERIAL ISOLATES FROM URINARY TRACT INFECTIONS AND ITS ANTIMICROBIAL SUSCEPTIBILITY PATTERN IN A TERTIARY CARE HOSPITAL"***, under the guide of **Dr. Deepali Saini** Assistant Professor, in the Department of Microbiology,Subharti Medical College & associated Chhatrapati Shivaji,Subharti Hospital,Meerut.

DR. ANITA PANDAY

Professor & Head

Department of Microbiology

Subharti Medical College, Meerut

Date: 18/10/21

Place: Meerut

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE

(Affiliated to CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

27-10-21

CERIFICATE

This is certified that the project work entitled "*A STUDY ON BACTERIAL ISOLATES FROM URINARY TRACT INFECTIONS AND ITS ANTIMICROBIAL SUSCEPTIBILITY PATTERN IN A TERTIARY CARE HOSPITAL*" has successfully completed by **Mr. Jahangeer Alam (Roll no.190855254008)** under the supervision of **Dr. Ashwani Kumar,** associate professor of Bioscience Department.The matter embodied in this project work has been submitted in partially fulfillment of the requirement for the award of degree **Master of Science in Microbiology, CCS University Meerut.** The project/Dissertation work not used for award for any other Degree/Diploma course in any other University/Institution.

(Dr. Ashwani Kumar)
Associated Professor

(Dr. Aditya Gautam)
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No. 0131-2660212, 9927028908
Web www.srgcmzn.com • E-mail src_mzn@rediffmail.com

SHRI RAM COLLEGE

(Affiliated To CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

25/11/21

CERTIFICATE

This is certified that the project work entitled " **Microbiological Analysis of Pharmaceutical Products** " successfully completed and submitted under the supervision of Ms. Lavee Sharma Submitted by **Ms Aanchal (Roll No190855254009)** for partial fulfillment of Master of science in Microbiology from CCS University, Meerut. The Project /Dissertation work not used for award for any other degree/diploma course in any other University/Institution.

(Ms. Lavee Sharma)
(Supervisor)
Faculty of Bioscience

Dr. Ashwani Kumar
Dean
Faculty of Bioscience

Dr. Aditya Gautam
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No.: 0131-2660738, 2620899, 9927028908
Web: www.srgcmzn.com E-mail: src_mzn@rediffmail.com

SHRI RAM COLLEGE

(Affiliated To CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

29/11/2021

CERTIFICATE

This is certified that the project work entitled "**Phytochemical Profiling And Microscopic Characterization Of Highly Anticancer Plant Turmeric (*Curcumin longa*)**" successfully completed and submitted under the supervision Dr. Ashwani Kumar, Dean, faculty of Bioscience, Submitted by **Ms. Saiyyada Razia [Roll No. 190855254012]** for partial fulfillment of Master of science in Microbiology from CCS University, Meerut. The Project /Dissertation work not used for award for any other degree/diploma course in any other University/Institution.

Dr. Ashwani Kumar
Dean and Supervisor
Faculty of Bioscience

Dr. Aditya Gautam
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No.: 0131-2660738, 2620899, 9927028908
Web: www.srgcmzn.com E-mail: src_mzn@rediffmail.com

SHRI RAM COLLEGE

(Affiliated To CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

29/11/2021

CERTIFICATE

This is certified that the project work entitled **"Macroscopic, Microscopic and Phytochemical Screening of Aromatic Plant Marwa (*Origanum Vulgare*)"** successfully completed and submitted under the supervision Dr. Ashwani Kumar, Dean, faculty of Bioscience, Submitted by **Ms. Shivani Pal (Roll No 190855254013)** for partial fulfillment of Master of Science in Microbiology from CCS University, Meerut. The Project /Dissertation work not used for award for any other degree/diploma course in any other University/Institution.

Dr. Ashwani Kumar
Dean and Supervisor
Faculty of Bioscience

Dr. Aditya Gautam
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No.: 0131-2660738, 2620899, 9927026808
E-mail: src_mzn@rediffmail.com

SHRI RAM COLLEGE

(Affiliated to CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

29/11/2021

CERTIFICATE

This is certified that the project work entitled "**Qualitative Phytochemical Characterization And Genomic DNA Isolation of Aromatic, Medicinal Plant Large Cardomam (Amomum subulatum *Roxb.*)**" successfully completed and submitted under the supervision Dr. Ashwani Kumar, Dean Faculty of Bioscience, Submitted by **Ms. Shivani Tyagi [Roll No. 190855254014]** for partial fulfillment of Master of science in Microbiology from CCS University, Meerut. The Project /Dissertation work not used for award for any other degree/diploma course in any other University/Institution.

Dr. Ashwani Kumar
Dean and Supervisor
Faculty of Bioscience

Dr. Aditya Gautam
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No. : 0131-2660212, 9927028900
Web : www.srgcmzn.com ♦ E-mail : src_mzn@rediffmail.com

SHRI RAM COLLEGE

(Affiliated To CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

30/11/2021

CERTIFICATE

This is certified that the project work entitled " **Microscópic Phytochemical and Isolation Based Charactersation of Anti HIV Plant Alligator weed (Alternanthera philoxeroides)** " successfully completed and submitted under the supervision Dr. Ashwani Kumar, Dean, faculty of Bioscience, Submitted by **Ms Manu Tomar (Roll No 190855254015)** for partial fulfillment of Master of science in Microbiology from CCS University, Meerut. The Project /Dissertation work not used for award for any other degree/diploma course in any other University/Institution.

Dr. Ashwani Kumar
Dean and Supervisor
Faculty of Bioscience

Dr. Aditya Gautam
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No.: 0131-2660738, 2620899, 9927028908

SHRI RAM COLLEGE

(Affiliated to CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

Date 20/04/2021

CERTIFICATE

This is to certify that the project work Entitled ***"A STUDY TO DETECT THE BACTERIOLOGICAL PROFILE OF BLOOD STREAM INFECTIONS IN A TERTIARY CARE HOSPITAL IN MEERUT"*** *has successfully completed by Mr.* **Mohd. Avvaleen** ***(Roll No.190855254017)*** *under the supervision of* ***Dr. Ashwani Kumar*** *Associated Prof. Bioscience Department. The matter embodied in this project work has been submitted in partially fulfillment of the requirement for the award of degree of Master of Science in Microbiology, CCS University, Meerut.*

The project/ Dissertation work not used for award any other Degree/ Diploma course in any other university/ Institution.

(Dr. Ashwani Kumar)
Associated Prof.
Faculty of Bioscience

(Dr. Aditya Gautam)
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No. 0131-2660212, 9927928908
Web : www.srgcmzn.com • E-mail : src_mzn@rediffmail.com

SWAMI VIVEKANAND SUBHARTI UNIVERSITY-MEERUT

ENDORSEMENT BY THE HEAD OF DEPARTMENT

This is to certify that **Mr. Mohd. Avvaleen (Roll No. 190855254017)** Student of **M.Sc Microbiology** from **Shri Ram College, Muzaffarnagar, India** did this thesis entitled ***"A STUDY TO DETECT THE BACTERIOLOGICAL PROFILE OF BLOOD STREAM INFECTIONS IN A TERTIARY CARE HOSPITAL IN MEERUT"***, under the guide of **Dr. Priyanka Chaturvedi**, MD. Microbiology in the Department of Microbiology, Subharti Medical College & associated Chhatrapati Shivaji, Subharti Hospital, Meerut.

DR. ANITA PANDAY

Professor & Head

Department of Microbiology

Subharti Medical College, Meerut

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Date: 7/10/2021

Place: Meeru

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SWAMI VIVEKANAND SUBHARTI UNIVERSITY-MEERUT

ENDORSEMENT BY THE HEAD OF DEPARTMENT

This is to certify that **Mr. Mohd Saif Roll No.(190855254018)** student of **M.Sc Microbiology** from **Shri Ram College, Muzaffarnagar, India** did this thesis entitled ***"A STUDY ON ANTIBIOTIC SUSCEPTIBILITY PATTERN OF PSEUDOMONAS SPECIES ISOLATED FROM CLINICAL SAMPLES IN A TERTIARY CARE HOSPITAL IN MEERUT"***, under the guidance of of **Dr. Anubhuti** Assistant Professor in the department of Microbiology, Subharti Medical College & associated Chhatrapati Shivaji Subharti Hospital, Meerut.

DR. ANITA PANDAY

Professor & Head

Department of Microbiology

Subharti Medical College, Meerut

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Date: 11-Oct-2021

Place: Meerut

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE

(Affiliated to CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

Date : 20 Oct 2021

CERTIFICATE

This is to certify that the project work Entitled "A STUDY ON ANTIBIOTIC SUSCEPTIBILITY PATTERN OF PSEUDOMONAS SPECIES ISOLATED FROM CLINICAL SAMPLES IN A TERTIARY CARE HOSPITAL" has successfully completed by Mr. **Mohd Saif** *(Roll No.190855254018) under the supervision of Dr.* ***Ashwani Kumar*** *Associated Prof. Bioscience Department. The matter embodied in this project work has been submitted in partially fulfillment of the requirement for the award of degree of Master of Science in Microbiology, CCS University, Meerut.*

The project/ Dissertation work not used for award any other Degree/ Diploma course in any other university/ Institution.

(Dr. Ashwani Kumar)
Associated Prof.
Faculty of Bioscience

(Dr. Aditya Gautam)
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No. : 0131-2660212
Web : www.srgcmzn.com ♦ E-mail : src_mzn@rediffmail.com

SHRI RAM COLLEGE
(Affiliated to CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR
'A' Grade Accredited by NAAC

25/11/21

CERTIFICATE

his is certified that the project work entitled "**Giant virus and their CORE genome etection**" has successfully completed by **Miss. Priya Tyagi (Roll No. - 190855254020)** under e supervision of **Dr. Ashwani Kumar;** Dean Faculty of Bioscience. The matter embodied in is project work has been submitted in partially fulfillment of the requirement for the award of egree of Master of Science in Microbiology, CCS University, Meerut. The Project/Dissertation ork not used for award for any other Degree/Diploma course in any other niversity/Institution.

r. Ashwani Kumar)
ean & Supervisor
culty of Bioscience

(Dr. Aditya Gautam)
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE

(Affiliated to CCS University, Meerut & Approved By NCTE)

CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

25/11/2021

CERTIFICATE

…is is certified that the project work entitled **"Giant virus and their CORE genome …tection"** has successfully completed by **Miss. Priya Tyagi (Roll No. - 190855254020)** under … supervision of **Dr. Ashwani Kumar;** Dean Faculty of Bioscience. The matter embodied in …s project work has been submitted in partially fulfillment of the requirement for the award of …gree of Master of Science in Microbiology, CCS University, Meerut. The Project/Dissertation …rk not used for award for any other Degree/Diploma course in any other …iversity/Institution.

…Ashwani Kumar)
…n & Supervisor
…ulty of Bioscience

(Dr. Aditya Gautam)
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No. : 0131-2580212, 99270...
Web: www.srgcmzn.com • E-mail : ...

SHRI RAM COLLEGE

(Affiliated to CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

19-11-2021

CERTIFICATE

This is certified that the project work entitled **"Invitro Characterization of Phytochemicals And Microscopic analysis of "without Sorrow Plant" Ashok Briksh (*Saraca asoca Roxb.*)"** successfully completed and submitted under the supervision Dr. Ashwani Kumar, Dean Faculty of Bioscience, Submitted by **Ms. Rashi Patlan [Roll No. 190855254021]** for partial fulfillment of Master of science in Microbiology from CCS University, Meerut. The Project /Dissertation work not used for award for any other degree/diploma course in any other University/Institution.

Dr. Ashwani Kumar
Dean and Supervisor
Faculty of Bioscience

Dr. Aditya Gautam
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No. : 0131-2660212, 9927028908
Web : www.srgcmzn.com ✦ E-mail : src_mzn@rediffmail.com

SHRI RAM COLLEGE

(Affiliated to CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

29/11/2021

CERTIFICATE

This is certified that the project work entitled **"Qualitative Physiochemical, Biochemical and DNA Isolation Analysis of Saintly Herb Indian Hemp (*Cannabis sativa* L.) with UV-VIS Spectrophotometer"** has successfully completed by **Miss. Zehra Husaini (Roll No. - 190855254023)** under the supervision of **Dr. Ashwani Kumar; Dean Faculty of Bioscience and Co-supervision of Mr. Rajat Dhariwal; Assistant Professor of Bioscience.** The matter embodied in this project work has been submitted in partially fulfillment of the requirement for the award of degree of Master of Science in Microbiology, CCS University, Meerut. The Project/Dissertation work not used for award for any other Degree/Diploma course in any other University/Institution.

Mr. Rajat Dhariwal
Co-supervisor

Dr. Ashwani Kumar
Dean & Supervisor

(Dr. Aditya Gautam)
Director

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No. : 0131-2660212, 9927028908
Web : www.srgcmzn.com ♦ E-mail : src_mzn@rediffmail.com

A

Summer Training Project Report

On

"MARKETING STRATEGY OF VODAFONE"

Submitted By

Aarti Ahuja (Roll No. 180855105001)

Submitted To

Mr. VIVEK TYAGI

In Partial Fulfillment of the Requirement for the Award of Degree of

Bachelor of Business Administration

Session 2020-2021

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Broadband & Telephone Services

vodafone

Vodafone Limited
B-38/C, Sector-47
NOIDA-201301(U.P.)
T+911204246664
+911204246645
www.vodafone.in

Date : 25 feb 2021

Ref. No. 18/686/A/8235

TO WHOM SO EVER IT MAY CONCERN

This is to certify that AARTI AHUJA (ROLL. NO.180855105001) Student of BBA from Shri Ram College, Muzaffarnagar had undergone training in our organization from 08/01/2020 to 10/02/2020 at Branch -*Muzaffarnagar.

Their performance during the training period was found tobe good.

We wish all success in his future endeavors.

Vodafone Essar Company Ltd. AGRA
Authorized Signatory

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

A

Project report

on

"A study of Consumer Behaviours And Satisfaction with Hyundai Motors".

at

"Hyundai Motors India Limited"

Submitted by

Aayushi Srivastava
Roll No. – 1808551050003.

In partial fulfillment of the requirement of the Award of degree of

BACHELOR OF BUSINESS ADMINISTRATION

(Session 2020–2021)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE, MUZAFFARNAGAR.

HYUNDAI

new
THINKING
new
POSSIBILITIES

CERTIFICATE

This is to certify that **Miss. Aayushi Srivastava** student of "Bachelor of Business Administration" at **Shri Ram College, Muzaffarnagar** has successfully completed his summer training project on the topic a "Study of Consumer Behaviours and satisfaction with **Hyundai Motors**" from (18th March 2021) to (26 April 2021)

During the above period her conduct was "Excellent"

Wishing her a bright and prosperous future.

Vijay Gupta

(HR Manager)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

PROJECT REPORT

ON

"LOANS & PRODUCTS"

OF

HDFC BANK

Submitted in partial fulfillment
of the requirement of the
award of degree of

"Bachelor of Business Administrati

Submitted by

Aayushi Tyagi
BBA 3rd year
Rollno.→1808551050004

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Session - 2020 - 2021

"Shri Ram College, Muzaffarna

HDFC BANK

WE UNDERSTAND YOUR WORLD

HDFC BANK LTD GROUND FLR 1ST FLR 13 2243 43 1 ANSARI RD SAHARANPUR UTTAR PRADESH 247001
Contact no - +91-0751 401 5002 Fax: +91- 751-4988300 Web site :- www.hdfcindia.com

TO WHOM SO EVER IT MAY CONCERN

This is to Certify that **Aayushi Tyagi**, a student of **BBA** from **Shri Ram College, Muzaffarnagar** had undergone training in our organization from **03 Jan 2021 to 03 Feb 2021** at **Branch- HDFC Bank, Saharanpur.**

Their performance during the training period was found to be good

We wish all success in him/her future endeavours.

AUTHORIZED SIGNATURE

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

C.C.S. University, Meerut.
Bachelors of Computer Application
Semester – wise

SEMESTER-I

Course Code	Course Name
BCA-101	Mathematics-I
BCA-102	Programming Principle & Algorithm
BCA-103	Computer Fundamental and Office Automation
BCA-104	Principle of Management
BCA-106	Business Communication
BCA-108	Environmental Studies or Sports & Physical Education
BCA-105	Computer Laboratory and Practical Work of Computer Fundamental and Office Automation
BCA-107	Computer Laboratory and Practical Work of Programming Principle & Algorithm

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Principal
Shri Ram College
Muzaffarnagar

C.C.S. University, Meerut.
Bachelors of Computer Application
Semester – wise

SEMESTER -II

Course Code	Course Name
BCA-201	Mathematics-II
BCA-202	C-Programming
BCA-203	Organization Behavior
BCA-204	Digital Electronics and Computer Organisation
BCA-205	Financial Accounting and Management
BCA-206	Computer Laboratory and Practical Work of C

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Principal
Shri Ram College
Muzaffarnagar

C.C.S. University, Meerut.
Bachelors of Computer Application
Semester - wise

SEMESTER -III

Course Code	Course Name
BCA-301	Object Oriented Programming Using C++
BCA-302	Data Structure Using C & C++
BCA-303	Computer Architecture & Assembly Language
BCA-304	Business Economics
BCA-305	Elements of Statistics
BCA-306	Computer Laboratory and Practical Work of OOPS
BCA-307	Computer Laboratory and Practical Work of DS

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Principal
Shri Ram College
Muzaffarnagar

C.C.S. University, Meerut.
Bachelors of Computer Application
Semester – wise

SEMESTER -IV

Course Code	Course Name
BCA-401	Computer Graphics & Multimedia Application
BCA-402	Operating System
BCA-403	Software Engineering
BCA-404	Optimization Techniques
BCA-405	Practical Based on Subject Code -401.
BCA-406	Mathematics-III

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Principal
Shri Ram College
Muzaffarnagar

C.C.S. University, Meerut.
Bachelors of Computer Application
Semester – wise

SEMESTER -V

Course Code	Course Name
BCA-501	Introduction to DBMS
BCA-502	Java Programming and Dynamic Webpage Design
BCA-503	Computer Network
BCA-504	Numerical Methods
BCA-508	Minor Project
BCA-507	Viva-Voice on Summer Training
BCA-505	Computer Laboratory and Practical Work of DBMS
BCA-506	Computer Laboratory and Practical Work of Java Programming & Dynamic Webpage Design

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Principal
Shri Ram College
Muzaffarnagar

C.C.S. University, Meerut.
Bachelors of Computer Application
Semester – wise
SEMESTER -VI

Course Code	Course Name
BCA-601	Computer Network Security
BCA-602	Information System: Analysis Design & Implementation
BCA-603	E-Commerce
BCA-604	Knowledge Management
BCA-605	Major Project
BCA-606	Presentation/Seminar based on Major Project

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Principal
Shri Ram College
Muzaffarnagar

A

PROJECT REPORT

ON

Fees Management System

Submitted in partial fulfillment of the requirement for the award of

Degree of

BACHELOR OF COMPUTER APPLICATION (BCA)

PROJECT GUIDE:

Mr. PARMOD KUMAR

BCA Dept. ,SRC

Computer Application

SUBMITTED BY

ABHISHEK SAUDAI (1808851060[illegible])

KOMIT KUMAR (1808851060[illegible])

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College
Muzaffarnagar

A

Project

On

"SCHOOL MANAGEMENT SYSTEM"

In the partial fulfillment for the award of the degree of

Bachelor of Computer Application (BCA)

SESSION : 2020-21

Submitted by

ANUPRIYA(1808551106043)

YASH PRATAP (1808551106197)

Under the Guidance of:

Mr. PRAMOD KUMAR

(Asst. Professor)

DEPARTMENT OF COMPUTER APPLICATION
SHRI RAM COLLEGE, MUZAFFARNAGAR
(Affiliated to Chaudhary Charan Singh University, Meerut)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

A

PROJECT REPORT

On

PATIENT INFORMATION SYSTEM

Submitted towards the partial fulfillment of requirement

For the towards of degree of

BACHOLAR OF COMPUTER APPLICATION

Submitted to:
Dr.PRAMOD SHARMA
ASST. PROFESSOR

(Computer application Department)

Submitted by:
NADEEM
(ROLL NO: 8557154)

UJJAIR
(ROLL NO: 8557253)

BCA IIIrd YEAR

SUBMITTED AT:

SHRI RAM COLLEGE, MUZAFFARNAGAR

(Affiliated To Choudhary Charan Singh University , Meerut

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

A

PROJECT REPORT

On

BANK MANAGEMENT SYSTEM

Submitted in Partial Fulfillment of the Requirements

For the award of the degree of

BACHELOR OF COMPUTER APPLICATIONS (BCA)

Submitted By:

Krishankant

Roll Number: 1808551060084

Mohd.Shahrukh

Roll Number: 1808551060099

Submitted To:

Dr. PramodKumar

(BCA Dept. SRC)

DEPARTMENT OF COMPUTER APPLICATION

SHRI RAM COLLEGE, MUZAFFARNAGAR

(Affiliated to Chaudhary Charan Singh University, Meerut)

Session 2020-2021

Co-ordinator

SRC, Shri Ram College,

Muzaffarnagar

Principal

SRC, Shri Ram College,

Muzaffarnagar

A

PROJECT

ON

FACULTY MANAGEMENT SYSTEM

Project Report submitted for the partial fulfillment of the degree Bachelor of Computer Application(BCA)

SUBMITTED BY

Kartik(180855106079)

Devraj(180855106060)

GUIDED BY

Anuj Dixit

Designation

BCA Dept., SRC

DEPARTMENT OF BCA

SHRI RAM SCHOOL

MUZAFFARNAGAR

Batch 2019-21

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE MUZAFFARNAGAR

(Affiliated to Ch.Charan Singh University MEERUT)

A

PROJECT REPORT

ON

HOSPITAL MANAGEMENT SYSTEM

Submitted towards the partial fulfillment of the requirement
For the award of the degree of

BACHELOR OF COMPUTER APPLICATION (BCA)

SUBMITTED BY

Shreya (180855106170)

Ayushi (180855106008)

UNDER THE GUIDANCE

Dr. Pramod Sharma

Coordinator
BCA Dept., SRC
DEPARTMENT OF BCA
SHRI RAM COLLEGE
MUZAFFARNAGAR
Batch [illegible]

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College
Muzaffarnagar

SHRI RAM COLLEGE MUZAFFARNAGAR

(Affiliated to Ch. Charan Singh University MEERUT)

GSTIN:- 09AALCA8926F1ZC

Service Tax : AALCA8926FSD001

A2Z Autowheels (P) Ltd.

Auth. Dealer MAHINDRA & MAHINDRA (Passenger & Commercial)

NH-58, 6th Mile Stone, Meerut Road, Muzaffarnagar-251 003 (U.P.)

Phone : 8392954021, 8392954026 E-mail : a2zautowheels@gmail.com

Mahindra Rise

TO WHOM SO EVER IT MAY CONCERN

This is to certify that the project work title " **Sugar Mill Management System**" made by **Jatin Pundir (180855106076) and Anshul Kumar (180855106040)** a student of **BCA from Shri Ram College, Muzaffarnagar**. And He/She came to collect the information about the following module;

1- Login

2- Purchase

3- Delete Entry

4- EditProduct

5- Sales

6- Display Stock

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

TO WHOM SO EVER IT MAY CONCERN

This is to certify that the project work title " Bank Management System " made by Obaid Alam (180855106131) & Zeeshan Ansari (180855106199) are students of BCA from Shri Ram College , Muzaffarnagar . And They Came To collect the information about the following modules;

1- Login
2- Splash Screen
3- Main Menu
4- New Account
5- Deposit
6- Withdrawal

26/7/21

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

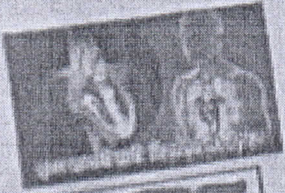
MUSKAN HEALTH CARE CENTER

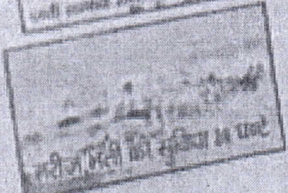
DR. M.SUHAIL
RAU, Jodhpur (RJ)
Ex.Residence - M.P.S. Hospital Jaipur
Dr Lal Hospital New Delhi

हृदय रोग
छाती रोग
जिगर रोग
शुगर
सांस फूलना
ब्लडप्रेशर की शिकायत
टी.बी हो जाना

सुविधाएँ

मरीज भर्ती की सुविधा 24 घन्टे
नेबुलाईजर की सुविधा
ऑक्सीजन की सुविधा
खून की जाँच की सुविधा
दिल की जाँच की सुविधा
फिजियोथेरेपी द्वारा मरीजों से सिकाई



समय:-
सुबह 9:00 बजे से 3:00 बजे तक
शाम 5:00 बजे से 9:00 बजे तक

Name.. Age........... Sex...........Date.....

Rx

BP.

Pulse.

Spo₂

Temp.

To Whom It May Concern

This is to certify that KUNAL AND ABHISHEK, a student of BCA Semester from Shri Ram College, Muzaffarnagar, worked on a proje Entitled "HOSPITAL MANAGEMENT SYSTEM" and they came Collect the information about the following modules:-

1 Enquiry

2 Patient

3 Doctors

4 Room

5 Admit

6 Discharge

MUSKAN HEALTH CARE CENTER, Dr. M. SUHAIL, B.U.M.S., Reg.No. 1035, DEOBAND (SRE)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

NOT FOR MEDICO

मंगलौर चौकी रुड़की रोड, निकट तिलक धर्म कॉटे के सामने, देवबन्द ✆ 750027713

खुशी क्लीनिक

एण्ड फिजियोथेरेपी व हिजामा सैन्टर

डा0 एम0 नौमान
B.P.T., D.C.H. (U.P.M.F.C. Lucknow)
दर्द व फालिस रोग विशेषज्ञ
Regd. No. MZN/BPT/1119

मरीज का नाम ..... दिनाक .....

पता ..... उम्र ..... लिंग .....

℞

This is to certify that the work title "Hospital Management System" made by Monu Chaudhary (1808551060090) & Rakshit Kumar (1808551060145) a student of BCA from Shri Ram College, Muzaffarnagar. And He/She came to collect the information about the following module.

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

सुविधायें

लकवा, फालिस, अधरंग माइग्रेन, सरवाइकल साईटिका, घुटनो का दर्द कमर दर्द, गठिया वाय जोड़ो का दर्द, हाथो पैरो सुनपन, गर्दन की व घुटनो की हड्डी बढ़ना हाथो पैरो का जाम होना कपकपी, डिस्कसैट करना हाथो पैरो मे चीटिया चलना एव बसो की सभी समस्याओ का ईलाज कम्प्यूटराईज मशीनो के द्वारा किया जाता है। सभी खून की जाच की सुविधा। जापानी मशीनों के द्वारा बसो की जाँच की सुविधा हिजामा की सुविधा Body mass index की सुविधा, मोटापा या पेट की चर्बी घटाने की सुविधा। मस्से व तिल हटाने की सुविधा E.C.G. की सुविधा।

समय
सुबह 10 बजे से
शाम 7 बजे तक

पता : डा0 नौमान
की गली मे, जगदीश पुरम
कुकड़ा ब्लॉक, जौली रोड, मुजफ्फरनगर
Khushi clinic & physiotherapy center

Digital X-Ray Available (Germany CR-AGFA Digital)
नाम लिखवाने के लिए सम्पर्क करें
Mob. 9557561360

SALEEM MEDICAL STORE

Moh. Mirdgan
Main Bazar
Budhana, Distt. M.Nagar
Uttar Pradesh-251309

TO WHOM IT MAY CONCERN

THIS IS TO CERTIFY THAT MOHD. JAMAL & KESHAV, ARE STUDENTS OF BCA 6TH SEMESTER FROM SHRI RAM COLLEGE, MUAFFARNAGAR, WORKED ON A PROJECT ENTITLED "**MEDICAL STORE MANAGEMENT SYSTEM**" AND THEY CAME TO COLLECT THE INFORMATION ABOUT THE FOLLOWING:

MODULE :

1- LOGIN
2- MEDICINE
3- SUPPLIER
4- PURCHASE
5- SALE

Signature

For M/s Saleem Medical Agency
Proprietor

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Studnets

Name : Mohd. Jamal

Roll. No. 180855106

Jamal

Name : Keshav

Roll. No. 180855106

Keshav

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Tin No. 09172809310
09-10-2014

Shri Ganeshay Namah

9412842117
8439128700

Aayush Medicose

254B, Rampur, Roorkee Road, Muzaffarnagar (U.P.)

Ref. No. ....

Dated 28/Jul/2

We Aayush medicose gives our data to mr. akshay kumar and mr. Apoorv kansal in sense of help them in these major project. we assure that the given data is true and correct.

Aayush Medicose
254 B, Rampur, Roorkee Road
Muzaffarnagar 25[illegible]

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI DHARM NATH INTER COLLEGE

Gogwn Jalalpur Shamli

UTTAR PRADESH , 251305

PHONE NO – 7042757048

TO WHOM IT MAY CONCERN

This is certify that ARIF ALI (180855106045) & SHNAVVAR ALI (180855106169), are students of BCA 6TH semester from **SHRI RAM COLLEGE, MUZAFFARNAGAR**, worked on a project Entitled ***"FACULTY MANAGEMENT SYSTEM"***, and they came to collect the information about the following:

MODULE :

1 – LOGIN

2 – Add Faculty

3 – Delete Faculty

4 – Edit Faculty

5 – Salary

6 – List of Faculty

प्रधानाचार्य
श्री धर्मनाथ इण्टर कॉलेज
गोगवान जलालपुर (शामली)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

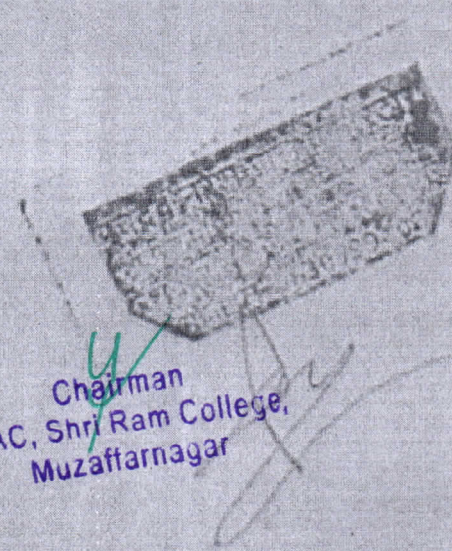
Cheirman
IQAC, Shri Ram College,
Muzaffarnagar

PANCH DEV NARESH PAL BOOK DEEPO

TO WHOM IT MAY CONCERN

THIS IS TO CERTIFY THAT MR. AAKASH KUMAR (180855106002) & GAURAV PAL (180855106063), A STUDENT OF BCA 6TH SEMESTER FROM SHRI RAM COLLEGE, MUZAFFARNAGAR, WORKED ON A PROJECT ENTITLED "BOOKSHOP MANAGEMENT SYSTEM", AND HE CAME TO COLLECT THE INFORMATION ABOUT THE FOLLOWING MODULE:

1- Login
2- Purchase
3- Sale
4- Stock
5- Edit



Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

VARMA NURSING HOME

Near D.A.V. College, Arya Samaj Road, MUZAFFARNAGAR-251001 (U.P.)

डा० अतुल वर्मा

एम.डी (मेडिसिन) फिजिशियन

विशेषज्ञ छाती, हृदय, टी.बी, ब्लड प्रेशर दमा, बाथ, शुगर एवं पेट रोग आदि

भूतपूर्व चिकित्सक :

सफदरजंग अस्पताल, नई दिल्ली

दीनदयाल उपाध्याय अस्पताल, नई दिल्ली

Dr Atul Verma

M.D. (Medicine)
Physician
Reg No MCI 22621
Mob : 9456265918

TO WHOM SO EVER IT MAY CONCERN

It is hereby certified that Shreya Holkar and Aayushi Baliyan, had visited at our hospital for giving Entrance Regarding our hospital.

Dr Atul Verma M.D.
Physician
Reg No M.C.I. 22621
22/1/21

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

समय प्रातः 11-00 से 2-00 बजे तक, सायं 5-00 से 7-00 बजे तक

रविवार अवकाश रहेगा Not valid for Medico Legal Purpose

नोट इस पर्चे पर 10 दिन में एक बार और परामर्श कर सकते हैं

SAURABH BAL VIDHAYA MANDIR PUBLIC SCHOOL

VPO BHAILA KALAN,
SAHARANPUR UP 247554
PHONE NO - 9027996496

TO WHOM IT MAY CONCERN

THIS IS TO CERTIFY THAT ANUPRIYA(1808S5106043) & YASH PRATAP(1808S5106197) , ARE STUDENTS OF BCA 6TH SEMESTER FROM SHRI RAM COLLEGE, MUZAFFARNAGAR, WORKED ON A PROJECT ENTITLED "SCHOOL MANAGEMENT SYSTEM", AND THEY CAME TO COLLECT THE INFORMATION ABOUT THE FOLLOWING:

MODULE:

1- LOGIN
2- STUDENT MODULE
3- TEACHER MODULE
4- FEE SUBMISSION
5- REPORT CARD
6- ADD STUDENT
7- Edit STUDENT

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

ओरियन्टल बैंक ऑफ़ कॉमर्स
(भारत सरकार का उपक्रम)

ओ बी सी

ORIENTAL BANK OF COMMERCE
(A GOVERNMENT OF INDIA UNDERTAKING)

To Whom It may concern

This is to certify that krishankant and shahrukh, A student of bca 6th semester from Sri Ram GroupCollege, muzaffarnagar worked on project entitled "BANK MANAGEMENT SYSTEM" and they came to collect the information about following modules:-

1. Account
2. Customer
3. Deposit
4. Withdrawal
5. Balance

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

प्र. का. : ई-ब्लाक, कनॉट प्लेस, नई दिल्ली-110001 H.O.: E-Block, Connaught Place, New Delhi-110001
दूरभाष / Telephones : 23417121, 23416691, 23415508, 23415598, 23418021, 23416171
तार का पता / Telegraphic address : 'बैंकहूरी' / 'BANKHOORI'
E-mail : obc@bcindia.com Website : www.obcindia.com

OF-82 | BED

PUNJAB AND SINDH BANK

TO WHOM SO EVER IT MAY CONCERN

This is to certify that the project work title " **BANKING MANAGEMENT SYSTEM.**" made by **ANSHUL (180855106039) & PARAMJEET (180855106133)** a student of **BCA from Shri Ram College, Muzaffarnagar**. And He/She came to collect the information about the following module.

1. Login
2. Add Account
3. Search Account
4. Customer list
5. Employee Details

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

LORD SHIVA COLLEGE Mob: 8570842893
8923990398

Correspondence Address: Plot No. 2414, 2442, V.P.O. BAGHRA
Panipat-Khatima Highway, (Opp. Titavi Sugar Mill), Distt. Muzaffarnagar (U.P.) 251306
Web site:-www.lordshivacollege.org Email: - lordshivacollege2019@gmail.com

Run By: B. L. ShikshaSamiti (Reg. No. 236)
324, RohanaMill, Muzaffar Nagar (U.P.)

Ref No- LORD-250/2021Date-26/07/2021 Date .....

Dear **Kartik & Devraj** this is our great pleasure to appreciate and thank you for your excellent performance on '**Faculty Management System**' project. We heartily express our appreciation towards, your dedication and hard work on this project.

You have been evaluated as one of the dedicated student who worked on the project under the guidance of **Lord Shiva College.**

We wish you very best of luck for your future.

Lord Shiva College Signature

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

ADARSH KISHAN VIDHYA MANDIR CHHAPAR MUZAFFARNAGAR UP

CERTIFICATE

This is ceritify that this project entitled "FEES MANAGEMENT SYSTEM" submitted in partial fulfillment of the degree of bachelor of computer application to the choudhry charan singh university, meerut though SHRI RAM COLLEGE,MUZAFFARNAGAR BY **ADARSH KISHAN VIDHYA MANDIR CHHAPAR** muzaffarnagar done **BY AMIT KUMAR (180855106029)& AKASH DHIMAN (180855106020)** authentic work carried out by him under my guidance , the matter embodied in this project work has not been submitted earlier for award of any degree or diploma best of my knowledge and belief.

प्रधानाध्यापक
आदर्श किसान विद्या मन्दिर
छपार (मु० नगर)
PRINCIPAL

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

A Project Report

On

"TRADING COMPANY MANAGEMENT SYSTEM"

Submitted towards partial fulfillment for the award of the degree of

Bachelor of Computer Applications
(Batch 2018- 2021)

Under the Guidance of:

Dr. Pramod Kumar

Astt Professor

BCA Dept., SRC.

Submitted by:

Radha Rana (180855106140)

Akshat Garg (180855106022)

Submitted at:

DEPARTMENT OF COMPUTER APPLICATION
SHRI RAM COLLEGE, MUZAFFARNAGAR

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

A

PROJECT REPORT

ON

AMUL SHOP MANAGEMENT SYSTEM

Submitted In Partial Fulfillment of the Requirements
for the award of the degree of

BACHELOR OF COMPUTER APPLICATIONS

Submitted By:
Name : Anant Deshwal
Roll No. 180855106031
Name : Vikas Kashyap
Roll no. 180855106191

Project Guide:
Mr. Parmod kumar sharma
Designation
BCA Dept, SRC

DEPARTMENT OF COMPUTER APPLICATION

SHRI RAM COLLEGE MUZAFFARNAGAR

(Affiliated to CCS University, Meerut)

Session (2020-2021)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

A
PROJECT REPORT
ON

BANKING MANAGEMENT SYSTEM

Submitted in Partial Fulfillment of the Requirements
for the award of the degree of

BACHEOR OF COMPUTER APPLICATION (BCA)

"BACHELOR OF COMPUTER APPLICATION"
(BCA)

SUBMITTED BY

Paramjeet (1808551061333)
Anshul (1808551060339)

SUBMITTED TO:

Dr.pramod Sharma
Associate Professor
BCA Dept., SRC

To the

Deptt. Of Computer Application
Shri Ram College
Muzaffarnagar

SHRI RAM COLLEGE MUZAFFARNAGAR

(Affiliated to Choudhary Charan Singh University, Meerut)

Session: 2018- 2021

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

A

PROJECT

ON

SCHOOL MANAGEMENT SYSTEM

Submitted By:

Nigam Pundir (1808555106127)

Rohit Pal(1808555106148)

Guided By:

Mr. Anuj Kumar

SUBMITTED FOR THE PARTIAL FULFILLMENT OF

THE AWARD OF

"BCA (Bachelor of Computer Application)"

2020-2021

SHRI RAM COLLEGE, M.NAGAR

AFFILIATED TO CH. CHARAN SINGH, UNIVERSITY, MEERUT

A

Project Report On

"Fees Management System"

Submitted towards partial fulfillment of the requirement

For the awards of the degree of

"BECHELOR OF COMPUTER APPLICATION"

Guided by :-

Mr. ANUJ KUMAR

(Assistant professor of BCA Department)

Submitted by:-

Amit Kumar (Roll no 180855106029)

Akash Dhiman (Roll no 180855106020)

SHRI RAM COLLEGE MUZAFFARNAGAR

(Affiliated to Ch. Charan Singh University MEERUT)

(2020-21)

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

GLOBAL MOBILE REPAIRING CENTER

Shop No 21-22, Basement City Center Market, Muzaffarnagar

Mob:-9897101794

Date.....

Dear **Shivam Sharma & Hem Singh** this is our great pleasure to appreciate and thank you for excellent performance on **"Global Mobile "** project we heartily express our appreciation towards, your dedication and hardword on this project.

You have been evaluated as one of the dedicated student who worked on the project under the guidance of Mr. **Anuj Dixit**

We wish you very best of luck for your future.

For GLOBAL MOBIL

Auth. Sign

The Touchstone Academy Krishnapuri

Play to Class 8th

Krishnapuri ,Muzaffarnagar

www.touchstoneacademy.org

Ph.9319984572
8869881379

It is certified that Sanyam Jain S/o Mr. Ajay Jain & Udit Sharda S/o Mr. Akhil Sharda ; pursuing BCA sixth semester from Shri Ram College ,Muzaffarnagar worked on a project **"Library Management System"**.Both students collected informations from school and school library. School appreciates their work & wishes for their bright future.

Principal
The Touchstone Academy
Dated 03-07-2021

Principal
The Touchstone Academy
Krishnapuri, Muzaffarnagar

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

A
PROJECT REPORT
ON

MOBILE GALLERY

SUBMITTED FOR THE PARTIAL FULFILLMENT OF
THE AWARD OF
"BCA (Bachelor of Computer Application)"

Submitted By:

Shivam Sharma(1808510106166)
Hem Singh(1808510106068)

Guided By:

Anuj Dixit
(Assistance Professor)

Designation
BCA Dept. SRC
DEPARTMENT OF BCA
SHRI RAM COLLEGE

SHRI RAM COLLEGE MUZAFFARNAGAR

(Affiliated to Choudhary Charan Singh University, Meerut)

Co-ordinator
Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Annex.-I

A PROJECT REPORT

ON

HOROSCOPE WEBSITE

Submitted for partial fulfillment of award of

BACHELOR OF COMPUTER APPLICATIONS

Degree

Session 2020-2021

By

STUDENT NAME: HARSH CHAUDHARY

Roll No. 180855106066

STUDENT NAME: SAURABH AHLAWAT

Roll No. 180855106153

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

A

PROJECT REPORT

ON

HOTEL MANAGEMENT SYSTEM

Submitted in Partial Fulfillment of the Requirements
for the award of the degree of

BACHELOR OF COMPUTER APPLICATION (BCA)

Submitted By:

SHAZLI AHMED

180855106159

ARNAV TYAGI

180855106046

Submitted To:

Dr. Pramod Kumar

(Dept.ofComputerApplication)

DEPARTMENT OF COMPUTER APPLICATION

SHRI RAM COLLEGE,MUZAFFARNAGAR

(Affiliated to Chaudhary Charan Singh University, Meerut)

Session: 2020-2021

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

A

PROJECT REPORT

ON

Car Showroom Sale Management System

Project Report submitted for the partial fulfillment of the degree Bachelor of Computer Application(BCA)

SESSION :- 2020-2021

SUBMITTED BY:-

JATIN PUNDIR (18035510607S)

ANSHUL KUMAR (18035510604S)

SUBBMITTED TO:-

Dr. PRAMOD KUMAR

[illegible]

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE, MUZAFFARNAGAR

(Affiliated to Chaudhary Charan Singh University, Meerut)

A

Project

On

"BOOKSHOP MANAGEMENT SYSTEM"

In the partial fulfillment for the award of the degree of

Bachelor of Computer Application (BCA)

SESSION : 2020-21

Submitted by

AAKASH KUMAR(180855106002)

GAURAV PAL (180855106063)

Under the Guidance of:

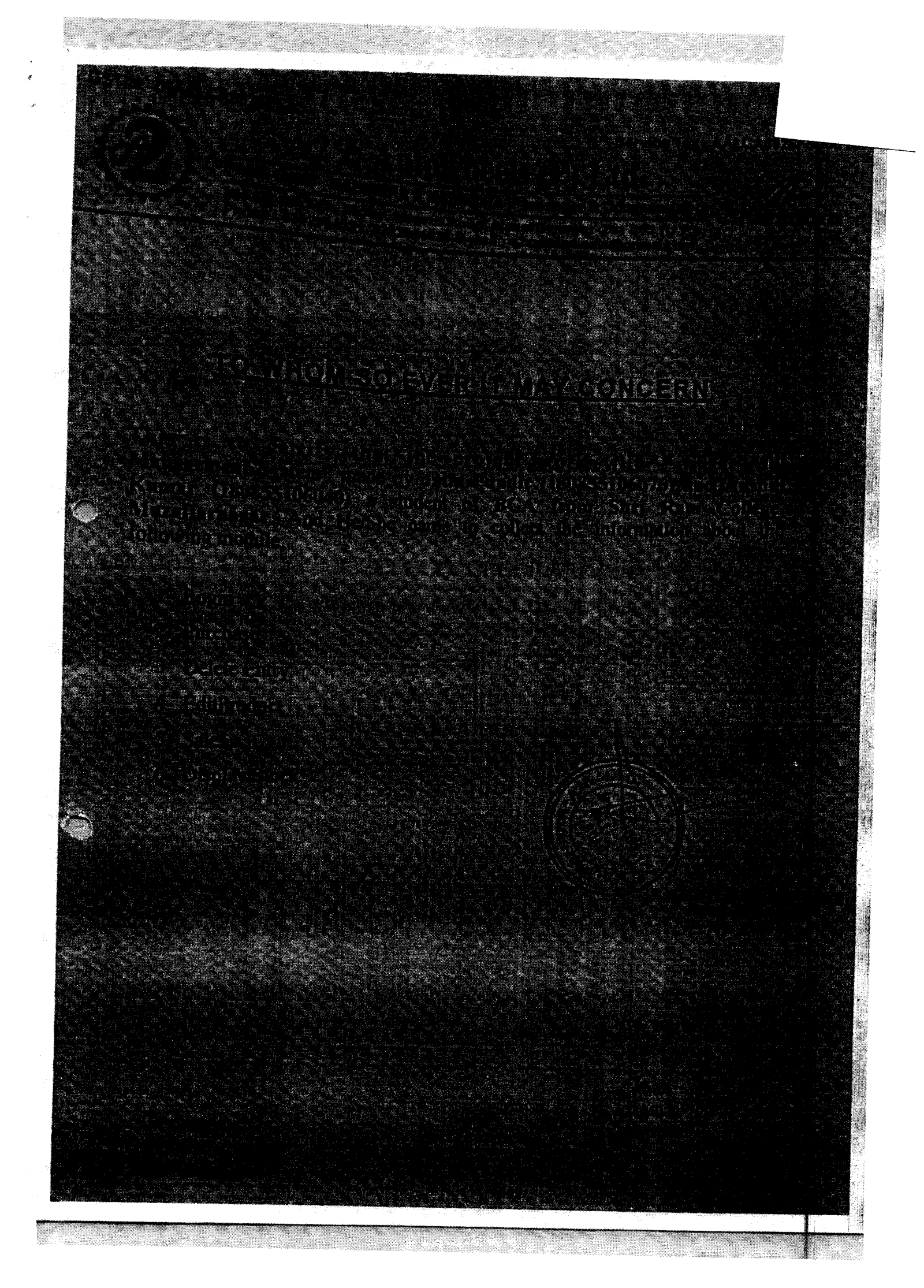
Dr. PRAMOD KUMAR

(Asst. Professor)

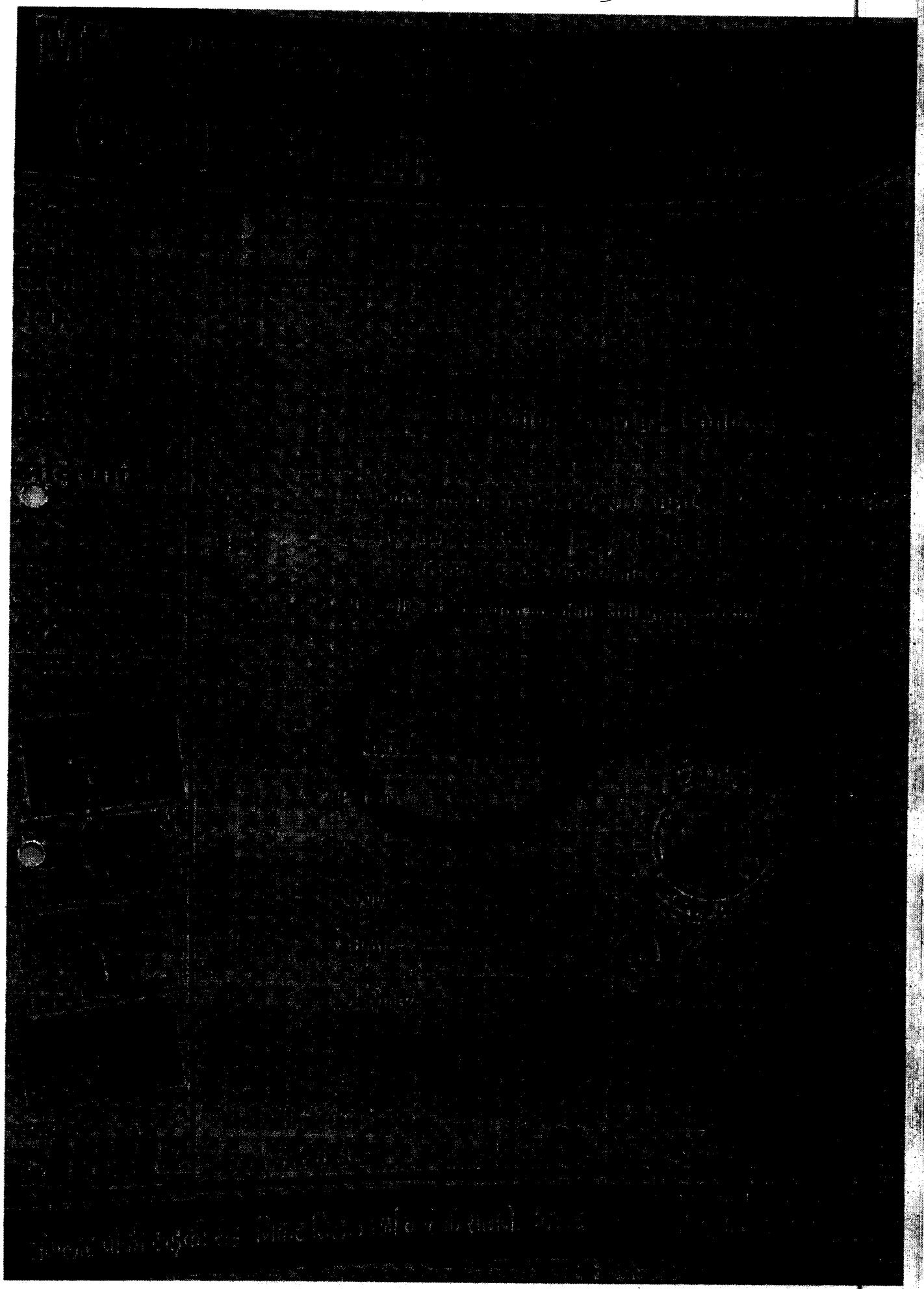
DEPARTMENT OF COMPUTER APPLICATION
SHRI RAM COLLEGE, MUZAFFARNAGAR
(Affiliated to Chaudhary Charan Singh University, Meerut)

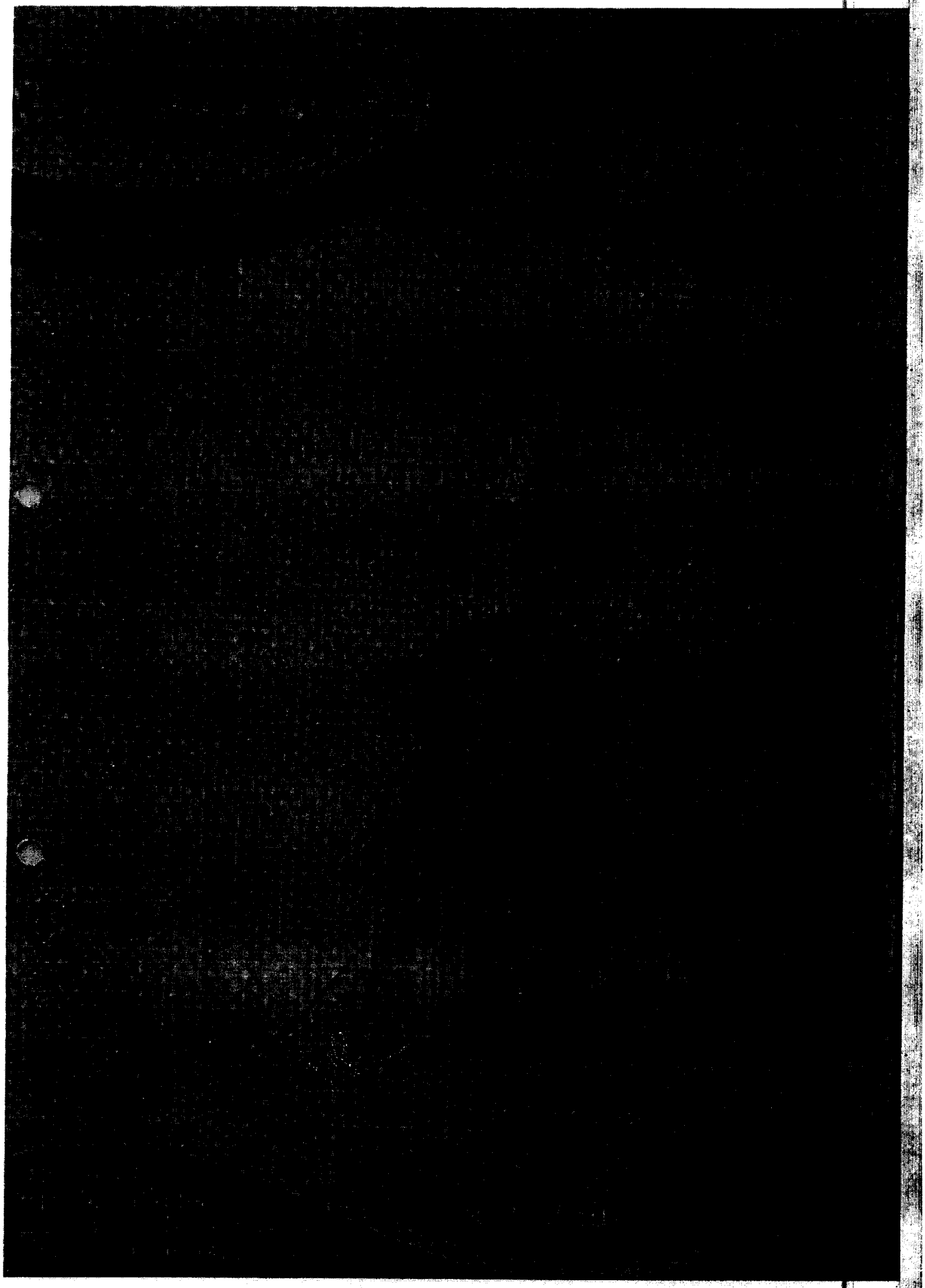
Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar



2020-21
(1.3.2) (1.3.3)





BPEd - 2021

SHRI RAM COLLEGE

Teaching Practice

B.P.Ed-2nd Year

SESSION-2019-21

Department of Physical Education

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

INDEX

Teaching Practice

Session 2019-21

- Notice for Students
- Teaching Permission Letter for Teaching Practice
- Student List for Teaching Practice School
- Duty for Supervision
- Attendance list of Students
- Letter for complete Teaching Practice

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE, MUZAFFARNAGAR

Department of Physical Education

Dated 29.03.2021

Notice

All the student of class B.P.Ed Session 2019-21 are hereby informed that the Teaching Practice classes will be held at New Horizon School and Holy Child Public School, Muzaffarnagar from 01.04.2021to 30.04.2021 The following specializations are made according to the choice.

HoD
Department of Physical Education

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE

(Affiliated To CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

Date 24.03.2021

To,

The Principal
New Horizon School
Muzaffarnagar

Subject: Permission for teaching practice of B.P.Ed Session 2019-21

Dear Sir/Madam,

We have the honour to bring to your kind notice that our college is running approved B.P.Ed course. As you know that practical teaching training is necessary part in the second year of this course.

It is therefore requested to allow for practical teaching practice in your college from 01-04-2021 to 30-04-2021 for the same as above

Hope that necessary permission will very kindly be accorded at your end.

Thanking You,

Yours faithfully

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

HoD
Physical Education

Phone No.: 0131-2660738, 2620899, 9927028908
Web: www.srgcmzn.com E-mail: src_mzn@rediffmail.com

SHRI RAM COLLEGE

(Affiliated To CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR

'A' Grade Accredited by NAAC

Date 24.03.2021

To,

The Principal
Holy Child Public School
Jarauda, Muzaffarnagar

Subject: Permission for teaching practice of B.P.Ed Session 2019-21

Dear Sir/Madam,

We have the honour to bring to your kind notice that our college is running approved B.P.Ed course. As you know that practical teaching training is necessary part in the second year of this course.

It is therefore requested to allow for practical teaching practice in your college from 01-04-2021 to 30-04-2021 for the same as above

Hope that necessary permission will very kindly be accorded at your end.

Thanking You,

Yours faithfully

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

HoD
Physical Education

Phone No.: 0131-2660738, 2620899, 9927028908
Web: www.srgcmzn.com E-mail: src_mzn@rediffmail.com

॥ ओ३म् ॥

Manager/Principal
HOLY CHILD PUBLIC INTER COLLEGE
(Affiliated to U. P. Board)
Jarauda, Muzaffarnagar (U. P.)
Cont. : 9897620351, 9720989181

To,

Ref. No.....

Date.....

Date 25.03.2021

To,

The HoD,
Department of Physical Education
Shri Ram College,
Muzaffarnagar

Dear Sir,

Please refer to your letter dated 24.03.2021 This School has no objection and grant the permission for your students for teaching practice.

Thanking You,

Principal
Holy Child Public School
Jarouda, Muzaffarnagar

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

NEW HORIZON SCHOOL

Affiliated to C.B.S.E (New Delhi), Affiliation No. 2131800

Date 25.03.2021

To,

The HoD,
Department of Physical Education
Shri Ram College,
Muzaffarnagar

Dear Sir,

Please refer to your letter dated 24.03.2021 This School has no objection and grant the permission for your students for teaching practice.

Thanking You,

Principal
New Horizon School
Muzaffarnagar
Mrs Meenakshi Mittal
(Principal)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE, MUZAFFARNAGAR

Physical Education Department
BPEd 2019-21

Teaching Practice Starting Dates 01.04.2021 to 30.04.2021

S.No	Name of School	Name of Faculty	Signature
1	New Horizon School	Dr. Abdul Ajeej Khan	
2	Holy Child Public School	Mr. Bhupendra Kumar	

HoD
Physical Education Deptt.

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

NEW HORIZON SCHOOL

Affiliated to C.B.S.E (New Delhi), Affiliation No. 2131800

To,

The HoD,
Department of Physical Education
Shri Ram College,
Muzaffarnagar

Subject: Successfully attend teaching practice of B.P.Ed session 2019-21

Respected Sir/Madam

I have honour to notice that the students of B.P.Ed 2nd Year session 2019-21 from Shri Ram College, Muzaffarnagar in the guidnace of Dr. Abdul Ajeez Khan. They have conducted their teaching practice from (01.04.2021 to 30.04.2021) in our school.

Work of students was fully inspirable and students of our school were fully motivated them.

I pray for their bright future and success.

Thanking You,

Principal
New Horizon School
Muzaffarnagar
Mrs Meenakshi Mittal

(Principal)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

॥ ओ३म् ॥

Manager/Principal
HOLY CHILD PUBLIC INTER COLLEGE
(Affiliated to U. P. Board)
Jarouda, Muzaffarnagar (U. P.)
Cont. : 9897620351, 9720989181

To, _____

Date.....

Ref. No. .....

To,

The HoD,
Department of Physical Education
Shri Ram College,
Muzaffarnagar

Subject: Successfully attend teaching practice of B.P.Ed session 2019-21

Respected Sir/Madam

I have honour to notice that the students of B.P.Ed 2nd Year session 2019-21 from Shri Ram College, Muzaffarnagar in the guidnace of Mr. Bhupenda Kumar. They have conducted their teaching practice from (01.04.2021 to 30.04.2021) in our school.

Work of students was fully inspirable and students of our school were fully motivated them.

I pray for their bright future and success.

Thanking You,

Principal
Holy Child Public School
Jarouda, Muzaffarnagar

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE

Internship Programme

M.P.Ed-2nd Year

SESSION-2019-21

Department of Physical Education

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

INDEX

Internship

Session 2019-21

- Notice for Students
- Internship Permission Letter for Internship
- Student List for Internship School
- Letter for complete Internship

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Physical Education Department

Dated 02.02.2021

Notice

All the student of class M.P.Ed Session 2019-21 are hereby informed that their Internship will be held at Holy Child Public School, Muzaffarnagar from 03.02.2021 to 03.03.2021. The following specializations are made according to the choice.

HoD
Physical Education Deptt.

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE, MUZAFFARNAGAR

Physical Education Department

Dated 02.02.2021

Notice

All the student of class M.P.Ed Session 2019-21 are hereby informed that their Internship will be held at New Horizon School, Muzaffarnagar from 03.02.2021 to 03.03.2021. The following specializations are made according to the choice.

HoD
Physical Education Deptt.

Co-ordinator
IQAC, Shri Ram College
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

SHRI RAM COLLEGE
(Affiliated To CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR
'A' Grade Accredited by NAAC

Date 01.02.2021

To,

The Principal
Holy Child Public School
Jarauda, Muzaffarnagar

Subject: Permission for internship of M.P.Ed Session 2019-21

Dear Sir/Madam,

We have the honour to bring to your kind notice that our college is running approved M.P.Ed course. As you know that internship is necessary part in the second year of this course.

It is therefore requested to allow for internship in your college from 03-02-2021 to 03-03-2021 for the same as above

Hope that necessary permission will very kindly be accorded at your end.

Thanking You,

Yours faithfully

HoD
Physical Education

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No.: 0131-2660738, 2620899, 9927038
Web: www.srgcmzn.com E-mail: src_mzn@rediff

SHRI RAM COLLEGE
(Affiliated To CCS University, Meerut & Approved By NCTE) CIRCULAR ROAD, MUZAFFARNAGAR
'A' Grade Accredited by NAAC

Date 01.02.2021

To,

The Principal
New Horizon School
Muzaffarnagar

Subject: Permission for internship of M.P.Ed Session 2019-21

Dear Sir/Madam,

We have the honour to bring to your kind notice that our college is running approved M.P.Ed course. As you know that internship is necessary part in the second year of this course.

It is therefore requested to allow for internship in your college from 03-02-2021 to 03-03-2021 for the same as above

Hope that necessary permission will very kindly be accorded at your end.

Thanking You,

Yours faithfully

HoD
Physical Education

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

Phone No.: 0131-2660738, 2620899, 9927028[illegible]
Web: www.srgcmzn.com E-mail: src_mzn@rediffmail.com

॥ ओ३म् ॥

Manager/Principal
HOLY CHILD PUBLIC INTER COLLEGE
(Affiliated to U. P. Board)
Jarauda, Muzaffarnagar (U. P.)
Cont. : 9897620351, 9720989181

To, _____

_____

_____

Ref. No..... Date.....

To,

The HoD,
Department of Physical Education
Shri Ram College,
Muzaffarnagar

Respected Sir/Madam

I have honour to notice that the students of M.P.Ed 2nd Year session 2019-21 from Shri Ram College, Muzaffarnagar has sucessfully completed 1 month (03.02.2021 to 03.03.2021) Internship in our school. Her Internship activities include teaching, organizing of monning assemblies, physical activities etc. During the period of Internship program with us they found punctual, hardworking and inquisitive.

We wish very best for all their future endevours

Principal
Holy Child Public School
Jarouda, Muzaffarnagar

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

NEW HORIZON SCHOOL

Affiliated to C.B.S.E (New Delhi), Affiliation No. 2131800

Date 04.03.2021

To,

The HoD,
Department of Physical Education
Shri Ram College,
Muzaffarnagar

Respected Sir/Madam

I have honour to notice that the students of M.P.Ed 2nd Year session 2019-21 from Shri Ram College, Muzaffarnagar has sucessfully completed 1 month (03.02.2021 to 03.03.2021) Internship in our school. Her Internship activities include teaching, organizing of monning assemblies, physical activities etc. During the period of Internship program with us they found punctual, hardworking and inquisitive.

We wish very best for all their future endevours

Principal
New Horizon School
Muzaffarnagar
Mrs Meenakshi Mittal

(Principal)

Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

Chairman
IQAC, Shri Ram College,
Muzaffarnagar

1.3.2

Course* Offered in last five years by SRC

Department of Agriculture

B.Sc. Ag., SEMESTER-I

SN	Programme Code	Course Code	Subject Name	Title of the course
1	D	191	Agronomy	Principles of Agronomy (ICAR)
2	D	192	Ag. Chemistry	Fundamentals of Soil Science
3	D	193	Ag. Botany	Elements of Genetics
4	D	194	Statistics	Elementary Statics and applied mathematics elements of Statistics (ICAR)
5	D	195	Soil Conservation	Agricultural Meteorology
6	D	196	Agriculture Extension	Rural Sociology and Educational Psychology
7	D	197	Horticulture	Fundamentals of Horticulture
8	D	198	Physical Department	Physical Education (Only Practical No. Syllabus by ICAR)
9	D	199	English Department	Structural & Spoken English
10	D	008	Environment	Environmental Studies (Only theory)
11	D	009	Indian Culture	Bhartiya Sanskrit evam Rashtra Gaurav (Only theory)

INTERNAL QUALITY ASSURANCE CELL ★ S.R.C. MZN.

B.Sc. Ag., SEMESTER-II

SN	Programme Code	Course Code	Subject Name	Title of the course
1	D	291	Agronomy	Irrigation and Water Management
2	D	292	Extension Education	Fundamentals of Extension Education and Rural development
3	D	293	Ag. Botany	Elementary Crop Physiology
4	D	294	Agriculture Entomology	Introductory Entomology
5	D	295	Plant pathology	Introductory Plant Pathology
6	D	296	Ag. Chemistry	Elementary plant Bio-Chemistry and Chemistry of Plant products
7	D	297	Ag. Economics	Introduction to Agriculture and Natural Resources Economics and Farm Management Economics

B.Sc. Ag., SEMESTER-III

SN	Programme Code	Course Code	Subject Name	Title of the course
1	D	391	Agronomy	Cereals Millets, and pulses crops (field crops Kharif Crops)
2	D	392	Agriculture Botany	Principal of plant breeding
3	D	393	Agriculture Engineering	Farm power and Machinery, farm Structures, Power and Machinery (ICAR)
4	D	394	Soil Conservation	Environmental Science Agro Ecology
5	D	395	Agriculture Economics	Agriculture marketing, export and cooperation
6	D	396	Horticulture	Vegetable Production
7	D	397	Agriculture Soil Chemistry	Elementary Microbiology and Soil microbiology

B.Sc. Ag., SEMESTER-IV

SN	Programme Code	Course Code	Subject Name	Title of the course
1	D	491	Agronomy	Oil seeds commercials crops fields crops-II Rabi crops (ICAR)
2	D	492	Agriculture Botany	Breeding of field crops
3	D	493	Soil Conservation	Principles of soil physics and conservation soil survey/land planning and remote sensing (ICAR)
4	D	494	Animal Husbandry	Livestock production and management (including poultry) lives stock production India poultry swine and goa farming along with animal diseases (ICAR)
5	D	495	Entomology	Economic Entomology, Economic entomology including crops (ICAR)
6	D	496	Horticulture	Fruit production fruit production including plantation crops (ICAR)

B.Sc. Ag., SEMESTER-V

SN	Programme Code	Course Code	Subject Name	Title of the course
1	D	591	Botany	Introduction to plant biotechnology
2	D	592	Dairy	Milk and milk processing, principles of food science and human nutrition (ICAR)
3	D	593	Horticulture	Preservation of fruits and vegetables post harvest management of fruits and vegetables (ICAR)
4	D	594	Entomology	Crop pests and integrated pest management crops pests and management (ICAR)
5	D	595	Agronomy	Weed management.
6	D	596	Pathology	Crop disease and their management plant pathology : crop diseases and management (ICAR)
7	D	597	Soil Chemistry	Soil fertility, fertilize and integrated nutrient management (ICAR)

B.Sc. Ag., SEMESTER-VI

SN	Programme Code	Course Code	Subject Name	Title of the course
1	D	691	Botany	Principles of seed technology oil seed and commercial corps (ICAR)
2	D	692	Dairy	Dairy products technology
3	D	693	Engineering	Post Harvest Engineering.
4	D	694	Agronomy	Farming system and sustainable agriculture crop planning farm manage and sustainable agriculture. (ICAR)
5	D	695	Agriculture Economic	Agriculture Finance, Business management and trade
6	D	696	Agriculture Extension	Communication, Diffusion of agriculture innovation History and development of agri. Research and communication and difiusion of agri. Innovation (ICAR)
7	D	697	Pathology	Plant Pathology: Mushroom cultivation Mushroom culture and elementary plant nemeology (ICAR)
8	D	698	Horticulture	Ornamental Horticulture

B.Sc. Ag., SEMESTER-VII

SN	Programme Code	Course Code	Subject Name	Title of the course
1	D	791	Agronomy	Rained Agri. Dry Land for Minf. And Water Seed Manag.
2	D	792	Forestry	Silviculture and Agro. Forestry and spec. Forestry
3	D	793	Horticulture	Production tech. of Med. Aromatic and Diff. Crops
4	D	794	Soil Science	Management of Problems Soil and Water Land
5	D	795	Animal Dairy	Dairy Chemistry and Animal Nutr. Inclu. Fortage and Grasses
6	D	796	Computer	Computer Application

B.Sc. Ag. SEMESTER-VIII

SN	Programme Code	Course Code	Subject Name	Title of the course
1	D	891 (a)	Agriculture Extension	Rural agricultural work experience all departments related in field work
2	D	891 (b)	Agriculture Economic	
3	D	891 (c)	Agriculture Botany	
4	D	891 (d)	Agriculture Chemistry	
5	D	891 (e)	Agriculture Dairy	
6	D	891 (f)	Agriculture Engineering	
7	D	891 (g)	Agriculture Horticulture	
8	D	891 (h)	Agriculture Soil conservation	
9	D	891 (i)	Agriculture Agronomy	
10	D	891 (j)	Agriculture Paint Pathology	
11	D	891 (k)	Agriculture Entomology	

Ch. Charan Singh University, Meerut,

Revised Uniform Syllabus of B.J.M.C. w.e.f. 2016-17 (B.O.S. 25-06-2016, AC.....)

(For University Department and Colleges)

(Three Years / Six semesters Programme)

Semester-I

Course-I	Introduction to Mass Communication	M.M.:100 (Ext.-75&Int.-25)
Course-II	Computer Basics	M.M.:100 (Ext.-75&Int.-25)
Course-III	Value Education	M.M.:100 (Ext.-75&Int.-25)
Course-IV	General Hindi (सामान्य हिन्दी)	M.M.:100 (Ext.-75&Int.-25)
Course-V	Course Related Practicals-Viva	Max. Marks: 100 (Ext.)

Semester – II

Course-VI	Introduction to Journalism	M.M.:100 (Ext.-75&Int.-25)
Course-VII	Constitution and Indian Political System	M.M.:100 (Ext.-75&Int.-25)
Course-VIII	Indian Social System	M.M.:100 (Ext.-75&Int.-25)
Course-IX	General English	M.M.:100 (Ext.-75&Int.-25)
Course-X	Course Related Practicals-Viva	Max. Marks: 100 (Ext.)

Semester-III

Course-XI	Print Media-I (Reporting)	M.M.:100 (Ext.-75&Int.-25)
Course-XII	Indian Economic System	M.M.:100 (Ext.-75&Int.-25)
Course-XIII	Electronic Media-I (Radio)	M.M.:100 (Ext.-75&Int.-25)
Course-XIV	Media Laws	M.M.:100 (Ext.-75&Int.-25)
Course-XV	Course Related Practicals-Viva	Max. Marks: 100 (Ext.)

Semester-IV

Course-XVI	Print Media-II (Editing)	M.M.:100 (Ext.-75&Int.-25)
Course-XVII	Social Media	M.M.:100 (Ext.-75&Int.-25)
Course-XVIII	Public Relations and Corporate Communication	M.M.:100 (Ext.-75&Int.-25)
Course-XIX	Electronic Media-II (Television)	M.M.:100 (Ext.-75&Int.-25)
Course-XX	Course Related Practicals-Viva	Max. Marks: 100 (Ext.)

Semester-V

Course-XXI	Advertising	M.M.:100 (Ext.-75&Int.-25)
Course-XXII	Development Communication	M.M.:100 (Ext.-75&Int.-25)
Course-XXIII	Mass Media Writing Skills	M.M.:100 (Ext.-75&Int.-25)
Course-XXIV	Digital Journalism	M.M.:100 (Ext.-75&Int.-25)
Course-XXV	Course Related Practicals-Viva	Max. Marks: 100 (Ext.)

Semester-VI

Course-XXVI	Print Media Practical-Viva	Max. Marks: 100 (Ext.)
Course-XXVII	Radio Practical-Viva	Max. Marks: 100 (Ext.)
Course-XXVIII	TV Practical Viva	Max. Marks: 100 (Ext.)
Course-XXIX	New Media Practical-Viva	Max. Marks: 100 (Ext.)
Course-XXX	Project- Viva	Max. Marks: 100 (Ext.)