Criterion I
Curricular Aspects

1.1.2 Revised Content in the Syllabus

Assessment Period (2016 – 2021)

Comparing B.Sc. Botany Syllabus 2016 & 2019

Syllabus 2016 (Compared with University Syllabus)	
Course Code and Title	Topics introduced/ **removed**

Syllabus 2019 (Compared with 2016 syllabus)	
Course Code and Title	Topics introduced/ **removed**
BOT1B01T Core course I Angiosperm Anatomy, Reproductive Botany & Palynology (3C)	Reproductive Botany , Palynology
BOT2B02T Core Course II -Microbiology, Mycology, Lichenology & Plant Pathology(3)	Xylaria, Aspergillus, Rhizopus Mucor, Cercospora
BOT3B03T Core Course III – Phycology, Bryology & Pteridology (3)	Nostoc, Chlorella Chlamydomonas, Spirogyra Marsilea, Contribution of Indian Pteridologists
BOT4B04T Core Course IV - Methodology and Perspectives in Plant Science	Steps in Scientific Methods Structure of research Report Latest methods of presentation Practicals: Bibliography searches using online tools Familiarizing latest methods of ICT based presentations Observations- Direct & Indirect, Representation of data
BOT5B07T Core Course VII: Angiosperm Morphology & Systematics(3)	Roots, Stem, Leaf (Detailed study) Development of Plant systematics: Folk taxonomy, Herbalists, Early taxonomists: Caesalpino, Bauhin, Linnaeus; Natural systems; Phylogenetic systems; Phenetics; Cladistics (Brief account of various phases). Contributions of EKJanakiAmmal. e-Flora Orchidaceae excluded from practical examination scheme. Familiarization of herbarium techniques (Demonstration only).Only one herbarium is added to Record
BOT5B08T Core Course VIII: Tissue Culture, Horticulture, Economic Botany &Ethnobotany (3)	Tissue Culture Embryology, Palynology
BOT6B10T Core Course X: Genetics & Plant Breeding (3)	Sex determination and sex linked inheritance
BOT6B14T (E3) Core Course XIV: Genetics & Crop Improvement	Genetics of salinity resistance General account–Resistance to mineral deficiency stress-Genetics of mineral deficiency resistance –Sources of mineral deficiency resistance. Heat and cold resistance 1.Heatstress–Generalaccount;Heatstressresistance-Geneticsof heat tolerance Sources of heat tolerance. 2.Chillingresistance

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MSc Botany Syllabus Comparison

Syllabus 2016

Course Code and Title	Topics introduced / **removed**
VPBO1C01 Phycology, Bryology, Pteridology and Gymnosperms	Fossil algae and cyanobacteria A brief account on applied bryology A brief account on applied Pteridology
VPBO1C03 Angiosperm Anatomy, Embryology, Palynology and Lab Techniques	Stress anatomy
VPBO1PL1 Practical of Phycology, Bryology, Pteridology, Gymnosperms, Mycology and Lichenology, Microbiology, Plant Pathology, Angiosperm anatomy, Embryology, Palynology and Lab Techniques.	Study of pteridophyte in their natural habitat. Demonstration of isolation and pure culture of pathogens. Demonstration of camera lucida
VPBO2PL2 Practicals of Cell Biology, Molecular Biology, Biophysics, Cytogenetics, Genetics, Biostatistics, Plant Breeding, Plant Ecology, Conservation Biology, Phytogeography and Forest Botany	Only a field visit to plant breeding station.
VPBO3PL3 Practicals of Plant Physiology, Metabolism, Biochemistry, Angiosperm Morphology, Taxonomy, Plant Resources, Biotechnology and Bioinformatics	QR Code is not implemented
List of electives	
VPBO4E03 Advanced Angiosperm Taxonomy *Practicals :*	50 herbarium without QR Code
VPBO4E01Environmental biology and biodiversity conservation *Practicals :*	Addition of a lab visit
VPBO4E09Plant Physiology *Practicals :*	Addition of a lab visit
VPBO4E12 Plant cell and molecular biology *Practicals :*	Addition of a lab visit
VPBO4E10 Molecular plant taxonomy *Practicals :*	Addition of a lab visit
VPBO4E04 Genetic engineering *Practicals :*	Addition of a lab visit
VPBO4E05 Genomics and proteomics *Practicals :*	Addition of a lab visit
VPBO4E08 Genetic engineering and bioinformatics *Practicals :*	Addition of lab visits

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MSc Botany Syllabus Comparison

Syllabus 2019 compared with 2016

Course Code and Title	Topics introduced / **removed**
BOT01CT01 Phycology, Bryology, Pteridology and Gymnosperms	**Fossil algae and cyanobacteria** **A brief account on applied bryology** **A brief account on applied Pteridology**
BOT01CT03 Angiosperm Anatomy, Embryology, Palynology and Lab Techniques	**Stress anatomy** Seedling anatomy
BOT01CP04 Practicals of Phycology, Bryology, Pteridology, Gymnosperms, Mycology and Lichenology	Collection, preparation and submission herbarium sheets of pteridophytes Field work for the *in situ* study for mycology Submission of five herbarium sheets of pathological specimens.
BOT01CP05 Practicals of Microbiology, Plant Pathology, Angiosperm anatomy, Embryology, Palynology and Lab Techniques	Technique of isolation and pure culture of pathogens by students Illustrative drawing using camera lucida
BOT02CP09 Practicals of Cell Biology, Molecular Biology, Biophysics, Cytogenetics	Visit to an ecologically sensitive area and submission of report
BOT03CP14 Practicals of Plant Physiology, Metabolism, Biochemistry, Angiosperm Morphology and Taxonomy	Herbarium submission with QR Code
BOT03CP15 Practicals of Plant Resources, Biotechnology and Bioinformatics	10 plant specimens collected by the student from the field with a note on the source plant and plant part.
List of electives	
BOT04ET01 - Elective I 1. Advanced Angiosperm Taxonomy *Practicals :*	25 herbarium with QR Code
2. Environmental Biology and Biodiversity Conservation *Practicals :*	Visit to an ecological sensitive area and submission of a report.
3. Plant Physiology	Visit to a research centre in the subject area and submission of a report.
4. Plant Cell and Molecular Biology *Practicals :*	Visit to a research centre in the subject area and submission of a report.

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BOT04ET02 - Elective II 1. Molecular Plant Taxonomy *Practicals :*	Visit to a research centre in the subject area and submission of a report
2. Genetic Engineering *Practicals :*	Visit to a genetic engineering lab and submission of a report
3. Genomics and Proteomics *Practicals :*	Visit to a research lab and submission of a report.
4. Genetic Engineering and Bioinformatics *Practicals :*	Visit to a genetic engineering lab and submission of a report. Visit to a research institute of the relevant area and submission of a report

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Comparing B.Sc. Chemistry Syllabus 2016 & 2019

Syllabus 2016 (Compared with University Syllabus)

Course Code and Title	Topics introduced/ **removed**
VCH1B01- Core Course I: Theoretical and Inorganic Chemistry- I(2C)	General purification techniques, **Evolution of chemistry, Significant figures, comparison of results**
VCH4B04- Core Course IV: Organic Chemistry-I(3C)	**Orientation of aromatic substitution, Haworth synthesis of naphthalene, polycyclic arenes as carcinogens**
VCH4(PL1)- Core Course V : Inorganic Chemistry Practical-I(4C)	
VCH5B05- Core Course VI: Inorganic Chemistry-III(3C)	Catalysis, Significant figures – Comparison of results **Hydrogen, Structure of polyhalide ions, structure of oxy fluorides of xenon,** **Reaction of xenon fluorides with water**
VCH5B06- Core Course VII: Organic Chemistry-II(3C)	Organo copper and silicon compounds **Sulphonic Acids: Carbonic Acid Derivatives: Preparation and properties of urea and semicarbazide – Estimation of urea (hypobromite method and urease method) - Basicity of guanidine**
VCH6B08- Core Course IX: Inorganic Chemistry-IV(3C)	**Zeigler Natta catalyst in the polymerization of alkene and Wilkinson catalyst in the hydrogenation of alkene**
VCH6B09- Core Course X: Organic Chemistry-III(3C)	Enzymes : Chemical nature and properties of enzymes. Nomenclature and classification of enzymes. Mechanism of enzyme action. Substrate specificity of enzymes. Enzyme inhibition **Nucleic acids**
VCH1C01- Complementary Course I: General Chemistry(2C)	Significant figures, Errors **Nuclear Chemistry**
VCH2C02- Complementary Course II: Physical Chemistry(2C)	Nuclear Chemistry **Solid State, Liquid crystals**
VCH3C03- Complementary Course III: Organic Chemistry(2C)	Organic Chemistry – Some Basic Concepts- Source of organic compounds, purification methods **Chemistry of Functional Groups – II**
VCH4C04- Complementary Course IV: Physical and Applied Chemistry(2C)	Rotational Spectroscopy: diatomic molecules, determination of bond length **Petrochemicals, Dyes, Cement, Glass**

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Syllabus 2019(Compared with 2016 syllabus)

Course Code and Title	Topics introduced/ **removed**
CHE1B01- Core Course I: Theoretical and Inorganic Chemistry- I(2C)	**Role of concepts and models in science - Scientific revolution** Scientific research **Symbol of elements – Atomic number and mass number - Atomic mass – Isotopes, isobars and isotones -** **Molecular mass** Personal Protective Equipment (PPE) Accuracy, precision, types of error - Significant figures and its application **General purification techniques** **Module IV: Atomic Structure** **Nuclear Chemistry** Module III: Periodic Properties Module IV: Representative Elements Module V: Acid Base Concepts
CHE2B02- Core Course II: Theoretical and Inorganic Chemistry- II(2C)	Module I: The Quantum revolution and its early impact atomic structure Quantum mechanical concept of bonding **Metallic Bond, Intermolecular Forces, Comparison of bond length, magnetic behaviour and bond energy of O2, O2+, O22+, O2- and O22, Resonance structures of borate, carbonate and nitrate ions – Comparison of bond energy. Ionic bond and covalent bond.** **Periodic Properties**
CHE3B03- Core Course III: Physical Chemistry- I(3C)	Maxwell's relations. Resonance energy from thermochemical data. Changes of thermodynamic properties with respect to different chemical changes. Boltzmann distribution derivation Module V: Molecular Symmetry and Group Theory **Module IV: Liquid State**
CHE4B04- Core Course IV: Organic Chemistry- I(3C)	**Introduction to Organic Chemistry** Intermolecular Forces Alkyl halides **Comparison of basicity of (i) pyrrole and pyridine (ii)indole and quinoline - Anti-aromatic compounds.** Orientation of aromatic substitution Aryl halides: Aromatic nucleophilic substitutions – bimolecular displacement mechanism, elimination- mechanism.

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CHE4B05(P)- Core Course V : Inorganic Chemistry Practical-I(4C)	Module VIII: Inorganic Preparations
CHE5B06- Core Course VI: Inorganic Chemistry-III(3C)	**Significant figures – Comparison of results.** **Accuracy and precision – Classification and minimization of errors - Sampling and its types (elementary idea only)** Pollution due to light, Air pollution in Indian cities (Delhi, Agra and Kanpur). **Pollution Control Board: Duties and responsibilities.** **Module II: Representative Elements - I** **Module III: Representative Elements - II**
CHE5B07- Core Course VII: Organic Chemistry-II(3C)	Sulphonic Acids, Preparation and uses sulpha drugs, Carbonic Acid Derivatives, preparation and basicity of guanidine **Alcohols: Classification – Isomerism, Preparation of ethanol from molasses – Preparation of rectified spirit and absolute alcohol - Power alcohol, proof spirit and denatured spirit (mention only).** **Organolithium compounds, organo copper and silicon compounds** **Harmful effects of nitrobenzene in the human body.** **Explosives: Definition - TNT, nitroglycerine, RDX and ANFO (structural formula and chemistry behind the explosion).** **Module I: Halogen Compounds**
CHE5B08- Core Course VIII: Physical Chemistry-II(3C)	Clausius-Clapeyron equation and its applications to solid-liquid, liquid-vapour and solid-vapourequilibria **Colloids** **Chemistry of vision 1h** **Chromatography Molecular Symmetry and Group Theory**
CHE6B09- Core Course IX: Inorganic Chemistry-IV(3C)	Instrumental Methods of Analysis Explanation of metallic properties of transition metals based on theories of Metallic Bonding: Free electron theory, valence bond theory and band theory (qualitative treatment only) **Metallurgy** **Preparation, properties, structure and uses of KMnO4 and K2Cr2O7 Introduction - Types of ligands – Anionic, cationic and neutral complexes – IUPAC Nomenclature**

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CHE6B10- Core Course X: Organic Chemistry-III(3C)	Purification of organic compounds: Column, paper and thin layer chromatography. Gas Chromatography Nucleic acids **Cholesterol and heart attack – Anabolic steroids and their abuse(elementary idea only) – Structure of Methandrostenolone - Doping in sports (a brief study)** **Enzymes: Chemical nature and properties of enzymes. Nomenclature and classification of enzymes.** **Mechanism of enzyme action. Substrate specificity of enzymes. Enzyme inhibition**
CHE6B11- Core Course XI: Physical Chemistry-III(3C)	Surface tension: Explanation and its determination. Viscosity: Determination of molecular mass from viscosity measurements. Refraction: Refractive index– Molar refraction and optical exaltation – application. **Levelling and differentiating solvents, Applications of common ion effect and solubility product** **Principles of fractional distillation, Binary systems, vapour diagram andazeotropic distillation**
CHE6B12- Core Course XII: Advanced and Applied Chemistry(3C)	Colloids, Potential energy surface – local minima, global minima, saddle point and transition states. Softwares used in computational chemistry calculations. Organo chlorine pesticides Organo phosphorus pesticides – malathion, parathionHerbicides– glyphosate – side effects. Natural pigments in fruits and vegetables (carotenoids, chlorophylls and flavonoids).
	General Introduction to Computers: Operating systems and programming languages (basic idea only). **Excel Spread Sheets: Basic operations, functions, charts and plots - Linear and non-linear regression -** **Curve fitting.** **Perfumes, antiperspirants, cleansing creams (cold creams, vanishing creams and bleach creams), sun screen preparations, UV absorbers, skin bleaching agents, depilatories, nail polishes, lipsticks and eye liners - Turmeric and Neem preparations Vitamin oil. Harmful effects of cosmetics. Methods of preservation: Drying, pasteurization, refrigeration, vacuum packing, use of salt and pickling.** **Modern food, Natural food, Composition and advantages of milk - Importance of regional and seasonal fruits – Composition,importance and medical uses of coconut water and Neera - Advantages of traditional Kerala foods.**

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CHE6B13(E1)- Industrial Chemistry	**Environmental management systems, Some diseases and treatment: Tuberculosis and asthma (causes and treatment). Drugs used in the treatment for systemic hypertension and hypercholesterolemia, Indian Medicinal Plants United state pharmacopoeia, Indian pharmacopoeia and British pharmacopoeia (a brief study). Alcohol Industry: Fermentation of molasses and starch – Manufacture of rectified spirit – Absolute alcohol (preparation by azeotropic distillation) – Denatured spirit, proof spirit and power alcohol (synthesis and applications) - Uses of ethanol**
CHE6B13(E2)- Polymer Chemistry	**Module VI: Advances in Polymers (6 hrs)**
CHE6B13(E3)- Medicinal and Environmental Chemistry	Endosulfan disaster in Kerala (brief study) **Indian Medicinal Plants** **Treatment for Specific Poisons: Snake bite, arsenic and mercury compounds, myocardial infarction and AIDS** **Dissolved oxygen, BOD (Winkler's titration method and dissolved oxygen meter) and COD Use and conservation of water resources – Rain water harvesting - Sea water for agriculture**
CHE6B17(P)- Core Course XVII: Inorganic Chemistry Practical-III(4C)	**Module II: Inorganic Preparations 10h**
CHE5D01- Environmental Chemistry	Air pollution in Indian cities, Impurities in water– Underground water pollution. Radioactive waste, Petroleum, Pharmaceutical, heavy metal, pesticides Oil pollution in water. International standards for drinking water. Physiological response to noise, Noise categories - effect of noise – biological effects. Light pollution. Green Chemistry **Causes, symptoms and drugs used for the treatment of air-borne diseases:** **Chickenpox, influenza, measles and tuberculosis.** **Hydrological cycle – Importance of water - Aquatic pollution – Visible signs of aquatic pollution** **Water born diseases: Cholera, dysentery and typhoid – Symptoms and medicines.** **Water treatment methods -** **Pollution Control Board: Duties and responsibilities (a brief study).** **Some Environmental movements**

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CHE5D02- Chemistry in Daily Life	Module II: Chemistry in Biological Systems Dyes: classification based on constitution, application, examples, uses. **Module VII: Advanced Materials (3 hrs)**
CHE5D03- Food Science and Medicinal Chemistry	Beverages: Definition and examples - Classification of beverages - fruit beverages - milk based beverages - malted beverages -Appetizers - definition - classification - examples. Clinical chemistry
CHE1C01- Complementary Course I: General Chemistry(2C)	**Evolution of Chemistry** **Modern periodic law – Long form periodic table. Periodicity in properties: Atomic radii, ionic radii,ionization enthalpy, electron affinity (electron gain enthalpy) and electronegativity (Pauling scale).** **Theory of acids and bases: Arrhenius theory, Bronsted-Lowry theory and Lewis theory** **significant figures, errors** Module III: Nuclear Chemistry
CHE2C02- Complementary Course II: Physical Chemistry(2C)	Solid State Module V: Chemistry of Functional Groups – II **Module IV: Nuclear Chemistry** **Cation and anion reversible electrodes** **Hydrolysis of salts, Henderson's equation**
CHE3C03- Complementary Course III: Organic Chemistry(2C)	**Introduction: Definition and importance of organic chemistry** **Ethers: Preparation by Williamson's synthesis – Acidic cleavage 1h**
CHE4C04- Complementary Course IV: Physical and Applied Chemistry(2C)	Module II: New Vistas in Chemistry Petrochemicals, Dyes, Cement, Glass **Module II: Kinetics & Catalysis** **Rotational Spectroscopy: diatomic molecules, determination of bond length.** **Solid Waste Management: Sanitary landfill and composting.** **Cosmetics, Agriculture, cleansing agents, Fast foods and junk foods & their health effects - Artificial ripening of fruits and its health effects. Importance of milk, coconut water and Neera.**

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Comparing MSc ChemistrySyllabus 2016 & 2019

Syllabus 2016 (Compared with University Syllabus)

Course Code and Title	Topics introduced / **removed**
VPCH1C01 Basic concepts in quantum chemistry & group theory	Compton effect, Zeeman effect- the need for quantum mechanics.Bohr's correspondence principle
VPCH1C02 Elementary inorganic chemistry	Molecular topologies-shared and lone pair and Lewis structure. Bonding in metals, packing of atoms in metals, band theory of metals and metallic properties, insulators and semiconductors **The Lewis structure – Octet rule** **The hydrogen bond and its consequences-van der Waal`s forces-Determination of molecular structure by X-Ray diffraction**
VPCH1C04 Thermodynamics, kinetics and catalysis	Phase equillibria : Applicaions to binary liquid system-separation of two miscible liquid-formation of azetropic mixture **Deduction of the laws of Raoult's ebullioscopy, cryoscopy, and osmotic pressure**
VPCH2CO5 Applications of quantum mechanics & group theory	Slatersrule,rules for calculation of effective nuclear charge.STO's for He,C,and N
VPCH2CO6 Coordination chemistry	Coordination compounds with special properties: stereochemically non-rigid and fluxional compounds Infra-red spectra of metal complexes, group frequency concept, changes in ligand vibrations on coordination- metal ligand vibrations. **Metal complex sensitizers- waterphotolysis**
VPCH3CO9 Molecular spectroscopy	Photo-electron spectroscopy: principle and technique of PES and Ultra-Violet PES **Quantum mechanical description of electron spin in a magnetic field- Energy levels-Population- Transition probabilities using Ladder operators**

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VPCH3C11 Organic transformations & reagents	Formation of Carbon-carbon bond **Chemistry of Polymers**
VPCH3EO1 Synthetic organic chemistry (Elective)	Phase transfer catalysis and Crown ethers **Retro Synthetic Analysis and Heterocyclics**
VPCH4C13 Instumental methods of analysis	Analysis of Biomolecules **Different types of electrodes and improvements of lower detection limits.Voltammetric sensors. Organic polarography**
VPCH4E05 Industrial Catalysis (Elective)	catalytic preparative methods **Kinetics and Catalysis**

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Syllabus 2019 (Compared with 2016 syllabus)

Course Code and Title	Topics introduced/ **removed**
CHE1C01 Quantum Mechanics and Computational Chemistry	Approximation Methods in Quantum Mechanics Quantum Mechanics of Many-electron Atoms Introduction to Computational Chemistry – I Introduction to Computational Chemistry – II **Foundations of Group Theory & Molecular Symmetry** **Representations of Point Groups & Corresponding Theorems**
CHE1C02 Elementary inorganic chemistry	Chemistry of Nanomaterials **Molecular topologies-shared and lone pair and Lewis structure. Bonding in metals, packing of atoms in metals, band theory of metals and metallic properties, insulators and semiconductors**
CHE1C04 Thermodynamics, kinetics and catalysis	Deduction of the laws of Raoult's ebullioscopy, cryoscopy, and osmotic pressure **Phase equillibria : Applicaions to binary liquid system-separation of two miscible liquid-formation of azetropic mixture**
CHE2C05 Group theory and Chemical Bonding	Foundations of Group Theory & Molecular Symmetry Representations of Point Groups & Corresponding Theorems **Approximation Methods in Quantum Mechanics** **Quantum Mechanics of Many-electron Atoms**
CHE2C06 Coordination chemistry	Metal complex sensitizers- waterphotolysis
CHE3C09 Molecular spectroscopy	Quantum mechanical description of electron spin in a magnetic field- Energy levels-Population- Transition probabilities using Ladder operators **Photo-electron spectroscopy: principle and technique of PES and Ultra-Violet PES**

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CHE3C11 Reagents and Transformations in Organic Chemistry	Chemistry of Polymers Heterocyclic chemistry and supramolecular chemistry **Formation of Carbon-carbon bond**
CHE3E01 Synthetic organic chemistry (Elective)	Retro Synthetic Analysis and Heterocyclics **Phase transfer catalysis and Crown ethers**
CHE4E06 Natural Products & Polymers(Elective)	Full paper
CHE4C12 Instrumental Methods of Analysis	different types of electrodes and improvements of lower detection limits.Voltammetric sensors. Organic polarography **Analysis of Biomolecules**
CHE4E05 Industrial Catalysis(Elective)	Kinetics and Catalysis **catalytic preparative methods**

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Comparing B.Sc. Computer ScienceSyllabus 2018& 2019

Syllabus 2018 (Compared with 2016 Syllabus)

Course Code and Title	Topics introduced/ **removed**
VCS1B01: Computer Fundamentals & HTML	**New course**
VCS3B03: Data Structures using C	complexity and time-space trade off, Big-O notation. Strings: Introduction, strings, String operations, Pattern matching algorithms
VGC4CS2: Basics of Audio & Video Media	Computer Graphics Definition, Application, Pixel, Frame Buffer,Raster and Random Scan display, Display devices CRT, Color CRT Monitors,Basics of LCD & LED Monitors
VCS5B05 : Computer Organization and Architecture	Digital Logic, Combinational circuits,Sequential Logic Circuits, Shift register, counters **Parallel Processing, Symmetric Multiprocessors Pipelining**
VCS5B06: ava Programming	OOPS concepts added **Collections & Networking removed**
VCS5B08: Principles of Software Engineering	Agile development, Design concepts, Maintenance
VCS6B1 : Operating Systems	Linux Shell Programming
VCS6E01: System Software	**New course**/ No change

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Syllabus 2019(Compared with 2018 syllabus)

Course Code and Title	Topics introduced/ **removed**
A11: Python Programming	**New Course**
A12: Data Communication and Optical Fibres	**New Course**
A13: Microprocessors Architecture and Programming	**New Course**
A14 : Sensors and Transducers	**New Course**
BCS6B11: Android Programming	Added Data base classes and operations on real time databases
BCS6B12: Operating Systems	Secondary storage structure **Protection and security**
BCS6B16B Machine Learning	**New Course**

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Comparing BSc Family and Community Science Syllabus 2016 & 2019Syllabus

2016 (Compared with University Syllabus)

Course Code and Title	Topics introduced/ **removed**
VFC5B06 Family Resource Management	**Waste management** Type of wastes, principles of waste management, disposal of waste. Recycling of waste and reuse of waste- biogas, Vermiculture, Upcycling, environment concerns
VFC6 BPL3 PRACTICL I11 -Family Resource Management	Event management- planning, organizing, implementing and evaluating a group activity (party, exhibition)
VFC6BPL4 Textile Science	Prepare a sample of Tie and dye
VFC6B09 Fabric Care and Apparel Designing	Fashion terminologies- fad, style, classic, Haute couture, prêt-A- porter, trend Visual merchandising- Needs and important, elements- areas of display- store interior, store exterior, window display.
VFC6 BPL6 PRACTICAL VI Fabric Care and Apparel Designing	Boutique window display- theme based (group activity , report and photo to be maintained in the record)
VFC6B11 Concepts of Family Relation	**Unit V Deviant sexual behavior** Types- Exhibitionism, Fetishism, Frotteurism, Pedophilia, sexual masochism, sexual sadism, Transvestic fetishism, Voyeurism, Zoophilia.

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VFC3B03 – **RESEARCH METHODOLOGY AND BIOINFORMATICS**	**Defining research problem** Definition and selection, necessity of defining the problem, technique involved in defining a problem **Unit III Research design / proposal** Meaning and purpose of a research design or proposal, research problem definition, identification, statement of research problem, criteria for selection, definition of concepts (operational definition).Variables - types of variables, independent and dependent variables, control and intervening variables. Hypothesis AND related literature –Meaning **Renamed Unit IV Methods of data collection** Collection of primary data – observation method, Interview method, collection of Data through questionnaires and schedules, other methods of data collection, collection of secondary data

Syllabus 2019(Compared with 2016 syllabus)

***No change in syllabus, change in scheme only**

Course Code and Title	Topics introduced/ **removed**
FCS1B01 Fundamentals of Nutrition	Nil
FCS2B02 Human Development	Nil
FCS3B03 Research Methodology and bio informatics	Nil

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Comparing BSc Home Science (Textiles and Fashion Technology) Syllabus 2016 & 2019
Syllabus 2016 (Compared with University Syllabus)

Course Code and Title	Topics introduced/ **removed**
VTF1B01 HISTORIC COSTUMES	Mughal Influence- history Punjab and Haryana, Himachal Pradesh, Uttar Pradesh, Bengal, Bihar, Gujarat, Rajasthan, Tamil Nadu
VTF2B02 FASHION MARKETING AND SHOP FLOOR MANAGEMENT	Merchandising, Quality essential for a Merchandiser. Fashion marketing, marketing mix (4Ps of market), types of product, Promotion, Pricing- Strategies, methods of pricing, pricing at a different stage of product cycle **Fashion forecasting – Process, sources of fashion forecasting information, Export documentation – export marketing, global scenario. Importance of textile industry in Indian economyPromotional Activities of Govt. Organization. The Store Window display, Exterior of store, Illumination. Masking and Proscenia Mannequins and 3D Dressing. Props & promotions on floor. Visual merchandising and colourpalletes.**
VTF5B06 FASHION PRESENTATION	UNIT – 1: FASHION FORECASTING Fashion forecasting- Process, Source of fashion forecasting information UNIT – 2: DRAWING FROM A SOURCE Mannequins, types of mannequins, alternatives to the mannequin, display. Types of display and display settings, model- live model, still model **Old Unit III and IV Omitted**
VTF6BPL4 FASHION PRESENTATION (PRACTICAL)	**Number of garments are reduced from 4 to 1**
VTF6BPL3 PRACTICAL III- TRADITIONAL INDIAN TEXTILES AND SURFACEORNAMENTATION	**Machine embroidery**

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VTF5B07 GARMENT COSTING	**Introduction to Cost Accounting:** **Responsibility accounting, uses of cost accounting, elements of cost, Direct material, Direct labour, factory overhead; cost of goods manufactured statements, cost behavior ,Patterns in theapparel industry-fixed variable, semi variable, job order for process costing.** **Unit 2 Accounting for factory overhead:** **Capacity level concepts, production and service departments direct and indirect costs over andunder, applied overhead, cost volume profit analysis; Breakeven analysis: Contributionmargin,Variable, cost ratio, marginal income.; sales mix by garment style, effect of volumechange, price/column analysis** **Introduction to Costing:** Costing, aims of costing – difference between estimating and costing – types of estimates. Elements of cost – material cost – labour cost, Patterns in the apparel industry-fixed variable, semi variable, job order for process costing. Different types of expenses – cost of product – advertisement cost, -going rate pricing, Selling cost. Pricing, full cost pricing, marginal cost pricing. **Accounting for factory overhead** Analysis of over head expenses: introduction – factory expenses –administrative expenses – selling and distribution expenses – allocationof over head expenses – depreciation – reasons for depreciation – methods of calculating depreciation – simple problem.
VTF6B10 **APPAREL PRODUCTION AND QUALITY CONTROL**	**standards** pressing and fusing, various National standards
VTF6B09: **TEXTILE SCIENCE**	After treatments – Steaming – Curing - Thermal fixing
VTF6BPL6 **PRACTICAL VI- TEXTILE SCIENCE**	**Identification of weaves**

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Syllabus 2019(Compared with 2016 syllabus) (*Only change in scheme)
Syllabus 2020 (Compared with 2019 syllabus)

Course Code and Title	Topics introduced/ **removed**
HTF3B03 COMPUTER AIDED FASHION DESIGN	UNIT III: Different types of textile prints- one direction, two direction, non-directional, calico, overall, camouflage, floral and vines, plaids, bull's eye, checkerboard, art moments, traditional and geometric UNIT IV: Gerber and Reach CAD UNIT V: Importance of CAD in the fashion Industry and its progression **UNIT I: Organization of computers – Input unit – Output unit – Central Processing Unit – Memory device. Working principles of Printer- Scanner- Digitizer – Plotters.** **UNIT II: Corel draw** **UNIT III: Design creation, fashion studio** **UNIT IV: Laying – cutting – labeling – duplicating** **UNIT V: Brief study on design software used in industries, Computer Integrated Manufacturing**
HTF3B03(P) PRACTICAL I - COMPUTER AIDED FASHION DESIGN	**UNIT 1** **MS office and Internet knowledge** **UNIT IV: Textile designing, Corel Draw** UNIT IV: Development of Textile Prints UNIT V: Logo Creation- Logo, brochure, visiting card, letter head, Invitation card

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Comparing Bvoc Food Processing Syllabus 2018& 2019

Syllabus 2018 (Compared with initial Syllabus)	
Course Code and Title	Topics introduced / **removed**
SDC1FQ01: Food Quality And Food Safety Management	Hazard analysis Critical Control Point: Definition, principles, Guidelines for the application of HACCP system. Food laws and standards 1.Introduction and need of food laws. Indian food regulations –FSSAI 2006 – export and import laws and regulations – International food laws- CAC – WTO implications - national and international agencies for implementation 2.. Mandatory food laws; The food safety and standards Act 2006, 3.Recommended international code of hygiene for various products.
SDC2FA05: Food Additives and Adulteration	Types offoodadditives Food Adulteration
SDC3FP09: Food Preservation	Food irradiation – Principles, merits and demerits, effects of irradiation and photochemical methods. **Food laws and standards** **1.Introduction and need of food laws. Indian food regulations –FSSAI 2006 – export and import laws and regulations – International food laws- CAC – WTO implications - national** **and international agencies for implementation** **2.. Mandatory food laws; The food safety and standards Act 2006,** **3.Recommended international code of hygiene for various products.**

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SDC3FT10:Fruits And Vegetable processing Technology	Tomato products. Dried fruits Dehydration of fruits and vegetables using various dryingtechnologies like sun drying, solar drying, osmotic, tunnel drying, fluidized fed drying, freeze drying. Pectin chemistry, defects in jam, jelly and pickles Canning of fruits and vegetables-
SDC4FM14: FOOD MICROBIOLOGY	Microbial Testing - Water and milk
GEC5QF13: Food Engineering	Introduced a new subject instead of Quantity Food Preparation.
GEC5FC14: Food chemistry	Instrumentation Instrumentation - Instrumentation for food quality assurance; subjective and objective parameters. Gas chromatography, Liquid chromatography, HPLC

Syllabus 2019(Compared with 2018 syllabus)	
Course Code and Title	Topics introduced / **removed**
SDC1FQ01: Food Quality And Food Safety Management	**Sensory vis-àvis instrumental methods for testing quality.**
SDC1FS04(P): Food Science (P)	Qualitative tests for carbohydrates: Phenyl hydrazine test, Estimation of Gluten: Dough raising capacity, Quantitative determination of Preservatives in fruit products **Estimation of purity of potassium metabisulphite,** **Qualitative determination of benzoic acid**
SDC1BC02: BAKING AND CONFECTIONERIES	**Baked Snack Manufacture** Role of Phase Transitions in Dough Rheology- gelatinization, retro gradation and dextrinization of starch.
SDC1BC03(P) : BAKING AND CONFECTIONERIES (PRACTICAL)	**Flaky/Puff pastry- pattycases**
GEC3PHT08: Post Harvest Technology	New subject added

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Comparing M Sc Home Science (Nutrition and Dietetics) Syllabus 2016 & 2019

Syllabus 2016 (Compared with University Syllabus)

Course Code and Title	Topics introduced / **removed**
VPND1 C01 Human Physiology	**Lymphatic system**
VPND1 C02 Nutrition Through Life Cycle	Balanced diets. Nutritional disorders in school age Nutritional problems in adolescence Techniques for assessing body composition Ergogenic aids in sports nutrition Nutrition in high altitude Nutrition in Disaster Management
VPND1 C03 Advanced Food Science	Classification and composition of pulses, nuts and oil seeds Definition and importance of nutraceutical, phytochemicals, probiotics and prebiotics Classification of polyphenols Importance of green tea, grape sees, wheat grass, garciniacambogia and aloe vera
VPND1 C04 Macro Nutrients	Deficiency and toxicity of carbohydrates Classification of proteins Indian reference man and woman, Energy Requirements. Estimating energy requirement of individuals and group, energy balance. Nutrition and work capacity- factors affecting physical work capacity and efficiency. Regulation of body weight, Control of food intake, role of hunger and satiety centre, metabolic consequences of starvation Regulation of water balance
VPND1 C05 Research methods and Statistics Part A: research methods Part B: Statistics	Unit II: defining research problem- definition and selection, necessity of defining the problem, technique involved in defining a problem Unit V: Measurements and scaling techniques- measurement in research, measurement scale, sources of error in measurement, technique of developing measurement tools, scaling- meaning, classification and technique Meaning and advantage of statistical presentation of data Unit III: Introduction to statistical package for social science (SPSS)1 1st and 2nd units shifted to Part A and 3rd and 4th units formed as 1 and 2

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VPND2 C07 Food Service Management	Types of Hotel Size and Type of Kitchen, Work simplification counter service, English service, French service, American service, Russian service and service techniques counter service, English service, French service, American service, Russian service and service techniques Menu Pricing- Factor method, Prime cost method and Actual cost method
VPND2 C08 Clinical And Therapeutic Nutrition	Nutritional care process- assessment, diagnosis, intervention, monitoring and evaluation Arthritis, Osteoporosis dietary management
VPND2 C09 Nutritional Management In Life Style Diseases	CABG Human Immuno Deficiency Virus (Hiv) Etiology, Pathophysiology and classification. Stages, opportunistic infections, complications and Malnutrition. Medical Nutritio therapy.
VPND3 C10 Vitamins and Minerals	Interrelationship between calcium and vitamin D
VPND3 C11 Community Nutrition	Public health nutrition Nutritional surveillance
VPND4 C13 Metabolic And Biochemical Changes In Diseases	Collection and preservation procedures of blood, plasma, serum, cerebrospinal fluid, urine, faeces, pleural fluid, peritoneal fluid and semen. Familiarization of biochemical charts from clinical labs Urine and CSF- Normal and abnormal constituents, procedures of qualitative analysis and interpretation and their clinical significance. Principle of estimation of semen fructose and acid phosphatase.
VPND4 E21 Diabetic Care and Management	Physical activity and exercise- Physiological changes occurring during exercise, Benefits of exercise in patients with Diabetes, Potential adverse effect of exercise in patients with Diabetes, Type of Physical Activity (SAFE)

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Syllabus 2019 (Compared with 2016 syllabus)

Course Code and Title	Topics introduced / **removed**
HND1 C01 Human Physiology	**Composition of inspired and expired gas** **Acid base balance, regulation of micturition** **Puberty, menarche, menopause**
HND1 C03 Advanced Food Science	**Unit I: Introduction to food science: history and development of food science, functions of food, different methods and objectives of cooking** Sensory tests: types of tests, procedures for determination and monitoring of shelf life **Pulses, nuts and oil seeds: Classification 3Protein foods for infants and children, soy products, textured vegetable proteins** **Pulses, nuts and oil seeds**: anti-nutritional factors present in pulses **Classification and composition of vegetables and fruits, effect of cooking on pigments and nutrients, ripening** Meat: changes during cooking Fish: selection of spoilage Egg: egg foams Structure and nutritive value of egg, quality of egg **(Unit VII shifted to Unit VI)** **Milk: cheese making, microbiology of milk** Physical properties of milk **Unit VIII: Fats and oils** (Unit IX and Unit XII combined to form Unit VI) **Types of food additives, adulteration** FSSAI, HACCP, food fortification (Unit VII formed from Unit XII) **Definition and importance of nutraceuticals, phytochemicals, classification of polyphenols** Unit VII: Nutraceuticals- classification, health effect, sources and importance of polyphenols **Unit X: Sugar: properties, crystallization, factors affecting crystallization, crystalline and no crystalline candies, stages of cookery, artificial sweeteners** **Unit XI: Evaluation of food quality: quality attribute of food_ appearance, texture, flavor, color, taste: subjective evaluation and objective evaluation**
HND2 C06 Oncology Nutrition	**New core paper**
HND3 E 01 Geriatric Nutrition	**New elective paper option**
HND3 E02 Sports Nutrition	**Chosen new elective paper**

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HND4 C12 Metabolic And Biochemical Changes In Diseases	Body fluids; extracellular and intra cellular- CFC, Serous fluids-, peritonial, pleural and pericardial – Transudates and exudates – Synovial fluids (unit II changed to unit IV) **Collection and preservation procedures of blood, plasma, serum, cerebrospinal fluid, urine, faeces, pleural fluid, peritoneal fluid and semen. Familiarization of biochemical charts from clinical labs.** **Principles of estimation, normal values and clinical significance of the following parameters of blood -glucose, hemoglobin, uric acid, lipid profiles, acid phosphatase, creatine phosphokinase, Na+, K+,Cl- and phosphate. Principles of determination, clinical significance of the following parameters- Total count, Differential count, Erythrocyte sedimentation rate, packed cell volume and prothrombin time. Brief study of blood groups, anticoagulants, storage and transfusion of blood** **Urine and CSF- Normal and abnormal constituents, procedures of qualitative analysis and interpretation and their clinical significance. Principle of estimation of semen fructose and acid phosphatase.** **Infectious Diseases** Fever, typhoid, TB, Chicken Gunea, and Dengue fever **Non infectious diseases** Hepatitis Renal calculi, alzheimer's, PCOD **Musculo-skeletal problems** Arthritis, Osteoporosis Enzymes-Intracellular distribution, factors affecting enzyme activity, enzymes in clinical diagnosis. Hormones -Mode of action, regulation of metabolism, hormonal status indifferent stages of life, endocrinological abnormalities and clinical diagnosis.

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Comparing M.Sc. Home Science (Textiles and Costume Science)Syllabus for 2017& 2020

Syllabus 2017 (Compared with 2016 Syllabus)

Course Code and Title	Topics introduced / **removed**	Syllabus change in hours	Total hours	% of change
VPTC1 B01 HISTORIC COSTUME	No change	0	90	0
VPTC1 B02- FASHION MARKETING	No change	0	90	0
VPTC1 B03 COSTUME DESIGN AND ILLUSTRATION	Men's Ensembles -short and heavy body type, short and thin body, Tall& heavy body, tall and thin body type, athletic body type	5	90	6%
VPTC1B04 INTRODUCTION TO FASHION DESIGN CONCEPT	No change	0	72	0
VPTC1B05 RESEARCH METHODOLOGY AND STATISITICS	No change	0	108	16%
VPTC2 B06 QUALITY ASSURANCE AND TEXTILE TESTING	No change		108	0

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VPTC2 PL1 FASHION DRAPING (P)	Basic sleeve	2	72	3%
VPTC2 B07 VISUAL RETAILING AND ENTREPRENEURSHIP MANAGEMENT	No change	0	90	0
VPTC2 PL2 PRACTICAL - ADVANCED PATTERN MAKING AND CONSTRUCTION TECHNIQUES	No change	0	108	0
VPTC2 I01 INTERNSHIP	No change			
VPTC3 B08- FABRIC CONSTRUCTION AND ANALYSIS	3D weaving	1	108	1%
VPC3 B09 TECHNICAL TEXTILES	Smart Textiles, Nano tech in textiles-Nano fibres& Nano finishes	3	90	3%
VPTC3 B10 TEXTILE CHEMISTRY	No change	0	108	0
VPTC3 E11 FASHION CHOREOGRAPHY	Lighting and Sound	5	54	9%

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VPTC3 B11 TEXTILES & ENVIRONMENT	No change	0	90	0
VPTC4 PL3 PRACTICAL- QUALITY ASSURANCE AND TEXTILE TESTING	No change	0	90	0
VPTC4 PL4 PRACTICAL- TEXTILE CHEMISTRY	No change	0	90	0
VPTC3 E11 FASHION COMMUNICA'	No change	0	90	
VPTC3 E11 SOCIOLOGY OF CLOTHING	No change	0	90	
VPTC4 E21 HOME TEXTILES	No change	0	90	0
VPTC4 E22 COMPUTER APPLICATION IN FASHION DESIGNING	No change	0	90	
VPTC4E23 KNITT WEAR TECHNOLOGY	No change	0	90	
	Average %		**5/24**	**21%**

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Syllabus 2020 (Compared with 2017 syllabus)

Course Code and Title	Topics introduced/ **removed**	Syllabus change in hours	Total hours	% of changed
HTC1C01 HISTORIC COSTUME	No change	0	90	0
HTC1C02 FASHION MARKETING	No change	0	90	0
HTC1C03 COSTUME DESIGN AND ILLUSTRATION	Reasons for wearing clothing Elements used in creating a design. Principles of design Textures in clothing Color theory- Dimensions, psychological impacts, color scheme, color systems, Color illusions and Emotions- added	10	90	9%
HTC1C04 INTRODUCTION TO FASHION DESIGN CONCEPT	**Elements used in creating a design.** **Principles of design** **Color theory- Dimensions, psychological impacts, color scheme, color systems** Fashion leaders, followers, laggards, innovators, and motivators	11+5 = 16	72	22%

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VPTC1C05 RESEARCH METHODOLOGY AND STATISITICS	UNIT II DEFINING RESEARCH PROBLEM -Definition and selection, necessity of defining the problem, technique involved in defining a problem UNIT IV METHODS OF DATA COLLECTION-Collection of primary data – observation method, Interview method, collection of Data through questionnaires and schedules, other methods of data collection, collection of secondary data UNIT V MEASUREMENTS AND SCALING TECHNIQUES-Measurement in research, Measurement scales, Sources of error in measurement, Technique of developing measurement tools, scaling-meaning, classification and techniques UNIT III Introduction To Statistical Package For Social Sciences (SPSS) **OMITTED OLD UNIT II AND ADDED NEW UNIT III)**	3+6+5+ 3 = 17	108	16%
HTC2C06 QUALITY ASSURANCE AND TEXTILE TESTING	No Change	0	108	0
HTC2L01 FASHION DRAPING (P	No change	0	72	0

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HTC2C07 VISUAL RETAILING AND ENTREPRENEURSHIP MANAGEMET	No change	0	90	0
HTC2L02 PRACTICAL-ADVANCED PATTERN MAKING AND CONSTRUCTION TECHNIQUES	No change	0	108	0
HTC3C10 INTERNSHIP	No change			
HTC3C08 TECHNICAL TEXTILES	No change	0	90	0
HTC3C09 FABRIC CONSTRUCTION & ANSLYSIS	No change	0	108	0
HTC3C10 TEXTILE CHEMISTRY	No change	0	108	0
HTC3E01FASHIONCHOREOGRAPHY	No change	4	54	7%
HTC3E02 TEXTILES & ENVIRONMENT	No change	0	90	0

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HTC4L03 PRACTICAL- QUALITY ASSURANCE AND TEXTILE TESTING	No change	0	90	0
HTC4L04 PRACTICAL- TEXTILE CHEMISTRY	No change	0	90	0
HTC3 E01 FASHION COMMUNICATION	No change	0	90	
HTC3 E01 SOCIOLOGY OF CLOTHING	No change	0	90	
HTC4E03 HOME TEXTILES	No change	0	90	0
HTC4 E03 COMPUTER APPLICATION IN FASHION DESIGNING	No change	0	90	
HTC4 E03 KNITT WEAR TECHNOLOGY	No change	0	90	
HTC3 E02 SCIENCE OF CLOTHING COMFORT	New elective paper (Added in 2019 as per University changes)	90	90	100%
HTC3 E02 TESTING OF FUNCTIONAL AND TECHNICAL TEXTILES	New elective paper (Added in 2019 as per University changes)	90	90	100%
	Average %		**3/24**	**12.5%**

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Comparing BSc MATHEMATICS Syllabus 2016 & 2019

Syllabus 2016 (Compared with University Syllabus)

Course Code and Title	Topics introduced/ **removed**
VMT2 B02 Calculus	Optimization, Linearization and differentials changed from Module II to Module I. **Riemann sums and definite – integrals, Properties, area and the mean value theorem, The fundamental theorem, Substitution in Definite Integrals.** Curvature and evolutes, radius of curvature – Cartesian equations, Centre of curvature, evolutes and involutes, properties of evolutes asymptotes and envelopes added as Module 4.
VMT5B06 Abstract Algebra	**The Field of Quotients of an Integral Domain**
VMT5 B08 Differential Equations	Module IV Partial Differential Equations All topics changed
VMT6 E02 Graph Theory	**Full paper revised**

Syllabus 2019(Compared with 2016 syllabus)

Course Code and Title	Topics introduced/ **removed**
MT1B01 Basic Logic and Number Theory	**Full paper revised.** Module 4 changed to Module 1 (12 hours). Modules 2, 3, 4 all topics newly introduced
MT 2 B02	Module I: The role of derivative in the real world- Motion Along a Line, Marginal Functions in Economics, Using the Derivative to Describe the Motion of the Maglev. **Curvature and evolutes, radius of curvature – Cartesian equations, Centre of curvature, evolutes and involutes, properties of evolutesasymptotes and envelopes.** Module III Integration added
MT3 B 03 Calculus of Single Variable-2	Module IV Lines and Planes in Space, Surfaces in Space, Cylindrical and Spherical Coordinates and Vector Calculus newly added

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MT4 B04 Linear Algebra	Module I : Diagonal, Triangular and Symmetric matrices, Determinants by cofactor expansion, Modules II and III entire topics, Module IV Geometry of matrix operators, Diagonalization, Inner product, Orthogonalisation
MT5 B05 Theory of Equations and Abstract Algebra	a **Full paper revised.** VMT5B06 Abstract Algebra included as Modules 2,3 and 4. Module I Theory of equations newly introduced.
MT5 B06 Basic Analysis	Same as VMT5 B07 Basic Mathematical Analysis Module 4 Limits and Continuity of Complex Functions elaborated. Branch cuts added.
MT5 B08 Linear Programming	Same as VMT6 E01 elective paper LPP. Module III Matrix Games introduced.
MT5 B09 Introduction to Geometry	**Full paper newly introduced**
MT6 B10 Real Analysis	Module I Section 5.1 Module II **Section 7.4** Module III Section 8.2 (Previously there was 8.2.1 & 8.2.2 only) Module IV 2.1: Calculus Techniques 2.2: Integrals Dependent on Parameters
MT6 B12 Calculus of Multi Variable	**Full paper newly introduced** Some topics are fromVMT5B05 Vector Calculus
MT6 B14 (E01) Graph Theory	**Full paper revised**
MT6 B14 (E02) Topology of Metric Spaces	**Full paper newly introduced**
MT6 B14 (E03) Mathematical Programming With Python And Latex	**Full paper newly introduced**

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OPEN COURSE	
MT5D01 Applied Calculus	Module II Marginal Analysis and Applications, Chapter 3 newly introduced. Module III Applications to Business and Economics
MT5D02 Discrete Mathematics For Basic And Applied Sciences	**Full paper newly introduced**
MT5D03 Linear Mathematical Models	**Full paper newly introduced**
MT5D04 Mathematics For Decision Making	**Full paper newly introduced**
COMPLEMENTARY COURSES	
MT 1C01 Mathematics I	Module III The Mean Value Theorem- The MVT, consequences of MVT-*RollesTheorem, horserace theorem* Module IV Sections 4.1,4.2,4.3 newly added
MT 2C02 Mathematics II	Module III Diagonalisation and LU Factorisation
MT 3C03 Mathematics III	Module III Complex Functions and Analyticity
MT 4C04 Mathematics IV	Module III Volterra Integral Equation, Series Circuits Module IV 12.1: Orthogonal Functions- Inner Product, Orthogonal Functions, Heat Equation

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Comparing M.Sc. Mathematics Syllabus 2016 & 2019

Syllabus 2016 (Compared with University Syllabus)

Course Code and Title	Topics introduced/ **removed**
VMT2C10Discrete Mathematics	Some topics from MT1C05-Discrete Mathematics Module 1 Same as MT1C05-Discrete Mathematics **Module 3 Automata and formal languages removed** Module 3 Matchings and covers introduced **Text 3 removed fromMT1C05-Discrete Mathematics**
VPMT3C14:Linear Programming and its Applications	**Fully Revised**
VPMT4E05: Computer Oriented Numerical Analysis	**Fully Revised**

Syllabus 2019(Compared with 2016 syllabus)

Course Code and Title	Topics introduced/ **removed**
MTH1C01: Algebra – I	**Binary Linear Codes** Series of Groups changed from Module 1 to module 2 Group action on a set, Applications of G-set to counting changed from Module 2 to module 1
MTH1C04: Discrete Mathematics	Module 1 same as VPMT2C10: DISCRETE MATHEMATICS **Module 2 and 3 fully revised**
MTH1CO5: Number Theory	**Fully revised**
MTH2C06: Algebra II	Same as VPMT2C06 - ALGEBRA – II Removed **The Field of Quotients of an Integral Domain**
MTH2CO7: Real Analysis II	**Fully revised**
MTH2C10: Operations Research	**Fully revised**

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MTH3C11: Multivariable Calculus And Geometry	**New course**
MTH3C12: Complex Analysis	**Fully revised**
MTH3C13: Functional Analysis	**Fully revised**
MTH3C14: PDE and Integral Equations	**Fully revised**
MTH3E01: Coding Theory	**New course**
MTH3E02: Cryptography	**New course**
MTH3E03: Measure And Integration	**Fully revised**
MTH3E04: Probability Theory	**Fully revised**
MTH4C15 Advanced Functional Analysis	**Fully revised**
MTH4E05: Advanced Complex Analysis	**New course**
MTH4E07: Algebraic Topology	**New course**
MTH4E11: Graph Theory	**New course**
MTH4E12 Representation Theory	**New course**
MTH4E13: Wavelet Theory	**New course**

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Comparing B.Sc. Physics Syllabus 2016 & 2019
Syllabus 2016 (Compared with University Syllabus)

Course Code and Title	Topics introduced/ **removed**
CORE	
VPH1 B01 Methodology of Science and Physics (2C)	Added in Part B of Unit II General theory of relativity, Astronomy and cosmology, Our galaxy, galaxy types, Radio sources and quasars, Large scale structure of Universe, Radiation backgrounds, History of universe – Future of Universe **Removed from Part B of Unit II** **Laser- Concepts of ordinary and monochromatic light, Coherent and incoherent light, Spontaneous and stimulated emission, Metastable state, pumping and population**
VPH4 B04 Core Course IV – Electrodynamics I(3C)	Added Added Unit 5 Electromagnetic Induction
VPH5 B05 Core Course VI -Electrodynamics II(3C)	Relativistic Electrodynamics-Magnetism as a relativistic phenomenon Maxwell's Loop Current method, Nodal analysis with current sources
VPH5 B07 Core Course VIII Physical Optics and Modern Optics(3C)	Non-linearintroduced **Holography removed**
VPH5 B08 Core Course IX Electronics (Analogue and Digital(4C)	Switched Mode Power Supplies Photo diode, Solar cell Character representation **Transformer coupled Amplifiers Direct Coupled Amplifier-Comparison** **Differentiator and integrator**
VPH6 B10 Core Course X - Solid State Physics, Spectroscopy and Laser physics(4C)	atomic and geometric factor, powder diffraction method,

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VPH6 B11 Core Course XI - Nuclear Physics, Particle Physics and Astrophysics(4C)	Photomultiplier tube, field bosons-basic ideas of quantum chromo dynamics-Higg's boson, Spectral classification of stars, Havard system of Spectral Classification, The Hertzsprung-Russel Diagram, Stellar evolution, White dwarfs, Electrons in a white dwarf star, Chandrasekhar limit, Neutron stars, Black holes, Supernova explosion **Cloud chamber, Bubble chamber,Hadronsresonance particles, Stellar magnitudes an sequences, Absolute magnitude, The bolometric magnitude - Different magnitude standards, The colour index of a star, Luminosities of stars, Stellar parallax and the units of stellar distances, Stellar positions: The celestial co-ordinates. A Qualitative study on stellar positions and constellations**
VPH6 E01 Computational Physics (Elective)	The Bisection method
VPH6 BPL2 Core Course XIV: Practical -II(5C)	Newly introduced experiments – (Expt. No. 20, 22 to 27) Newton's law of cooling, Stefan's law, sensitiveness of the given galvanometer to measure the emf of a thermocouple, hysteresis loop of an ion rod/ring, dielectric constant, hollow prism, temperature coefficient of resistance of thermistor **Removed experiments – (Expt. No. 21 to 23)** **Polarimeter, Searle's and Box vibration magnetometers, Numerical aperture of an optical fibre**
VPH6 BPL3 Core Course XV: Practical-III(5C)	Newly introduced experiments – (Expt. No. 5, 10, 18 to 20, 29) Clipping & Clamping circuits, Single transistor voltage regulator, Static characteristics - semiconductor diode/LED, RC filter circuit –Low pass, High pass, Dual regulated power supply, Solution of algebraic equations using bisection method. **Removed experiments – (Expt. No. 3, 6, 8, 11)** **Transistor characteristics – CB Configuration, Full adder, LC Oscillator (Hartley), LCR circuits**

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Complementary	
SEMESTER -1 VPH1 C01: Properties of matter & Thermodynamics	**Cantilever Loaded uniformly**
SEMESTER - 2 VPH2 C02: Mechanics, Relativity, Waves & Oscillations	**momentum energy relation**
SEMESTER - 3 VPH3 C03: Optics , Laser , Electronics & communication	**– CE Amplifier- frequency response- band width**
SEMESTER - 4 VPH4 C04: Electricity, Magnetism and Nuclear physics	**Dark energy- Origin of universe.**

Syllabus 2019 (Compared with 2016 syllabus)

Course Code and Title	Topics introduced/ **removed**
CORE	
PHY1 B01 Core course I - Methodology of Science and Basic Mechanics (2C)	Added Units Mechanics (Unit 2,3 & 4) (**Paper from Semester 3 &2 to 1)** and 1 Module on Properties of Matter(From Semester 2) Unit 2 Newton's Laws, – Unit 3 Work and Energy, Unit 4Angular Momentum and Unit 5Properties of matter **Removed** **Units :2 Part B &C** **Developments of New Frontiers of Physics** **Mathematical Methods in Physics**
PHY2 B02 Core Course II - Mechanics (2C)	**(Paper from Semester 3 to 2)** Added Units 1& 2 Noninertial Systems and Fictitious Forces Central Force Motion
PHY3 B03 Core Course III – Electrodynamics-I (3C)	Paper Changed from Semester 4 to Semester 3 Added Unit 1 Vector Calculus **Removed** **Unit 1 part Special Techniques-The method of images**

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PHY4 B04 Core Course IV - Electrodynamics II (3C)	Paper Changed from Semester 5 to Semester 4 Added Electromotive force ,Potential formulation Gauge transformations. **Removed** **Relativistic Electrodynamics** **AC bridges – Anderson and Rayleigh bridge**
PHY4B05: PRACTICAL I	Newly introduced experiments – (Expt. No. 1, 2, 19 to 24) Kater's pendulum, Potentiometer-measurement of resistance and resistivity, Lissajous figures, Cantilever –scale and telescope /pin and microscope, Single slit diffraction using LASER, dielectric constant of liquid/thin sheet, Thermo emf - Seebeck effect, Thermal conductivity – Searle's method **Removed experiments – (Expt. No. 3 to 5, 13, 14)** **Young's modulus-Angle between the tangents, Surface Tension-capillary rise method, Viscosity-Poiseuille's method, Deflection magnetometer-Tan A, Tan B, Tan C**
PHY5 B06 Core Course VI – Computational Physics (3C)	Compulsory Core Paper (Elective earlier in S6) Numpy and Matplotlib module newly introduced Newton Cote's quadrature formula
PHY5 B07 Core Course VII - Quantum Mechanics (3C)	Thomson model – Rutherford nuclear atom
PHY5 B08 Core Course VIII - Optics (3C)	The Newton formula, Lateral magnification Holography introduced **Non-linear optics removed**
PHY5 B09 Core Course IX- Electronic s (Analog and Digital) (3C)	3C course (earlier 4C) Transformer coupled Amplifiers Direct Coupled Amplifier-Comparison Differential amplifier (basic ideas only), application of OP-amp - inverting, Noninverting, summing amplifiers, Differentiator and integrator **Half wave and Centre-tapped rectifier, Hybrid parameters, h-parameters of a transistor, Nomenclature for transistor h parameters (h-parameter qualitative only)** **Digital communication and special devices removed**

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OPEN COURSE (3C) PHY5D01(1)Non conventional Energy Sources	3C course (earlier 2C) Unit 1 – Energy resources (new portion) solar air heaters and drying, solar photovoltaic cells Unit 3 – Wind energy modified Unit 4 – Geothermal energy and Energy from biomass modified Unit 5 - Energy from Oceans and Thermal and Chemical effects modified
PHY6 B10 Core Course X - Thermodynamics(3C)	Macroscopic versus Microscopic points of view – Scope of Thermodynamics, Heat capacity – Specific heat of water; the Calorie – Quasi-static flow of heat; Heat reservoir Experimental determination of heat capacities, Kinetic theory of the ideal gas **Statistical Physics removed**
PHY6 B11 Core Course XI -Statistical Physics, Solid State Physics, Spectroscopy and Photonics (3C)	Statistical Physics Added Unit 5 Photonics added **Removed** **Unit 3 Super conductivity** **Unit 7 Raman spectroscopy** **Unit 8 Laser Physics**
PHY6 B12 Core Course XII - Nuclear Physics and Particle Physics (3C)	**Unit 1 modified with addition of radioactivity** **Added Unit 2 Nuclear Reactions and Applications** **Added unit Particle Detectors** **Nuclear Detectors and Counters:** **Cosmic Rays:** **Astrophysics :**
PHY6 B13 **Core Course XIII - Relativistic Mechanics and Astrophysics(3C)**	**Newly introduced**
PHY6 B14 **Core Course XIV EL1** **Biomedical Physics**	**New course**

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PHY6B15: PRACTICAL II 72 hours in each semester (Credit - 5)	Newly introduced experiments – (Expt. No. 1, 14, 20, 22, 23) e/m measurement, Grating- Resolving power and Dispersive power, Polarimeter, Numerical aperture of an optical fibre **Removed experiments – (Expt. No. 13, 20, 22 to 27)** **Carey Foster's bridge-resistance & resistivity, Newton's law of cooling, Stefan's law,** **sensitiveness of the given galvanometer to measure the emf of a thermocouple, hysteresis loop of an ion rod/ring, dielectric constant, hollow prism, temperature coefficient of resistance of thermistor**
PHY6B16: PRACTICAL III 72 hours in each semester (Credit - 5)	Newly introduced experiments – (Expt. No. 3, 8, 9, 12, 18 to 21) Transistor characteristics – CB Configuration, Full adder, LC Oscillator (Hartley), LCR circuits, Photo diode, LED, LDR, Wave shaping R-C circuits - integrator and differentiator, OPAMP- adder, subtractor **Removed experiments – (Expt. No. 5, 10, 18 to 20, 29)** **Clipping & Clamping circuits, Single transistor voltage regulator, Static characteristics - semiconductor diode/LED, RC filter circuit –Low pass, High pass, Dual regulated power supply, Solution of algebraic equations using bisection method**
Complementary	
Semester 1 Complementary course-I PHY1C01: Properties of matter & Thermodynamics	**Dependence of Young's modulus on temperature (posing one practical application)-** Cantilever Loaded uniformly **Variation of surface tension with temperature, impurities, contamination- Effect of evaporation and condensation.** **Thermo dynamic functions- concept of enthalpy- Helmholtz function- Gibb's function Maxwell's thermodynamic relations-**

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Semester 2 Complementary Course II PHY2C02: Optics, Laser & Electronics	– CE Amplifier- frequency response- band width **Laws of reflection and refraction- verification by Fermat's principle** **bi-prism** **Colpit's& Hartley oscillators** **Exclusive NOR Gate, Basic principles of integrated circuits.** **Principle of Communication : Transmission and reception of signals- modulation and demodulation- Types of modulation-AM, FM,PM.(Elementary only)**
Semester 3 Complementary Course III PHY3C03: Mechanics, Relativity, Waves and Oscillations	momentum energy relation **-Fourier theorem.** **Postulates of quantum mechanics-** **electron microscope and scanning tunnelling microscope (Qualitative study)** Electromagnetic waves -Black body radiation, UV catastrophe(Qualitative ideas), Photoelectric effect, wave-particle duality, de Broglie hypothesis, Uncertainty Principle, Energy and momentum operators,
Semester 4 Complementary Course IV PHY4C04: Electricity, Magnetism and Nuclear physics	**Radiation detectors- gas detectors- semi conductor detectors** **-latitude effect- longitude effect** Origin of universe Galvanometer- conversion of galvanometer in to Voltmeter and ammeter A parallel plate capacitor, Energy of a capacitor, capacitance of cylindrical and spherical capacitors. Capacitance of a parallel plate capacitorpartially filled with dielectric and when completely filled with dielectric.

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Comparing M.Sc. Physics Syllabus 2016 & 2019

Syllabus 2016 (Compared with University Syllabus)

Course Code and Title	Topics introduced/ **removed**
VPPH1C02: Mathematical Physics – I	Coordinate transformations, Differential vector operators, **Rotation of coordinates, Laplacian operator, Laplace"s equation – application to electrostatic field and wave equations,** **irreducible tensors ,Partial differential equations of Physics, Separation of variables, Singular points, Ordinary seriesSolution** Module 5 changed completely
VPPH1C03: Electrodynamics	Multipole expansion, Dipole radiation-Electric dipole radiation, Magnetic dipole radiation **Boltzmann and Vlasov equations, their moments - Fluid equations**
VPPH1C04: Electronics	**Module on Microprocessors and Microcontrollers** **Module on Microwave and Photonic Devices -- removed**
VPPH2C06: Mathematical Physics-II	Module 2 Schur's lemma,orthogonality and character tables Module 3 calculus of Variation -introduced **Module 3 Fourier series removed**
VPPH2C07: Statistical Mechanics	The correct enumeration of microstates

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VPPH2C08: Computational Physics	Least –square curve fitting Procedure-Linear and non linear, Solution of Algebraic andTranscendental equations- The Bisection method and Newton –Raphson method- Numerical solution ofordinary differential equations- RungeKutta methods-Boundary value problems, Finite –differencemethod, The shooting method Inverse of a function **Inverse of a function, Interpolation with Cubic Spline, Zeros of polynomials,** **Eigenvalues and eigen functions shooting and relaxation methods, Sampled Data: Sampling Theorem, Discrete Fourier Transform, Fast Fourier Transform---removed**
Audit Course	No audit course
VPPH1P01 &VPPH2P01 (General Physics)	5 new experiments were included **5 experiments were removed**
VPPH1P02&VPPH2P02 (Electronics)	9 new experiments -added **12 experiments removed**
VPPH3C09: QUANTUM MECHANICS –II	**Module 5 -Quantization of fields: The principles of canonical quantization of fields, Lagrangian density and Hamiltonian density, Second quantization of the Schrödinger wave field for bosons and fermions,Enough exercises.** **Module 4** **spin-orbit coupling** **The Klein-Gordon equation with potentials.**
VPPH3C10 : (Nuclear and Particle Physics)	Module 5 Feynmann Diagrams added

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VPPH3C11 (Solid State Physics)	Added Module on Solid state devices **Removed Basics of crystal structure**
VPPH3E11 (Experimental Techniques)	Module 2 Introduced growth techniques for nanomaterials **Shifted thickness measurement to module 5** **Module 5 Nuclear techniques for material analysis replaced by** Analytical Techniques for thin films and nanomaterials
VPPH4C12: SPECTROSCOPY	Module 1Weak field stark effect in hydrogen introduced Module 3 CARS and PARS introduced
VPPH4E21: MATERIALS SCIENCE	Added in Module 5 Nano materials and Quantum mechanics.- **Removed from** **Module 4** **Growth techniques of nanomaterials-**

Syllabus 2019(Compared with 2016 syllabus)

Course Code and Title	Topics introduced/ **removed**
PHY1C02 Mathematical Physics – I	Laplacian operator, Laplace"s equation – application to electrostatic field and wave equations, Rotation of coordinates **Coordinate transformations, Differential vector operators,** Irreducible tensors, Partial differential equations of Physics, Separation of variables, Singular points, Ordinary seriesSolution Module 5 changed completely
PHY1C03 Electrodynamics And Plasma Physics	Multipole expansion of electric scalar potential and magnetic vector potential Boltzmann and Vlasov equations, their moments – Fluidequations, Plasma oscillations
PHY1C04 Electronics	**Revised module on Microwave and Photonic Devices** **Microcomputers and microcontrollers removed**

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PHY2C05 Quantum Mechanics-I	**Entire content revised**
PHY2C06 Mathematical Physics-II	Fourier series and theorem introduced **Module 3 calculus of Variation -introduced- removed**
PHY2C08: Computational Physics	Concept of high level language, steps involved in the development of a Program - Compilers and Interpreters . Mathematical functions (math module). Formatted Printing Additional module on Numerical method introduced Module 5 modified with new topics (Driven LCR circuit, circuit analysis using Kirchoff's laws, central field motion, simulations of standing waves, enough exercises.)
PHY1L01 & PHY2L03 General Practical	9 new experiments added **experiments were removed**
PHY1L02& PHY2L04	12 new experiments -added **5 experiments removed**
PHY3C09: Quantum Mechanics –II	Module 4 - Scattering -Scattering amplitude – Method of partial waves – Scattering by a central potential – Optical theorem – Scattering by a square-well potential Module 3 - Scattering cross section in the Born approximation Module 1 Two-fold degeneracy – Higher-order degeneracy – The fine-structure of hydrogen – Relativistic correction – Spin-orbit coupling - Weakfield Zeeman effect – Strong-field Zeeman effect – Intermediate-field Zeeman effect – Hyperfine splitting

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PHY3C10 Nuclear and Particle Physics	**Added a new module as** **Nuclear Radiation Detectors and Nuclear Electronics:.** **Removed from Module 4** **Types of reactions and conservation laws, Energetics of nuclear reactions, reaction cross sections, compound nucleus reactions,**
PHY3C11 Solid State Physics	Module 2 lattice vibrations introduced **Removed Module on Solid state devices**
PHY3E05: Experimental Techniques	**Removed Module 3 Cryogenic techniques** Added Module 5 X- Ray Diffraction Technique
PHY4E11: Materials Science	Added in Module 4 Growth techniques of nanomaterials- Added in Module 5 Characterization tools of Nanomaterials- **Removed from** **Module 5** **Nano materials and Quantum mechanics.-**

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Comparing BSc Statistics Syllabus (Core)2016& University Syllabus2014

Syllabus 2016 (Compared with University Syllabus 2014)

Course Code and Title	Topics introduced/ removed
VST1B01: BASIC STATISTICS AND PROBABILITY	Population, Sample, Statistical data, Types of data, Methods of data collection, classification and tabulation of data, frequency distribution,
VST4B04: TESTING OF HYPOTHESIS	**Krukal Wllis and test for randomness (run test)**
VST5B07: SAMPLE SURVEYS	**Two stage cluster Sampling - estimate of variance of population mean.**
VST5B08: OPERATIONS RESEARCH AND STATISTICAL QUALITY CONTROL	**Linear programming: Mathematical formulation of LPP, Graphical and Simplex methods of solving LPP-duality in linear programming** Sequencing Models: Sequencing problems- assumptions in sequencing problems – processing n jobs through one machine - processing n jobs through two machines - processing n jobs through three machines
VST5PL1: P RACTICAL 1.	Operations Research (L.P.P, T.P, A.P)
VST6B09: TIME SERIES AND INDEX NUMBERS	**Analysis of Income and allied distributions-Pareto distribution, graphical test, fitting of Pareto's law, illustrations, lognormal distribution and properties, Lorenz curve, Gini's coefficient** **.Attitude Measurements and Scales: issues in attitude measurements- scaling of attitude-Guttman scale-Semantic differentia l scale-Likert scale-selection of appropriate scale**-limitations of scales- Research methodology: Meaning of research- objectives, Types of research – criteria of good research – research design, sampling design- steps in sampling design –criteria of selecting a sampling procedure- Measurement and Scaling techniques- data collection- statistical tools for analysis- Interpretation and report writing – Layout of the research project (concepts only)

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VST6PL2: PRACTICAL 2	**Construction of Control charts** **3. Linear programming** Regression Analysis (Linear and Multiple regression)
ELECTIVE COURSES	
1. VST6E02: Stochastic Modelling	
2. VST6E03: Actuarial Science- Probability Models and Risk Theory	
OPEN COURSES	
1).ST5 D02: Economic Statistics	
2). ST5 D03: Quality Control	

Comparing B.Sc. Statistics Syllabus (Core) 2018& 2019

Syllabus 2018 (Compared with 2016 Syllabus)

Course Code and Title	**Topics introduced/ removed**
ELECTIVE COURSES	
1. VST6E02: Stochastic Modelling	
2. VST6E03: Actuarial Science- Probability Models and Risk Theory	
OPEN COURSES	
1). ST5 D01: Basic Statistics	
2). ST5 D02: Economic Statistics	**Open Course changed to Economic Statistics**
3). ST5 D03: Quality Control	

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Syllabus 2019(Compared with 2018 syllabus)

Course Code and Title	Topics introduced/ removed
STA1B01: OFFICIAL STATISTICS AND PROBABILITY	Statistical organizations in India-MOSPI; CSO, NSSO, DES; Roles functions and activities of CSO, NSSO and DES;(added Portions)
STA2B02: BIVARIATE RANDOM VARIABLE AND PROBABILITY DISTRIBUTIONS	Skewness and kurtosis using moments, Degenerate distribution . Limit Theorems: Chebyshev's inequality, Convergence in probability, Convergence in distribution (definition and example only), weak law of large numbers (iid case), Bernoulli's law of large numbers.(added) **Continuous probability distributions-Uniform, exponential, gamma, Beta, Normal (definition, properties and applications), Lognormal and Cauchy (Definition only), transformation of bivariate random variables.(deleted)**
STA3B03: STATISTICAL ESTIMATION	**Limit Theorems: Chebyshev's inequality, Convergence inprobability(definition and example only), weak law of large numbers (iid case), Bernoulli law of large numbers.Central limit theorem (Llindberg – Levy iid case).** Continuous type-Uniform, exponential, gamma, Beta, Normal (definition, properties and applications), Lognormal, Pareto and Cauchy (Definition only Bayesian estimation method.
STA4B04: TESTING OF HYPOTHESIS	Kruskal Wallis test
STA5B05: MATHEMATICAL METHODS IN STATISTICS	Infinite series and its convergence, Ratio test and Root test.
STA5B06: SAMPLE SURVEYS	**Papers interchanged changed to sample survey** two stage cluster sampling-estimate of variance of population mean.

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STA5B07: LINEAR REGRESSION ANALYSIS	**Papers interchanged to Linear regression analysis** Regression and Model building: Scatter diagram, regressor, response, error, uses of regression. Test on individual regression coefficients, Interval estimation of coefficients, slope and intercept, co-efficient of determination. Model adequacy checking: Residual analysis, Methods of scaling residuals – standardized residuals, studentized residuals, PRESS residuals, R- Student. Residual plots – Normal probability plots, plot of residuals against fitted values, plot of residuals against the regressor, plot of residuals in time sequence. PRESS Statistic, R2 for prediction based on PRESS.
STA5B08: STATISTICAL COMPUTING	**Papers interchanged to Statistical Computing** **Practical Examination** Random number generation.
STA6B09: TIME SERIES AND INDEX NUMBERS	Analysis of Income and allied distributions-Pareto distribution, graphical test, fitting of Pareto's law, illustrations, lognormal distribution and properties, Lorenz curve, Gini's coefficient Attitude Measurements and Scales: issues in attitude measurements scaling of attitude-Guttman scale, Semantic differential scale, Likert scale; selection of appropriate scale-limitations of scales **Research methodology: Meaning of research-objectives, Types of research – criteria of good research – research design, sampling design- steps in sampling design –criteria of selecting a sampling procedure- Measurement and Scaling techniques-data collection- statistical tools for analysis-Interpretation and report writing – Layout of the research project (concepts only)**

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STA6B10: DESIGN OF EXPERIMENTS	Post Hoc Tests - Least Significant Difference (LSD) test Basic concepts of Incomplete block design, Balanced incomplete block design and Partially Balanced incomplete block design.
STA6B12: OPERATIONS RESEARCH AND STATISTICAL QUALITY CONTROL	**Papers interchanged to** **OPERATIONS RESEARCH AND STATISTICAL QUALITY CONTROL** Linear programming: Mathematical formulation of LPP, Graphical and Simplex methods of solving LPP-duality in linear programming **Sequencing Models: Sequencing problems-assumptions in sequencing problems – processing n jobs through one machine - processing n jobs through two machines - processing n jobs through three machines**
OPEN COURSES	
1. STA5D 01: ECONOMIC STATISTICS	Chain base index numbers-Base shifting-splicing and deflating of index numbers. Consumer price index numbers-family budget enquiry

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Comparing BSc Statistics - Complementary StatisticsSyllabus 2016& 2019

Syllabus 2016 (Compared with 2014 University Syllabus)

Course Code and Title	Topics introduced/ **removed**

University Syllabus 2019(Compared with 2016 syllabus)

Course Code and Title	Topics introduced/ **removed**
STA 1C 01 INTRODUCTORY STATISTICS	Official statistics: The Statistical system in India: The Central and State Government organizations, functions of the Central Statistical Office (CSO), National Sample Survey Organization (NSSO) and the Department of Economics and Statistics. Introduction to Statistics: Nature of Statistics, Uses of Statistics, Statistics in relation to other disciplines, Abuses of Statistics. Concept of primary and secondary data. Designing a questionnaire and a schedule. Concepts of statistical population and sample from a population, quantitative and qualitative data, Nominal, ordinal and time series data, discrete and continuous data. Presentation of data by table and by diagrams, frequency distributions by histogram and frequency polygon, cumulative frequency distributions (inclusive and exclusive methods) and gives. Time series: Introduction and examples of time series from various fields, Components of times series, Additive and Multiplicative models. Trend: Estimation of trend by free hand curve method, method of semi averages, method of moving averages and fitting various mathematical curves. Seasonal Component: Estimation of seasonal component by Method of simple averages, Ratio to Trend. Index numbers: Definition, construction of index numbers and problems thereof for weighted and unweighted index numbers including Laspeyre's, Paasche's, Edgeworth-Marshall and Fisher's. **Random experiment, Sample space, event, classical definition ofprobability, statistical regularity, relative frequency definition, field, sigma field, axiomatic definition of probability and simple properties, concept of probability measure, addition theorem (two and three events), conditional probability of two events, multiplication theorem, independence of events(pair wise and mutual), Bayes theorem. –numerical problems. Random variable-discrete and continuous, probability mass function (pmf) and probability density function (pdf)-properties and examples, cumulative Distribution function and its properties, change of variable (univariate case).**

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STA 2C 02- PROBABILITY THEORY	Introduction to Probability: Random experiment, Sample space, events, classical definition of probability, statistical regularity, field, sigma field, axiomatic definition of probability and simple properties, addition theorem (two and three events), conditional probability of two events, multiplication theorem, independence of events-pair wise and mutual, Bayes theorem and its applications. Random variables: Discrete and continuous, probability mass function (pmf) and probability density function (pdf)-properties and examples, Cumulative distribution function and its properties, change of variables (univariate case only) **Standard distributions: Discrete type-Bernoulli, Binomial, Poisson,Geometric, negative binomial (definition, properties and applications), Uniform (mean, variance and mgf), Continuous type-Uniform, exponential, gamma, Beta, Normal (definition, properties and applications), Lognormal, Pareto and Cauchy (Definition only) Chebyshev's inequality, variables, Convergence in probability weaklaw of large numbers (iid case), Bernoulli law of large numbers, example only), Central limit theorem (Lindberg Levy-iid case)**
STA 3C 03- PROBABILITY DISTRIBUTIONS AND SAMPLING THEORY	**Theory of Estimation: Point Estimation, desirable properties ofa good estimator, unbiasedness, consistency, sufficiency, Fisher Neyman factorization theorem, efficiency. Methods of Estimation:- Method of maximum likelihood, method of moments.** **Interval Estimation: Interval estimates of mean, difference ofmeans, variance, proportions and difference of proportions. Derivation of exact confidence intervals for means, variance and ratio of variances based on normal, t, chi square and F distributions:** **Testing of Hypotheses: concept of testing hypotheses, simple and composite hypotheses, null and alternative hypotheses, type I and II errors, critical region, level of significance and power of a test. Neyman Pearson approach: Large sample tests concerning mean equality of means, proportions, equality of proportions, Small sample tests based on t distribution for mean, equality of means and paired t test. Tests based on F distribution for ratio of variances. Tests based on Chi square distribution for variance, goodness of fit and for independence of attributes:**

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	Standard distributions: Discrete type-Bernoulli, Binomial, Poisson, Geometric, Negative Binomial (definition only), Uniform (mean, variance and mgf). Continuous type-Uniform, exponential and Normal (definition, properties and applications); Gamma (mean, variance, mgf); Lognormal, Beta, Pareto and Cauchy (Definition only) Limit theorems: Chebyshev's inequality, Sequence of random variables, parameter and Statistic, Sample mean and variance, Convergence in probability (definition and example only), weak law of large numbers (iid case), Bernoulli law of large numbers, Convergence indistribution (definition and examples only), Central limit theorem (Lindberg levy-iid case) Sampling methods: Simple random sampling with and without replacement, systematic sampling (Concept only), stratified sampling (Concept only), Cluster sampling(Concept only)
STA 4C 04 – STATISTICAL INFERENCE AND QUALITY CONTROL	Estimation theory: Parametric space, sample space, point estimation. Nayman Factorization criteria, Requirements of good estimator: Unbiasedness, Consistency, Efficiency, Sufficiency and completeness. Minimum variance unbiased (MVU) estimators. Cramer-Rao inequality (definition only). Minimum Variance Bound (MVB) estimators. Methods of estimation: Maximum likelihood estimation and Moment estimation methods (Detailed discussion with problems); Properties of maximum likelihood estimators (without proof); Least squares and minimum variance (concepts only). Interval estimation: Confidence interval (CI);CI for mean and variance of Normal distribution; Confidence interval for binomial proportion and population correlation coefficient when population is normal. Testing of Hypothesis: Level of significance, Null and Alternative hypotheses, simple and composite hypothesis ,Types of Errors, Critical Region, Level of Significance, Power and p-values. Most powerful tests, Neyman-Pearson Lemma (without proof), Uniformly Most powerful tests. Large sample tests: Test for single mean, equality of two means, Test for single proportion, equality of two proportions. Small sample tests: t-test for single mean, unpaired and paired t-test. Chi-square test for equality of variances, goodness of fit, test of independence and association of attributes.

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	Non-parametric methods: Advantages and drawbacks; Test for randomness, Median test, Sign test, Mann-Whiteny U test and Wilcoxon test; Kruskal Wallis test (Concept only) **Census and Sampling, Principal steps in a sample survey,different types of sampling, Organisation and execution of large scale sample surveys, errors in sampling (Sampling and nonsampling errors) preparation of questionnaire, simple random sampling with and without replacement, Systematic, stratified and cluster sampling (concept only).** **Time series: Components of time series-additive and multiplicativemodels, measurement of trend, moving averages, seasonal indices-simple average-ratio to moving average.** **Index numbers: meaning and definition-uses and types-problems in the construction of index numbers- different types of simple and weighted index numbers. Test for an ideal index number- time and factor reversal test.**

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Comparing BSc Zoology Syllabus 2015 (University) & 2016 (Autonomous)

Syllabus 2016 (Compared with University Syllabus 2015)

Course Code and Title	Topics introduced/ **removed**
VZO1B01 Core Course 1(ANIMAL DIVERSITY—NON CHORDATA PART-I)	Parasitic Protozoans of man Nutrition in Protozoans Reproduction in Protozoans Larval forms and gemmule of sponges Polymorphism in Cnidarians Corals and coral reefs Mention the life cycle, host and pathogenicity of examples **Type *Paramecium***
VZO2B02 Core Course 2(ANIMAL DIVERSITY-NON CHORDATA PART-II)	Useful and harmful insects Economic importance of crustaceans Social organisation and caste system in honey bee Economic importance of Molluscs **Type *Pila***
VZO3B03 Core Course 3(ANIMAL DIVERSITY- CHORDATA PART-I)	Parental care in fishes Migration in fishes Accessory respiratory organs in fishes Parental care in Amphibians Identification key for snakes Poison apparatus and snake venom Mesozoic reptiles **Type *Calotes***
VZO4B04 core Course 4(ANIMAL DIVERSITY CHORDATA PART-II)	Migration in birds (mention local movements of birds, transhimalayan, transcontinental migrations) Flight adaptations in birds Flightless birds Nesting behaviour and parental care in birds Aquatic mammals and their adaptations Dentition in mammals (adaptations related to food) Social groups in mammals **Type*Columba***

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VZO5B05 Core Course 5(ENVIRONMENTAL BIOLOGY,WILD LIFE BIOLOGY AND TOXICOLOGY)	Aquatic Ecology (a) Marine ecology-major divisions of marine habitat, pelagic realm, benthic realm (b) Freshwater ecology- lentic and lotic environments(c) Individual responsibilities – Role of Governmental and Non Governmental Organizationsin biodiversity conservation
VZO5B06 core Course 6 CELL BIOLOGY AND GENETICS	Cytoplasmic inheritance Shell coiling in *Limnaea*, Cytoplasmic organells- DNA in chloroplast and mitochondria **Histochemicals, galactosemia, sickle cell anemia, Gaucher's disease, Tay- sach's syndrome**
VZO5D01 OPEN COURSE REPRODUCTIVE HEALTH AND SEX EDUCATION	Reproductive Biology and sex education Introduction, phases of body growth, stages of sexual growth, sexual hygiene, need for sex education Problems of adolescence, reproductive rights Reproductive system Male genitalia- testis, accessory glands, penis Female genitalia- ovaries, uterus, vulva Sexual cycle- ovarian cycle, uterine cycle Menarche, menopause, adropause Hormones and human reproduction Functions of male and female hormones, Hormones in pregnancy **Common Diagnostic Techniques**
VZO6B09 Core Course-9 BIOCHEMISTRY	Molecular structure of B DNA, A & Z DNA, Importance of Nucleic acids
VZO6B10 Core Course -10 PHYSIOLOGY AND ENDOCRINOLOGY	Medical aids for respiration – aspirators, heart lung machine Artificial respiration and ventilation Common renal problems - Renal hypertension, nephritis, renal failure, oedema, acidosis, uraemia, haematuria and calculi Brief notes on: Intelligence, memory, sleep, EEG, hunger, thirst and emotion

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VZO6B11 Core Course-11 MOLECULAR BIOLOGY & BIOINFORMATICS	Mitochondrial genome Special features of mitochondrial genome Human genome project Significance, ethical social and legal aspects
VZO6B12 Core Course-12 REPRODUCTIVE BIOLOGY, DEVELOPMENTAL BIOLOGY AND	Regeneration Definition, Types (epimorphosis, morphallaxis) Heteromorphosis, super regeneration Histological and cytological events in regeneration Placenta Different types and functions **Reproductive scope, reproductive stratergies in vertebrates and invertebrates** **Semlparity, iteroparity** **Sex patterns, Sex Reversal , unisexual**
VZO6B13 Core Course-13 BIOTECHNOLOGY, MICROBIOLOGY AND IMMUNOLOGY	The ethical and social implications of genetic engineering Genetically modified microorganisms Cellular and Humoral Immunity **PCR**
VZO6E01 Elective Course (AQUACULTURE,POULTRY SCIENCE AND ANIMAL HUSBANTRY)	Pearl culture-*Pictadafucata, Pinctadamargaritifera* Sea weed culture - *Grassilaria,Sargassum* **General account and fishery aspect of Shark** **Ornamental fishes*pterophyllumsp, Astronotusoccllatus***

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Comparing B Sc .Zoology Syllabus 2016 (Autonomous) & 2017 (Autonomous)

Syllabus 2016 (Compared with Autonomous Syllabus 2017)

Course Code and Title	Topics introduced/ **removed**
VZO2B02 Core Course 2(ANIMAL DIVERSITY-NON CHORDATA PART-II)	Class Aplacophora. Example: *Neomenia* Class Monoplacophora. Example: *Neioplina* Phylum HEMICHORDATA Salient features. Example: *Balanoglossus*(Habit, habitat, morphology and affinities)
VZO5B06 CORE COURSE –VI EHOLOGY, EVOLUTION AND ZOOGEOGRAPHY	Social group in common monkey Biogeography of India Biogeographical zones of India-Trans Himalayan zone, Himalayan zone, Desert zone, semiarid zone, Western Ghats zone, Deccan plateau zone, Gangetic plain zone, North East zone, Coastal zone, Islands present near the shore line **Baboon**
VZO6B10 core course -10 PHYSIOLOGY AND ENDOCRINOLOGY	Hormonal changes **Reproduction**
VZO6B12 Core Course-12 REPRODUCTIVE BIOLOGY, DEVELOPMENTAL BIOLOGY AND	Surrogacy regulation bill 2016
VZO6B13Core Course-13 BIOTECHNOLOGY, MICROBIOLOGY AND IMMUNOLOGY	Role of primary and secondary lymphoid organs in the maturation of T and B lymphocytes

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Comparing B Sc .Zoology Syllabus 2017 (Autonomous) & 2019 (Autonomous)
Syllabus 2017 (Compared with Autonomous Syllabus 2019)

Course Code and Title	Topics introduced/ **removed**
VZO1B01 Core Course 1 (ANIMAL DIVERSITY—NON CHORDATA PART-I)	DNA barcoding Type *Paramecium* Type *Dugesia* **Larval forms and gemmule of sponges** **Corals and coral reefs** ***Example ephelota***
VZO2B02 Core Course 2 (ANIMAL DIVERSITY-NON CHORDATA PART-II)	Type: *Pila globosa* **Economic importance of Molluscs** **Useful and harmful insects** **Economic importance of crustaceans** **Social organisation and caste system in honey bee**
VZO3B03 Core Course 3 (ANIMAL DIVERSITY- CHORDATA PART-I)	Type: *Calotes versicolor* **Parental care in fishes** **Migration in fishes** **Accessory respiratory organs in fishes** **Parental care in Amphibians** **Poison apparatus and snake venom** **Mesozoic reptiles**
VZO4B04 Core Course 4 (ANIMAL DIVERSITY CHORDATA PART-II)	Type: *Columba livia* Migration in birds Comparative Anatomy **Flight adaptations in birds** **Flightless birds** **Nesting behaviour and parental care in birds** **Aquatic mammals and their adaptations** **Dentition in mammals (adaptations related to food)** **Social groups in mammals**

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VZO5B05 Core Course 5 (ENVIRONMENTAL BIOLOGY,WILD LIFE BIOLOGY AND TOXICOLOGY)	Terrestrial ecology Disaster management Biodiversity conservation strategies *In situ conservation* Conference of the Parties Ramsar Sites Classification of poisons
VZO5B06 Core Course 6 CELL BIOLOGY AND GENETICS	Cytoskeleton Cancer causes of transformation;protooncogenes and tumor suppressor genes and their role in transformation Mitotic Recombination Sex Differentiation Testis determining factor (TDF), Müllerian inhibition factor. Disorders of Sexual Development (short notes) XX males and XY females, Point mutations in the *SRY* gene and testicular feminization Histochemicals, galactosemia, sickle cell anemia, Gaucher's disease, Tay- sach's syndrome **Cytoplasmic inheritance (2 hrs)** **Shell coiling in *Limnaea*, Cytoplasmic organells- DNA in chloroplast and mitochondria** **Golgi bodies: structure and functions** **Ribosomes (2 hrs)** **Types of ribosomes in prokaryotes, eukaryotes and mitochondria; Structure and chemical composition of subunits; free and attached ribosomes, monosomes, polysomes; functions of ribosomes; biogenesis of ribosomes**
VZO5B06 Core Course –VI EHOLOGY, EVOLUTION AND ZOOGEOGRAPHY	Neural mechanism in behavior Evolution of horse Insular fauna

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VZO6B09 Core Course-9 BIOCHEMISTRY changed to core course -7 BIOCHEMISTRY AND MOLECULAR BIOLOGY	Paper combination changed Changes from Biochemistry **Biotechniques – principle and applications** **Colorimeter, Ultraviolet - visible spectrophotometer** **Seperation techniques- Chromatography, Paper chromatography, Column chromatography** **Electrophoresis- Mention Polyacrylamide Gel Electrophoresis (PAGE), Agarose Gel Electrophoresis**
VZO6B10 core course -10 PHYSIOLOGY AND ENDOCRINOLOGY	Bioluminescence and Bioelectricity **Hormonal disorders (3 hrs)** **Hypo and hyper secretion of of hormones.** **Hypopituitarism** **Addison's disease** **Cushing's syndrome** **Diabetes mellitus- Type I and Type II** **Acromegaly**
VZO6B11 Core Course-11 MOLECULAR BIOLOGY & BIOINFORMATICS changed to core course -7 BIOCHEMISTRY AND MOLECULAR BIOLOGY	Paper combination changed Changes from Molecular biology DNA Replication Gene concept Transcription Regulation of gene expression and organization of geome Genetics of bacteria and phages **Mitochondrial genome (2 hrs)** **Special features of mitochondrial genome** **Human genome project** **Introduction (5 hrs)** **Milestones of molecular biology,DNA as the genetic material,Griffith'sexperiments-bacterial transformations, experiments by Hershey and Chase, concept of gene, gene action/ gene expression, one gene – one enzyme hypothesis, one gene – one polypeptide hypothesis, central dogma of molecular biology and central dogma reverse, retroviruses** **2. Repetitive and unique DNA sequences (2 hrs)** **Chromosome content, C-value and C-value paradox, unique, moderately repetitive and highly repetitive DNA sequences, satellite DNA , selfish DNA**

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VZO6B12 Core Course-12 REPRODUCTIVE BIOLOGY, DEVELOPMENTAL BIOLOGY AND	**Placenta(2 hrs)** **Different types and functions**
VZO6B13 Core Course-13 BIOTECHNOLOGY, MICROBIOLOGY AND IMMUNOLOGY	Pluripotent Stem Cells Preparation and Sterilization Molecular diagnosis of genetic diseases Enzymes in detergents and leather industries, Heter ologous protein production Applications of bacteriophages Medical Microbiology Transplantation Immunology
CORE COURSE- VIII GENERAL METHODOLOGY IN SCIENCE,BIOSTATISTICS AND INFORMATICS Code: VZO5B08 changed to METHODOLOGY IN SCIENCE, BIOSTATISTICS AND BIOINFORMATICS	Paper combination changed Changes in general methodology Animal ethical committee **Section C Informatics of (19hrs) removed** and bioinformatics of (24hrs) added Changes incoorperated in bioinformatics Biological Databases Cheminformatics **Applications of bioinformatics (2hrs** **Ethical issues in bioinformatics (2 hrs)** **Accuracy and error** **Appropriate uses and users** **Privacy and confidentiality**
VZO6E01 Elective Course (AQUACULTURE,POULTRY SCIENCE AND ANIMAL HUSBANTRY)	GIFT Tilapia, Nutter **Sea weed culture - *Grassilaria,Sargassum***

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Comparing M Sc Zoology Syllabus 2015 (University)& 2016 (Autonomous)

Syllabus 2016 (Compared with University Syllabus 2015)

Course Code and Title	Topics introduced/ **removed**
M.Sc. First Semester	
THEORY I Code- VPZO1C01 Biochemistry	Cori cycle **Interrelation between lipid, amino acid & carbohydrate metabolism**
THEORY II Code- VPZO1C02 Biophysics & Biostatistics	Adsorption **Echolocation; receiving and analyzing echoes**
THEORY III Code- VPZO1C03 Systematics & Evolution	Types of Museum collections
M.Sc Second Semester	
THEORY V Code- VPZO2C05 Ecology & Ethology	Resistance and resilience stability, Gaia hypothesis Proximate and Ultimate factors Types of orientation- reafference theory of Von Holst & Mittel Stadt. Navigation & migration
THEORY VI Code- VPZO2C06 Developmental biology & Endocrinology	JAK-STAT pathway **Physical characteristics of hormones – latency, post-secretory modification and half-life**
Third semester	
THEORY VIII - Elective Code- VPZO3E11 Fishery Biology I: Taxonomy, Biology, Physiology & Ecology	Types of locomotion
THEORY IX - Elective Code- VPZO3E21 Fishery Biology II: Capture & Culture Fisheries	Culture of Holothuria

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Fourth Semester	
THEORY X Code- VPZO4C08 Immunology	MHC and immune response
THEORY XII - Elective Code- VPZO4E31 Fishery Biology III: Harvesting, Post-harvesting Technology & Marketing (Offered by the department)	Onboard Processing and handling

Comparing MSc Zoology Syllabus 2016 (Autonomous) & 2017 (Autonomous)

Syllabus 2016 (Compared with Autonomous Syllabus 2017)

Course Code and Title	Topics introduced/ **removed**
	First Semester
THEORY I Code- VPZO1C01 Biochemistry and Cytogenetics	Uronic acid pathway Biosynthesis and degradation of amino acids - valine. Fate of amino acids in the body Transamination, Decarboxylation and deamination reactions in the biological System Part B. Cytogenetics **Reactions - Oxidation (by acids, metal hydroxides and H2O2), dehydration (by acid) and** **reduction (by alkali), reactions with alanine and phenyl hydrazine**

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	Derivatives - ascorbic acid, acetal and hemiacetal, ketal and hemiketal, glycocosides, **glycosidic bond and deoxyribose** **Mode of action of amylase on homopolysaccharides (starch and glycogen)** **Brief account of the chemistry of sterols, terpenes and carotenoids** **Acid number, saponification number, Iodine number, Polenske number and Reichert-Meissl number of lipids** **Structure of nitrogen bases and nucleotides** **Allosteric enzymes – positive and negative modulators** **Iso-enzyme and ribozyme** **Vitamins as conenzymes** **Factors influencing enzyme action** **Metabolism of 2, 3 DPG as regulator of oxygen transport** **Disorders related to defect in lipid metabolism** **Interrelation between lipid, amino acid & carbohydrate metabolism**
	Third Semester
THEORY VII Code- VPZO3C07 Molecular Biology	Transcription in prokaryotes and eukaryotes Alteration of cell cycle regulation in cancer **Suppressor mutation, suppressor genes & suppressor Trna** **Experiments to understand composition, topography, active centres and biogenesis ofRibosome.Topography, methods to study ribosome structure - Immune electron microscopy, cross linking.** **Biogenesis, anucleolate mutants in *Xenopuslaevis* riboswitches**

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Comparing MSc.Zoology Syllabus 2017 (Autonomous) & 2019

(Autonomous)Syllabus 2017 (Compared with Autonomous Syllabus 2019)

Course Code and Title	Topics introduced/ **removed**
	First semester
ZOL1C02- Biophysics and Biostatistics	Crystalloids Biological importance of colloids. **Adsorption** **Electrosmosis** Echolocation; receiving and analyzing echoes Radioactivity, different types ionizing radiations and their sources Radioactive disintegration. Decay curve, half-life. Biological applications of radioisotopes. Radiation dosimetry- dose units and dose measurement. **Molecular imaging of radioactive material, safety guidelines** **nuclear medicine** Properties of electromagnetic radiations **Flow cytometry** **Role of biostatistics in modern research** Limitations of Statistics **Diagrammatic and graphical presentation of data- Bar diagram (types), pie diagram,** **histograms, frequency polygon, frequency curve** **Median, mode** **Range, mean deviation** **Variance** **Ecological data analysis** Alpha diversity , Beta diversity ,Shannon diversity index, Simpsons Dominance index, Pielou"s evenness index, Margalef species Richness, Fisher"s alpha, Morisita Horn index, Sorenson index, Bray-Curtis similarity

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VPZO1C03 Core Course 1 (Theory 3)(SYSTEMATICS AND EVOLUTION) Changed to ZOL1C03 Core Course 1(ECOLOGY AND ETHOLOGY)	Natural history of Indian subcontinent Major habitat types of the subcontinent Geographic origin and migration of species Seasonality of the subcontinent Resistance and resilience stability Gaia hypothesis Structure and function of some Indian ecosystems- Terrestrial- major forest types in India with their features, grassland, desert Fresh water, marine, coral reef, estuarine, wetland and mangrove ecosystems Species diversity and its measurements Alpha diversity- Simpson's Diversity Index -Shannon index -Fisher's Alpha- Rarefaction, Beta diversity –Sorensen's similarity index-Whittaker's measure Gamma diversity –Guild and its functioning in the community Theory, influencing factors Applications in conservation biology Species-area relationship -single large or several small (SLOSS) Development of habitat corridors Carbon credit, Carbon trading, Blue Carbon Green building technology and its ecological importance. Discuss the benefits and disadvantages of the idea of (brief) a. Inter linking of major rivers of India, b. Sethusamudram ship canal project. Environmental pollution (air, water, terrestrial and noise pollution)- causes and consequences Global environmental change (global warming and ozone layer depletion), climate Change Biodiversity management approaches- Ex situ and in situ conservation strategies

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Second semester	
ZOL2C04- Physiology	**Digestion of carbohydrate, protein & lipids, brief note on the role of salivary glands, liver,** **pancreas and intestinal glands in digestion** **Absorption of carbohydrates, lipids, amino acids, water, electrolytes, vitamins & minerals** **Composition (normal & abnormal) and characteristics of urine** Structure of urinary bladder, micturition reflex and micturition. **Transport of gases -transport of oxygen and carbon dioxide** **Introduction- basic details of neurons and action potential** **Basal ganglia – mention components and functions** Diencephalon – organisation and function. Protection of brain – Meninges, cerebrospinal fluid- formation and function, blood brain barrier and its function. **Problems related to vision** **Heat production & heat loss,** **factors affecting body temperature, lethal temperature**
VPZO2C05 Core Course 2 (Theory 5) (ECOLOGY AND ETHOLOGY) Changed to ZOL2C06 – (SYSTEMATICS AND EVOLUTION)	Introduction to systematics and evolution Historical resume of systematics Definition of systematics Definition of classification Types of classification- evolutionary & phylogenetic classification, typological classification, phonetic classification, omnispective classification, horizontal and vertical classification Components of classification recognition, ontological (theoretical) and operational (epistemological species concepts) Taxonomic diversity within species, different kinds of species, sub species and other infra specific categories, hybrids Monotypic species Polytypic species Ecospecies and Cenospecies Morphospecies

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	Super species Species as a Population Complex Difficulties in the application of the biological species concept Theories of Classification (a) Essentialism (b) Nominalism (c) Empiricism (d) Cladism (e) Evolutionary Classification Hierarchy of Categories The objectives of classification Nature of taxonomic characters Taxonomic characters and adaptation Ethics related to collections Credit Lending and borrowing of specimens Loan of material Exchange of materials Collaboration and co-operation with co-workers Use of language Isolating mechanisms- Prezygotic and Postzygotic isolating mechanisms Speciation-allopatric, peripartric, parapatric, heteropatric, sympatric speciation, ecotypes Co-evolution, Microevolution, Macroevolution, convergent (homoplasy), divergent and parallel evolution Evidence for evolution: DNA evidence, fossil evidence, embryological evidence, geological evidence, evolution in action, imperfection of evolution Co-evolution: microevolution, macroevolution, convergent evolution (homoplasy), divergent (parallel) evolution
	Third semester
ZOL3C07 -Immunology	Hematopoiesis Antigens Antigenic determinants of immunoglobulin - (a) Isotype (b) Allotype (c) Idiotype. **Agglutination reactions** Generation of B-cell and T-cell responses Properties of cytokines Biological consequences of complement activation. Complement deficiencies. **Inflammation** **MHC and immune response** Transplantation immunology **Immunity and malnutrition**

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ZOL3C08- Developmental Biology and Endocrinology		Genomic Imprinting The stem cell concept- Progenitor cells, Adult stem cells, Mesenchymal stem cells, Multipotent adult stem cells, Pluripotent Embryonic stem cells, Stem cell therapy. Eye lens induction. Induction and competence- cascade of induction- reciprocal and sequential inductive events, Instructive and permissive interactions. Control of gene expression at the level of translation- Differential mRNA longevity, selective inhibition of mRNA translation, Selective activation mRNA translation, micro RNAs, Control of RNA expression by cytoplasmic localization. Post translational regulation of gene expression. Developmental Mechanisms of Evolutionary change- Physical characteristics of hormones - latency, post-secretary modification and half- life **Cell signalling**
ZOL3E09- Fishery Science 1: Taxonomy, Biology, Physiology& Ecology	36	Fundamentals of fish taxonomy Mechanism of propulsion- forces Types of locomotion
		Fourth semester
Code: VPZO4C09-MICROBIOLOGY(45 hrs)& BIOTECHNOLOGY (45 hrs) Changed to ZOL4C10- Biotechnology(54 hrs) and Microbiology (36 hrs)		Unit 2 Genetic engineering is changed to Vectors Viruses: SV40 and CaMVTransposones; Ac transposon and Ds transposon of Maize, P-element of *Drosophila*

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	Expression vectors: mention commonly used promoters in expression vectors (Nopaline synthase (*nos*) promoter from T-DNA, 35 S RNA promoter of CaMV, Polyhedrin promoter from Baculovirus McFISH Polymerase Chain Reaction Isolation, sequencing and synthesis of genes Biotechnology - Animal and human health care *In vitro* fertilization Agricultural Biotechnology Intellectual property rights The ethical and social implications **Recognition of the role of microbes in diseases** **Composition of the microbial world** **Turning points in microbial research** **Microorganisms and the evolution of the earth** **Modern age of microbiology** Microbial Taxonomy and Phylogeny Bacterial cell structure and function Microbial nutrition Microbial growth Utilization of energy Viruses Control of microorganisms **Dairy products cheese, Yogurt, kefir**
ZOL4E11- Fishery Science II: Capture & Culture Fisheries	**culture of holothuria**
ZOL4E12-Fishery Science III: Harvesting, Post-harvesting Technology & Marketing	Onboard handling and processing

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Comparing B A Economics Syllabus 2016 & 2019

Course Code and Title	Topics introduced / **removed**
VEC3B03 Quantitative Methods for Economic Analysis I	Progressions, exponents, logarithms, multiple and partial regressions
VEC4B05 Quantitative Methods for Economic Analysis II	Seasonal index, additive model, multiplicative model
VEC5B07 Macroeconomics I	CSO methodology in NI estimation **Theories of consumption**
VEC5B08 India's economic development - National and Regional	Centre-State Financial Relations: Finance Commission, its structure and Functioning (with emphasis on Latest Finance, Agroprocessing, value addition, agribusiness, Inequality measures, extend of inequality in India.
VEC5B10 International Economics	BoP, BoT, Exchange rate
VEC6B11 Macroeconomics II	Theories of consumption
VEC6B14 Development Economics	NITI Aayog, I-O analysis, Plan models
VEC6E01 Environmental Economics	(New course)

Syllabus 2019(Compared with 2016 syllabus)

Course Code and Title	Topics introduced / **removed**
ECO1B01 Microeconomics I	Internal and External economies, Modern and traditional theory of costs **CES and Translog production function**
ECO2B02 Macroeconomics I	Circular flow of income, Classical response to the Great Depression-Crisis in the discipline of Economics, Money-concepts, theories. **Two sector, three sector and four sector economy, role of govt.**
ECO3B03 Quantitative methods for economic analysis I	Data management using Spread Sheet. **Multiple regression and partial regression**
ECO3B04 Microeconomics II	**Theory of costs**
ECO4B05 Quantitative methods for economic analysis II	**Rules of probability**

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ECO4BO6 Macroeconomics II	Fiscal and Monetary policy **Theories of consumption and theories of money**
ECO5B08 Indian Economic Development	**Inequality measures, extend of inequality in India**
ECO5D01 Economics in Everyday Life	(New course)
ECO6B11 Financial Economics	(New course)
ECO6B13 Development of Economic Thought	(New course)
ECO6B14 Economics of Growth and Development	(New course)
ECO6B15 Research Methodology	(New course)
ECO6B17 Behavioural Economics	(New course)

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Comparing MA Economics Syllabus 2016 & 2019

Course Code and Title	Topics introduced / **removed**
VPEC3 C11 Banking: Theory and Problems	ICICI, Provident Fund, Financial inclusion initiatives. **Innovations in banking transactions**
VPEC3C12 Basic Econometrics	Lagged model, simultaneous equations **Dummy variable regression models, Model specification and diagnostic testing**
VPEC4E01 Advanced Econometrics	Instrumental variable regression, Econometric applications in India **Dynamic Econometric model, Simultaneous equation models**
VPEC4E02 Research Methodology and Computer Applications	(Newly selected elective)

Syllabus 2018 (Compared with 2016 syllabus)

Course Code and Title	Topics introduced / **removed**
VPEC1C03 Indian Economy: Problems and Policies	Sustainable Development Goals
VPEC 1 C04 Quantitative Methods for Economic Analysis I	Joint probability distribution of two random variables
VPEC 2 C07 Public Finance: Theory and Practice	GST
VPEC 3 C10 Growth and Development	Paris agreement 2015
VPEC 4E10 Research Methodology and Computer Applications	MLA, APA, Ethics in Research, Plagiarism, How to prepare research paper

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Syllabus 2019(Compared with 2018 syllabus)

Course Code and Title	Topics introduced / **removed**
ECO1 C01 Microeconomics: Theory and Applications I	Expected Value and Variability - Maximising expected utility- Fair gambles and expected utility hypothesis, The state preference approach to choice under uncertainty, Characteristic approach to demand function, Estimating and Predicting cost- Short run and long run distinction. **Bernoullis hypothesis, Managerial theories, theories of limit pricing**
ECO1 C02 Macroeconomics: Theories and Policies I	Theories of Inflation and Unemployment, Theories of Business Cycles. **Liquidity theory, Microfoundation of Monetary theory**
ECO1 C03 Indian Economy: Problems and Policies	Review of Economic Development, Welfare programmes announced in the last two Union Budgets. **Environmental degradation, HDI related indicators of India, Millennium Development Goals, Inclusive growth in India**
ECO1 C04 Quantitative Methods for Economic Analysis I	Differential and Difference Equations, Financial mathemati **Probability theory**
ECO2 C05 Microeconomics: Theory and Applications II	Intertemporal Choice and Capital Decisions, First Theorem of welfare economics- Second Theorem of welfare economics Behavioural Economics. **Macro theories of distribution, Input output analysis and linear programming.**
ECO2 C06 Macroeconomics: Theories and Policies II	Classical vs Keynes. **Theories of inflation and unemployment**
ECO3 C09 International Trade	Posner's Imitation gap- Vernon's Product Cycle Theory - Leamer's and Trefler's Theorem - Kravis theory of Availability- Linder's theory of Volume of Trade and Demand pattern
ECO3 C10 Growth and Development	Atkinson, Theil, Palmaratio, Financing Economic Development. **Perpetuation of UDCs, Structural view of UDCs, Vicious Circle of poverty, Environent and development.**
ECO3 C11 Basic Econometrics	Chow test, Dummy Variable Regression Model, Model Specification and Diagnostic Testing. **Lagged models, Simultaneous equation models.**
ECO3E01 Banking Theory : Theory and PracticesI	Innovations in Banking Transactions. **Cooperative banks, land development banks, RRBs, Financial inclusion initiatives**
ECO4E01 Advanced Econometrics	Qualitative Response Regression Models, Dynamic Econometric Models and Panel Data Regression Models Simultaneous Equation Methods **Dummy regression models, Econometric applications in India.**
ECO4E10 Research Methodology and Computer Applications	**MLA, APA, ethics in research, plagiarism, how to prepare research paper**

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Comparing B A English Language & Literature Syllabus 2016 & 2019

Syllabus 2016 (Compared with University Syllabus)

Course Code and Title	Topics introduced / **removed**
VEG3B03 READING DRAMA	Noël Coward : The Blithe Spirit **Ibsen : Doll's House (1881)Act III**
VEG4B06 METHODOLOGY OF HUMANITIES	Sudhir Kakar, Katharina Kakar. "The Hierarchical Man" in The Indians: Portrait of a People. Pg – 7-24 **Indian theories of knowledge – Methodologies of Indian knowledge systems – what is knowledge – concepts of knowledge in the Indian tradition - origin and development of Indian philosophical systems**
VEG5B10 INFORMATICS	brief introduction to Windows and Linux **Windows versions- Linux – Linux distributions**
VEG6B12 LITERARY CRITICISM & THEORY	Allegory, alliteration, assonance,metre and ecocriticism **Repeated topics**

Comparing 2019 syllabus with 2016 syllabus

Course Code and Title	Topics introduced/ **removed**
ENG1B01 INTRODUCING LITERATURE	**New Course**
ENG2Bo2 APPRECIATING POETRY	**New Course**
ENG3B03 APPRECIATING PROSE	Module 2 completely changed
ENG3B04 ENGLISH GRAMMAR AND USAGE	**New Course**
ENG4B05 APPRECIATING FICTION	Module 2,3,4 – complete new topics
ENG4B06 LITERARY CRITICISM	50% of Module 1 added-Rearranging of topics-Overall 50% added
ENG5B07 APPRECIATING DRAMA AND THEATRE	**New Course**

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ENG5B08 LITERARY THEORY	Module 1 is an addition
ENG5B09 LANGUAGE AND LINGUISTICS	Nearly 10 topics are added
ENG5B10 INDIAN WRITING IN ENGLISH	Module2,3,4 complete new works
ENG5D01 ENGLISH FOR COMPETITIVE EXAMINATIONS	**New Course**
ENG5D02 CREATIVE WRITING IN ENGLISH	**New Course**
ENG5D03 APPRECIATING LITERATURE	**New Course**
ENG6B11 VOICES OF WOMEN	The whole paper except 1 topic is new
ENG6B12 CLASSICS OF WORLD LITERATURE	More than 20% revision
ENG6B13 FILM STUDIES	More than 20% revision
ENG6B14 NEW LITERATURES IN ENGLISH	**New Course**
ENG6B15 LITERATURE OF THE MARGINALIZED	**New Course**
ENG6B16 DIGITAL LITERATURE AND ENGLISH	**New Course**
ENG6B17 WRITING FOR THE MEDIA	**New Course**
ENG6B18 TRANSLATION STUDIES	**New Course**
ENG6B19 ENGLISH LANGUAGE EDUCATION	**New Course**
ENG6B20 SHAKESPEARE	**New Course**

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Comparing B A Functional English Syllabus 2016 & 2019

Syllabus 2016 (Compared with University Syllabus)

Course Code and Title	Topics introduced/ **removed**
VFE6B13 Translation Studies	Practical assignment of 20 marks
VFE6B14 Introduction to Film Studies	Main concepts of Ronald Abramson **Ronald Abramson: Structure and Meaning in Cinema in Movies and Methods. Ed. Bill Nicholas**

Syllabus 2019(Compared with 2016 syllabus)

Course Code and Title	Topics introduced/ **removed**
FEN1B01 Communication Skills in English	More than 20%
FEN1(2)CO1 Complementary-Literatures in English: From Chaucer to the Present	More than 20%
FEN1(2)CO2 Complementary-Cultural Studies: Perspectives in Culture	**New Course**
FEN2B02 Advanced English Grammar	More than 20%
FEN3B03 Language and Technology	More than 20%
FEN4B05 Fundamentals of Linguistics	More than 20%
(FEN4B06) Business English	More than 20%
FEN4(3)CO1 Complementary - Literatures in English: American & Post Colonial	**New Course**
FEN4(3)CO2 Complementary-Cultural Studies: Cultural Spaces	**New Course**
FEN5B07 Translation Studies	More than 20%
FEN5B08 Print Media	More than 20%

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FEN5B09 Theatre for Communication	More than 20%
FEN5B10 Contemporary Literary Theory	More than 20%
Open Course	
FEN5DO1 English for Competitive Examinations	**New Course**
FEN5DO2 Language for advertising: theory and practice	**New Course**
FEN5DO3 Language for professional Success	**New Course**
FEN6B11 English Language Teaching	More than 20%
FEN6B12 Electronic Media	More than 20%
FEN6B13 Creative Writing	More than 20%
FEN6B14 Film Studies	More than 20%
FEN6B15 Elective 1 – Language for Advertising : Theory and Practice Or	**New Course**
FEN6B16 Elective 2 – Women Studies	**New Course**

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Comparing M A English Syllabus 2016 with university syllabus

Course Code and Title	Topics introduced / **removed**
VPEG2CO4 Criticism and Theory	Discussion topics : Derrida- Deconstruction Spivak- The two dimensional speech act of the subaltern Iser- Reader Response **Derri - Structure sign and Play**
VPEG2E24 European Fiction in Translation	Knut Hamsun: Growth of the Soil **Pasternak: Doctor Zhivago**
VPEG3E34 Film Studies	Indian Action Adventure: Sholay(Dir: Ramesh Sippy)
VPEG4CO7 Indian English Literature	Rajeswari Sunder Rajan - After Midnight's Children: Some Notes on the New Indian Novel in English (From Social Research Vol.78: No.1: Spring 2011)

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Comparing 2019 syllabus with 2016 syllabus

Course Code and Title	Topics introduced / removed
ENG1CO1 British Literature from Chaucer to 18th century	More than 20%
ENG1CO2 British Literature 19th century	More than 20%
History of English Language	More than 20%
ENG1CO4 Indian Literature in English	More than 20%
ENG2CO5 Twentieth century British Literature up to 1940	More than 20%
ENG2CO6 Literary Criticism and Theory - Part 1(up to New Criticism)	More than 20%
ENG2CO7 American Literature	More than 20%
ENG2CO8 Postcolonial writings	More than 20%
ENG3CO9 Twentieth century British Literature post 1940	More than 20%
ENG3CO10 Literary Criticism and Theory-Part 2	More than 20%
ENG3 E09 American Ethnic Writing	Below 20%
ENG3 E06 Teaching of English	More than 20%
ENG4 C11 **English Literature in the 21st Century**	**New Course**
ENG4 E10 Introduction to Film Studies	More than 20%
ENG4E15 Introduction to Children's Literature	More than 20%

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Comparing B.A Malayalam Syllabus 2016 & 2019
Syllabus 2016 (Compared with University Syllabus)

Course Code and Title	Topics introduced/ **removed**
VML1A01 COMMON COURSE I - MALAYALA SAHITHYAM	MODULE 1 **EZHUTHACHAN** **Kilippattu** **Nambiar** **Syamanthakamthullal** **Poonthanam** **Jnanapana** Nadanpattu-nerampoy Nadodikadha Panchathanthramkadhakal -10 Pazhamchollu-nambiar 10 PadavumporulumDr.nishafrancis o Kadamkadhakal-10 Module 2 **Nadanpattu** **Vadakkanpattu** **Mappilapattu** Cherussery Ezhuthachan Nambiar Poonthanam Module 3 **Thakazhi** **Kasava dev** **Lalithambika-kathakal** Madhavikutti- sihabudheen-kathaakal Module 4 **M.T,T.PATMANABHAN,K.R MEERA** **V.R SUDHEESH** N.P MUHAMMAD N DAIVATHINTE KANNU
VML2A02 MALAYALA SAHITHYAM 2	Module 2 **ONV** **Anithathambi poems** Module 3',4 **Essays and criticism** Language literature and key media technology Cinema criticism Madhu eravankara, K.gopinadh

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VML3A03 MALAYALA SAHITHYAM 3	Module 1 **M.K Sanu** **Dr.Thomaskutty** Drama C J Thomas Module 2 **MT essay** **Pathmarajan film** Celluloid- Kamal Module-3 **M.Rasheed** **V.K.Sreeraman** st.evuprasia- Essays sacharia- Travalouge **Musaphir** S.Joseph- Poem Priyaa.S – Story Sara Joseph- Novel
VML4A04 MALAYALASAHITHYAM-4	Module-1 **S.Gupthannair, A.R,Prabodhachandran, M.N.Karassery,- Essays** **Communication practices** **Technologies of printing media** Module-2 **Akkitham, C.Radhakrishnn, R.Viswanathan, B.Rajeevan-Essays** M.T, C.L.Jose, Vailoppilly Module-3 **Kerala cultural history** Film techniques Keli-malayalam film Module-4 **Theories of translation** **Marcase, Mnabladia, Puthunanooru, Shelespmark** **M.Mukundan- Novel** N.P.Rajendran- Essay New media technologies
VML1B01 MALAYALAKAVITHANAVOTHAN AKHATTAM	Module-1 **Bhakthideepika- Ullor** Module-2 **Ramanan,- Poem** spandikkunnaasthimadam,maninadam- Poems kanneerpadam,chandanakattil- Poems lokameyathra- Poem

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VML3B03 MALAYALAKAVITHAUTHARAKHATTAM	Module-1 **Urvaseenrutham-vishu-poem** Adirthiyilekkuveendum-vishnu- Poem **Kaalakal-poem** Vindakaaladikal- Poem Module-2 Saantha- Poem- Kadammanitta **Kozhi-poem-Kadammanitta**
VML4B06 NOVALSAHITHYAM	Module -2 **Noval by N.P.Muhammad** Novel by Punathil Kunjabdulla
VML5B08 WESTERN CRITICISM	Module -4 **Psychological Criticism**
VML6B15 TRANSLATION	Module -3 **Essays changed to mod1,2and3** Module - 4 Translation of Karkkus Zerodegree- Dr.G.Balasubrahmunian & Dr.P.M.Gireesh

Syllabus 2019(Compared with 2016 syllabus)

Course Code and Title	Topics introduced/ **removed**
MAL1B01 NAVOTHANAMALAYALAVITHA	Module-1 **Karuna-asan** **Bandanastanayaanirudhan- Vallathole** **Bakthideepika- Ulloor** Mayoorasandesam- Keralavarmma Malayavilasam- A.R Komappan- Kundoor Module-2 **Spandikkunnaasthimadam- Changambuzha** **Narabali- P** **Maninaadam- Edappilli** Jathikkummi- K.P Karuppan Oruvilapam- V.C.Balakrishnappanikkar Leele-aasan Grameenakanyaka- Kuttippurath Module-3 **Budhanumnariyumnjanum- Edassery** **Gandhiyumgodseyum- N.V** **Kannerppadam- Vailoppilly** **Chandanakkattil- G** Sarppakkad- Vailoppilly Nimisham- G Spandikkunnaasthimaadam- Changambuzha Pulluvappenkodi- P

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	Module-4 **Vidavangal- Ubidu** **Lokameyathra- Mary john thottam** **Nangemakkutty- Olappamanna** Africa- N.V Erupathamnoottandinteethihasam-Akitham Kottayilepattu- Punaloorbalan Choroonu- ONV
MAL2B02 **KATHASAHITHYAM**	Module-1 **Tiger- Basheer** **Uthuppantekinar- Karoor** Veluthakunju- Thakazhi Janmadinam- Basheer Module-2 **Silalikhitham- M.T** **Makan- T.Padmanabhan** **Aarkkariyam- Sakharia** **Vaasthuhara- Sreeraman** Tharisunilam- Maadhavikkutty Makhansingintemaranam- T.Padmanabhan Perumazhayude Pittennu- M.T Radayudekathu-Lalidambikaandarjanam Module-3 **Mundanamcheyyappettajeevitham- M.Mukundan** **Naalamyamam- M.Sukumaran** **Charithrapurushan- T V Kochubava** **Panthibhojanam- Santhoshechikkanam** Prabhathammuthalprabhathamvare- M.Mukundan Malamukalile Abdulla- Punathil Then- Sakhariya Snehathintesraadham- O V Vijayan Module-4 **Amma vannu- V P Sivakumar** **Bhranthu- C Ayyappan** **Daanokkuorupalli- Priya A S** **Thalpam- Subhashchandran** Nilavuariyunnu- Sara Prethabhashanam- C Ayyapan Erachi- T V Kochubava Modasthidanayangunilppumalapole- S Harish

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MAL3B03 **NAVEENAMALAYALAKAVITHA**	Module-1 **Adirthiyilekkuveendum-vishnu** **Divyadukkathintenizhalil-r Ramachandran** **Paathalathintemuzhakkam- Kakkad** **Vindakaaladikal- P Baskaran** Busstoppil- Madhavanayyappath Kaadevidemakkale-Ayyappapanikkar Santha- Kadammanitta Module-2 **Mruthyupooja- Ayyappapanikkar** **Aayiramnaavullamounam- Yusafalikecheri** **Santha- Kadammanitta** **Neethiyudevruksham-Sachi** Pothu- Kakkad Bangal-KGS Samkramanam-Aattoor Pani-sachi Module-3 Mekharoopan- Aattor **Avasarochithan- Chemmanam** **Kadanam-KGS** **Kaadu- D Vinayachandran** Kavipreyasi- Bala Penkunju- Sugutha Mrugasikshakan- Vijayalakshmi Adukkalayillathaveedu- Vijila Module-4 **Manasandaram-chullikkad** **Pasanchar-mohanakrishnankaladi** **Pennungalkanathapathiraneram-V M Girija** **Smarakam- Veerankutty** Athazham-V V Ayyappan Kotta-S Joseph Panthukaaykkummaram-Mohanakrishnankaladi Kanam-P Raman Nashttam-K R Tony Marthomanagarileprathimakal-P Nasimuddeen Aanamayilottakam-Rafeeq Koottanthadayudeezhupathuvarshangal-M B Manoj

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MAL3B04 **DRISYAKALASAHITHYAM**	TOTALLY CHANGED **Nadakam/thirakkatha**
MAL4B05 **PRACHEENAMALAYALA KAVITHA**	**Bhasharamayanamchampu** **Nalacharitham- Unnai** **Orupoliceinspecterudevadham- Oduvil** Bhashanishadhamchambu- Thottampaattu Maappilappattu Thekkanpattu
MAL4B06 **NOVALSAHITHYAM**	Novels: **Ramarajabahadoor- C V** **Manju- M.T** **Aadujeevitham- Benyamin** **Aarogyanikethanam-** **Kolarakkalathe pranayama** **Kunjukaryangaludeodethampuran** **Jaivam** **Aalahayudepenmakkal** Maarthandavarmma Balyakalasakhi Branthalayam Pulayappattu
MAL5B09 **MALAYALASAHITHYAVIMARSAM**	Essays: **Fuctarisavumkeraleeyakalakalum** **Valmeekiyuderaman** **Kalidasankalathintedasan** **Hasyathinteulpathi** **Eni naam engottu** **Srashttavinteswathanthrryavumsrushtiyudesadacharavum** **Sahyantemakan** **Kavithayileangadikal** **Chemmeenilesankharshanjal** **Viharikkukayanumethil** Prasavadam Naliniyudeavatharika Marthandavarmma Nishpakshaniroopanam Samoohathilevisham Balyakalasakhiavatharika Jeevalsahithyam Mambazham Budhanumsivanum Anubhoothikaludecharithraparatha Ezhuthuadikaramsoundaryam Saraswatheevijayam-avatharika Kannadikaludakkunnathenthinu Kadhayumparisthithiyum

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MAL6B12 **GADYASAHITHYAM**	**Ambareekshopakyanam** **Medemazhaedamazha** **Sahithyabhashayudemuzhukkol** **Kavithayumthathwachinthayum** **Mahathagandhi** **Guruvumsishyanum** **Himavantemukalthattil** Vazhappillysasanam Bhashakoudileeyam Soorpanankam Udayamperoorsoonahadosintekanonukal Varthamanapusthakam Sahithyasahyam Malayalasaily Aanayumalpamthelunkum Nadakabhinayam-chilachinthakalumsmaranakalum Pennukothiyavakku

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Comparing MA Malayalam Syllabus 2016 & 2019

Syllabus 2016 (Compared with University Syllabus)

Course Code and Title	Topics introduced / **removed**
VPML1C01 Adyakala Malayala Gadhyam	**Unit 1** **Vyjnjanikasahithyam, Anasasthram, Ukthibhasha, Pattu, Manipravalamennivayile bhashayumayulla tharathamyavum malayalabhasha sidhandheekaranavum, Samskrutha janyavadam, Swathandravadam, Upasakhavadam, Misrabhashavadamthudangiyabhasholpathyvadangaludepasc hathalam** Alathurmaanipravalam Unit:2 **Horthusmalabaricose vandrede** **Horthusum itti achuthanum: sathyavum mithyayum** **Paschimodayam, jnjananikshepam, Missionarynigandukkal,Vyakaranangal** **Jarardintealankarasasthram, Balabhyasanam,** Bible canonakal Unit:3 Mariyammanadakam; Kocheeppantharakan, Bhootharayar, Appanthampuran
VPML1E1/4 Kathasahityam	Unit 1 **Oruneelamkuranjakathu – C.S Gopala panickre** **Unit 2** **Ottakam S.K Pottakadu** **Veluthakutti - Uroob** **Unit 3** **Nintekadhaenteyum** **- N Mohanan** **Angel - Gouthaman** **Unit 4** **Radha radhamathram - N.Mukundan** **Chelakkarayudeadheedaswapnangal –** **K.P Nirmalkumar** **Unit 5** **Ormmayudenjarambu- K.R Meera** **Chetta - Indumenon** **Odinappuram parambinippuram - Unni R** Unit 5 Agni- Sithara
VPML4C014 Translation theory and practice	Unit 4 **Ezhuthacha, A.R, Nalappattu, Edappilli,** **N K Damodaran - Translations** Malayalathile paribhasha sangalppam Prethangalkesari Pavangal - nalappattu Unit 5 **The fallen flower** **Geethanjali** **Insight** The waste land -translation

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VPML2C07 BHASHA SASTHRAM	Unit 2 **Bhasha sasthrathinu mattu vishayangalumayulla bandham - Phylosophy, Anthropology, Psychology, Sociology, Literature** **Diff. areas of linguistics** **Theoretical linguistics and practical linguistics-contemporary trends** Dravidian linguistics Contributions of caldaneminobaro
VPML3C010 KERALA SAMSKARAM	
VPML2C06 MALAYALAM VYAKARANAM	UNIT 1 **TAMIL –Tholkapyam, Nannool, Veeracholiyam, Panineeyam, Panineeyaprathyodam, Laghupanineeyam, Leelathilakam, Bhrahmand, Fron, Meyer, Gundert, Georgemathan, Pachumuthathu, Kovunninedungadi, ar, Seshagiriprabhu, Sukumarapillai Eevn namboothiri, C.V Vasudevabhattathiri, Vyakarananmarum grandhangalum samanyaparichayam** Malayalabhashayude vikasaghattangal,,virudavadanga bhashacharitham
VPML1C02 ADYAKALA MALAYALA KAVITHA VPML1C0ADHUNIKA KAVITHA	UNIT:1 **Poomalakkavile Pooravilakku, Kolkali Pattu Puliyoru Kannan Thottam, Kolkali Pattu Vadakkan Pattu-Othenanum Ona Pudavayum** **Unit 2** **Sanga Kalathe Kavya Mathrukakal, Bhasha Bhagavatgeetha** **Unit3** **Unniachi Charitham Chandrolsavam** **Unit 5** **V.C Balakrishnapanickre oruvilapam** **Ar rajarajavarmma Malaya vilasam** Daivasatakam sree Narayana guru
VPML1C03	Unit 1 Oru vilapam - V.C Balakrishna panickre Unit 2 **Kannuneerthulli nalappattu** **Maninadamedappali** Mathruhrudaayam Balamaniyamma unit 3 **Mazhuvintekadha** **Nangemakutti - Olappamanna** Jadikummi - K.Karuppan Jalakapakshi - Olappamanna unit 4 **Orkkuka vallappozhum - P Baskaran** unit 5 **Mrithyupoojaa** **Kochiyilevrikshangal Kgs** Rathrikal pakalukal -Ayyappa panickre Bengal kgs
	Average %

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Syllabus 2019(Compared with 2016 syllabus)

Course Code and Title	Topics introduced / **removed**
MAL1C01 PRACHEENAMADYAKALASAHITHYAM	Mod-1 **Sasanangal** **Bhashakoudileeyambrahmandapuravarnanam** **Nambianthamizhu** **Kramadeepika** **Aattaprakaram** **Aalathurmanipravalam** **Mod-2** **Samkshepavedaartham** **Varthamanapusthakam** **Bible translation-baily** **Bible canons** **Mod-3** **Mariyammanadakam** **Bhootharayar** Mod-1 Folkballads Kurathithottam Kariyapanikkarudechishyatham Thampuranumpulayiyum Unniyaarcha Mod-4 Unniyadicharitham Mod-5 Mukthakangal Komappan
MAL1CO2 **AADHUNIKAKAVITHA**	**Oruvilapam- V.C.** **Daivadasakam- Guru** **Malayavilasama. R** **Mathruhrudayam- Bala** **Nimisham- G** **Ushassu- M N Pallor** **Ethrayadruschikam- G.Sankarappillai** **Jathikkummy-Karuppan** **Jalakappakshi-Olappamanna** Sivathandavam- G Aassampanikkaar-Vailoppilly Kaliyachan-P Mazhuvintekatha-Bala Nellukuthukariparu-Edassery Kochuthomman-N.V Erupathamnoottandinteethihasam- Akkitham Yugalaprasadan-Vishnu Budhanumaattinkuttiyum- A Ayyappan

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Comparing B A Sociology Syllabus 2016 & 2019
Comparing B A Sociology 2016 (with university syllabus)

Course Code and Title	Topics introduced / removed
VSO1B01: Methodology and perspectives of Social Sciences	Structural functional approach
VSO2B02: Introduction to Sociology	**Isolation**
VSO3B03: Social Informatics	No change
VSO3 B04: Foundation of Sociological Theories	Evolution, Elementary forms of the religious life **Society**
VSO4B05: Social Research Methods	No change
VSO4B06: Life Skill Education	Positive talk
VSO5 B07: Indian Society And Social Change	Title changed **Rural and Urban** Module 4 changed
VSO5B08: Theoretical Perspectives in Sociology	No change
VSO5B09: Social Anthropology	No change
VSO5B10: Research Methods and Statistics	No change
VSO6B11: Environment And Society	Interdisciplinary **Emile Durkheim**
VSO6B12: Sociology of Mass Communication	Title change No change in content

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VSO6B13: Women and Society	Title change Legislative, Status of Women and Changing Form of Family Structure, Women's movement in Pre Independent India **Family, Rights and privileges of women in India, Women's movement in Post Independent India**
VSO6B14: Population and Society	No change
VSO6E01: Sociology of Development	Sustainable development- social and ecological, Modernization theory: Rostow, Alternative model: Gandhi, Schumpeter **Unequal uneven development**
VSO1C01: Principles of Sociology	Types of Socialisation Theories of Socialisation
VSO4C04: Sociology of Communication	Media definition relevance and importance, Interpersonal, relationship of culture, personality and society **Theories of Mass communication: Habermas, John Thomson Raymond Williams, Cultural studies as an interface between between Social Sciences and Humanities.**
VSO5D01: Life Skill Education	No change
	Average (%)

Syllabus 2019 (Compared with 2016 syllabus)

Course Code and Title	Topics introduced / removed
SGY1B01: Basics of Sociology	New Course
SGY2B02: Indian Society: Structure and Transformation	Syllabus completely changed

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SGY3B03: Sociological Theory: An Introduction	Title change Emergence of Social thought Classification of Societies, Positive Philosophy Comte – Hierarchy of Science and Law of three stages. Spencer – Social Darwinism, types of society. Emile Durkheim – Collective conscience. Marx- Historical materialism. Max Weber – Ideal type **Social background: French Revolution, Decline of Estate System, Emergence of Capitalism and Establishment of Democracy in Europe.I.2 Intellectual background: Scientific revolution, Freedom of thought, Efforts to interpret social change, Need for a new social science.** **Auguste comte – concept of society and social change, Spencer-evolution and social change,Karl Marx- Relations of production, Forces of production and Mode of production.** **Durkheim – The elementary forms of religious life, development of modern Sociology. .Durkheim as a functionalist.** **Rationality, iron cage of rationality.**
SGY3B04: Social Stratification and Inequality	New course
SGY4B05: Introduction to Social Research	Social Research – nature and scope, subjectivity, ethical issues in Social research. Relevance of literature in research -Literature survey. Research methods – Observation, interview, social survey, ethnography, oral history, Interview guide, Probability and non – probability sampling. Module 4 completely changed **Types of Research: Basic, Applied and Action Research, Case study, Content analysis, Narrative, Focused Group Interview.** **Research Designs: Descriptive, Exploratory, Experimental and Diagnostic Designs.** **Local correspondents, projective techniques.** **Construction of Questionnaires: Criteria and guidelines.**

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SGY4B06: Sociology of Keralam	New course
SGY5B07: Social Anthropology	Fieldwork tradition in anthropology-features of anthropological field work. Relationship between Sociology and Anthropology, culture and civilization. De-notified Tribes, Primitive tribes. Indebtedness, Land alienation, shifting cultivation, displacement and rehabilitation-psycho-socio-cultural adjustments Santhal rebellion, Munda rebellion, Muthanga agitation Ethnographic Profile of Selected Tribes in Kerala: Cholanaickan, Mullukurumba, Kurichias, Paniyans. Tribal development initiatives in Kerala- a critical appraisal. **Origin of Social Anthropology, Social Institutions in Primitive Society: Marriage, Family, Kinship, Kinship Usages, Class & Lineage Totem, Religion and Magic.**
SGY5B08: Sociology of Rural and Urban Societies	New course
SGY5B09: Women in contemporary Society	Studying Women in third world societies with particular reference to India. Patriarchy, Gender Division of Labour, Social construction of gender, Gender Justice. Module 3rd and 4th completely changed. **Relevance of Women Studies, Gender Difference, Gender Inequality, Gender Identity.** **Psychological Theories – Freud.** **Feminism – Definition, meaning and objectives.**
SGY5B10: Environment and Society	Nature and significance of Environmental Sociology. Nature, Ecology, Biodiversity, social ecology environmentalism, environmental justice Environmental conservation - necessity and challenges. Module 2 completely changed. Environmental movements, environmental policies - international, national & regional.

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	International policies to curb environmental pollutions, Technological advancement, consumerism and impact on environment. Impact of developmental projects - roads, rails, SEZs Impact of environmental degradation, need for sustainable development. Environmental protection – protests in Kerala: Silent Valley, Plachimada, Kathikoodam. **Interdisciplinary and multidisciplinary nature of environmental studies.** **Views of Max Weber, Karl Marx, Parsons, Anthony Giddens.** **Issues pertaining to water, air, soil, solid waste, sanitation, Technological waste. Importing and Exporting of waste.**
SGY6B11: Invitation to Sociological Theory	Relationship between Theory and Research. Module2, 3 and 4 completely changed. **Characteristics of Theory, major schools of Sociological Thought (in brief).**
SGY6B12: Social Psychology	New course
SGY6B13: Population Studies	Title change **Measures of fertility and measures of Mortality.**
SGY6B14: Political Sociology	New course
SGY6B15: Life Skill Education	Core life skills- The Ten core Life Skills as laid down by WHO. The Four Pillars of Education - Learning to Know, Learning to Do, Learning to Be, Learning to Live Together. Barriers in effective Communication. **Career Guidance Centers, Job fair, Computerised job search and Career Magazines.**
SGY6B16: Social Informatics	Ubundu **Uses of Ms Word, MS Excel and Ms Power point and SPSS.**
SGY6B17: Mass Media and Society	Title change. **Cultural studies as interface between Humanities and Social Science.**

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Comparing MA SociologySyllabus 2016 & 2019

Comparing MA Sociology Syllabus 2016 (with university syllabus)

Course Code and Title	Topics introduced / **removed**
VPSO1C01 Classical Social Theory	Theory of Suicide
VPSO1C02 Research Methodology I	Qualitative and quantitative data
VPSO1C03 Indian Society – Structure Transformation	Challenges to Indian society
VPSO1C04 Population And Society	Population: meaning, Definition, Nature, Scope and relevance of population studies
VPSO2C05 Schools Of Sociological Theory	No change
VPSO2C06 Research Methodology II	No change
VPSO2C08 Urban Sociology	No change
VPSO2C07 Family And Society	
VPSO3C09 Schools Of Sociological Theory –II	No change
VPSO3C10 Sociology of Development: Themes and perspectives	IT, Gram Sabha
VPSO4C11: Current Debate in social Theory	No change
VPSO4C12 : Women Studies	
VPSO3E05: Elective 2 Sociology Migration And Diaspora	No change
:Elective 3 Educational Sociology	
VPSO3E04 Sociology of Health	No change
VPSO4E02 : Elective 4 Guidance AndCounselling	**No change**
VPSO3E01: Elective 1 EnvironmentalSociology	Eco- feminist -Vandhana Shiva KasturiRangan – Gadgil movement
VPSO4E01 Sociology Of Media And Communication	No change

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Syllabus 2019(Compared with 2016 syllabus)

Course Code and Title	Topics introduced / **removed**
SOC1C01 Foundations of Sociological Theory Core Course- FOUNDATIONS OF SOCIOLOGICAL THEORY(5C) Core Course-RESEARCH MET HODOLOGY OF SOCIOLOGY (5C) Core Course- SOCIOLOGY OF INDIAN SOCIETY(5C) Core Course- RURAL AND TRIBAL SOCITIES IN INDIA(5C) **ABILITY ENHANCEMENT PROGRAMME(4C)**	Renaissance Condorcet Elementary forms of religious life, Historical materialism, Verstehen, rationality and modernity-rationalisation **Law of three stages, Hierarchy of sciences, Social Statics and** **Social Dynamics, Evolutionary Theory and Social Darwinism, Vilfredo Pareto, Comparison between Marx and Weber.**
SOC2 CO2 Research Methodology of Sociology	Scientific methods in Social sciences,Reflexivity, Ethical concerns in SocialResearch, Sources of Secondary Data,Qualitative method in Social research **Reason and Science; Positivism and its critique, Mixed designs, Statistics**
SOC2 CO3 Sociology of Indian Society	David Hardiman- Devi Movement, Annihilation of Caste, Cultural approach, **Commercialisation of** **Agriculture, Regionalism, Factionalism, Terrorism, Secularism4.3 New Economic Policies: Liberalisation, Privatisation, Globalisation: Features, Positive and Negative Effects**
SOC2 CO4 Rural and Tribal Societies in India	New Course
SOC2C 05 Schools of Sociological Theory I	LinguisticTradition, **Exchange Theory**

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SOC2C 06 Research Methodology II	Measurement Scales, Sources of errors in measurement, Measures of Central Tendency, Measures of Dispersion, Data Analysis, use of computers in data analysis, Issues of Copyright and Plagiarism, Use of Softwares in Social Research **Scatter Diagram, Concurrent deviation method, Yule's Coefficient,Qualitative Methods In Social Research, Contents Formulation, Footnotes and Endnotes**
SOC2C 07 Urban Sociology	No change
SOC2C 08 Gender Studies	New Course
SOC3C09 Schools of Sociological TheoryII	Interpretative Tradition InSociology, Neo Functionalism and Neo Marxism **Pollock, Eric Fromm Weaknesses and Decline of early Critical Theory,Phenomenology And Ethnomethodology,Structuralism, Micro- Macro Integration**
SOC3C10 Sociology of Development: Themes AndPerspectives	Basic concepts, Modernization, . F. Schumacher – Intermediate Technology, Critique of Development, Grassroot initiatives, Development induced displacement **Social structure as a facilitator/inhibitor of development, Culture as an aid/impediment of development, Eisenstadt, The Risk Society : Ulrich Beck, Resistance Movements**
SOC4C11 Current Debates In SocialTheory	Discipline and punish
SOC4C12 Economic Sociology	
SOC3E02 Sociology of Migration AndDiaspora	No change
SOC3E03 Sociology of Health	

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SOC3E04 Science, Technology and Society	
SOC3E05 Project Planning and Preparation	No change
SOC4E06 Guidance andCounselling	No change
SOC4E07 Kerala Society: Structure andChange	
SOC3E01 **Not Opted** EnvironmentalSociology	Basic concepts , Environment in Culture and Religion, Environmental Visions, Green dilemmas, Capitalism and Implications on Environment, Constitutional Provisions and Environmental Laws **Classical TheoriesKasturiRangan – Gadgil movement, Elements of Social Ecology, Environmental Movements**
SOC4E08Sociology of Mediaand Communication	No change

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DEPARTMENT OF SOCIAL WORK, VIMALA COLLEGE, THRISSUR

Comparing MSW Syllabus 2016 (with university syllabus)

Course Code and Title	Topics introduced / **removed**
VPSW 1 C01 History and Fields of Social Work	Historical development of social work in India - Social Reform Movements and their contribution to Social Welfare. Post Independent Era and welfare activities in India by Governmental and nongovernmental agencies
VPSW 1C02 Philosophy and Ideologies of Social Work	**Ideology of voluntary organization** **Beginning of social work education in India and Professionalisation of Social Work**
VPSW1C03 Sociology and Economics for Social Wor k Practice	**"Positivism** **"social mobility** **"Conformity and deviance"** Budget analysis
VPSW 1C04 Human Growth and Development	No change
VPSW 1C05 Professional Skills for Social Workers	Relationship skills, life skills, Negotiation, Decision making, Problem solving, Assertiveness, Emotional resilience, Emotional Intelligence
VPSW 1F 01 Concurrent Fieldwork	No change
VPSW 2 C06 Social Casework and Social Group work	**Group process" and "functional and non functional roles of individual in group**
VPSW 2 C08 Community organization and Social Action	**Examples for capacity 0building of organisaitons Networking**
VPSW 2 C10 Social legislation and Human rights	UNCRC, Commissions for child rights- National Commission for Protection of Child Rights (NCPCR), SCPCR, ICPS, DCPU. Role of a social worker in relation to social legislation and human rights issues – advocacy, campaign, lobbying, networking, educating, guiding, enabling were included to bring more clarity about the role of social worker.

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VPSW 3 C 11 Quantitative and Qualitative research Methods in Social Work Research	Approaches in qualitative research ATLAS. ti **Measures of Phi-coefficent and Yule's coefficient**
VPSW 3 C 12 Participatory Project Planning and Training	Sustainability, Development direction, Concern for marginalized, forecasting, stakeholder analysis, Gender Impact Assessment, Beneficiary analysis, PERT, network analysis, Action Plan, PME, Gap analysis Transparency, Public relations, Marketing Discussion exercises, checklists, using visual images and SWOC analysis
VPSW 3 C 13 Community Health	National and international health funding organizations WHO, UNICEF, UNDP, UNEP, UNFPA, DFID, FAO, UNESCO, Rotary International, USAID. Globalisation and health, health and media.
VPSW 3 E101 Health Care Social Work	Assessment, care planning, Direct counselling,)
VPSW 4 C 17 Administration of Human Service Organisations	Human Resource Development Disciplinary procedures, statutory compliance- welfare measures, health and safety and social security
VPSW 4 E1 03 Therapeutic Approaches in Medical and Psychiatric Settings	**Major Perspectives on human behavior: Behavioral Perspective, Bio psychological perspective, Stress-vulnerability-coping model, Cognitive Perspective, Humanistic/Existential Perspective, Socio -cultural perspective, Feminist- Perspective, strength perspective.**
VPSW 4 E2 03 Environmental Studies and Disaster Management	**Ecological Theories**
VPSW 4 E2 04 Social Work with Gender Issues	**Interventions for women in prostitution** Women in commercial sex work

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Syllabus 2020(Compared with 2019 syllabus)

Course Code and Title	Topics introduced/ removed
SOW1C04 Professional Skills for Social Workers	professional integrity and Professional boundaries Documentation and writing skills
SOW 1 L05 Social Legislation and Human Rights	Preamble to the Constitution, Right to Information Act 2005, Criminal reforms like Probation, Parole Salient features of ESI Act1948, Factories Act1 948, Workmen's Compensation Act 1923 **UN and its Principal Organs: General Assembly, Economic and Social Council, and Security Council, Subsidiary Organ: Human Rights Council, Specialized Agencies: UNICEF, UNESCO, ILO, WHO and various agencies. Inter governmental and non governmental agencies working for human rights**
SOW2C09 Community organization and Social Action	**Sustainable Development**
SOW 3 C 15 Community Health	concepts of Occupational Health and Health Hazards **The National & International funding agencies**
SOW 3 E2 01 Rural Community Development and Governance	recent national and state policies, current programmes for Livelihood and Infrastructure Development by State and Centre related to Rural Development
SOW 3 E2 02 Urban Community Development and Governance	recent national and state policies, current programmes for Livelihood and Infrastructure Development by State and Centre related to Urban Development
SOW 4 C 18 Social Work with Vulnerable Groups	**Analytical understanding of the prevailing realities, causes and precipitating factors of vulnerability, needs and problems of these children, child rights and its deprivation..** **Categories of vulnerable children, with emphasis on the girl child, destitute children, children from broken families, child labour, street children, children with disability, sexually abused children, children facing stigmatization, Children affected by natural calamities, disasters, domestic violence National policies and programmes for children: Education, health, nutrition and protection.** **National and international agencies working with children. Institutional and non institutional services for children. National interventions and initiatives in child protection and child rights. Scope of social work interventions and the role of the social worker in helping vulnerable children.**

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	Problems and concerns and vulnerable situation of migrants and refugees- Health issues,right violations isolation, stigma, discrimination and inability to access to services and resources **Issues and concerns of the elderly: Work, retirement, social security, housing; physical and mental health, disability, terminal illness and death of spouse; loneliness and alienation; feminization of ageing, domestic violence and abuse; dependency and family care; destitution; Risk assessment. Policies and programmes for elderly in India, Welfare schemes for elderly. Role of Govt. and NGOs in the development of services for elderly. Social work practice for enabling active ageing and enhancing quality of life: education for preparation of new roles and activities; for physical safety, financial security; retirement planning; individual and family counselling for adjustment and emotional wellbeing; bereavement counselling; mediating for enabling the elderly to receive their entitlements.** National and international agencies working with migrants and refugees Scope of social work interventions and the role of the social worker in helping migrants and refugees Categories of sexual minorities, Issues and concerns of sexual minorities- Health issues, violence, harassment, human right violations, and discrimination National policies and programmes for sexual minorities Possible social work interventions for helping sexual minorities
SOW 4 E2 03 Environmental Studies and Disaster Management	Legislations to Environment Protection and Recent Development in the Environment Protection

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Comparing B. Com Syllabus 2019

Syllabus 2019 (Compared with 2018 syllabus)

Course Code and Title	Topics introduced/ **removed**
CORE	
BCMIB01 Business Management	'Business Ethics' i.e. Theories of Ethics and Different views of business ethics.' Corporate Social Responsibility (CSR)' has been elaborated as shown as a separate Module.
BCM2B02 Financial Accounting	Syllabus completely changed
BCM3A11 Basic Numerical Methods	Interest and time value have been added in Module IV. **Sets and Set Operation. Analysis of Time Series: Methods of measuring – Trend and Seasonal variations- Index number –Unweighted indices – Consumer price and cost of living indices.**
BCM3A12 Professional Business Skills	New course
BCM3B04 Corporate Accounting	Syllabus completely changed
BCM4A13 Entrepreneurship Development	Module I recent developments if ED has been included. Module IV and Module V entire module is been added.
BCM4A14 Banking and Insurance	Financial Inclusion in Module III
BCM4B05 Cost Accounting	Standard Costing has been added in Module V
BCM6B14 Fundamentals of Investments	New topics in Module III
Complementary	
BCM3C03 Human Resources Management	E-HRM, Operational E-HRM, Relational E-HRM, Transformational E-HRM in Module I

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Comparing M.Com Syllabus 2016 & 2019

Syllabus 2016 (Compared with University Syllabus)

Course Code and Title	Topics introduced / **removed**
VPMC1C01 Business Environment	Environmental Studies **International Agreements**
VPMC1C03 Accounting for Managerial Decisions	**Capital Investment Process** Fund Flow and Cash Flow Statement
VPMC1C05 Organizational theory and Behavior	Change Agents
VPMC2C07 Advanced Corporate Accounting	Treatment of Dividend, Investment Accounts, Social Responsibility Accounting **Financial statement of Banking Companies**
VPMC2C08 Business Communication	Resume preparations and Office Etiquette **Physical exercises, yoga and meditation for personality development**
VPMC2C09 Management Science	**Operation Research and Game theory**
VPMC2C10 Strategic Management and Corporate Governance	Powers and limitations of Board
VPMC3C13 Research Methodology	Case study and Univariate, Bivariate and Multivariate Methods **Sample Design and Sampling Theories**
VPMC3EF01 Elective I Financial Management	Cost of Capital and Capital budgeting **International Financial management**
Average	

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Syllabus 2019 (Compared with 2016 syllabus)

Course Code and Title	Topics introduced / **removed**
MCM1C01 Business Environment & Policy	GST, Digital Economy & Start, Environment Management
MCM1C02 Corporate Governance &Business Ethics	New Paper
MCM1C03 Quantitative Techniques for Business Decisions	Probability Distributions, SPSS **Statistical Quality Control**
MCM1C04 Management Theory and Organizational Behaviour	Management and Leadership, HRM Approaches
MCM1C05 Advanced Management Accounting	Modern Production Management Techniques, Decision Making under risk and Uncertainty
MCM2C06 Advanced Corporate Accounting	New paper
MCM2C07 Advanced Strategic Management	Corporate Governance & Business Ethics **Strategy evaluation and Control**
MCM2C08 Strategic Cost Accounting	New Paper
MCM2C10 Management Science	Introduction to management science, inventory and queuing management, project scheduling, markov chains and theory of games **Management science- basic concepts, transportation and assignment, network analysis, queuing theory**
MCM3E02 Elective II Financial Markets & Institutions	Financial instruments **Interest rates**
MCM4C15 Income Tax Law, Practice and Tax Planning II	New paper

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VIMALA COLLEGE (AUTONOMOUS)
THRISSUR-680 009