


Programme Code	UGBOT
Programme Name	B.Sc. Botany Honours

**1.3.1 Institution integrates cross cutting issues relevant to Gender, Environment and Sustainability, Human Values and Professional Ethics into the Curriculum**

Sl. No.	Course Code	Course Name	Relevant Issue			Remarks
			Gender	Environment & Sustainability	Human Values & Professional Ethics	
1	UGBOTCC01	Phycology and Microbiology		✓		Teaches about the diversity of algae and microbes and their conservation.
2	UGBOTCC02	Biomolecules and Cell Biology		✓		Teaches about the macromolecular composition of cells.
3	UGBOTCC03	Mycology and Phytopathology		✓		Uses of fungi in human welfare are highlighted.
4	UGBOTCC04	Archegoniate		✓		Diversity and importance of bryophytes, pteridophytes and gymnosperms are listed.
5	UGBOTCC05	Anatomy of Angiosperms		✓		Detailed information on plant ultrastructure is given..
6	UGBOTCC06	Economic Botany		✓	✓	Plant resources as useful products in human welfare and medicine are elaborated upon.
7	UGBOTCC07	Genetics		✓		Introduction to inheritance of traits and genetic disorders is given to the students
8	UGBOTCC08	Molecular Biology		✓		Overview of the maintenance of molecular life of living organisms is given.
9	UGBOTCC09	Plant Ecology and Phytogeography		✓	✓	Educating the students on the biodiversity, conservation, and sustainable development.

  
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Sl. No.	Course Code	Course Name	Relevant Issue			Remarks
			Gender	Environment & Sustainability	Human Values & Professional Ethics	
10	UGBOTCC10	Plant Systematics		✓		Role and diversity of medicinal plants and their conservation of plants is highlighted
11	UGBOTCC11	Reproductive Biology of Angiosperms		✓		Teaches about the reproductive organs and mechanism of reproduction.
12	UGBOTCC12	Plant Physiology		✓		Molecular mechanism of biological pathways occurring in plants is explained.
13	UGBOTCC13	Plant Metabolism		✓		Molecular pathways of plant metabolism is explained.
14	UGBOTCC14	Plant Biotechnology		✓	✓	Role of GMOs and tissue culture in the fields of medicine, agriculture and environment is elaborated upon.
15	UGBOTDSE01	Industrial and Environmental Microbiology		✓	✓	Uses of microbes in human welfare and their industrial application are taught.
16	UGBOTDSE02	Plant Breeding		✓		Awareness on the conventional methods of plant breeding is given.
17	UGBOTDSE03	Biostatistics		✓		Statistical applications in biology can be studied.
18	UGBOTDSE04	Applied Phycology		✓		Economic importance of algae is highlighted
19	UGBOTDSE05	Research Methodology			✓	Applications of various instruments used and concept of research ethics is highlighted.
20	UGBOTSEC01	Value Education and Indian Culture		✓	✓	Teaches about ethical values that are found in the major religions of India.

  
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**Programme Code: PHDZOO, Programme name: Ph.D. Zoology**

Sl. No.	Course code	Title of the Course	Need			Remarks
			Gender Environment and Sustainability Human Values and Professional Ethics			
1	PHDZOO 01	Research Methodology	✓	✓	✓	Understand the objectives, motivation and types of research. Collect data (primary or secondary) based on the formulated problem and analyse the data. Discuss the application of results and write the thesis.
2	PHDZOO 02	Computer Applications			✓	Understand the core Python scripting elements such as variables and flow control structures. Use Python to read, write, demonstrations files.
3	PHDZOO 03	Literature review	✓	✓	✓	Identify and retrieve relevant publications within a field of research and write a literature review by searching the literature systematically. Write a research proposal for obtaining Financial assistance from national funding agencies.
4	PHDZOO 04	Tools and techniques in molecular biology and biochemistry	✓	✓	✓	It has ample scope for relevent issues
5	PHDZOO 05	Pharmacology and Toxicology	✓	✓	✓	Demonstrate and apply the scopes and techniques in Pharmacology and Toxicology. Students will know the adverse impact in different gender.
6	PHDZOO 06	Anti-Microbial Defence	✓	✓	✓	Demonstrate the microbial pathogens and Anti-microbial defence and its impact in enviromental sustainability.
7	PHDZOO 07	Ecology, Environment and animal behaviour	✓	✓	✓	Apply the acquired knowledge about the field studies and evaluate various tools and techniques in biodiversity study. Obtain knowledge on collection, preservation and identification of museum specimens.
8	PHDZOO 08	Bioinformatics and computational Biology		✓	✓	It has ample scope for relevent issues



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Programme Code	PGBOT
Programme Name	M.Sc. Botany

1.3.1 Institution integrates cross cutting issues relevant to Gender, Environment and Sustainability, Human Values and Professional Ethics into the Curriculum


Sl. No.	Course Code	Course Name	Relevant Issue			Remarks
			Gender	Environment & Sustainability	Human Values & Professional Ethics	
1	PGBOTCC1.1 (Th)	Phycology + Microbiology		✓		Teaches about the diversity, structure, metabolism and evolution of algae and microbes and their conservation.
2	PGBOTCC1.2 (Th)	Mycology + Plant Pathology		✓		Mentions the uses of fungi in human welfare.
3	PGBOTCC1.3 (Th)	Biostatistics + Biophysics		✓		Detailed analysis of biological data and tools and techniques.
4	PGBOTCC1.4 (Th)	Ecology + Evolution		✓	✓	Ecology, biodiversity and conservation of natural resources is elaborated.
5	PGBOTCC1.5 (Pr)	Phycology + Microbiology		✓	✓	Hands on training on diversity of algae and microbes.
6	PGBOTCC1.6 (Pr)	Mycology + Plant Pathology		✓		Teaches the identification of plant diseases and their control.

  
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Sl. No.	Course Code	Course Name	Relevant Issue			Remarks
			Gender	Environment & Sustainability	Human Values & Professional Ethics	
7	PGBOTCC2.1 (Th)	Plant Anatomy + Developmental Biology		✓		Detailed information on plant ultrastructure and mechanism of its development is given.
8	PGBOTCC2.2 (Th)	Taxonomy of Angiosperms + Embryology of Seed Plants		✓		Overview of plant diversity and embryo formation is given.
9	PGBOTCC2.3 (Th)	Biochemistry & Metabolism + Plant Physiology		✓		Molecular mechanism of physiological pathways and metabolism in plants is explained.
10	PGBOTCC2.4 (Th)	Environmental Science + System Biology		✓	✓	Role of environment and conservation of natural resources is highlighted
11	PGBOTCC2.5 (Pr)	Taxonomy + Plant Anatomy		✓		Teaches about the workflow of plant dissection
12	PGBOTCC2.6 (Pr)	Biochemistry + Plant Physiology		✓		Molecular mechanism of biological pathways occurring in plants is explained.
13	PGBOTCC3.1 (Th)	Cell & Molecular Biology		✓		Introduction to cellular ultrastructure and molecular biology is given.

  
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Sl. No.	Course Code	Course Name	Relevant Issue			Remarks
			Gender	Environment & Sustainability	Human Values & Professional Ethics	
14	PGBOTCC3.2 (Th)	Genetics & Genomics		✓		Introduction to plant genes and genomes and their analysis is provided.
15	PGBOTCC3.3 (Th)	Plant Biotechnology & Recombinant DNA technology		✓	✓	Molecular tools of plant genome alteration is explained.
16	PGBOTCC3.4 (Th)	Allied Elective				NA
17	PGBOTCC3.5 (Pr)	Plant Biotechnology		✓	✓	Applications of plant tissue culture & genetic
18	PGBOTCC3.6 (Pr)	Cytology and Molecular Biology		✓		Applications of various instruments used in the detection of chromosomal behaviour and
19	PGBOTCC4.1 (Th)	Research Methodology & Bio-Instrumentation			✓	Teaches about the handling principles of instruments.
20	PGBOTCC4.2 (Th)	Phytochemistry & Herbal Technology		✓		Educating the students on the biodiversity, conservation, use of medicinal plants and indian system of medicine.
21	PGBOTME4.3A (Th)	Genetics and Plant Biotechnology - I (Major Elective)		✓		Helps students understand the concept of bioethics and hazards.


  
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Sl. No.	Course Code	Course Name	Relevant Issue			Remarks
			Gender	Environment & Sustainability	Human Values & Professional Ethics	
22	PGBOTME4.4A (Pr)	Genetics and Plant Biotechnology - I (Major Elective)		✓		Educating the students on Intellectual Property Rights helps them aspire to new arenas of biotechnological achievement.
23	PGBOTME4.3B (Th)	Diversity and Ecology of algae (Major Elective)		✓		Environmental and Community Ecology of algae.
24	PGBOTME4.4B (Pr)	Advanced phycology and algal biotechnology (Major Elective)		✓		Enrichment of soil fertility through algae, and role of algae in human welfare is explained.
25	PGBOTME4.3C (Th)	Taxonomy of Angiosperms (Major		✓		Teaches about the use of plants in human welfare.
26	PGBOTME4.4C (Pr)	Taxonomy of Angiosperms (Major		✓		Detailed information on plant classification systems is given.

  
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Programme Code	UGMCBA
Programme name	Honours

Sl no	Course code	Title of the course	Gender	Environment & Sustainability	Human Values & Professional Ethics	Remarks
1	UGMCBACC01	Introduction to Microbiology and Microbial Diversity		✓		Ecological significance and economic importance of various microbes are explained
2	UGMCBACC02	Bacteriology		✓		The morphology, ecology, genetics and biochemistry of bacteria are taught & explained.
3	UGMCBACC03	Biochemistry	✓	✓		The structure, properties and functions of different biomolecules and their role in microbial physiology are discussed. These are the basis of the microbial impact on the environment.
4	UGMCBACC04	Virology	✓	✓		The biology of viruses and viral diseases, including the distribution, biochemistry, physiology, molecular biology, ecology, evolution of Viruses and clinical, environmental aspects of viral pathogenesis are explained.
5	UGMCBACC05	Microbial Physiology and Metabolism		✓		The growth condition of microbes in various environments and their metabolism process are discussed.
6	UGMCBACC06	Cell Biology			✓	The knowledge of cell signalling and cell cycle, directly helps in the medical field of apoptosis and cancer treatment. Beside the proteomics study these idea helps in molecular detection of microbial pathogen, thus human values and professional ethics are associated with this.
7	UGMCBACC07	Molecular Biology	✓	✓		The different processes of central dogma of molecular biology along with their regulation in response to environmental and other factors are explained in details.

  
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Sl no	Course code	Title of the course	Gender	Environment & Sustainability	Human Values & Professional Ethics	Remarks
8	UGMCBACC08	Microbial Genetics		✓	✓	Genome structure and genetic exchange of bacteria and virus are elaborately discussed. The regulation, as well as the functional and pathway organization of gene expression are also deciphered. These have huge impact on surrounding environment.
9	UGMCBACC09	Environmental Microbiology		✓	✓	The entire idea of environmental microbiology is a boon on our society by study on Waste management, Microbial bioremediation and Water potability. Reasonable use of resources and microbial processes are associated with human values.
10	UGMCBACC10	Food and Dairy Microbiology		✓	✓	The idea about various sources of foodborne pathogen and methods to detect them, types of fermented foods, and dairy starter culture are discussed. How human values and professional ethics should be applied during the collection of food samples and handling of animals in the dairy sector are discussed.
11	UGMCBACC11	Industrial Microbiology		✓	✓	Production of industrially important items using microbiological processes is eco-friendly and cost effective option in many cases. Maintaining and monitoring proper quality of the product and accurate reporting is the integral part of professional ethics and values.
12	UGMCBACC12	Immunology	✓	✓		The detail mechanism of body's defense to invading pathogens and disorders in that system's functioning, which are also dependent on environmental factors to some extent as well, are discussed. The principle and procedure of various immunological techniques are also explained.
13	UGMCBACC13	Medical Microbiology		✓	✓	Awareness on microbial diseases, epidemiology, diagnostics are developed. Values and professional ethics on sample collection, reporting, antibiotics usage are explained.

Sl no	Course code	Title of the course	Gender	Environment & Sustainability	Human Values & Professional Ethics	Remarks
14	UGMCBACC14	Recombinant DNA Technology	✓	✓		Different tools and methods of genetic engineering are described. Furthermore preparation of overlapping DNA segments of a species genome and application of molecular cloning in human, plant and environmental benefit are explained.
15	UGMCBADSE01	Inheritance Biology	✓	✓	✓	The molecular and genetic basis of heredity, mendelian principles, linkage, recombination, ultrastructure of chromosomes as well as basics of Human Genetics are explained. Many facts are established by studying model organisms from different environments. Ethical guidelines are always important in studying Genetics. At the same time biological basis of gender and sex determination in different organisms including human is taught here.
16	UGMCBADSE02A	Microbial Biotechnology		✓	✓	Types of microbes used in the different biotechnological fields, their methods, beneficial and detrimental sides are explained. How human values are maintained when applying the biotechnological products are explained.
17	UGMCBADSE02B	Project Work		✓	✓	Depending on the area chosen, the students has ample opportunities to work for environment and sustainability. This course is suitable to increase critical thinking, scientific temperament and professional ethics.
18	UGMCBADSE03	Instrumentation and Biotechniques		✓	✓	The basic principle of different instruments are explained. The application of these instruments and techniques require handling with proper care, perfect reporting, appropriate statistical and other references, which are developed with professional ethics and values.

  
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Sl no	Course code	Title of the course	Gender	Environment & Sustainability	Human Values & Professional Ethics	Remarks
19	UGMCBADSE04	Advances in Microbiology		✓	✓	The sustainability of environmental monitoring is defined by the mean of biofilm formation in the area of waste management. The idea of evolutionary significance of microbial pathogen genome and metagenomics helps in synthetic biology which is used in the area of public health and future medication.
20	UGMCBASEC01	Value Education & Indian Culture			✓	It has ample scope for relevant issues
21	UGMCBASEC02	Online course			✓	CellDesigner is a structured diagram editor for drawing gene-regulatory and biochemical networks. Networks are drawn based on the process diagram which require appropriate representation of acquired knowledge and due acknowledgements.
22	UGMCBGE01	Bacteriology and Virology		✓		Ecological significance and economic importance of various microbes are explained
23	UGMCBGE02	Microbes in Environment		✓	✓	The entire idea of environmental microbiology is a boon on our society by study on Waste management, Microbial bioremediation and Water potability.

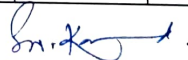
  
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**Gender/ Environment and Sustainability/ Human Values and Professional Ethics**

Course Code	Title of the Course	Semester	Need			Remarks
			Gender	Environment and Sustainability	Human Values and Professional Ethics	
UGCMSCC01	Programming Fundamentals using C/C++: Theory & Lab	I		✓	✓	This course will provide the logical and conceptual knowledge of computer programming for application development with hands-on practical training which will be helpful for development of products that supports environment and sustainability. Working in a team for development will be helpful for growth of professional ethics.
UGCMSCC02	Computer System Architecture: Theory & Lab	I				It has ample scope for relevant issues
UGCMSCC03	Programming in JAVA: Theory & Lab	II		✓	✓	It will provide the object oriented advanced logical and conceptual understanding of computer programming using Java for application development with hands-on practical training which will be helpful for development of products that supports environment and sustainability. Working in a team for development will be helpful for growth of professional ethics.
UGCMSCC04	Discrete Structures: Theory & Tutorial	II			✓	
UGCMSCC05	Data Structures: Theory & Lab	III		✓		It will provide the knowledge of structural and logical organisation of data in a computing system, is a skill which may be helpful for planning and designing of products that supports environment and sustainability.

  
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Course Code	Title of the Course	Semester	Need			Remarks
			Gender	Environment and Sustainability	Human Values and Professional Ethics	
UGCMSCC06	Operating Systems: Theory & Lab	III			✓	It has ample scope for relevant issues
UGCMSCC07	Computer Networks: Theory & Lab	III		✓		It will give the understanding of the principals and functionalities of networking system along with the hardware products that are used for networking. This may be helpful for sustainable production of network hardware product that will be environment friendly.
UGCMSSEC01	Value Education	III			✓	This is helpful to enrich human values and social and professional ethics.
UGCMSCC08	Design and Analysis of Algorithms: Theory & Lab	IV		✓		It is helpful to understand the design aspects of algorithms and computational cost of algorithms for efficient development of softwares. This may be helpful for development of products that supports environment and sustainability.
UGCMSCC09	Software Engineering: Theory & Lab	IV		✓	✓	This will incorporate the basic skills of systematic software development which is the key aspect of software design in MNCs. It will give the students knowledge about the professional ethics of application development. This may be helpful for development of products that supports environment and sustainability.



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Course Code	Title of the Course	Semester	Need			Remarks
			Gender	Environment and Sustainability	Human Values and Professional Ethics	
UGCMSCC10	Database Management Systems: Theory & Lab	IV		✓		This will create the skill of structural and logical organisation of database system to efficiently handle large amount of information. This may be helpful for development of products that supports environment and sustainability.
UGCMSSEC02	Programming in Python	IV		✓	✓	It will provide the object oriented concepts of computer programming using Python for application development which will be helpful for development of products that supports environment and sustainability. Working in a team for development will be helpful for growth of professional ethics.
UGCMSCC11	Internet Technologies: Theory & Lab	V		✓	✓	This skill will be helpful to accure the base knowledge of functionality and design aspects of Internet along with technologies used to run the same. This may be helpful for future development of sustainable Internet technologies that will be environment friendly.
UGCMSCC12	Theory of Computation: Theory & Tutorial	V		✓	✓	It has ample scope for relevent issues
UGCMSDSE01	Microprocessor: Theory & Lab	V			✓	It has ample scope for relevent issues
UGCMSDES02	Numerical Methods: Theory & Lab	V			✓	It has ample scope for relevent issues

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Course Code	Title of the Course	Semester	Need			Remarks
			Gender	Environment and Sustainability	Human Values and Professional Ethics	
UGCMSDES03	Cloud Computing: Theory & Lab	V		✓		This skill is required to get the base knowledge of recent technologies of cloud based computing methods and functionalities. This may be helpful for future cloud based algorithms that will be highly energy efficient helping in the environment friendly sustainable development.
UGCMSCC13	Artificial Intelligence: Theory & Lab	VI		✓		This course will provide the understanding of the basics concept and recent developments of Artificial Intelligence algorithms with hands-on practical training which will be helpful for computationally energy efficient and environment friendly sustainable development of AI products.
UGCMSCC14	Computer Graphics: Theory & Lab	VI				
UGCMSDSE04	Machine Learning: Theory & Lab	VI		✓		It will provide the understanding of the basics concept and recent developments of Machine Learning algorithms with hands-on practical training will be helpful for development of products that supports environment and sustainability.
UGCMSDSE05	Data Mining: Theory & Lab	VI		✓		This course will provide the understanding of the basics concept and implementation of different Machine Learning algorithms to handle varieties of data with hands-on practical training will be helpful for development of products that supports environment and sustainability.

  
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Course Code	Title of the Course	Semester	Need			Remarks
			Gender	Environment and Sustainability	Human Values and Professional Ethics	
UGCMSDSE06	Dissertation or Project work	VI		✓	✓	This course enable students to take the responsibility to complete a research oriented challenging task inside a given time frame and to work in a collaborative environment which will develop the professional ethics among students. It will also be helpful for development of products that supports environment and sustainability.

  
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## PHYSICS, RKMVCC

### 1.3.1 List of courses addressing the Gender, Environment and Sustainability, Human Values and Professional Ethics

Program Code	Program Name	Course Code	Course Name	Developmental Needs				Remarks
				Gender	Environment and Sustainability	Human Values	Professional Ethics	
UGPHY	B. Sc. Physics	UGPHYCC01	Mathematical Physics - I		✓		✓	It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYCC02	Mechanics		✓			It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYCC03	Electricity and Magnetism		✓	✓	✓	It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYCC04	Waves and Optics		✓			It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYCC05	Mathematical Physics - II		✓		✓	It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYCC06	Thermal Physics		✓	✓		It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYCC07	Digital Systems and Applications		✓		✓	It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYCC08	Mathematical Physics - III		✓			It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYCC09	Elements of Modern Physics		✓	✓	✓	It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYCC10	Analog Systems and Applications		✓			It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYCC11	Quantum Mechanics and Applications		✓			It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYCC12	Solid State Physics		✓		✓	It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYCC13	Electromagnetic Theory		✓			It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYCC14	Statistical Mechanics		✓			It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYDSE01	Advanced Mathematical Physics - I		✓			It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYDSE02	Advanced Dynamics		✓			It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYDSE03	Communication Electronics		✓		✓	It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYDSE04	Advanced Mathematical Physics - II				✓	It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYDSE05	Nuclear and Particle Physics		✓	✓	✓	It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYDSE06	Nano Materials and Applications				✓	It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYDSE07	Dissertation / Project work		✓	✓	✓	It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYSEC01	Value Education and Indian Culture		✓	✓	✓	It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYSEC02	Spoken Tutorial		✓		✓	It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYGE01	Mechanics		✓			It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYGE02	Thermal Physics and Statistical Mechanics		✓	✓		It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYGE03	Waves and Optics		✓			It has ample scope for relevant issues
UGPHY	B. Sc. Physics	UGPHYGE04	Electricity and Magnetism		✓			It has ample scope for relevant issues

## PHD MATHEMATICS, RKMVCC

### 1.3.1 Institution integrates cross cutting issues relevant to Gender, Environment and Sustainability, Human Values and Professional Ethics into the Curriculum


Sl no	Program Name	Course Code	Title of the Course	Relevant Issue			Description
				Gender	Environment and Sustainability	Human Values and Professional Ethics	
1	Ph.D. Mathematics	PHDMATH01	Research Methodology			✓	It has ample scope for relevant issues
2	Ph.D. Mathematics	PHDMATH02	Computer Applications		✓	✓	The course provides the practical exposure on basic computer skills, program writing.
3	Ph.D. Mathematics	PHDMATH03	Literature review		✓	✓	It has ample scope for relevant issues
4	Ph.D. Mathematics	PHDMATH04	Algebraic Topology			✓	It has ample scope for relevant issues
5	Ph.D. Mathematics	PHDMATH05	Complex Analysis		✓	✓	It has ample scope for relevant issues
6	Ph.D. Mathematics	PHDMATH06	Cosmology		✓	✓	The course reveals about the nature of the cosmos we inhabit.

  
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## PG MATHEMATICS, RKMVCC

### 1.3.1 Institution integrates cross cutting issues relevant to Gender, Environment and Sustainability, Human Values and Professional Ethics into the Curriculum

Sl no	Program Name	Course Code	Title of the Course	Relevant Issue			Description
				Gender	Environment & Sustainability	Human Values & Professional Ethics	
1	M. Sc. Mathematics	PGMATHCC101	<b>Algebra-I</b>		✓	✓	The course expertises the students in every real life field starting from a shopping domain to the economy of a country. The problems related to debts or loans are solved using algebra.
2	M. Sc. Mathematics	PGMATHCC102	<b>Real Analysis</b>		✓		This formalises the study of numbers and functions which are among the prime basics of one's daily life, hence, greatly contribute to environment and sustainability.
3	M. Sc. Mathematics	PGMATHCC103	<b>Complex Analysis</b>		✓		Complex analysis methods find its vast importance in engineering, biology and medicine. Development of boundary-integral techniques useful for solution of many problems arising in solid and fluid mechanics as well as conformal geometry in imaging, shape analysis and computer vision are taught.
4	M. Sc. Mathematics	PGMATHCC104	<b>Ordinary &amp; Partial Differential Equations</b>		✓	✓	The course describes the movement or flow of electricity, motion of an object to and fro like a pendulum, thermodynamics concepts and how to check the growth of diseases in graphical representation. Also, the course contributes in preparing professional of Computer Graphics, and constructions including dams, rivers, roads, temples, etc.
5	M. Sc. Mathematics	PGMATHCC105	<b>Numerical Analysis</b>			✓	Designs and analysis of techniques to give approximate but accurate solutions to tough problems is taught.

  
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Sl no	Program Name	Course Code	Title of the Course	Relevant Issue			Description
				Gender	Environment & Sustainability	Human Values & Professional Ethics	
6	M. Sc. Mathematics	PGMATHCC106	Computer Programming in C++ and Numerical Practical using GNU Octave/Scilab /Matlab		✓	✓	The course provides the practical exposure on basic computer skills, program writing.
7	M. Sc. Mathematics	PGMATHSS01	YOGA	✓	✓	✓	The course teaches how to develop ones physical health, mental health, social health, spiritual health, love and help for all living beings, respect for life, protection of nature and the environment and a peaceful state of mind. It inculcates self- realization or realization of the divine within us.
8	M. Sc. Mathematics	PGMATHCC201	Algebra-II		✓	✓	The course expertise the students in every real life field starting from a shopping domain to the economy of a country. The problems related to debts or loans are solved using algebra.
9	M. Sc. Mathematics	PGMATHCC202	Measure and Integration		✓		Measure theory provides the natural language for discussing integration and typically covers many topics including Lp spaces, Fourier transforms, various super useful inequalities, etc.
10	M. Sc. Mathematics	PGMATHCC203	General Topology		✓		Topology is used in many branches starting from differentiable equations, dynamical systems to string theory in physics, and for describing the space-time structure of universe.
11	M. Sc. Mathematics	PGMATHCC204	Classical Mechanics & Theory of Relativity		✓	✓	Study of classical mechanics find applications in celestial mechanic, the dynamics of molecular collisions, the propagation of seismic waves, generated by earthquakes, through the Earth's crust and the equilibrium and stability of structures.

Sl no	Program Name	Course Code	Title of the Course	Relevant Issue			Description
				Gender	Environment & Sustainability	Human Values & Professional Ethics	
12	M. Sc. Mathematics	PGMATHCC205	<b>Linear Algebra &amp; Multivariate Calculus</b>		✓	✓	The course expertise the students in every real life field starting from a shopping domain to the economy of a country. The problems related to debts or loans are solved using algebra.
13	M. Sc. Mathematics	PGMATHCC206	<b>Integral transforms and Integral Equations</b>			✓	Techniques for solving many scientific and engineering problems are taught.
14	M. Sc. Mathematics	PGMATHSS02	<b>Communicative English</b>		✓	✓	The course provide a powerful tool that can be used for business, travel or simply to have a conversation in a different country.
15	M. Sc. Mathematics	PGMATHCC301	Functional Analysis		✓	✓	This course is an abstract branch of mathematics that originated from classical analysis and find applications in problems related to ordinary and partial differential equations, numerical analysis, calculus of variations, approximation theory, integral equations, and so on.
16	M. Sc. Mathematics	PGMATHCC302	<b>Dynamical System Analysis</b>		✓		Chaos theory is among the focus of the course whose best example is weather pattern.
17	M. Sc. Mathematics	PGMATHCE301	Advanced Real Analysis-I		✓		This formalise the study of numbers and functions which are among the prime basics of one's daily life, hence, greatly contribute to environment and sustainability.
18	M. Sc. Mathematics	PGMATHCE302	Advanced Complex Analysis-I		✓		Complex analysis methods find its vast importance in engineering, biology and medicine. Development of boundary-integral techniques useful for solution of many problems arising in solid and fluid mechanics as well as conformal geometry in imaging, shape analysis and computer vision are taught.
19	M. Sc. Mathematics	PGMATHCE303	Algebraic Topology-I		✓		Topology is used in many branches starting from differentiable equations, dynamical systems to string theory in physics, and for describing the space-time structure of universe.
20	M. Sc. Mathematics	PGMATHCE304	Differential Manifold-I		✓		The course deals with the geometry of smooth shapes and smooth spaces.

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Sl no	Program Name	Course Code	Title of the Course	Relevant Issue			Description
				Gender	Environment & Sustainability	Human Values & Professional Ethics	
21	M. Sc. Mathematics	PGMATHCE305	Cosmology-I		✓	✓	The course reveals about the nature of the cosmos we inhabit.
22	M. Sc. Mathematics	PGMATHCE306	Mathematical Biology-I	✓	✓	✓	Cellular neurobiology, epidemic modeling, and population genetics are taught in this course. Also, the course aids to develop analytical and predictive models of biological and medical systems.
23	M. Sc. Mathematics	PGMATHCE307	Operation Research-I	✓	✓	✓	Solving integer programming problems, NLPP, programming algorithms and inventory models are taught.
24	M. Sc. Mathematics	PGMATHCE308	Continuum Mechanics(Solid)-I		✓	✓	The course offers understanding the anatomy of living beings, and the design of dental prostheses and surgical implants.
25	M. Sc. Mathematics	PGMATHAE301	Programming in PYTHON & LaTeX		✓	✓	Development GUI applications, websites and web applications in IOT devices are taught. Further, skill development for research project and application are on focus.
26	M. Sc. Mathematics	PGMATHSS03	VE & IC		✓	✓	It has ample scope for relevant issues
27	M. Sc. Mathematics	PGMATHCC401	Number theory			✓	The course teaches the error correcting codes, numerical integration, computer arithmetic, Random and quasi-random number generation.
28	M. Sc. Mathematics	PGMATHCC402	Discrete Mathematics		✓	✓	Discrete mathematics teaches how to wire a computer network using the least amount of cable is a minimum-weight spanning tree problem, encryption and decryption as a part of cryptography.
29	M. Sc. Mathematics	PGMATHCE401	Advanced Real Analysis-II		✓		This formalise the study of numbers and functions which are among the prime basics of one's daily life, hence, greatly contribute to environment and sustainability,

  
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Sl no	Program Name	Course Code	Title of the Course	Relevant Issue			Description
				Gender	Environment & Sustainability	Human Values & Professional Ethics	
30	M. Sc. Mathematics	PGMATHCE402	Advanced Complex Analysis-II		✓		Complex analysis methods find its vast importance in engineering, biology and medicine. Development of boundary-integral techniques useful for solution of many problems arising in solid and fluid mechanics as well as conformal geometry in imaging, shape analysis and computer vision are taught.
31	M. Sc. Mathematics	PGMATHCE403	Algebraic Topology-II		✓		Topology is used in many branches starting from differentiable equations, dynamical systems to string theory in physics, and for describing the space-time structure of universe.
32	M. Sc. Mathematics	PGMATHCE404	Differential Manifold-II		✓		The course deals with the geometry of smooth shapes and smooth spaces.
33	M. Sc. Mathematics	PGMATHCE405	Cosmology-II		✓	✓	The course reveals about the nature of the cosmos we inhabit.
34	M. Sc. Mathematics	PGMATHCE406	Mathematical Biology-II	✓	✓	✓	Cellular neurobiology, epidemic modeling, and population genetics are taught in this course. Also, the course aids to develop analytical and predictive models of biological and medical systems.
35	M. Sc. Mathematics	PGMATHCE407	Operation Research-II	✓	✓	✓	Solving integer programming problems, NLPP, programming algorithms and inventory models are taught.
36	M. Sc. Mathematics	PGMATHCE408	Continuum Mechanics(Fluid)-II		✓	✓	The course enrich the learners with the application point of hydrostatic forces on plane and curved surfaces, the pressure distribution for incompressible fluids. It may find applications in Hydroelectric Power Plants, Hydraulic machines, Automobiles, Thermal Power Plants, Nuclear power plants, Fluids as a Renewable Energy Source, Operating Various Instruments.

Sl no	Program Name	Course Code	Title of the Course	Relevant Issue			Description
				Gender	Environment & Sustainability	Human Values & Professional Ethics	
37	M. Sc. Mathematics	PGMATHCC403	<b>Project Work** (Viva Voce + Dissertation)</b>		✓	✓	The course helps to develop the learner a keen knowledge of the subject.
38	M. Sc. Mathematics	PGMATHSS04	Seminar Presentation		✓	✓	Development of strong communication skill and confidence to withstand today's competitive world is encouraged.

  
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Programme Code: PGZOO, Programme name: M.Sc. Zoology						
Sl. No.	Course code	Title of the Course	Need			Remarks
			Gender	Environment & Sustainability	Human Values & Professional Ethics	
1	PGZOOCC 1.1T	Diversity and biology of Nonchordates	✓	✓		Discussed the adaptive radiation, evolution, affinities of a variety of invertebrates, biological and medicinal importance of various larvae and sponges respectively
2	PGZOOCC 1.2T	Diversity and biology of Chordates	✓	✓		Discussed evolutionary significance and Structural Adaptation of different vertebrates.
3	PGZOOCC 1.3T	Cell biology & Instrumentations			✓	It has ample scope for relevant issues
4	PGZOOCC 1.4T	Genetics			✓	Complexities associated with inheritance, human karyotyping and chromosomal disorders are taught.
5	PGZOOCC 1.5P	Structures & systems of organisms		✓	✓	Obtain knowledge on collection, preservation and identification of museum specimens.
6	PGZOOCC 1.6P	Tools & techniques in biological study			✓	Acquire knowledge on survey of Mendelian traits, analyse the pedigree
7	PGZOOSOC 1	Yoga			✓	Students learn general awareness about health, how to manage life style, increase concentration, Improve the decision-making capacity.
8	PGZOOCC 2.1T	Biochemistry & Metabolism			✓	It has ample scope for relevant issues

  
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Sl. No.	Course code	Title of the Course	Need			Remarks
			Gender	Environment & Sustainability	Human Values & Professional Ethics	
9	PGZOOCC 2.2T	Molecular biology & Biotechnology			✓	Acquire knowledge on different professional ethics related to genetic engineering, transgenic organisms' production, gene silencing and non-coding RNAs interference for drug development.
10	PGZOOCC 2.3T	Ethology & chronobiology		✓		Attain knowledge how to apply the animal's communications system in resource exploration.
11	PGZOOCC 2.4T	Ecological sciences		✓	✓	Focus on the components of environment, population and community, different fragile ecosystems and the laws for the conservation of environment, natural resources & biodiversity.
12	PGZOOCC 2.5P	Biochemical and molecular aspects of life			✓	It has ample scope for relevent issues
13	PGZOOCC 2.6P	Ethology & Ecology		✓		Educating the students on the different ways of wasteland development and sustainability, management of pollution and riverine ecosystems.
14	PGZOOSOC 2	Communicative English			✓	Enhance their English language proficiency in the aspects of reading, writing, listening and speaking and make them responsible and ethical English users.


  
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Sl. No.	Course code	Title of the Course	Need			Remarks
			Gender	Environment & Sustainability	Human Values & Professional Ethics	
15	PGZOOCC 3.1T	Parasitology and Immunology		✓	✓	Acquire knowledge on community infections of parasites and prophylaxis and host parasite interactions.
16	PGZOOCC 3.2T	Developmental biology and Neurobiology	✓		✓	It has ample scope for relevant issues
17	PGZOOCC 3.3T	Endocrine physiology			✓	It has ample scope for relevant issues
18	PGZOOEC 3.4T-	Elective paper -Entomology		✓	✓	Learn the importance of insects in environmental sustainability. Demonstrate, evaluate, and discuss the application of social insects.
19	PGZOOEC 3.4T-	Elective paper-Cellular and Molecular Biology	✓		✓	Acquire knowledge on different professional ethics related to genetic engineering, gene silencing and non-coding RNAs interference for drug development.
20	PGZOOCC 3.5P	Immunology, Parasitology, Developmental biology & Endocrinology			✓	It has ample scope for relevant issues
21	PGZOOEC 3.6P-	Dissertation and practical of elective paper - Entomology		✓	✓	Learn the importance of insects in environmental sustainability. Demonstrate, evaluate, and discuss the application of social insects. Acquire knowledge on different professional and research ethics related to insect management.

  
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Sl. No.	Course code	Title of the Course	Need			Remarks
			Gender	Environment & Sustainability	Human Values & Professional Ethics	
22	PGZOOEC 3.6P-	Dissertation and practical of elective paper - Cellular and Molecular Biology		✓	✓	Acquire knowledge on different professional and research ethics related to genetic engineering, gene silencing and non-coding RNAs interference for drug development.
23	PGZOOSOC 3	Value Education and Indian Culture			✓	Define, understand and apply the daily routine, self-evaluation & Integral Personality Development
24	PGZOOCC 4.1T	Taxonomy and Biostatistics	✓	✓	✓	Learn the basic concepts in taxonomy in the context of
25	PGZOOCC 4.2T	Bioinformatics and Computational Biology			✓	Learn professional ethics for data analysis and interpretation in bioinformatics.
26	PGZOOCC 4.3T	Bio python and LaTeX			✓	It has ample scope for relevant issues
27	PGZOOEC 4.4T	Elective paper -Entomology		✓	✓	Knowledge on biological and chemical control of insect pests and Integrated Pest Management (IPM) is imparted to the students.
28	PGZOOEC 4.4T	Elective paper -Cellular and Molecular Biology			✓	Acquire knowledge on different professional ethics related to biotechnology.

  
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Sl. No.	Course code	Title of the Course	Need			Remarks
			Gender	Environment & Sustainability	Human Values & Professional Ethics	
29	PGZOOCC 4.5P	Phylogenetics, Biostatistics and Bioinformatics		✓	✓	Learn the basic concepts in taxonomy in the context of specimen collection and species conservation. Learn professional ethics for sampling and data analysis in biostatistics. Learn professional ethics for data analysis and interpretation in bioinformatics.
30	PGZOOEC 4.6P	Submission of final dissertation and practical of elective paper Entomology		✓	✓	Learn the importance of insects in environmental sustainability. Demonstrate, evaluate, and discuss the application of social insects. Acquire knowledge on different professional and research ethics related to insect management.
31	PGZOOEC 4.6P	Submission of final dissertation and practical of elective paper - Cellular and Molecular Biology	✓	✓	✓	Acquire knowledge on different professional and research ethics related to genetic engineering, gene silencing and non-coding RNAs interference for drug development.
32	PGZOOSOC 4	Fundamentals of remote sensing and GIS		✓	✓	Learn to observe the forest cover, land-use pattern and ecosystem distribution which are very important to sustainable environment management.

*Sri. Karan*

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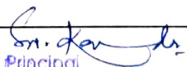
PROGRAMME CODE	UGCHEM
PROGRAMME NAME	B.Sc. Chemistry Honours

Sl No	Course Code	Title of the course	Relevant Issue			Remarks
			Gender	Environment & Sustainability	Human Values & Professional Ethics	
1	UGCHEMCC01	Organic Chemistry 01		✓	✓	This course deals with the elementary ideas on different aspects of organic molecules. Students will be more concerned about environmental protection and its sustainable development.
2	UGCHEMCC02	Physical Chemistry 01			✓	It has ample scope in said field
3	UGCHEMCC03	Inorganic Chemistry 01			✓	It has ample scope in said field
4	UGCHEMCC04	Organic Chemistry 02		✓	✓	This course deals with the elementary ideas on different aspects of organic molecules. Students will be more concerned about environmental protection and its sustainable development.
5	UGCHEMCC05	Physical Chemistry 02		✓	✓	It has ample scope in said field
6	UGCHEMCC06	Inorganic Chemistry 02			✓	It has ample scope in said field



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Sl No	Course Code	Title of the course	Relevant Issue			Remarks
			Gender	Environment & Sustainability	Human Values & Professional Ethics	
7	UGCHEMCC07	Organic Chemistry 03		✓	✓	This course deals with the elementary ideas on different aspects of organic molecules. Students will be more concerned about environmental protection and its sustainable development.
8	UGCHEMCC08	Physical Chemistry 03			✓	It has ample scope in said field
9	UGCHEMCC09	Inorganic Chemistry 03			✓	It has ample scope in said field
10	UGCHEMCC10	Organic Chemistry 04		✓	✓	This course deals with the elementary ideas on different aspects of organic molecules. Students will be more concerned about environmental protection and its sustainable development.
11	UGCHEMCC11	Inorganic Chemistry 04			✓	It has ample scope in said field
12	UGCHEMCC12	Organic Chemistry 05		✓	✓	This course deals with the elementary ideas on different aspects of organic molecules. Students will be more concerned about environmental protection and its sustainable development.
13	UGCHEMCC13	Inorganic Chemistry 05			✓	It has ample scope in said field

  
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Sl No	Course Code	Title of the course	Relevant Issue			Remarks
			Gender	Environment & Sustainability	Human Values & Professional Ethics	
14	UGCHEMCC14	Physical Chemistry 04			✓	It has ample scope in said field
15	UGCHEMDSE01	Advanced Physical Chemistry			✓	It has ample scope in said field
16	UGCHEMDSE02	Analytical Methods of Chemistry			✓	It has ample scope in said field
17	UGCHEMDSE03	Green Chemistry		✓	✓	The study of on green methods in chemistry will make the students to be more concerned about the environment and its sustainable development
18	UGCHEMDSE04	Inorganic Materials of Industrial Importance		✓	✓	This study will be applicable for synthesizing industrially important inorganic materials for environmental remediation and sustainable development
19	UGCHEMDSE05	Industrial Chemicals and Environment		✓	✓	The study of Industrial Chemicals and Environment deals with the root causes of different types of environmental pollution by industrial chemicals and their remedies. This course will make the students to be more concerned about the environment and its sustainable development

Sl No	Course Code	Title of the course	Relevant Issue			Remarks
			Gender	Environment & Sustainability	Human Values & Professional Ethics	
20	UGCHEMSEC01	Pharmaceutical  Chemistry		✓	✓	This course deals with synthesis and applications of pharmaceutical chemistry. These concepts will help the students for environmental protection and its sustainable development.
21	UGCHEMSEC02	Fuel Chemistry			✓	It has ample scope in said field
22	UGCHEMGE01	Generic Elective 01			✓	It has ample scope in said field
23	UGCHEMGE02	Generic Elective 02			✓	It has ample scope in said field
24	UGCHEMGE03	Generic Elective 03			✓	It has ample scope in said field
25	UGCHEMGE04	Generic Elective 04			✓	It has ample scope in said field
26	UGCHEMAECC01	English for  Communication	✓	✓	✓	Communicative english improves self confidence and communication skills in students. Thus it is very necessary for the development of professional ethics and human values.

  
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Sl No	Course Code	Title of the course	Relevant Issue			Remarks
			Gender	Environment & Sustainability	Human Values & Professional Ethics	
27	UGCHEMAECC02	Environmental Sciences	✓	✓	✓	The study of environmental studies deals with the root causes of different types of environmental pollution and their remedies. This course will make the students to be more concerned about the environment and its sustainable development

  
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PROGRAMME CODE	PGCHEM
PROGRAMME	MSc. Chemistry

Sl. No	Course Code	Title of the course	Relevant Issue			Remarks
			Gender	Environment & Sustainability	Human Values & Professional Ethics	
1	PGCHEMMCT01	Inorganic Chemistry 01		✓	✓	It has ample scope for relevant issues
2	PGCHEMMCT02	Organic Chemistry 01	✓	✓	✓	This course deals with the elementary ideas on different aspects of organic molecules. Students will be more concerned about environmental protection and its sustainable development.
3	PGCHEMMCT03	Physical Chemistry 01			✓	It has ample scope for relevant issues
4	PGCHEMMCP01	Inorganic Chemistry 01 Practical			✓	It has ample scope for relevant issues
5	PGCHEMMCP02	Organic Chemistry 01 Practical	✓	✓	✓	This course deals with the experimental aspects of organic chemistry. Students will be more concerned about environmental protection and its sustainable development in the organic synthesis procedures.
6	PGCHEMMCP03	Physical Chemistry 01 Practical			✓	It has ample scope for relevant issues
7	PGCHEMMCT04	Inorganic Chemistry 02			✓	It has ample scope for relevant issues
8	PGCHEMMCT05	Organic Chemistry 02	✓	✓	✓	This course deals with the elementary ideas on different aspects of organic molecules. Students will be more concerned about environmental protection and its sustainable development.
9	PGCHEMMCT06	Physical Chemistry 02			✓	It has ample scope for relevant issues

  
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Sl. No	Course Code	Title of the course	Relevant Issue			Remarks
			Gender	Environment & Sustainability	Human Values & Professional Ethics	
10	PGCHEMMCP04	Inorganic Chemistry 02 Practical			✓	It has ample scope for relevant issues
11	PGCHEMMCP05	Organic Chemistry 02 Practical		✓	✓	This course deals with the experimental aspects of organic chemistry. Students will be more concerned about environmental protection and its sustainable development in the organic synthesis procedures.
12	PGCHEMMCP06	Physical Chemistry 02 Practical			✓	It has ample scope for relevant issues
13	PGCHEMMCT07	Inorganic Chemistry 03			✓	It has ample scope for relevant issues
14	PGCHEMMCT08	Organic Chemistry 03		✓	✓	This course deals with the elementary ideas on different aspects of organic molecules. Students will be more concerned about environmental protection and its sustainable development.
15	PGCHEMMCT09	Physical Chemistry 03			✓	It has ample scope for relevant issues
16	PGCHEMMCP07	Inorganic Chemistry 03 Practical			✓	It has ample scope for relevant issues
17	PGCHEMMCP08	Organic Chemistry 03 Practical		✓	✓	This course deals with the experimental aspects of organic chemistry. Students will be more concerned about environmental protection and its sustainable development in the organic synthesis procedures.
18	PGCHEMMCP09	Physical Chemistry 03 Practical			✓	It has ample scope for relevant issues
19	PGCHEMSCC	Interdisciplinary Adv. Chemistry		✓	✓	It has ample scope for relevant issues

  
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Sl. No	Course Code	Title of the course	Relevant Issue			Remarks
			Gender	Environment & Sustainability	Human Values & Professional Ethics	
20	PGCHEMOE01	Supramolecular Chemistry		✓	✓	This course deals with the elementary concepts on supramolecular chemistry and its applications. These concepts will help the students for environmental protection and its sustainable development.
21	PGCHEMOE02	Medicinal Chemistry	✓	✓	✓	This course deals with synthesis and applications of medicinal chemistry. These concepts will help the students for environmental protection and its sustainable development.
22	PGCHEMME01	Advanced Organic Chemistry 01	✓	✓	✓	This course deals with the advanced ideas and concepts on different aspects of organic molecules. Students will be more concerned about environmental protection and its sustainable development.
23	PGCHEMME02	Advanced Organic Chemistry 02	✓	✓	✓	This course deals with the advanced ideas and concepts on different aspects of organic molecules. Students will be more concerned about environmental protection and its sustainable development.
24	PGCHEMME03	Advanced Inorganic Chemistry 01	✓		✓	It has ample scope for relevant issues
25	PGCHEMME04	Advanced Inorganic Chemistry 02	✓		✓	It has ample scope for relevant issues
26	PGCHEMME05	Advanced Physical Chemistry 01			✓	It has ample scope for relevant issues
27	PGCHEMME06	Advanced Physical Chemistry 02			✓	It has ample scope for relevant issues
28	PGCHEMOT01	Project and Presentation			✓	It has ample scope for relevant issues
29	PGCHEMOT02	Grand Viva and Seminar			✓	It has ample scope for relevant issues

Sl. No	Course Code	Title of the course	Relevant Issue			Remarks
			Gender	Environment & Sustainability	Human Values & Professional Ethics	
30	PGCHEMSOC01	Yoga			✓	Yoga improves both the physical and mental health of students. This enlighten human values and professional ethics in the students.
31	PGCHEMSOC02	Communicative English	✓	✓	✓	Communicative english improves self confidence and communication skills in students. Thus it is very necessary for the development of professional ethics and human values.
32	PGCHEMSOC03	VECC	✓	✓	✓	VECC improves the human values and professional ethics in the students.
33	PGCHEMSOC04	Computer For Chemists			✓	It has ample scope for relevent issues

  
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