MAHATMA GANDHI UNIVERSITY, KERALA

Abstract

Bachelor of Science (Honours) Biotechnology - 3rd Semester - Recommendations for modifications to the Course Outcomes, Course Content and Mode of Assessment - Academic Council Resolution - Orders issued.

ACA 16

No. 7451/ACA 16/2025/MGU Priyadarsini Hills,Dated: 11.08.2025

Read:-1. U.O. No. 5797/AC A16/2024/MGU, dated. 27.06.2024

2. Item No: 31/27356/ACA 16 -3/2025, of the minutes of the meeting of the Academic Council held on 04.07.2025,

ORDER

The syllabi of various Under Graduate Programmes coming under the MGU-UGP (Honours) Regulations, 2024, have been approved vide paper read as (1) above and published on the website of the University.

The Expert Committee on Biotechnology (UG), deliberated on modifying the Course Outcomes, Course Content and Mode of Assessment of the courses MG3DSCBTG200: Biophysics and Instrumentation, MG3DSCBTG201: Cell Biology and Genetics, MG3DSCBTG202: Fundamentals of Molecular Biology, MG3DSEBTG200: Developmental Biology and Assisted Reproduction Technology, MG3DSEBTG201: Plant and Animal Physiology, MG3MDCBTG200: Nutritional Biotechnology, and MG3VACBTG200: Environmental Biotechnology and Human Rights. The committee has also recommended to modify the 'Pre-requisites' for the courses MG3DSCBTG200: Biophysics and Instrumentation and MG3MDCBTG200: Nutritional Biotechnology, in the Third Semester syllabus of Bachelor of Science (Honours) Biotechnology programme and has submitted recommendations (Recommendations are attached as Annexure.)

The said recommendations were placed before the Academic Council for consideration as per the orders of the Vice Chancellor on 25.03.2025.

The Academic Council meeting, vide paper read as (2) above, has resolved to approve the recommendations of the Expert Committee on Biotechnology (UG).

Hence, the Course Outcomes, Course Content and Mode of Assessment of the said courses in the Third Semester syllabus of Bachelor of Science (Honours) Biotechnology programme stands modified to this extent.

Orders are issued accordingly.

SUDHA MENON J

ASSISTANT REGISTRAR III
(ACADEMIC)
For REGISTRAR

Copy To

1. PS to VC
2. PA to Registrar/CE
3. JR 2 (Admin)/DR 2, AR 3 (Academic)
4. JR/DR/AR (Exam)
5. Convenor, Expert Committee, Biotechnology (UG)
6. Tabulation /Academic Sections Concerned
7. AC C1/ AC C2 Sections
8. IT Cell 3/OQPM1 Sections
9. PRO/IQAC/Records Sections
10. Action Taken Report
11. Stock File/ File Copy

File No: 27356/AC A16 -3/2025/ACA 16

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Section Officer

Annexure

Semester III

Course Name: Biophysics and Instrumentation
Course Code: MG3DSCBTG200

Pre-requisites, if any: Need to complete 100-199 level courses	Page no - 31

COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome(Modified)	Learning Domains	PO No.	Page No
1	To remember and recall fundamental principles of biophysics, including thermodynamics, significance of water, principles of light.	No Change	No Change	31
2	To understand the structure and properties of biomolecules including proteins and DNA.			

COURSE CONTENT

Content for Classroom Transaction (Units)

Module	Units	Course Description	Hrs.	CO No(Modified)	Page No
1	1.1	No Change	No Change	1	32,33
	1.2			1	
	1.3			1	
2	2.1			2	
	2.2			2	
3	3.1			4	
	3.2			4	
	3.3			4	
	3.4			3	
	3.5			3	
	3.6			3	

	3.7	No Change	No Change	3	32,33
4	4.1			5	
	4.2			5	
	4.3			5	
	4.4			5	
	4.5			5	
	4.6			5	

MODE OF ASSESSMENT

A. Continuous Comprehensive Assessment (CCA)

Theory(Modified)	Page No
20+5 (for Teacher Specific Content) = 25 Marks .	33

B. End-Semester Evaluation (ESE)

1.Theory(Modified)			
Max.Marks: 50			Duration: 1.5Hrs
Type of Questions	Number of Questions to be answered	Marks	Page No
One word answer	10 out of 12	10 x 2 = 20	33
Short essay	5 out of 7	5 x 4 = 20	
Essay	1 out of 2	1 x 10 = 10	

2. Practical(Modified)		Page No.
Max.Marks: 35	Duration: 3Hrs	33

Course Name: – Cell Biology and Genetics
Course Code: MG3DSCBTG201

COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome(Modified)	Learning Domains (Modified)	PO No. (Modified)	Page No
1	Recall the salient features of living cell and	No Change	No Change	

	structure of cell, cell membrane and membrane transport.			34
2	Discuss the structure and function of cell organelles, cytoskeleton. Understand the cell cycle and its stages along with checkpoints.	No Change	No Change	
3	Explain the fundamentals of Mendelian laws, Population genetics, genetic disorders and aim to improve the genetic quality for human welfare	No Change	2,8,10	
4	Analyse the structure of different cell types, cell division stages, staining of mitochondria, barrbody and blood grouping.	An	5,6,7	
5	Deleted			

COURSE CONTENT

Content for Classroom Transaction (Units)

Module	Units	Course Description	Hrs.	CO No (Modified)	Page No
1	1.2	No Change	No Change	1	35
	1.3			1	
2	2.1			2	
	2.2			2	
	2.3			2	
3	3.1			3	
	3.2			3	
	3.3			3	
	3.4			3	
	3.5			3	
	3.6			3	
4	4.1			4	
	4.2			4	
	4.3			4	
	4.4			4	
	4.5			4	

MODE OF ASSESSMENT

A. Continuous Comprehensive Assessment (CCA)

Theory(Modified)	Page No
20+5 (for Teacher Specific Content) = 25 Marks .	36

B. End-Semester Evaluation (ESE)

1.Theory (Modified)			
Max.Marks: 50			Duration: 1.5Hrs
Type of Questions	Number of Questions to be answered	Marks	Page No
One word answer	10 out of 12	10 x 2 = 20	36
Short essay	5 out of 7	5 x 4 = 20	
Essay	1 out of 2	1 x 10 = 10	

2. Practical(Modified)		Page No.
Max.Marks: 35	Duration: 3 Hrs	36

Course Name:Fundamentals of Molecular Biology
Course Code: MG3DSCBTG202

COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome(Modified)	Learning Domains	PO No.	Page No
1	Describe the fundamentals of molecular biology, the types of genetic materials and the organization of virus, prokaryotic and eukaryotic genomes.	No Change	No Change	37
2	Recall the concepts of Central Dogma of molecular biology, gene structure and the replication of prokaryotic and eukaryotic genomes.			
3	Students can assess cellular functions, transcription and translation, gene regulation, errors occurring during the cellular mechanisms and its repair.			

4	Students can execute various molecular techniques including isolation of genomic DNA and plasmid, gel electrophoresis, PCR and blotting techniques.			
5	-Deleted-			

COURSE CONTENT

Content for Classroom Transaction (Units)

Module	Units	Course Description	Hrs.	CO No (Modified)	Page No
1	1.4	No Change	No Change	1	38
	1.5			1	
	1.6			1	
2	2.1			2	
	2.2			2	
3	3.1			3	
	3.2			3	
	3.4			3	
4	4.1			4	
	4.2			4	
	4.3			4	
	4.4			4	

MODE OF ASSESSMENT

A. Continuous Comprehensive Assessment (CCA)

Theory(Modified)	Page No
20+5 (for Teacher Specific Content) = 25 Marks .	39

B. End-Semester Evaluation (ESE)

1.Theory(Modified)			
Max.Marks: 50			Duration: 1.5Hrs
Type of Questions	Number of Questions to be answered	Marks	Page No
One word answer	10 out of 12	10 x 2 = 20	39
Short essay	5 out of 7	5 x 4 = 20	

Essay	1 out of 2	1 x 10 = 10	

2. Practical(Modified)		Page No.
Max.Marks: 35	Duration: 3Hrs	39

Course Name: Developmental Biology and Assisted Reproduction Technology
Course Code: MG3DSEBTG200

COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome(Modified)	Learning Domains	PO No.	Page No
1	Able to recall the anatomy of human reproductive system and its structures, gametogenesis.	No Change	No Change	40
2	Gain a knowledge about fertilization, pregnancy, parturition, placenta and its hormones.			
3	Gain a comprehensive understanding of early embryonic development with its stages.			
4	Gain a knowledge about Assisted Reproductive Technology, Equipped to comprehend genetic counselling along with an exploration of the ethical and future considerations in assisted reproductive technology.			

COURSE CONTENT

Content for Classroom Transaction (Units)

Module	Units	Course Description	Hrs.	CO No (Modified)	Page No
1	1.1	No Change	No Change	1	41
	1.2			1	
	1.3			1	
	1.4			1	
	1.5			1	
	1.6			1	
2	2.1			2	

	2.2			2	
	2.3			2	
	2.4			2	
	2.5			2	
4	4.2			3	

MODE OF ASSESSMENT

A. Continuous Comprehensive Assessment (CCA)

Theory(Modified)	Page No
25+5 (for Teacher Specific Content) = 30 Marks .	42

B. End-Semester Evaluation (ESE)

Theory(Modified)			
Max.Marks: 70			Duration: 2 Hrs
Type of Questions	Number of Questions to be answered	Marks	Page No
One Word Answer	10 out of 12	10 x 2 = 20	42
Short Essay	4 out of 6	4 x 5 = 20	
Essay	2 out of 4	2 x 15 = 30	

Course Name: - Plant and Animal Physiology
Course Code: MG3DSEBTG201

COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome(Modified)	Learning Domains (Modified)	PO No.	Page No
1	Understand the structure and functions of various organ systems in the human body – digestion, respiration, circulation, nervous system and renal physiology and their roles in maintaining homeostasis.	No Change	2,10	43
2	Apply knowledge on human physiology to diagnose and treat diseases affecting the human body.	A	1,2,3,10	

3	Understand plant physiological processes including nutrition and nutrient transport, stress response, mechanisms like photoperiodism and vernalization and hormonal response.	U	2,10	
4	Use knowledge on plant physiology in practical applications like crop improvement, plant defense, breeding and secondary metabolite production.	A	1,2,3,10	
5	Deleted			
6	Deleted			

COURSE CONTENT

Content for Classroom Transaction (Units)

Module	Units	Course Description	Hrs.	CO No (Modified)	Page No
1	1.1	No Change	No Change	1	`
	1.2			1	
	1.3			1	
	1.4			1	
2	2.1			1	
	2.2			1	44
	2.3			1	
	2.4			2	
3	3.1			2	
	3.2			3	
4	4.1			3	
	4.2			4	

MODE OF ASSESSMENT

A. Continuous Comprehensive Assessment (CCA)

Theory(Modified)	Page No
25+5 (for Teacher Specific Content) = 30 Marks .	45

B. End-Semester Evaluation (ESE)

Theory(Modified)			
Max.Marks: 70			Duration: 2 Hrs
Type of Questions	Number of Questions to be answered	Marks	Page No
One word answer	10 out of 12	10 x 2 = 20	45
Short essay	4 out of 6	4 x 5 = 20	
Essay	2 out of 4	2 x 15 = 30	

Course Name:– Nutritional Biotechnology
Course Code: MG3MDCBTG200

Programme: Bsc(Hons) Biotechnology	Page No: 46
Pre-requisites, if any: Need to complete 100-199 level courses.	

COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome(Modified)	Learning Domains (Modified)	PO No.	Page No
1	Student will be able to understand the role of nutrients and it's importance in keeping well balanced diet for a healthy life	U,C	No Change	46
2	Student will be able to apply Biotechnology and bioprocess technology for improving the nutritional quality of plants and animal foods and managing food adulterants	A,E,U		
3	Students are able to assess the reasons, management and treatment of life style diseases	No Change		
4	Deleted			
5	Deleted			
6	Deleted			
7	Deleted			
8	Deleted			

COURSE CONTENT

Content for Classroom Transaction (Units)

Module	Units	Course Description	Hrs.	CO No (Modified)	Page No
1	1.1	No change	No change	1	47,48
	1.2			3	
2	2.1			2	
	2.2			2	
	2.3			2	
	2.4			2	
3	3.1			2	
	3.3			2	
	3.4			3	
	3.7			1	
	3.8			1	
	3.9			3	
	3.10			3	
	3.11			3	

MODE OF ASSESSMENT

A. Continuous Comprehensive Assessment (CCA)

Theory(Modified)	Page No
20+5(for Teacher Specific Content) = 25 Marks .	48

B. End-Semester Evaluation (ESE)

Theory(Modified)			
Max.Marks: 50			Duration: 1.5Hrs
Type of Questions	Number of Questions to be answered	Marks	Page No
One word answer	10 out of 12	10 x 2 = 20	48
Short essay	5 out of 7	5 x 4 = 20	
Essay	1 out of 2	1 x 10 = 10	

Course Name: Environmental Biotechnology and Human Rights
Course Code: MG3VACBTG200

Programme: Bsc (Hons) Biotechnology	Page No: 50

COURSE OUTCOMES (CO)

CO No.	Expected Course Outcome(Modified) Upon completion of this course participants should be able to:	Learning Domains	PO No.	Page No
4	Gain insights into human rights, including their concept, history, and international dimensions, the role of the United Nations in promoting human rights and critically appraise its regime.	No Change	No Change	50,51
5	Deleted			
6	Deleted			

COURSE CONTENT

Content for Classroom Transaction (Units)

Module	Units	Course Description	Hrs.	CO No (Modified)	Page No
2	2.7	No Change	No Change	1	51
3	3.2			4	
3	3.3			4	

MODE OF ASSESSMENT

A. Continuous Comprehensive Assessment (CCA)

Theory(Modified)	Page No
20+5 (for Teacher Specific Content) = 25 Marks .	52

B. End-Semester Evaluation (ESE)

Theory (Modified)			
Max.Marks: 50			Duration: 1.5Hrs
Type of Questions	Number of Questions	Marks	Page No

	to be answered		
One word answer	10 out of 12	10 x 2 = 20	52
Short essay	5 out of 7	5 x 4 = 20	
Essay	1 out of 2	1 x 10 = 10	