

**Semester-wise curriculum outline for Four Year Undergraduate Programme  
National Education Policy (NEP-2020)**

**BSc (Hons) Botany**

Semester I				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Phycology	BOTUGMCC1101	4	100
2	Biomolecules	BOTUGMCC1102	4	100
3	Arabic and Islamic Studies	UCCUGMDC1101	3	75
4	MIL (Bengali/Urdu/Hindi)	UCCUGAEC1101	4	100
5	Biology for Sustainable Development	BOTUGSEC1101	3	75
6	Minor (Chemistry)	CHMUGMIN1101	4	100
		Total	22	
Semester II				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Mycology and Phytopathology	BOTUGMCC1203	4	100
2	Plant Morphology	BOTUGMCC1204	4	100
3	Biostatistics	BOTUGMDC1202	3	75
4	Economic Biology	BOTUGSEC1202	3	75
5	Environmental Science	UCCUGVAC1201	4	100
6	Minor (Chemistry)	CHMUGMIN1202	4	100
		Total	22	
		Grand Total (Year 1)	44	
<b>Exit with Certificate in Biological Sciences (Botany) One vocational course of 4 credits during summer vacation</b>				
Semester III				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Archegoniate	BOTUGMCC2305	4	100
2	Plant Anatomy	BOTUGMCC2306	4	100
3	Introduction to Cell and Molecular Biology	BOTUGMDC2303	3	75
4	English	UCCUGAEC2302	4	100
5	Pharmacognosy and Ethnobotany	BOTUGSEC2303	3	75
6	Minor (Chemistry)	CHMUGMIN2303	4	100
		Total	22	
Semester IV				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Plant Metabolism	BOTUGMCC2407	4	100
2	Ecology and Conservation Biology	BOTUGMCC2408	4	100
3	Plant Systematics and Evolution	BOTUGMCC2409	4	100
4	Understanding India	UCCUGVAC2402	4	100
5	Minor (Chemistry)	CHMUGMIN2404	4	100
		Total	20	
		Grand Total (Year 2)		
<b>Exit with Diploma in Biological Sciences (Botany) One vocational course of 4 credits during summer vacation</b>				

## BSc (Hons) Botany

Semester V				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Molecular Plant Taxonomy	BOTUGMCC3510	4	100
2	Molecular Biology	BOTUGMCC3511	4	100
3	Biotechniques	BOTUGMCC3512	4	100
4	Summer Internship Program	BOTUGSIP3501	4	100
5	Minor (Zoology/Microbiology)	ZOOUGMIN3501/ MICUGMIN3501	4	100
		Total	20	
Semester VI				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Principles of Genetics	BOTUGMCC3613	4	100
2	Plant Physiology	BOTUGMCC3614	4	100
3	Genomics and Proteomics	BOTUGMCC3615	4	100
4	Reproductive Biology of Angiosperms	BOTUGMDS3601	4	100
5	Summer Internship Program	BOTUGSIP3602	4	100
6	Minor (Zoology/Microbiology)	ZOOUGMIN3602/ MICUGMIN3602	4	100
		Total	20	
		Grand Total (Year 3)	40	
Exit with BSc in Botany				
Semester VII				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Cell Biology	BOTUGMCC4716	4	100
2	Recombinant DNA Technology	BOTUGMCC4717	4	100
3	Plant Developmental Biology	BOTUGMDS4702	4	100
4	Research Ethics, Biosafety and IPR	BOTUGMDS4703	4	100
5a	Applied Botany	BOTUGMDS4704	4	100
5b	Dissertation	BOTUGPRJ4701	4	100
6	Minor (Zoology/Microbiology)	ZOOUGMIN4703/ MICUGMIN4703	4	100
		Total	24	
Semester VIII				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Biochemistry	BOTUGMCC4818	4	100
2	Bioinformatics	BOTUGMCC4819	4	100
3	Plant Biotechnology	BOTUGMDS4805	4	100
4a	Bio-entrepreneurship	BOTUGMDS4806	4	100
4b	Phytochemistry	BOTUGMDS4807	4	100
4c	Dissertation	BOTUGPRJ4802	8	200
	Minor (Zoology/Microbiology)	ZOOUGMIN4804/ MICUGMIN4804	4	100
		Total	24	
		Grand Total (Year 4)	48	
Exit with BSc (H) in Botany				

## Remarks Semester VII

For Students opting for BSc (H) without research

5a	Applied Botany	BOTUGMDS4704
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For Students opting for BSc (H) with research

5b	Dissertation	BOTUGPRJ4701
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## Semester VIII

For Students opting for BSc (H) without research

4a	Bio-entrepreneurship	BOTUGMDS4806
4b	Phytochemistry	BOTUGMDS4807

For Students opting for BSc (H) with research

4c	Dissertation	BOTUGPRJ4802
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## Types of Courses

Major Core	MCC	Major DSE	MDS
Minor	MIN	Multidisciplinary	MDC
Ability Enhancement Courses	AEC	Skill Enhancement Courses	SEC
Value Added Courses	VAC	Summer Internship	SIP
Research Projects/ Dissertation	PRJ		

## Minor Papers Offered by BOTANY

Semester V				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Phycology	BOTUGMIN3501	4	100
Semester VI				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Mycology and Phytopathology	BOTUGMIN3602	4	100
Semester VII				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Archegoniate	BOTUGMIN4703	4	100
Semester VIII				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Plant Metabolism	BOTUGMIN4804	4	100

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**BSc (Hons) Zoology**

<b>Semester I</b>				
<b>Sl. No.</b>	<b>Course Title</b>	<b>Course Code</b>	<b>Credits</b>	<b>Marks</b>
1	Animal Diversity I: Comparative study of Non-Chordates	ZOUGMCC1101	4	100
2	Biomolecules	ZOUGMCC1102	4	100
3	Arabic and Islamic Studies	UCCUGMDC1101	3	75
4	MIL (Bengali/Urdu/Hindi)	UCCUGAEC1101	4	100
5	Biology for Sustainable Development	ZOUGSEC1101	3	75
6	Minor (Chemistry)	CHMUGMIN1101	4	100
		Total	22	
<b>Semester II</b>				
<b>Sl. No.</b>	<b>Course Title</b>	<b>Course Code</b>	<b>Credits</b>	<b>Marks</b>
1	Animal Diversity II: Chordates	ZOUGMCC1203	4	100
2	Animal Controlling and Coordinating Systems	ZOUGMCC1204	4	100
3	Biostatistics	ZOUGMDC1202	3	75
4	Economic Biology	ZOUGSEC1202	3	75
5	Environmental Science	UCCUGVAC1201	4	100
6	Minor (Chemistry)	Chem Dept	4	100
		Total	22	
		Grand Total (Year 1)	44	
<b>Exit with Certificate in Biological Sciences (Zoology) One vocational course of 4 credits during summer vacation</b>				
<b>Semester III</b>				
<b>Sl. No.</b>	<b>Course Title</b>	<b>Course Code</b>	<b>Credits</b>	<b>Marks</b>
1	Animal Systematics and Evolution	ZOUGMCC2305	4	100
2	Ethology and Wildlife	ZOUGMCC2306	4	100
3	Introduction to Cell and Molecular Biology	ZOUGMDC2303	3	75
4	English	UCCUGAEC2302	4	100
5	Disease Biology	ZOUGSEC2303	3	75
6	Minor (Chemistry)	CHMUGMIN2303	4	100
		Total	22	
<b>Semester IV</b>				
1	Animal Physiology & Metabolism	ZOUGMCC2407	4	<b>Marks</b>
2	Ecology and Conservation Biology	ZOUGMCC2408	4	100
3	Endocrinology and Reproductive Biology	ZOUGMCC2409	4	100
4	Understanding India	UCCUGVAC2402	4	100
5	Minor (Chemistry)	CHMUGMIN2404	4	100
		Total	20	100
		Grand Total (Year 2)		
<b>Exit with Diploma in Biological Sciences (Zoology) One vocational course of 4 credits during summer vacation</b>				

### BSc (Hons) Zoology

Semester V				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Parasitology and Microbiology	ZOUGMCC3510	4	100
2	Molecular Biology	ZOUGMCC3511	4	100
3	Biotechniques	ZOUGMCC3512	4	100
4	Summer Internship Program	ZOUGSIP3501	4	100
5	Minor (Botany /Microbiology)	BOTUGMIN3501/ MICUGMIN3501	4	100
		Total	20	
Semester VI				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Principles of Genetics	ZOUGMCC3613	4	100
2	Developmental Biology	ZOUGMCC3614	4	100
3	Genomics and Proteomics	BOTUGMCC3615	4	100
4	Immunology	ZOUGMDS3601	4	100
5	Summer Internship Program	ZOUGSIP3602	4	100
6	Minor (Botany/Microbiology)	BOTUGMIN3602/ MICUGMIN3602	4	100
		Total	20	
		Grand Total (Year 3)	40	
<b>Exit with BSc in Zoology</b>				
Semester VII				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Cell Biology	ZOUGMCC4716	4	100
2	Recombinant DNA Technology	ZOUGMCC4717	4	100
3	Entomology	ZOUGMDS4702	4	100
4	Research Ethics, Biosafety and IPR	ZOUGMDS4703	4	100
5a	Applied Zoology	ZOUGMDS4704	4	100
5b	Dissertation	ZOUGPRJ4701	4	100
6	Minor (Botany /Microbiology)	BOTUGMIN4703/ MICUGMIN4703	4	100
		Total	24	
Semester VIII				
1	Biochemistry	ZOUGMCC4818	4	
2	Bioinformatics	ZOUGMCC4819	4	
3	Fisheries	ZOUGMDS4805	4	
4a	Bio-entrepreneurship	ZOUGMDS4806	4	
4b	Zoonotic Diseases	ZOUGMDS4807	4	
4c	Dissertation	ZOUGPRJ4802	8	
5	Minor (Botany/Microbiology)	BOTUGMIN4804/ MICUGMIN4804	4	
		Total	24	
		Grand Total (Year 4)	48	
<b>Exit with BSc (H) in Zoology</b>				

**Remarks****Semester VII**

For Students opting for BSc (H) without research

5a	Applied Zoology	ZOOUGMDS4704
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For Students opting for BSc (H) with research

5b	Dissertation	ZOOUGPRJ4701
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**Semester VIII**

For Students opting for BSc (H) without research

4a	Bio-entrepreneurship	ZOOUGMDS4806
4b	Zoonotic Diseases	ZOOUGMDS4807

For Students opting for BSc (H) with research

4c	Dissertation	ZOOUGPRJ4802
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**Types of Courses**

Major Core	MCC	Major DSE	MDS
Minor	MIN	Multidisciplinary	MDC
Ability Enhancement Courses	AEC	Skill Enhancement Courses	SEC
Value Added Courses	VAC	Summer Internship	SIP
Research Projects/ Dissertation	PRJ		

**Minor Papers Offered by ZOOLOGY**

Semester V				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Animal Diversity I: Non-Chordates	ZOOUGMIN3501	4	100
Semester VI				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Animal Diversity I: Non-Chordates	ZOOUGMIN3602	4	100
Semester VII				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Animal Systematics and Evolution	ZOOUGMIN4703	4	100
Semester VIII				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Animal Physiology and Metabolism	ZOOUGMIN4804	4	100

## Semester-wise curriculum outline for Four Year Undergraduate Programme

### National Education Policy (NEP-2020)

#### BSc (Hons) Microbiology

Semester I			
Sl. No.	Course Title	Course Code	Credits
1	Introduction to Microbiology and Microbial Diversity	MICUGMCC1101	4
2	Biomolecules	MICUGMCC1102	4
3	Arabic and Islamic Studies	UCCUGMDC1101	3
4	MIL (Bengali/Urdu/Hindi)	UCCUGAEC1101	4
5	Biology for Sustainable Development	MICUGSEC1101	3
6	Minor (Chemistry)	CHMUGMIN1101	4
		Total	22
Semester II			
Sl. No.	Course Title	Course Code	Credits
1	Bacteriology	MICUGMCC1203	4
2	Microbial Techniques	MICUGMCC1204	4
3	Biostatistics	MICUGMDC1202	3
4	Economic Biology	MICUGSEC1202	3
5	Environmental Science	UCCUGVAC1201	4
6	Minor (Chemistry)	CHMUGMIN1202	4
		Total	22
		Grand Total (Year 1)	44
<b>Exit with Certificate in Biological Sciences (Microbiology)</b> One vocational course of 4 credits during summer vacation			
Semester III			
Sl. No.	Course Title	Course Code	Credits
1	Virology	MICUGMCC2305	4
2	Microbial Genetics	MICUGMCC2306	4
3	Introduction to Cell and Molecular Biology	MICUGMD2303	3
4	English	UCCUGAEC2302	4
5	Molecular Diagnostics	MICUGSEC2303	3
6	Minor (Chemistry)	CHMUGMIN2303	4
		Total	22
Semester IV			
1	Microbial Physiology and Metabolism	MICUGMCC2407	4
2	Ecology and Conservation Biology	MICUGMCC2408	4
3	Medical Microbiology	MICUGMCC2409	4

4	Understanding India	UCCUGVAC2402	4
5	Minor (Chemistry)	CHMUGMIN2404	4
		Total	20
		Grand Total (Year 2)	
<b>Exit with Diploma in Biological Sciences (Microbiology)</b> One vocational course of 4 credits during summer vacation			

### BSc (Hons) Microbiology

Semester V			
Sl. No.	Course Title	Course Code	Credits
1	Industrial Microbiology	MICUGMCC3510	4
2	Molecular Biology	MICUGMCC3511	4
3	Biotechniques	MICUGMCC3512	4
4	Summer Internship Program	MICUGSIP3501	4
5	Minor (Zoology/Botany)	ZOUGMIN3501/ BOTUGMIN3501	4
		Total	20
Semester VI			
Sl. No.	Course Title	Course Code	Credits
1	Principles of Genetics	MICUGMCC3613	4
2	Environmental Microbiology	MICUGMCC3614	4
3	Genomics and Proteomics	MICUGMCC3615	
3	Immunology	MICUGDSE3601	4
4	Summer Internship Program	MICUGSIP3602	4
5	Minor (Zoology/Botany)	BOTUGMIN3602/ ZOUGMIN3602	4
		Total	20
		Grand Total (Year 3)	40
Exit with BSc in Microbiology			
Semester VII			
Sl. No.	Course Title	Course Code	Credits
1	Cell Biology	MICUGMCC4716	4
2	Recombinant DNA Technology	MICUGMCC4717	4
3	Food and Dairy Microbiology	MICUGMDS4702	4
4	Research Ethics, Biosafety and IPR	MICUGMDS4703	4
5a	Microbial Technology	MICUGMDS4704	
5b	Dissertation	MICUGPRJ4101	4
6	Minor (Zoology/Botany)	ZOUGMIN4703/ BOTUGMIN4703	4
		Total	24
Semester VIII			
1	Biochemistry	MICUGMCC4818	4
2	Bioinformatics	MICUGMCC4819	4
3	Agricultural Microbiology	MICUGDSE4805	4
4a	Bio-entrepreneurship	MICUGDSE4806	4
4b	Emerging Microbes	MICUGDSE4807	4
4c	Dissertation	MICUGPRJ4802	4
5	Minor (Zoology/Botany)	ZOUGMIN4804/	8



		BOTUGMIN4804	
		Total	24
		Grand Total (Year 4)	48
<b>Exit with BSc (H) in Microbiology</b>			

### Remarks

#### Semester VII

For Students opting for BSc (H) without research

5a	Microbial Technology	MICUGMDS4704
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For Students opting for BSc (H) with research

5b	Dissertation	MICUGPRJ4701
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#### Semester VIII

For Students opting for BSc (H) without research

4a	Bio-entrepreneurship	MICUGMDS4806
4b	Emerging Microbes	MICUGMDS4807

For Students opting for BSc (H) with research

4c	Dissertation	MICUGPRJ4802
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### Types of Courses

Major Core	MCC	Major DSE	MDS
Minor	MIN	Multidisciplinary	MDC
Ability Enhancement Courses	AEC	Skill Enhancement Courses	SEC
Value Added Courses	VAC	Summer Internship	SIP
Research Projects/ Dissertation	PRJ		

### Minor Papers Offered by MICROBIOLOGY

Semester V				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Introduction to Microbiology and Microbial Diversity	MICUGMIN3501	4	100
Semester VI				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Bacteriology	MICUGMIN3602	4	100
Semester VII				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Virology	MICUGMIN4703	4	100
Semester VIII				
Sl. No.	Course Title	Course Code	Credits	Marks
1	Microbial Physiology and Metabolism	MICUGMIN4804	4	100