

Programme Type (UG/PG): UG/ B.Sc./B.Sc. Hons./B.Sc. Hons with Research of Microbiology

| First Year- Semester I | | | | | | | | | | | | |
|------------------------|-------------|---|------------------|----------------|------------------------------|----|---------------------------|----------|-------|-------------------------|----------|-------|
| Course Category | Course Code | Course Title | Nature of Course | No. of Credits | Teaching (Contact hrs/ week) | | Evaluation Scheme (Marks) | | | Minimum Passing (Marks) | | |
| | | | | | L | P | Internal | External | Total | Internal | External | Total |
| MM | MIC42MML101 | Biochemistry the building block of Life | Lecture | 2 | 2 | | 30 | 20 | 50 | - | 08 | 20 |
| MM | MIC42MML102 | Microbial Structure, Identification and Distribution | Lecture | 3 | 3 | - | 60 | 40 | 100 | - | 16 | 40 |
| IKS | MIC42IKL101 | IKS approaches to conserve biodiversity and ecological protection | Lecture | 2 | 2 | - | 30 | 20 | 50 | - | 08 | 20 |
| AEC | MGM54AEL104 | Functional Marathi | Lecture | 2 | 2 | - | 30 | 20 | 50 | - | 08 | 20 |
| OE | OE-1 | *OE-1 University Basket | Lecture | 2 | 2 | - | 30 | 20 | 50 | - | 08 | 20 |
| OE | OE-2 | *OE-2 University Basket | Lecture | 2 | 2 | - | 30 | 20 | 50 | - | 08 | 20 |
| VSC | MIC42VSP101 | Micro Lab I | Lecture | 2 | 2 | - | 30 | 20 | 50 | - | 08 | 20 |
| SEC | MIC42SEP101 | Microbiology: Principle and Exploration-I | Practical | 2 | | 4 | 30 | 20 | 50 | - | 08 | 20 |
| VEC | MGM21VEL101 | Environmental Studies | Lecture | 2 | 2 | 4 | 30 | 20 | 50 | - | 8 | 20 |
| MM | MIC42MMP101 | Micro building Block Lab | Practical | 1 | - | 2 | 30 | 20 | 50 | - | 08 | 20 |
| CC | MGM85CCP107 | Cultural Activities | Practical | 2 | - | 4 | 50 | - | 50 | 20 | - | 20 |
| Total | | | | 22 | 15 | 14 | 380 | 220 | 600 | 20 | 88 | 240 |

First Year- Semester II

| Course Category | Course Code | Course Title | Nature of Course | No. of Credits | Teaching (Contact hrs/ week) | | Evaluation Scheme (Marks) | | | Minimum Passing (Marks) | | |
|-----------------|-------------|---|------------------|----------------|------------------------------|-----------|---------------------------|------------|------------|-------------------------|-----------|------------|
| | | | | | L | P | Internal | External | Total | Internal | External | Total |
| MM | MIC42MML103 | Microbial Physiology and Metabolism | Lecture | 2 | 2 | | 30 | 20 | 50 | | 08 | 20 |
| MM | MIC42MML104 | Biology: Concept, Connections, Investigation and applications | Lecture | 3 | 3 | - | 60 | 40 | 100 | | 16 | 40 |
| MI | Minor | *Minor University Basket | Lecture | 2 | 2 | - | 30 | 20 | 50 | | 08 | 20 |
| AEC | MGM54AEL102 | Functional English | Lecture | 2 | 2 | - | 30 | 20 | 50 | | 08 | 20 |
| OE | OE-3 | *OE-3 University Basket | Lecture | 2 | 2 | - | 30 | 20 | 50 | | 08 | 20 |
| OE | OE-4 | *OE-4 University Basket | Lecture | 2 | 2 | - | 30 | 20 | 50 | | 08 | 20 |
| VEC | MGM56VEL102 | Constitution of India | Lecture | 2 | 2 | - | 30 | 20 | 50 | | 08 | 20 |
| VSC | MIC42VSP102 | Micro Lab II | Practical | 2 | | 4 | 30 | 20 | 50 | | 08 | 20 |
| SEC | MIC42SEP102 | Explorations in Microbiology –I | Practical | 2 | | 4 | 30 | 20 | 50 | | 08 | 20 |
| MM | MIC42MMP102 | Bio-Skills Sets Laboratory-I | Practical | 1 | - | 2 | 30 | 20 | 50 | | 08 | 20 |
| CC | MGM82CCP103 | Sports | Practical | 2 | - | 4 | 50 | - | 50 | 20 | - | 20 |
| Total | | | | 22 | 15 | 14 | 380 | 220 | 600 | 20 | 88 | 240 |

Level 4.5 Award of UG certificate with 40 credits and an additional 4-credits core NSQF course / internship OR continue with major and minor

| Second Year- Semester III | | | | | | | | | | | | |
|---------------------------|-------------------------|---|------------------|----------------|------------------------------|----|---------------------------|----------|-------|-------------------------|----------|-------|
| Course Category | Course Code | Course Title | Nature of Course | No. of Credits | Teaching (Contact Hrs/ week) | | Evaluation Scheme (Marks) | | | Minimum Passing (Marks) | | |
| | | | | | L | P | Internal | External | Total | Internal | External | Total |
| MM | MIC42MML201 | Molecular Biology of Gene | Lecture | 2 | 2 | - | 30 | 20 | 50 | - | 08 | 20 |
| MM | MIC42MML202 | Virology | Lecture | 3 | 3 | - | 60 | 40 | 100 | - | 16 | 40 |
| MM | MIC42MML203 | Microbial Fermentation | Lecture | 2 | 2 | - | 30 | 20 | 50 | - | 08 | 20 |
| OE | OE-5 | *OE-5 University Basket | Lecture | 2 | 2 | - | 30 | 20 | 50 | - | 08 | 20 |
| MI | Minor | *Minor University Basket | Lecture | 3 | 3 | - | 60 | 40 | 100 | - | 16 | 40 |
| AEC | MGM54AEL103 | Functional Hindi | Lecture | 2 | 2 | - | 30 | 20 | 50 | - | 08 | 20 |
| VSC | MIC42VSP201 | Applied MI Lab | Practical | 2 | - | 4 | 30 | 20 | 50 | - | 08 | 20 |
| MI | Minor | *Minor University Basket | Practical | 1 | - | 2 | 30 | 20 | 50 | - | 08 | 20 |
| MM | MIC42MMP201 | Fermentation Technology Laboratory | Practical | 1 | - | 2 | 30 | 20 | 50 | - | 08 | 20 |
| FP | MIC42FPJ201 | Field Project | Project | 2 | - | 4 | 50 | - | 50 | 20 | - | 20 |
| CC | MGM82CCP201 / 101 / 102 | Health and Wellness / National Cadet Crops / Yoga | Practical | 2 | - | 4 | 50 | - | 50 | 20 | - | 20 |
| Total | | | | 22 | 14 | 16 | 430 | 220 | 650 | 40 | 88 | 260 |

Level 4.5 Award of UG certificate with 40 credits and an additional 4-credits core NSQF course / internship OR continue with major and minor

Second Year- Semester IV

| Course Category | Course Code | Course Title | Nature of Course | No. of Credits | Teaching(Contact Hrs/week) | | Evaluation Scheme(Marks) | | | Minimum Passing(Marks) | | |
|-----------------|--------------------------------------|--|------------------|----------------|----------------------------|-----------|--------------------------|------------|------------|------------------------|-----------|------------|
| | | | | | L | P | Internal | External | Total | Internal | External | Total |
| MM | MIC42MML204 | Genome Maintenance and Regulation | Lecture | 2 | 2 | - | 30 | 20 | 50 | - | 08 | 20 |
| MM | MIC42MML205 | Advance Fermentation Technology | Lecture | 3 | 3 | - | 60 | 40 | 100 | - | 16 | 40 |
| MM | MIC42MML206 | Molecular Basis of Bacterial Infection | Lecture | 2 | 2 | - | 30 | 20 | 50 | - | 08 | 20 |
| OE | OE-6 | *OE-6 University Basket | Lecture | 2 | 2 | - | 30 | 20 | 50 | - | 08 | 20 |
| MI | Minor | *Minor University Basket | Lecture | 3 | 3 | - | 60 | 40 | 100 | - | 16 | 40 |
| AEC | MGM54AEL203 | Communication skills | Lecture | 2 | 2 | - | 30 | 20 | 50 | - | 08 | 20 |
| SEC | MIC42SEP201 | Infection control Lab | Practical | 2 | - | 4 | 30 | 20 | 50 | - | 08 | 20 |
| MI | Minor | *Minor University Basket | Practical | 1 | - | 2 | 30 | 20 | 50 | - | 08 | 20 |
| MM | MIC42MMP202 | Advance Fermentation Laboratory | Practical | 1 | - | 2 | 30 | 20 | 50 | - | 08 | 20 |
| CEP | MIC42CEP201 | Community Engagement Programme | Practical | 2 | - | 4 | 50 | - | 50 | 20 | - | 20 |
| CC | MGM82CCP104/ MGM73CCP105 / 106 | NSS / Fine Arts / Visual Arts | Practical | 2 | - | 4 | 50 | - | 50 | 20 | - | 20 |
| Total | | | | 22 | 14 | 16 | 430 | 220 | 650 | 40 | 88 | 260 |

| Third Year- Semester V | | | | | | | | | | | | |
|------------------------|--------------|--|------------------|----------------|-----------------------------|----|---------------------------|----------|-------|-------------------------|----------|-------|
| Course Category | Course Code | Course Title | Nature of Course | No. of Credits | Teaching (Contact hrs/week) | | Evaluation Scheme (Marks) | | | Minimum Passing (Marks) | | |
| | | | | | L | P | Internal | External | Total | Internal | External | Total |
| MM | MIC42MML301 | Soil and Environment Microbial Biotechnology | Theory | 2 | 2 | - | 30 | 20 | 50 | - | 08 | 20 |
| MM | MIC42MML302 | Wine and Brewing Microbiology | Theory | 3 | 3 | - | 60 | 40 | 100 | - | 16 | 40 |
| MM | MIC42MML303 | Molecular Microbiology | Theory | 2 | 2 | - | 30 | 20 | 50 | - | 08 | 20 |
| ME | MIC42M EL201 | Microbial Mechanisms of Foodborne disease | Theory | 3 | 3 | - | 60 | 40 | 100 | - | 16 | 40 |
| | MIC42MEL 202 | Introduction to Python | | | | | | | | | | |
| MI | Minor | *Minor University Basket | Theory | 3 | 3 | - | 60 | 40 | 100 | - | 16 | 40 |
| VSC | MIC42VSP301 | Python Lab | Practical | 2 | | 4 | 30 | 20 | 50 | - | 08 | 20 |
| VSC | MIC42VSP302 | Environmental Microbiology Lab | Practical | 2 | | 4 | 30 | 20 | 50 | - | 08 | 20 |
| MI | Minor | *Minor University Basket | Practical | 1 | - | 2 | 30 | 20 | 50 | - | 08 | 20 |
| MM | MIC42MMP301 | Microbial Analysis and use Laboratory | Practical | 1 | - | 2 | 30 | 20 | 50 | - | 08 | 20 |
| FP | MIC42FPJ301 | Field Project | Project | 2 | | 4 | 50 | - | 50 | 20 | - | 20 |
| ME | MIC42M EP201 | Seminar (Research Paper based) | Practical | 1 | - | 2 | 30 | 20 | 50 | - | 08 | 20 |
| | MIC42M EP202 | Applied Bioinformatics lab | | | | | | | | | | |
| Total | | | | 22 | 12 | 18 | 440 | 260 | 700 | 20 | 104 | 280 |

| Third Year- Semester VI | | | | | | | | | | | | |
|-------------------------|-------------|--|------------------|----------------|------------------------------|----|---------------------------|----------|-------|-------------------------|----------|-------|
| Course Category | Course Code | Course Title | Nature of Course | No. of Credits | Teaching (Contact hrs/ week) | | Evaluation Scheme (Marks) | | | Minimum Passing (Marks) | | |
| | | | | | L | P | Internal | External | Total | Internal | External | Total |
| MM | MIC42MML304 | Symbiosis, Plant Immunity and Disease | Lecture | 2 | 2 | - | 30 | 20 | 50 | - | 08 | 20 |
| MM | MIC42MML305 | Industrial Microbiology | Lecture | 3 | 3 | - | 60 | 40 | 100 | - | 16 | 40 |
| MM | MIC42MML306 | Gene Editing Technologies for Microbiology & therapeutic | Lecture | 3 | 3 | - | 60 | 40 | 100 | - | 16 | 40 |
| ME | MIC42MEL203 | Mycology | Lecture | 3 | 3 | - | 60 | 40 | 100 | - | 16 | 40 |
| | MIC42MEL204 | Advances in microbiology | | | | | | | | | | |
| MI | Minor | *Minor University Basket | Lecture | 3 | 3 | - | 60 | 40 | 100 | - | 16 | 40 |
| OJT | MIC42JTP301 | On Job Training | Practical | 4 | | 8 | 60 | 40 | 100 | - | 16 | 40 |
| MI | Minor | *Minor University Basket | Practical | 1 | | 2 | 30 | 20 | 50 | - | 08 | 20 |
| MM | MIC42MMP302 | Diagnosis and Industrial Microbiology Lab. | Practical | 1 | - | 2 | 30 | 20 | 50 | - | 08 | 20 |
| MM | MIC42MMP303 | Mini project | Practical | 1 | - | 2 | 30 | 20 | 50 | - | 08 | 20 |
| ME | MIC42MEP203 | Data analysis and statistics | Practical | 1 | - | 2 | 30 | 20 | 50 | - | 08 | 20 |
| | MIC42MEP204 | Advances in microbiology lab | | | | | | | | | | |
| Total | | | | 22 | 14 | 16 | 450 | 300 | 750 | - | 120 | 300 |

Level 5.5 Award of UG degree in major and minor (44+44+44)=132 credits OR continue with major and minor

| Fourth Year- Semester VII | | | | | | | | | | | | |
|---------------------------|--------------|--|------------------|----------------|-----------------------------|----|---------------------------|----------|-------|-------------------------|----------|-------|
| Course Category | Course Code | Course Title | Nature of Course | No. of Credits | Teaching (Contact hrs/week) | | Evaluation Scheme (Marks) | | | Minimum Passing (Marks) | | |
| | | | | | L | P | Internal | External | Total | Internal | External | Total |
| MM | MIC42MML401 | Biofertilizers and biopesticides | Lecture | 3 | 3 | - | 60 | 40 | 100 | - | 16 | 40 |
| MM | MIC42MML402 | Genetic Engineering of E. coli | Lecture | 3 | 3 | - | 60 | 40 | 100 | - | 16 | 40 |
| MM | MIC42MML403 | Genetic Engineering of yeast | Lecture | 3 | 3 | - | 60 | 40 | 100 | - | 16 | 40 |
| MM | MIC42MML404 | Microbes and sustainable development | Lecture | 2 | 2 | - | 30 | 20 | 50 | - | 08 | 20 |
| ME | MIC42MEL3 01 | Microbiome | Lecture | 3 | 3 | - | 60 | 40 | 100 | - | 16 | 40 |
| | MIC42MEL3 02 | Systems Microbiology | | | | | | | | | | |
| RM | MIC42RML401 | Research Methodology I | Lecture | 3 | 3 | - | 60 | 40 | 100 | - | 16 | 40 |
| RM | MIC42RMP401 | Research Methodology II | Practical | 1 | - | 2 | 30 | 20 | 50 | - | 08 | 20 |
| ME | MIC42MEP3 01 | R Programming | Practical | 1 | - | 2 | 30 | 20 | 50 | - | 08 | 20 |
| | MIC42MEP3 02 | Microbes and sustainable development Lab | | | | | | | | | | |
| MM | MIC42MMP401 | Genetic Engineering of E. coli and yeast lab | Practical | 1 | - | 2 | 30 | 20 | 50 | - | 08 | 20 |
| MM | MIC42MMP402 | Major Project | Practical | 1 | - | 2 | 30 | 20 | 50 | - | 08 | 20 |
| MM | MIC42MMP403 | Biofertilizer and biopesticide Lab | Practical | 1 | - | 2 | 30 | 20 | 50 | - | 08 | 20 |
| | | Total | | 22 | 17 | 10 | 480 | 320 | 800 | - | 128 | 320 |

Fourth Year- Semester VIII

| Course Category | Course Code | Course Title | Nature of Course | No. of Credits | Teaching (Contact hrs/ week) | | Evaluation Scheme (Marks) | | | Minimum Passing (Marks) | | |
|-----------------|--------------|---|------------------|----------------|------------------------------|----|---------------------------|----------|-------|-------------------------|----------|-------|
| | | | | | L | P | Internal | External | Total | Internal | External | Total |
| MM | MIC42MML405 | Bioethics, Biosafety & IPR | Lecture | 3 | 3 | - | 60 | 40 | 100 | - | 16 | 40 |
| MM | MIC42MML406 | Patents and copyrights | Lecture | 3 | 3 | - | 60 | 40 | 100 | - | 16 | 40 |
| MM | MIC42MML407 | Case Study in Microbiology | Lecture | 3 | 3 | - | 60 | 40 | 100 | - | 16 | 40 |
| MM | MIC42MML408 | Recent topics in Microbiology | Lecture | 2 | 2 | - | 30 | 20 | 50 | - | 08 | 20 |
| ME | MIC42M EL303 | GMP and GLP in Microbiology | Lecture | 3 | 3 | - | 60 | 40 | 100 | - | 16 | 40 |
| | MIC42M EL304 | Microbial Informatics and AI | | | | | | | | | | |
| OJT | MIC42JTP401 | On Job Training | Training | 4 | | 8 | 60 | 40 | 100 | - | 16 | 40 |
| ME | MIC42M EP303 | GMP and GLP in Microbiology lab | Practical | 1 | - | 2 | 30 | 20 | 50 | - | 08 | 20 |
| | MIC42M EP304 | Microbial Informatics and AI lab | | | | | | | | | | |
| MM | MIC42MMP404 | Practical Based on Research Methodology | Practical | 1 | - | 2 | 30 | 20 | 50 | - | 08 | 20 |
| MM | MIC42MMP405 | Patent protection in Microbiology Lab | Practical | 1 | - | 2 | 30 | 20 | 50 | - | 08 | 20 |
| MM | MIC42MMP406 | Seminar (research Paper based) | Practical | 1 | - | 2 | 30 | 20 | 50 | - | 08 | 20 |
| | | Total | | 22 | 14 | 16 | 450 | 300 | 750 | - | 120 | 300 |

Level 6.0 Four year UG Honours Degree in major and minor (44+44+44+44) = 176 credits

| Fourth Year- Semester VII Honors with research | | | | | | | | | | | | |
|--|-------------|--|------------------|----------------|------------------------------|-----------|---------------------------|------------|------------|-------------------------|------------|------------|
| Course Category | Course Code | Course Title | Nature of Course | No. of Credits | Teaching (Contact hrs/ week) | | Evaluation Scheme (Marks) | | | Minimum Passing (Marks) | | |
| | | | | | L | P | Internal | External | Total | Internal | External | Total |
| MM | MIC42MML401 | Bioethics regulatory & quality control I | Lecture | 3 | 3 | - | 60 | 40 | 100 | | 16 | 40 |
| MM | MIC42MML402 | Biostatistics I | Lecture | 2 | 2 | - | 30 | 20 | 50 | | 08 | 20 |
| MM | MIC42MML403 | Subject based case studies I | Lecture | 2 | 2 | - | 30 | 20 | 50 | | 08 | 20 |
| MM | MIC42MML404 | Bioinformatics I | Lecture | 2 | 2 | - | 30 | 20 | 50 | | 08 | 20 |
| ME | MIC42MEL301 | Evolutionary application I | Lecture | 3 | 3 | - | 60 | 40 | 100 | | 16 | 40 |
| | MIC42MEL302 | Science Communication I | | | | | | | | | | |
| RM | MIC42RML401 | Research Methodology | Lecture | 3 | 3 | - | 60 | 40 | 100 | | 16 | 40 |
| RM | MIC42RMP402 | Research Methodology Lab | Practical | 1 | - | 2 | 30 | 20 | 50 | | 08 | 20 |
| ME | MIC42MEP301 | Evolutionary application Lab I | Practical | 1 | - | 2 | 30 | 20 | 50 | | 08 | 20 |
| | MIC42MEP302 | Science Communication Lab I | | | | | | | | | | |
| MM | MIC42MMP401 | Subject based case studies seminar I | Practical | 1 | - | 2 | 30 | 20 | 50 | | 08 | 20 |
| RP | MIC42RPJ401 | Research Project I | Practical | 4 | - | 8 | 60 | 40 | 100 | | 16 | 40 |
| | | Total | | 22 | 15 | 14 | 420 | 280 | 700 | | 112 | 280 |

| Fourth Year- Semester VIII Honors with research | | | | | | | | | | | | |
|---|-------------|---|------------------|----------------|-----------------------------|-----------|---------------------------|------------|------------|-------------------------|------------|------------|
| Course Category | Course Code | Course Title | Nature of Course | No. of Credits | Teaching (Contact hrs/week) | | Evaluation Scheme (Marks) | | | Minimum Passing (Marks) | | |
| | | | | | L | P | Internal | External | Total | Internal | External | Total |
| MM | MIC42MML405 | Bioethics regulatory & quality control II | Lecture | 3 | 3 | - | 60 | 40 | 100 | | 16 | 40 |
| MM | MIC42MML406 | Biostatistics II | Lecture | 2 | 2 | - | 30 | 20 | 50 | | 08 | 20 |
| MM | MIC42MML407 | Subject based case studies II | Lecture | 2 | 2 | - | 30 | 20 | 50 | | 08 | 20 |
| MM | MIC42MML408 | Bioinformatics II | Lecture | 2 | 2 | - | 30 | 20 | 50 | | 08 | 20 |
| ME | MIC42MEL304 | Evolutionary application II | Lecture | 3 | 3 | - | 60 | 40 | 100 | | 16 | 40 |
| | MIC42MEL304 | Science Communication II | | | | | | | | | | |
| ME | MIC42MEP303 | Evolutionary application Lab II | Practical | 1 | - | 2 | 30 | 20 | 50 | | 08 | 20 |
| | MIC42MEP304 | Science Communication Lab II | | | | | | | | | | |
| MM | MIC42MMP402 | Subject based case studies seminar II | Practical | 1 | - | 2 | 30 | 20 | 50 | | 08 | 20 |
| RP | MIC42RPJ402 | Research Project II | Practical | 8 | - | 16 | 120 | 80 | 200 | | 32 | 80 |
| | | Total | | 22 | 12 | 20 | 390 | 260 | 650 | | 104 | 260 |

Level 6.0 Four year UG Honors with research Degree in major and minor (44+44+44+44) = 176 credits

*[Students who secure 75% marks and above in the first six semesters and wish to undertake research at the undergraduate level can choose a research stream in the fourth year.