



## University of Engineering & Management

### Department of Biotechnology

#### Second Year Third Semester

<b>A.THEORY</b>							
Sl No.	Subject Code	Theory	Contact Hours/Week				Credit Points
			L	T	P	Total	
1	HU301	Values & Ethics in Profession	3	0	0	3	3
2	CH(BT)301	Basic Environmental Engineering & Disaster Management	3	0	0	3	3
3	CH(BT)302	Chemistry	3	1	0	4	4
4	BT301	Thermodynamics and Kinetics	3	0	0	3	3
5	BT302	Biochemistry	3	1	0	4	4
6	BT303	Microbiology	3	1	0	4	4
7	GS301	Essential studies for Professionals III	2	0	0	2	2
<b>Total of Theory</b>						<b>23</b>	<b>23</b>
<b>B. PRACTICAL</b>							
7	CH(BT)381	Basic Environmental Engineering & Elementary Biology Lab	0	0	3	3	2
8	CH(BT)382	Chemistry Lab	0	0	3	3	2
9	BT391	Biochemistry Lab	0	0	3	3	2
10	BT392	Microbiology Lab	0	0	3	3	2
11	GS381	Skill Development For Professionals III	0	0	1	1	1
<b>Total of Practical</b>						<b>13</b>	<b>9</b>
<b>Total of Semester</b>						<b>36</b>	<b>32</b>

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<b>A.THEORY</b>							
<b>Sl No.</b>	<b>Subject Code</b>	<b>Theory</b>	<b>Contact Hours/Week</b>				<b>Credit Points</b>
			<b>L</b>	<b>T</b>	<b>P</b>	<b>Total</b>	
<b>1</b>	M (CS)402	Numerical Methods	2	1	0	3	2
<b>2</b>	CH(BT)401	Fundamental of material and Energy Balance	3	1	0	4	4
<b>3</b>	CH(BT)402	Transfer Operation I	3	0	0	3	3
<b>4</b>	BT401	Molecular Biology	3	1	0	4	4
<b>5</b>	BT402	Bioprocess Technology	3	1	0	4	4
<b>6.</b>	GS401	Essential studies for Professionals IV	2	0	0	2	2
<b>Total of Theory</b>						<b>20</b>	<b>19</b>
<b>B. PRACTICAL</b>							
<b>7</b>	HU481	Technical Report Writing & Language Lab Practice	0	0	3	3	2
<b>8</b>	M (CS)491	Numerical Methods	0	0	2	2	1
<b>9</b>	CH(BT)481	Transfer Operation I Lab	0	0	3	3	2
<b>10</b>	BT491	Molecular Biology Lab	0	0	3	3	2
<b>11</b>	BT492	Fermentation Technology Lab	0	0	3	3	3
<b>12</b>	GS481	Skill Development For Professionals IV	0	0	1	1	1
<b>Total of Practical</b>						<b>15</b>	<b>11</b>
<b>Total of Semester</b>						<b>35</b>	<b>30</b>

### Third Year – Fifth Semester

<b>A.THEORY</b>							
<b>Sl No.</b>	<b>Subject Code</b>	<b>Theory</b>	<b>Contact Hours/Week</b>				<b>Credit Points</b>
			<b>L</b>	<b>T</b>	<b>P</b>	<b>Total</b>	
<b>1</b>	<b>HU511</b>	Principles & Practices of Management	3	0	0	3	3
<b>2</b>	<b>BT501</b>	Cyto-Genetics	3	1	0	4	4
<b>3</b>	<b>BT502</b>	Bioinformatics	3	1	0	4	4
<b>4</b>	<b>CH(BT)505</b>	Transfer operation –II	3	1	0	4	4
<b>5</b>	<b>CS515</b>	Database Management System	3	0	0	3	3
<b>6.</b>	<b>GS501</b>	Essential Studies For Professionals-V	2	0	0	2	2
<b>Total of Theory</b>						<b>20</b>	<b>20</b>
<b>B. PRACTICAL</b>							
<b>7</b>	<b>BT591</b>	Genetics Lab	0	0	3	3	2
<b>8</b>	<b>BT592</b>	Bioinformatics Lab	0	0	3	3	2
<b>9</b>	<b>CH(BT)584</b>	Transfer operation Lab-II	0	0	3	3	2
<b>10</b>	<b>CS584</b>	Database Management System Lab	0	0	3	3	2
<b>11</b>	<b>GS581</b>	Skill Development For Professionals- V	0	0	1	1	1
<b>Total of Practical</b>						<b>13</b>	<b>9</b>
<b>Total of Semester</b>						<b>33</b>	<b>29</b>

### Third Year – Sixth Semester

<b>A.THEORY</b>							
<b>Sl No.</b>	<b>Subject Code</b>	<b>Theory</b>	<b>Contact Hours/Week</b>				<b>Credit Points</b>
			<b>L</b>	<b>T</b>	<b>P</b>	<b>Total</b>	
<b>1</b>	<b>HU611</b>	Production & Operations Management	2	0	0	2	2
<b>2</b>	<b>BT601</b>	Recombinant DNA Technology	3	0	0	3	3
<b>3</b>	<b>BT602</b>	Immunology	3	0	0	3	3
<b>4</b>	<b>BT603</b>	Plant Biotechnology	3	0	0	3	3
<b>5</b>	<b>BT604</b>	604A: Bioseparation Technology 604B: Molecular Modeling & Drug Designing 604C: Biophysics of Macromolecules 604D: Biosensor & Diagnostics 604E: Biofertilizer & Biopesticide	3	0	0	3	3
<b>6</b>	<b>CS605A</b>	Data Science and Data Analytics	3	0	0	3	3
<b>7</b>	<b>GS601</b>	Essential studies for Professionals VI	2	0	0	2	2
<b>Total of Theory</b>						<b>19</b>	<b>19</b>
<b>B. PRACTICAL</b>							
<b>8</b>	<b>BT691</b>	Recombinant DNA Technology Lab	0	0	3	3	2
<b>9</b>	<b>BT692</b>	Immunology Lab	0	0	3	3	2
<b>10</b>	<b>BT693</b>	Plant Biotechnology Lab	0	0	3	3	2
<b>11</b>	<b>CS684</b>	Data Science and Data Analytics lab	0	0	3	3	2
<b>12</b>	<b>BT694</b>	Seminar ( Review and Presentation by PPT )	0	0	1	1	1
<b>13</b>	<b>GS681</b>	Skill Development For Professionals-VI	0	0	1	1	1
<b>Total of Practical</b>						<b>14</b>	<b>10</b>
<b>Total of Semester</b>						<b>30</b>	<b>29</b>

## Fourth Year – Seventh Semester

<b>A.THEORY</b>							
<b>Sl No.</b>	<b>Subject Code</b>	<b>Theory</b>	<b>Contact Hours/Week</b>				<b>Credit Points</b>
			<b>L</b>	<b>T</b>	<b>P</b>	<b>Total</b>	
<b>1</b>	<b>BT701</b>	Bioreactor Design and Analysis	3	0	0	3	3
<b>2</b>	<b>BT702</b>	Animal Cell Culture & Animal Biotechnology	3	0	0	3	3
<b>3</b>	<b>BT703</b>	Food Biotechnology	3	0	0	3	3
<b>4</b>	<b>BT704</b>	704A: Environmental Biotechnology & Pollution Control 704B: Modeling & Simulation of Bioprocesses 704C: Biomaterials 704D: Biometalurgy 704E: Proteomics & Protein Engineering 704F: Human Genomics	3	0	0	3	3
<b>5</b>	<b>CHE701</b>	A. Pharmaceutical Biotechnology B. Object Oriented Programming	3	0	0	3	3
<b>6.</b>	<b>GS701</b>	Essential studies for Professionals VII	2	0	0	2	2
<b>Total of Theory</b>						<b>17</b>	<b>17</b>
<b>B. PRACTICAL</b>							
<b>7</b>	<b>HU781</b>	Group Discussion	0	0	2	2	2
<b>8</b>	<b>BT791</b>	Bioprocess Engineering Lab	0	0	3	3	2
<b>9</b>	<b>BT792</b>	Food Biotechnology Lab	0	0	3	3	2
<b>10</b>	<b>CHE 783</b>	Pharmaceutical Biotechnology Lab	0	0	3	3	2
<b>11</b>	<b>BT793</b>	Seminar (Review and Presentation by PPT of a Research Paper)	0	0	2	2	1
<b>12</b>	<b>BT794</b>	Project Work -I (Project Report-I)	0	0	6	6	3
<b>13</b>	<b>BT795</b>	Computational Biology Lab	0	0	2	2	2
<b>14</b>	<b>GS781</b>	Skill Development For Professionals-VII	0	0	1	1	1
<b>Total of Practical</b>						<b>22</b>	<b>15</b>
<b>Total of Semester</b>						<b>39</b>	<b>29</b>

## Fourth Year – Eighth Semester

A.THEORY							
Sl No.	Subject Code	Theory	Contact Hours/Week				Credit Points
			L	T	P	Total	
1	HU(BT)-801	Bioethics, Biosafety, IPR & Entrepreneurship in Biotechnology	3	0	0	3	3
2	BT-801	Downstream Processing	3	0	0	3	3
3	BT-802	802A: Renewable Energy Technology 802B: Tissue Engineering 802C: Biomedical Engineering 802D: Post Harvest Technology 802E: Metabolic Engineering	3	0	0	3	3
Total of Theory						9	9
B. PRACTICAL							
4	BT-891	Design Lab /Industrial problem/ Industrial related training	0	0	6	6	4
5	BT-892	Project work-II	0	0	12	12	4
6	BT-893	Project Report-II Report and Defense Seminar by PPT	0	0	0	0	2
7.	BT-894	Grand Viva ( Comprehensive Viva Voce)	0	0	0	0	3
8.	BT-895	<b>Industrial Project/Training(Report Poster Presentation &amp; Viva Voce)</b>	0	0	0	0	2
Total of Practical						18	15
Total of Semester						27	24