

# Indian Institute of Technology Indore



## **Bachelor of Technology in Biomedical Engineering and Data Science (BMDS)**

### **Mehta Family School of Biosciences and Biomedical Engineering**

April 2026

[After incorporating decisions of 62<sup>nd</sup> meeting of the Senate held on April 20, 2026]

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**B.Tech. in Biomedical Engineering and Data Science (BMDS)**  
**Mehta Family School of**  
**Biosciences and Biomedical Engineering**

**Semester I**

Course Code	Course Title	Weekly Contact Hours (L-T-P)	Credits
EE 101	Basic Electrical Engineering	1-1-0	2
ME 101	Engineering Mechanics	2-0-0	2
CH 105	Chemistry	3-0-0	3
CH 155	Chemistry Lab	0-0-2	1
MA 101N	Calculus - I	3-1-0 (1/2 Semester)	2
MA 103N	Calculus - II	3-1-0 (1/2 Semester)	2
HS 109	Language and Composition	2-0-0	2
HS XXX	Flexible Elective (HSS)	1-0-0	1
CS 103	Computer Programming	2-0-0	2
IC 151	Computer Programming Lab	0-0-3	1.5
NO 101	National Sports Organization (NSO)	0-0-0	P/NP
<b>Total</b>			<b>18.5</b>

**Semester II**

Course Code	Course Title	Weekly Contact Hours (L-T-P)	Credits
BSE 102	Bio Sciences	2-1-0	3
MA 102N	Linear Algebra	2-1-0 (1/2 Semester)	1.5
MA 104N	Differential Equations-I	2-1-0 (1/2 Semester)	1.5
ES 102	Environmental Studies: Scientific and Engineering Aspects	2-1-0 (1/2 Semester)	1.5
HS 102	Environmental Studies: Social Aspects	2-1-0 (1/2 Semester)	1.5
HS 104	Fundamentals of Economics	2-0-0	2
IC 152	Makerspace	1-0-6	4
PH 107	Basics of Physics	2-1-0	3
PH 157	Physics Lab - I	0-0-2	1
<b>ZZ XXX</b>	<b>Flexible Elective - I</b>	<b>1-0-0</b>	<b>1</b>
<b>ZZ XXX</b>	<b>Flexible Elective - II</b>	<b>1-0-0</b>	<b>1</b>
HS XXX	Flexible Elective (HSS)	1-0-0	1
NO 102	National Sports Organization (NSO)	0-0-0	P/NP
<b>Total</b>			<b>22</b>

**2<sup>nd</sup> Year B.Tech. in  
Biomedical Engineering and Data Science**

**Semester III**

Course Code	Course Title	Weekly Contact Hours (L-T-P)	Credits
<b>ZZ xxx</b>	<b>Course-I for Minor Program</b>	<b>x-x-x</b>	<b>3</b>
MA 207	Differential Equation II	3-1-0 (1/2 semester)	2
BSE 2xx	Human Anatomy and Physiology	2-1-0	3
BSE 2xx	Biostatistics	1-0-2	2
BSE 2xx	Medical Electronics	2-0-2	3
CS 203/ BSE 2xx	Data Structures and Algorithms	2-1-0	3
CS 207/ BSE 2xx	Database and Information Systems	2-1-0	3
CS 253/ BSE 2xx	Data Structures and Algorithms Lab	0-0-3	1.5
CS 257/ BSE 2xx	Database and Information Systems Lab	0-0-3	1.5
BSE 2xx	<b>Department Elective I</b>	<b>x-x-x</b>	<b>3</b>
<b>Total</b>			<b>22/25</b>

**Semester IV**

Course Code	Course Title	Weekly Contact Hours (L-T-P)	Credits
<b>ZZ xxx</b>	<b>Course-II for Minor Program</b>	<b>x-x-x</b>	<b>3</b>
MA 204N	Numerical Methods	2-0-2	3
BSE 2xx	Molecular and Cellular Biochemistry	2-1-0	3
BSE 2xx	Biomedical Data Science	2-0-2	3
CS 204/ BSE 2xx	Design and Analysis of Algorithms	2-1-0	3
BSE 2xx	Molecular and Cellular Biochemistry Lab	0-0-3	1.5
CS 254/ BSE 2xx	Design and Analysis of Algorithms Lab	0-0-3	1.5
BSE 2xx	<b>Department Elective II</b>	<b>x-x-x</b>	<b>3</b>
ZZ xxx	<b>Institute Elective-I</b>	<b>x-x-x</b>	<b>3</b>
<b>Total</b>			<b>21/24</b>

**3<sup>rd</sup> Year B. Tech. in  
Biomedical Engineering and Data Science**

**Semester V**

Course Code	Subject Name	Weekly Contact Hours (L-T-P)	Credits
<b>ZZ xxx</b>	<b>Course III - Minor Program</b>	<b>x-x-x</b>	<b>3</b>
BSE 3xx	Signals and Systems in Biomedical Engineering	2-1-0	3
BSE 3xx	Bioinformatics and Genomic Data Science	2-0-2	3
BSE 3xx	Molecular Biology and Genetic Engineering	2-1-0	3
BSE 3xx	Biomedical Devices and Instruments	2-1-0	3
BSE 3xx	Biomedical Devices and Instruments Lab	0-0-3	1.5
BSE 3xx	Molecular Biology and Genetic Engineering Lab	0-0-3	1.5
BSE 3xx	<b>Department Elective III</b>	<b>x-x-x</b>	<b>3</b>
ZZ xxx	<b>Institute Elective II</b>	<b>x-x-x</b>	<b>3</b>
BSE 3xx	<b>Clinical Immersion I</b>	<b>0-0-2</b>	<b>P/NP</b>
<b>Total</b>			<b>21/24</b>

**Semester VI**

Course Code	Subject Name	Weekly Contact Hours (L-T-P)	Credits
<b>ZZ xxx</b>	<b>Course IV - Minor Program</b>	<b>x-x-x</b>	<b>3</b>
BSE 3xx	Transport Phenomena in Biomedical Engineering	2-1-0	3
BSE 3xx	Design Principles of Medical Devices	1-0-2	2
BSE 3xx	Biomaterials and Tissue Engineering	2-1-0	3
BSE 3xx	Principles of Biomedical Signal Processing	2-1-0	3
BSE 3xx	Biomaterials and Tissue Engineering Lab	0-0-3	1.5
BSE 3xx	Biomedical Signal Processing Lab	0-0-3	1.5
BSE 3xx	<b>Departmental Elective IV</b>	<b>x-x-x</b>	<b>3</b>
BSE 3xx	<b>Departmental Elective V</b>	<b>x-x-x</b>	<b>3</b>
ZZ xxx	<b>Institute Elective III</b>	<b>x-x-x</b>	<b>3</b>
<b>Total</b>			<b>23/26</b>

**4<sup>th</sup> Year B. Tech. in  
Biomedical Engineering and Data Science**

**Semester VII**

Course Code	Subject Name	Weekly Contact Hours (L-T-P)	Credits
<b>ZZ xxx</b>	<b>Course-V for Minor Program</b>	<b>x-x-x</b>	<b>2</b>
ZZ 493N	B.Tech. Project (BTP)	0-0-32	16
ZZ 495 ZZ xxx	Internship <b>OR</b> Professional/Societal-Connect Basket Course	x-x-x	1.5
BSE 4xx	<b>Clinical Immersion II</b>	<b>0-0-2</b>	<b>P/NP</b>
<b>Total</b>			<b>17.5/19.5</b>

**Semester VIII**

Course Code	Subject Name	Weekly Contact Hours (L-T-P)	Credits
<b>BSE 4xx</b>	<b>Department Elective VI</b>	<b>x-x-x</b>	<b>3</b>
BSE 4xx	<b>Department Elective VII</b>	<b>x-x-x</b>	<b>3</b>
ZZ xxx	<b>Institute Elective IV</b>	<b>x-x-x</b>	<b>3</b>
ZZ xxx	<b>Institute Elective V</b>	<b>x-x-x</b>	<b>3</b>
ZZ xxx	<b>Institute Elective VI</b>	<b>x-x-x</b>	<b>3</b>
<b>Total</b>			<b>15</b>

### Suggested List of the Elective Courses

Semester	Course Code	Course Title	Weekly Contact Hours (L-T-P)	Credits
<b>III</b> (DE-I)	BSE 2xx	Bioanalytical Methods	2-1-0	3
	BSE 202	Biomedical Technologies	2-1-0	3
<b>IV</b> (DE-II)	BSE 2xx	Concepts of Neuroscience	2-1-0 (1/2 Semester)	1.5
	BSE 2xx	Omics Technologies	2-1-0 (1/2 Semester)	1.5
	BSE 2xx	Measurement and Control Theory	2-1-0	3
	BSE 2xx	Optimization in Biomedical Engineering	2-0-2	3
<b>V</b> (DE-III)	BSE 3xx	Stem Cell Technology	2-1-0 (1/2 Semester)	1.5
	BSE 3xx	Drug Discovery	2-1-0 (1/2 Semester)	1.5
	BSE 3xx	Biomedical Robotics	2-1-0	3
	BSE 3xx	Machine Learning for Biomedical Data	2-0-2	3
<b>VI</b> (DE-IV,V)	BSE 3xx	Immunotechnology	2-1-0	3
	BSE 3xx	Clinical Diagnostics	2-1-0	3
	BSE 3xx	Biosystems Modelling and Simulation	2-0-2	3
	BSE 3xx	Bionic Systems	2-1-0	3
	BSE 3xx	Medical Image Analysis	2-0-2	3
	BSE 3xx	Computational Epidemiology	2-0-2	3
<b>VIII</b> (DE-VI,VII)	BSE 702	Applied Genetic Engineering	2-1-0	3
	BSE 606	Molecular Virology and Viral Pathogenesis	2-1-0	3
	BSE 624N	Bioprocess Engineering and Technology	2-1-0	3
	BSE 662	Plant and Animal Biotechnology	2-1-0	3
	BSE 4xx	Clinical Data Science	2-0-2	3
	BSE 4xx	AI in Healthcare	2-0-2	3
	BSE 417	Biomolecular Modeling	2-0-2	3
	BSE 440	Biomedical Microsystems	2-1-0	3
	BSE 460	Wearable Devices and Sensors	2-1-0	3
	BSE 446	Biofabrication	1-0-4	3
BSE 632	Measurement and Testing of Medical Devices	2-1-0	3	