Maulana Abul Kalam Azad University of Technology, West Bengal
(Formerly West Bengal University of Technology)

Syllabus for B. Tech in Biomedical Engineering
(Applicable from the academic session 2018-2019)

SECOND YEAR FIRST SEMESTER

Sl.no.	Category	Code	Subject	Total number of contact hours/wk			Credit
				L	T	P	
1.	BS	BS - M301	Mathematics – III (Probability & Statistics)	3	0	0	3
2.	ES	ES – EC 301	Analog Electronic Circuits	3	0	0	3
3.	PC	PC – BME 301	Signals & Systems in Biomedical Engineering	3	0	0	3
4.	PC	PC – BME 302	Engineering Physiology & Anatomy	3	0	0	3
5.	PC	PC – BME 303	Biophysics & Biochemistry	3	0	0	3
6.	HM	HM – HU 301	Technical English	2	0	0	2
		Total Theory		**17**	**0**	**0**	**17**
		Practical					
7.	ES	ES – EC 391	Analog Electronic Circuits Lab	0	0	2	1
8.	PC	PC – BME 391	Signal Analysis Lab	0	0	2	1
9.	PC	PC – BME 392	Physiology & Biochemistry Lab	0	0	2	1
10.	HM	HM – HU 381	Interpersonal Skills & Technical Report Writing	0	0	2	1
		Total Practical		**0**	**0**	**8**	**4**
		Total of Third Semester		**17**	**0**	**8**	**21**

SECOND YEAR SECOND SEMESTER

Sl.no.	Category	Code	Subject	Total number of contact hours/wk			Credit
				L	T	P	
1.	BS	BS – M401	Numerical Methods	2	0	0	2
2.	ES	ES – EC 401	Digital Electronics & Integrated Circuits	3	0	0	3
3.	PC	PC – BME 401	Biosensors & Transducers	3	0	0	3
4.	PC	PC – BME 402	Biomedical Instrumentation	3	1	0	4
5.	PC	PC – BME 403	Analytical & Diagnostic Equipments	3	0	0	3
6.	PE	PE – EE 401/ PE – EE 402	Professional Elective -I	3	0	0	3
		Total Theory		**17**	**1**	**0**	**18**
		Practical					
7.	ES	ES – EC 491	Digital Electronic Circuits Lab	0	0	2	1
8.	PC	PC – BME 491	Biosensors & Transducers Lab	0	0	2	1
9.	PC	PC – BME 492	Biomedical Instrumentation Lab	0	0	2	1
10.	PE	PE – EE 491/	Professional Elective –I Lab	0	0	2	1

		PE – EE 492					
		Total Practical		**0**	**0**	**8**	**4**
		Total of Fourth Semester		**17**	**1**	**8**	**22**

Professional Elective – I:　　　PE – EE 401 Electric Circuits & Network Analysis /
　　　　　　　　　　　　　　　　　PE – EE 402 Electrical & Electronic Measurements

Professional Elective – I Lab:　　PE – EE 491 Circuits & Network Analysis Lab/
　　　　　　　　　　　　　　　　　PE – EE 492 Electrical & Electronic Measurements Lab

THIRD YEAR FIRST SEMSESTER

Sl.no.	Category	Code	Subject	Total number of contact hours			Credit
				L	**T**	**P**	
1.	PC	PC – BME 501	Therapeutic Equipments & Assistive Devices	3	0	0	3
2.	PC	PC – BME 502	Medical Imaging Techniques	3	0	0	3
3.	PE	PE – BME 501/ PE – BME 502	Professional Elective -II	3	0	0	3
4.	OE	OE – EI 501/ OE – EI 502	Open Elective - I	3	0	0	3
5.	OE	OE – CS 501/ OE – CS 502	Open Elective - II	3	0	0	3
6.	MC	MC – ES 501	Environmental Science & Safety	2	0	0	0
		Total Theory		17	0	0	15
		Practical					
7.	PC	PC – BME 591	Medical Equipments & Simulation Lab	0	0	2	1
8.	PC	PC – BME 592	Medical Instruments & System Lab	0	0	2	1
9.	OE	OE – EI 591/ OE – EI 592	Open Elective – I Lab	0	0	2	1
10.	OE	OE – CS 591/ OE – CS 592	Open Elective – II Lab	0	0	2	1
		Total Practical		0	0	8	4
		Total of Fifth Semester		17	0	8	19

Professional Elective –II:　　PE – BME 501 Telehealth Technology/
　　　　　　　　　　　　　　　　PE – BME 502 Communication Engineering & Bio-Telemetry

Open Elective – I:　　　　　　OE – EI 501 Microprocessor & Microcontroller/
　　　　　　　　　　　　　　　　OE – EI 502 VLSI & Embedded System

Open Elective – II:　　　　　　OE – CS 501 Data Structure & Algorithm/
　　　　　　　　　　　　　　　　OE – CS 502 DBMS

Open Elective – I Lab:　　　　OE – EI 591 Microprocessor & Microcontroller Lab/

OE – EI 592 VLSI & Embedded System Lab

Open Elective – II Lab: OE – CS 591 Data Structure & Algorithm Lab/
OE – CS 592 DBMS Lab

THIRD YEAR SECOND SEMSESTER

Sl.no.	Category	Code	Subject	Total number of contact hours			Credit
				L	T	P	
1.	PC	PC – BME 601	Biomedical Digital Signal Processing	3	0	0	3
2.	PC	PC – BME 602	Biomaterials & Tissue Engineering	3	1	0	4
3.	PC	PC – BME 603	Biomechanics & Implants	3	0	0	3
4.	PC	PC – BME 604	Advanced Medical Imaging Techniques	3	0	0	3
5.	PE	PE – BME 601/ PE – BME 602/ PE – BME 603	Professional Elective - III	3	0	0	3
6.	OE	OE – CS 601/ OE – CS 602/ OE – CS 603	Open Elective - III	3	0	0	3
		Total Theory		**18**	**1**	**0**	**19**
		Practical					
7.	PC	PC – BME 691	Biomedical Digital Signal Processing Lab	0	0	2	1
8.	PC	PC – BME 692	Biomaterials & Biomechanics Lab	0	0	2	1
9.	OE	OE – CS 691/ OE – CS 692 / OE – CS 693	Open Elective – III Lab	0	0	2	1
10.	HU	HM – HU 681	Group Discussion & Seminar	0	1	2	2
		Total Practical		**0**	**0**	**8**	**5**
		Total of Sixth Semester		**18**	**2**	**8**	**24**

Professional Elective – III: PE – BME – 601 Artificial Organs & Rehabilitation Engineering/
PE – BME – 602 LASER & Fiber Optics in Medicine
PE – BME – 603 IOT & Artificial Intelligence

Open Elective – III: OE – CS – 601 Object Oriented Programming /
OE – CS – 602 Computer Network /
OE – CS – 603 Software Engineering

Open Elective – III Lab: OE – CS – 691 Object Oriented Programming Lab /
OE – CS – 692 Computer Network Lab /
OE – CS – 693 Software Engineering Lab /

FOURTH YEAR FIRST SEMSESTER

Sl.no.	Category	Code	Subject	Total number of contact hours			Credit
				L	T	P	
1.	HM	HM – HU 701	Principles of Management & Organizational Behaviour	4	0	0	4
2.	PC	PC – BME 701	Medical Image Processing	3	0	0	3
3.	PE	PE – BME – 701/ PE – BME – 702/ PE – BME – 703	Professional Elective - IV	3	0	0	3
4.	OE	OE – BME – 701/ OE – BME – 702/ OE – BME - 703	Open Elective - IV	3	0	0	3
5.	MC	MC – HU 701	Indian Constitution	2	0	0	0
		Total Theory		**15**	**0**	**0**	**13**
		Practical					
6.	PC	PC – BME 791	Medical Image Processing Lab	0	0	2	1
7.	PROJ	PROJ – BME 792	Seminar on Industrial Visit	0	0	2	1
8.	PROJ	PROJ – BME 793	Project I	0	0	12	6
		Total Practical		**0**	**0**	**16**	**8**
		Total of Seventh Semester		**15**	**0**	**16**	**21**

Professional Elective – IV: PE – BME – 701 Hospital Engineering & Management /
PE – BME – 702 Hospital Safety & Management /
PE – BME – 703 Sports Medicine

Open Elective – IV: OE – BME – 701 Biological control Systems & Modeling /
OE – BME – 702 Biomedical MEMS & Nanotechnology
OE – BME – 703 Medical Robotics & Automation

FOURTH YEAR SECOND SEMSESTER

Sl.no.	Category	Code	Subject	Total number of contact hours			Credit
				L	T	P	
1.	PE	PE – BME 801/ PE – BME 802/ PE – BME 803	Professional Elective - V	3	0	0	3
2.	OE	OE – BME 801/ OE – BME 802/ OE – BME 803	Open Elective - V	3	0	0	3
		Total Theory		**6**	**0**	**0**	**6**
		Practical					
3.	PROJ	PROJ – BME 891	Design Lab / Industrial problem related practical	0	0	4	2

			training				
4.	PROJ	PROJ – BME 881	Project II	0	0	12	6
5.	Grand Viva	BME – 882	Grand Viva-Voce	0	0	0	1
		Total Practical		**0**	**0**	**16**	**9**
		Total of Eighth Semester		**6**	**0**	**16**	**15**

Professional Elective – V: PE – BME – 801 Home Medicare Technology /
PE – BME – 802 Biomedical Hazards & Safety /
PE – BME – 803 Bioinformatics & Expert System

Open Elective – V: OE – BME 801 Quality Control & Regulatory Aspects of Medical Devices /
OE – BME 802 Design Concept & Maintenance of Biomedical Instruments /
OE – BME 803 Virtual Instrumentation Design for Medical System