

E.G.S PILLAY ENGINEERING COLLEGE  
NAGAPATTINAM – 611001  
AUTONOMOUS INSTITUTION

REGULATION 2019  
CHOICE BASED CREDIT SYSTEM (CBCS)

CURRICULUM AND SYLLABUS

B.E BIOMEDICAL ENGINEERING

I – VIII SEMESTER

ATTESTED  
  
Dr. S. RAMABALAN, M.E., Ph.D.,  
PRINCIPAL  
E.G.S. Pillay Engineering College,  
Thethi, Nagore - 611 002.  
Nagapattinam (Dt) Tamil Nadu.

# CURRICULUM

## B.E BIOMEDICAL ENGINEERING

SEMESTER I									
Course Code	Course Name	L	T	P	C	Maximum Marks			Category
						CA	ES	Total	
<b>Theory Course</b>									
1901MA104	Engineering Mathematics –I (Linear Algebra, Calculus and Partial differentiation)	3	1	0	4	40	60	100	BSC
1901CH103	Chemistry for Biomedical Engineering	3	0	0	3	40	60	100	BSC
1901GEX03	Programming for Problem Solving	3	0	0	3	40	60	100	ESC
1901ENX01	English for Engineers	2	0	0	2	40	60	100	HSSC
<b>Laboratory Course</b>									
1901GEX52	Computer Programming Laboratory	0	0	2	1	50	50	100	BSC
1901GE151	Engineering Intelligence I	0	0	2	1	100	0	100	HSSC
1901CHX51	Engineering Chemistry Laboratory	0	0	2	1	50	50	100	BSC
1901HSX51	Communication Skill Laboratory	0	0	2	1	50	50	100	HSSC
<b>Total</b>		<b>11</b>	<b>1</b>	<b>8</b>	<b>16</b>	<b>410</b>	<b>390</b>	<b>800</b>	

SEMESTER II									
Course Code	Course Name	L	T	P	C	Maximum Marks			Category
						CA	ES	Total	
<b>Theory Course</b>									
1901MA204	Engineering Mathematics–II (Calculus, Ordinary Differential Equations and Complex Variable)	3	2	0	4	40	60	100	BSC
1901PH202	Semiconductor Physics Optoelectronics	3	0	0	3	40	60	100	ESC
1901GEX01	Basic Electrical and Electronics Engineering	3	0	0	3	40	60	100	ESC
1901GEX02	Engineering Graphics	2	0	2	3	50	50	100	ESC
1901GE201	Engineering Exploration	2	0	0	2	100	0	100	ESC
<b>Laboratory Course</b>									
1901GE254	Computer Hardware and IT Essentials Laboratory	0	0	2	1	50	50	100	ESC
1901GE252	Engineering Intelligence - II	0	0	2	1	100	0	100	HSSC
1901GEX51	CAD Laboratory	0	0	2	1	50	50	100	ESC
1901GEX53	Basic Electrical and Electronics Engineering Laboratory	0	0	2	1	50	50	100	ESC
1901PHX51	Engineering Physics Laboratory	0	0	2	1	50	50	100	ESC

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Total	13	2	12	20	570	430	1000	
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### SEMESTER III

Course Code	Course Name	L	T	P	C	Maximum Marks			Category
						CI A	ES	Total	
<b>Theory Course</b>									
1901MA301	Engineering Mathematics III (Linear Algebra and Vector Calculus)	3	2	0	4	40	60	100	BSC
1902CS306	Object Oriented Programming and Data Structure	3	0	0	3	40	60	100	ESC
1902BM301	Fundamentals of Biochemistry	3	0	0	3	40	60	100	PC
1902BM302	Bio medical Circuits and Networks	3	2	0	4	40	60	100	PC
1902BM303	Biosensors and Measurements	3	0	0	3	40	60	100	PC
1902BM304	Human Anatomy and Physiology	3	0	0	3	40	60	100	PC
<b>Laboratory Course</b>									
1902BM351	Devices and Circuits Laboratory	0	0	2	1	50	50	100	PC
1902BM352	Biochemistry and Human Physiology Laboratory	0	0	2	1	50	50	100	PC
1902CS351	C++ and Data Structures Laboratory	0	0	2	1	50	50	100	ESC
1904GE351	Life Skills: Verbal Ability	0	0	2	1	100	-	100	EEC
<b>Audit Course</b>									
1901MCX02	Constitution of India	2	0	0	0	100	0	100	MC
<b>Total</b>		<b>20</b>	<b>4</b>	<b>8</b>	<b>24</b>	<b>590</b>	<b>510</b>	<b>1100</b>	

### SEMESTER IV

Course Code	Course Name	L	T	P	C	Maximum Marks			Category
						CI A	ES	Total	
<b>Theory Course</b>									
1901MA401	Probability Theory and Stochastic Processes	3	2	0	4	40	60	100	BSC
1902BM401	Biomechanics	3	0	0	3	40	60	100	PC
1902BM402	Basics of Pathology and Microbiology	3	0	0	3	40	60	100	PC
1902BM403	Control Systems	3	0	0	3	40	60	100	PC
1902BM404	Biomedical Instrumentation	3	0	0	3	40	60	100	PC
1902BM405	Digital Electronics and Integrated Circuits	3	0	0	3	40	60	100	PC
<b>Laboratory Course</b>									
1902BM451	Pathology and Microbiology Laboratory	0	0	2	1	50	50	100	PC
1902BM452	Biomedical Instrumentation Laboratory	0	0	2	1	50	50	100	PC
1902BM453	Analog and Digital Integrated Circuits Laboratory	0	0	2	1	50	50	100	PC
1904GE451	Life Skills: Verbal Reasoning	0	0	2	1	100	-	100	EEC

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Audit Course										
1901MCX01	Environmental Science	2	0	0	0	100	0	100	MC	
<b>Total</b>		<b>20</b>	<b>2</b>	<b>8</b>	<b>23</b>	<b>490</b>	<b>510</b>	<b>1100</b>		


### SEMESTER V

Course Code	Course Name	L	T	P	C	Maximum Marks			Category	
						CIA	ES	Total		
<b>Theory Course</b>										
1902BM501	Biomedical Equipments	3	0	0	3	40	60	100	PC	
1902BM502	Medical Optics	3	0	0	3	40	60	100	PC	
1902BM503	Microprocessor and its Applications	3	0	0	3	40	60	100	PC	
1902BM504	Biomedical Digital Signal Processing	3	2	0	4	40	60	100	PC	
1902BM505	Bio Process Control	3	0	0	3	40	60	100	PC	
	Professional Elective - I	3	0	0	3	40	60	100	PE	
<b>Laboratory Course</b>										
1902BM551	Biomedical Digital Signal Processing Laboratory	0	0	2	1	50	50	100	PC	
1902BM552	Biosensors and Transducers Laboratory	0	0	2	1	50	50	100	PC	
1904BM553	Microprocessor and Applications Laboratory	0	0	2	1	50	50	100	PC	
1904GE551	Life Skills: Aptitude I	0	0	2	1	100	-	100	EEC	
<b>Audit Course</b>										
1901MCX03	Essence of Indian Traditional Knowledge	2	0	0	0	100	0	100	MC	
<b>Total</b>		<b>20</b>	<b>2</b>	<b>8</b>	<b>23</b>	<b>490</b>	<b>510</b>	<b>1000</b>		

### SEMESTER VI

Course Code	Course Name	L	T	P	C	Maximum Marks			Category	
						CA	ES	Total		
<b>Theory Course</b>										
1902BM601	Diagnostic and Therapeutic Equipment- I	3	0	0	3	40	60	100	PC	
1902BM602	Analog and Digital Communication	3	0	0	3	40	60	100	PC	
1902BM603	Biomaterials	3	0	0	3	40	60	100	PC	
	Professional Elective - II	3	0	0	3	40	60	100	PE	
	HSS Elective	3	0	0	3	40	60	100	HSS	
<b>Laboratory Course</b>										
1902BM651	Diagnostic and Therapeutic Equipment Laboratory	0	0	2	1	50	50	100	PC	
1902BM652	Analog and Digital Communication Laboratory	0	0	2	1	50	50	100	PC	
1902BM653	Mini Project	0	0	2	1	50	50	100	EEC	
1902BM654	Industrial Visit Presentation	0	0	2	1	100	-	100	EEC	
1904GE651	Life Skills: Aptitude II GD	0	0	2	1	100	0	100	EEC	

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<b>Total</b>	<b>15</b>	<b>0</b>	<b>10</b>	<b>20</b>	<b>400</b>	<b>400</b>	<b>900</b>	
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<b>SEMESTER VII</b>									
Course Code	Course Name	L	T	P	C	Maximum Marks			Category
						CA	ES	Total	
<b>Theory Course</b>									
1902BM701	Diagnostic and Therapeutic Equipment- II	3	0	0	3	40	60	100	PC
1902BM702	Rehabilitation Engineering	3	0	0	3	40	60	100	PC
	Universal Human values and ethics	3	0	0	3	40	60	100	PC
	Professional Elective - III	3	0	0	3	40	60	100	PE
	Open Elective	3	0	0	3	40	60	100	OE
<b>Laboratory Course</b>									
1902BM751	Hospital Training	0	0	2	1	100	-	100	EEC
1904BM752	In-plant Training/ Internship Presentation	0	0	0	1	100	-	100	EEC
1904GE751	Life Skills : Comprehensive Viva	2	0	0	1	100	-	100	EEC
<b>Total</b>		<b>20</b>	<b>0</b>	<b>2</b>	<b>18</b>	<b>590</b>	<b>410</b>	<b>1000</b>	

<b>SEMESTER VIII</b>									
Course Code	Course Name	L	T	P	C	Maximum Marks			Category
						CA	ES	Total	
<b>Theory Course</b>									
1902BM801	Radiological Equipment	3	0	0	3	40	60	100	PC
	Professional Elective -IV	3	-	-	3	40	60	100	PE
	Professional Elective -V	3	-	-	3	40	60	100	PE
<b>Laboratory Course</b>									
1904BM851	Project Work	-	-	14	07	50	50	100	EEC
<b>Total</b>		<b>9</b>	<b>-</b>	<b>14</b>	<b>16</b>	<b>170</b>	<b>230</b>	<b>400</b>	

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Course Code	Course Name	L	T	P	C	Maximum Marks			Category
						CA	ES	Total	
<b>PROFESSIONAL ELECTIVES – I</b>									
1903BM001	Bio MEMS	3	0	0	3	40	60	100	PE
1903BM002	Nanotechnology in Medicine	3	0	0	3	40	60	100	PE
1903BM003	Bio Signal Processing and Systems	3	0	0	3	40	60	100	PE
1903BM004	Nuclear Medicine	3	0	0	3	40	60	100	PE
<b>PROFESSIONAL ELECTIVES – II</b>									
1903BM005	Regulatory Requirements in Pharmaceutical Industries	3	0	0	3	40	60	100	PE
1903BM006	Bio Analytical methods and Instruments	3	0	0	3	40	60	100	PE
1903BM007	Tele Health Technologies	3	0	0	3	40	60	100	PE
1903BM008	Medical Informatics	3	0	0	3	40	60	100	PE
<b>PROFESSIONAL ELECTIVES – III</b>									
1903BM013	Tissue Engineering and R-DNA technology	3	0	0	3	40	60	100	PE
1903BM014	Medical Imaging	3	0	0	3	40	60	100	PE
1903BM015	Pattern Recognition in Medicine	3	0	0	3	40	60	100	PE
1903BM016	3D Printing Technology	3	0	0	3	40	60	100	PE
<b>PROFESSIONAL ELECTIVES – IV</b>									
1903BM017	Rapid Prototyping	3	0	0	3	40	60	100	PE
1903BM018	Wearable Systems	3	0	0	3	40	60	100	PE
1903BM019	Disaster Managements	3	0	0	3	40	60	100	PE
1903BM020	Special Surgical Equipment	3	0	0	3	40	60	100	PE
<b>PROFESSIONAL ELECTIVES – V</b>									
1903BM021	Biometric Systems	3	0	0	3	40	60	100	PE
1903BM022	Robotics and Medicine	3	0	0	3	40	60	100	PE
1903BM023	Ergonomics	3	0	0	3	40	60	100	PE
1903BM024	Physiological modeling	3	0	0	3	40	60	100	PE
<b>HSS ELECTIVES</b>									
1901HS001	Innovation & Entrepreneurship Fundamentals	3	0	0	3	40	60	100	HSS
1901HS002	Intellectual Property Rights	3	0	0	3	40	60	100	HSS
1901HS003	Start Up Entrepreneurship	3	0	0	3	40	60	100	HSS
1901HS004	Business model Innovation	3	0	0	3	40	60	100	HSS
<b>OPEN ELECTIVES OFFERED BY THE DEPARTMENT OF BIOMEDICAL ENGG</b>									
1903BM009	Biomedical Engineering	3	0	0	3	40	60	100	OE
1903BM010	Design and development of biomedical systems	3	0	0	3	40	60	100	OE
1903BM011	Bio Process Modeling	3	0	0	3	40	60	100	OE
1903BM012	Instrumentation Engineering	3	0	0	3	40	60	100	OE

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**TOTAL CREDIT**

S.NO	Subject Area	Credit per Semester								Credit		AICTE Credits	
		I	II	III	IV	V	VI	VII	VIII	Tot.	Percentage	Tot.	Percentage
1	HS	4	1				3			8	5%	12	7.5%
2	BS	9	4	4	4					21	13.1%	25	15.6%
3	ES	3	15	4						22	13.7%	24	15%
4	PC			15	18	19	11	9	3	75	46.8%	48	30%
5	PE					3	3	3	6	15	9.3%	18	11.2%
6	OE							3		3	1.8%	18	11.2%
7	EEC/PSI			1	1	1	3	3	7	16	10%	15	9.3%
8	MC			√	√	√							
Total Credits/Sem		16	20	24	23	23	20	18	16	160		160	

Humanities and Social Science(HSS)

Basic Sciences(BS)

Engineering Science(ES)


Professional Core (PC5)

Professional Elective(PE)

Open Elective(OE)

Employability Enhanced Course Project Seminar Internship (EEE / PSI)

Mandatory Course (MC)

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