DEPARTMENT OF ENGINEERING DESIGN, IIT MADRAS

Dual Degree (Biomedical Design) Curriculum (from July 2019) – Revised 22.06.21

Semester-wise credit hour distribution

Semester	I	Win.	II	Sum.	III	IV	V	VI	VII	VIII	Sum.	IX	X	Total
Credits	49	3	51	3	58	51*	50*	44*	30*	40	20	44	9*	551

* Indicated credits are only for core programme. In addition, 99 credits of electives have to be taken in sems IV-X, of which atleast 18 credits should be from the list of professional elective courses prescribed by the Department of Engineering Design, 9 credits Maths / Science Elective.   The remaining 72 credits constitute free electives. The presence of the terms "Free Elective" and "Professional Elective" in the tables is meant to remind the students regarding the same.

L: Lecture, **T**: Tutorial, **E**: extended tutorial, **P**: Lab, **O**: outside class hours, **C**: credits. **Cat**: Category (S: Basic sciences, E: Basic Engineering, H: Humanities, P: Professional).

SEMESTER I

No.	Title	L	T	E	P	O	C	Cat
MA1101	Functions of Several Variables	3	1	0	0	6	10	S
AM1100	Engineering Mechanics	3	1	0	0	6	10	E
ED1021	Introduction to Computation and Visualization	3	0	0	3	3	9	E
ME1120	Engineering Drawing	1	0	0	3	3	7	E
ED1031	Creative Design	0	0	0	3	0	3	P
PH1010	Physics I	3	1	0	0	6	10	S
GN1101	Life Skills I	0	0	0	0	2	0	
ID1200	Ecology and Environment	2	0	0	0	0	0	
	NCC (NC1010) / NS0 (NS1020) / NSO (NS1030)	0	0	0	0	2	0	
	Total	**15**	**3**	**0**	**9**	**28**	**49**	
Winter								
WS1301	Workshop I	0	0	0	3	0	3	E

SEMESTER II

No.	Title	L	T	E	P	O	C	Cat
MA1102	Series and Matrices	3	1	0	0	6	10	S
PH1030	Physics Laboratory	0	0	0	3	1	4	S
ED1011	Functional and Conceptual Design	2	0	0	3	4	9	P
ED2090	Geometric Modelling and CAD	3	0	0	3	6	12	P
ED1033	Form and Aesthetics in Design I	1	0	0	3	2	6	P
EE1101	Signals and Systems	3	1	0	0	6	10	E
GN1102	Life Skills II	0	0	0	0	1	0	
	NCC (NC1010) / NS0 (NS1020) / NSO (NS1030)	0	0	0	0	3	0	
	Total	**12**	**2**	**0**	**12**	**29**	**51**	
Summer								
WS1302	Workshop I	0	0	0	3	0	3	E

SEMESTER III

No.	Title	L	T	E	P	O	C	Cat
ED1034	Form and Aesthetics in Design II	1	0	0	3	2	6	P
ED2141	Physics of Measurement	3	0	0	3	6	9	S
ED2012	Manufacturing Processes	2	0	0	0	4	6	P
ED2011	Design of Mechanical Systems 1	4	0	0	3	8	15	P
MA2020	Differential Equations	3	0	0	0	6	9	S
ED2130	Analog and Digital Electronics	3	1	0	3	6	13	P
	Total	**16**	**1**	**0**	**12**	**32**	**58**	

SEMESTER IV

No.	Title	L	T	E	P	O	C	Cat
CY1050	Macromolecules as Engg. Materials	3	0	0	0	6	9	S
ED4040	Design of Thermal and Fluid Systems	4	0	0	3	8	15	P
ED2040	Control Systems	3	0	0	3	6	12	P
ED4060	Design of Mechanical Systems 2	4	0	0	3	8	15	P
	Free Elective / Professional Elective							
	Total	**14**	**0**	**0**	**9**	**28**	**51**	

SEMESTER V*

No.	Title	L	T	E	P	O	C	Cat
ED3010	Human Factors in Design	3	0	0	0	6	9	P
ED	Professional Elective							P
ED5040	Human Anatomy Physiology and Biomechanics	3	0	0	3	6	12	P
ED5052	Electromagnetic Compatibility for Product Design	3	0	0	2	6	11	P
ED5080	Mechatronics System Design	2	0	0	3	4	9	P
BT1010	Life Sciences	3	0	0	0	6	9	S
	Free Elective							F
	Total	**14**	**0**	**0**	**8**	**28**	**50**	

SEMESTER VI*

No.	Title	L	T	E	P	O	C	Cat
	Maths / Science Elective							S
ED5015	Computational Methods in Design	3	1	0	0	6	10	P
ED5020	Design of Implantable and Surgical Devices	3	0	0	0	6	9	P
ED5017	Digital Signal Processing for Engineering Design	3	1	0	0	6	10	P
ED5070	Design of Monitoring and Diagnostic Systems	4	0	0	0	8	12	P
ED5060	Medical Equipment Dissection Lab	0	0	0	3	0	3	P
ED	Professional Elective / Free Elective							
	Total	**13**	**2**	**0**	**3**	**26**	**44**	

SEMESTER VII*

No.	Title	L	T	E	P	O	C	Cat
	Free Electives							F
ED6001	Medical Image Analysis	3	0	0	3	6	12	P
BT5011	Biomaterials Engg.	3	0	0	0	6	9	P
HS	Humanities I	3	0	0	0	6	9	H
	Total	**9**	**0**	**0**	**3**	**18**	**30**	

SEMESTER VIII

No.	Title	L	T	E	P	O	C	Cat
ED5601	Project I (Industry)	0	0	0		0	40	P
	Total	**0**	**0**	**0**		**0**	**40**	
Summer								
ED5602	Project II	**0**	**0**	**0**	**20**	**0**	**20**	P
	Total	**0**	**0**	**0**	**20**	**0**	**20**	

SEMESTER IX

No.	Title	L	T	E	P	O	C	Cat
ED5603	Project III	0	0	0	35	0	35	P
HS	Humanities II	3	0	0	0	6	9	H
	Total	**3**	**0**	**0**	**35**	**6**	**44**	

SEMESTER X*

No.	Title	L	T	E	P	O	C	Cat
HS	Humanities III	3	0	0	0	6	9	H
	Free Electives							
	Total	**3**	**0**	**0**	**0**	**6**	**9***	
	Professional Ethics	2	0	0	0	0	0	

Category	Engineering (E)	Professional (P) Core+Elective+Project	Humanities (H)	Sciences (S)	Un-allotted credits	Total
Credits	**42**	**218+18+95**	**27**	**70+9**	**72**	**551**

* Indicated credits are only for core program. In addition, 99 credits of electives have to be taken in sems IV-X, of which atleast 18 credits should be from the list of professional elective courses prescribed by the Department of Engineering Design, 9 credits of Maths / Science Elective, the remaining 72 credits constitute free electives. The presence of the terms "Free Elective" and "Professional Elective" in the tables is meant to remind the students regarding the same.

BTech (honours) + MTech program: (Total credit requirement: **551** + 27 = **578**)

- *Eligibility*: minimum CGPA of 8.5 at the end of 5th sem without U or W grade in any course. They need to maintain these conditions until graduation.

- *Extra credit requirement*: 27 elective credits over and above regular program from the courses prescribed by the Department of Engineering Design. These credits *have* to be completed in VI, VII and IX semesters.