

# DEPARTMENT OF ENGINEERING DESIGN, IIT MADRAS

Dual Degree (Automotive Engineering) Curriculum (from July 2016) – Revised

23.01.2020

## SEMESTER-WISE CREDIT HOUR DISTRIBUTION

Semester	I	Win	II	Su m	III	IV	V	VI	VII	VIII	Sum	IX	X	Total
Credits	49	3	51	3	61	51*	43*	41*	39*	40	20	44	9*	553

\* 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	
	<b>Total</b>	<b>15</b>	<b>3</b>	<b>0</b>	<b>9</b>	<b>28</b>	<b>49</b>	
<b>Winter</b>								
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	
	<b>Total</b>	<b>12</b>	<b>2</b>	<b>0</b>	<b>12</b>	<b>29</b>	<b>51</b>	
<b>Summer</b>								
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
ED2140	Physics of Measurement	3	0	0	3	6	12	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
	<b>Total</b>	<b>16</b>	<b>1</b>	<b>0</b>	<b>12</b>	<b>32</b>	<b>61</b>	

### 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							F
	<b>Total</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>28</b>	<b>51</b>	

**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 I							P
	Free Elective							F
ED5160	Fundamentals of Automotive Systems	4	0	0	3	8	15	P
ED5052	Electromagnetic Compatibility for Product Design	3	1	0	0	6	10	P
ED5080	Mechatronics System Design	2	0	0	3	4	9	P
	<b>Total</b>	<b>12</b>	<b>1</b>	<b>0</b>	<b>6</b>	<b>24</b>	<b>43</b>	

**SEMESTER VI\***

No.	Title	L	T	E	P	O	C	Cat
	Science Elective (Maths / Science)							S
<b>ED5015</b>	Computational Methods in Design	3	1	0	0	6	10	P
ED5220	Vehicle Dynamics	3	0	0	3	6	12	P
ED5017	Digital Signal Processing for Engineering Design	3	1	0	0	6	10	P
ED5013	Analytical and Experimental Techniques in Vibration	2	0	0	3	4	9	P
ED	Professional Elective II							P
	<b>Total</b>	<b>11</b>	<b>2</b>	<b>0</b>	<b>6</b>	<b>22</b>	<b>41</b>	

**SEMESTER VII\***

No.	Title	L	T	E	P	O	C	Cat
BT1010	Life Sciences	3	0	0	0	6	9	S
	Free Electives							F
ED5050	Structural and Component Design of Vehicles	4	0	0	0	8	12	P
ED5330	Control of Automotive Systems	3	0	0	0	6	9	P
HS	Humanities I	3	0	0	0	6	9	H
	<b>Total</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>26</b>	<b>39</b>	

**SEMESTER VIII**

No.	Title	L	T	E	P	O	C	Cat
ED5601	Project I (Industry)	0	0	0		0	40	P
	<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>40</b>	

**Summer**

No.	Title	L	T	E	P	O	C	Cat
ED5602	Project II	0	0	0	20	0	20	P
	<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>0</b>	<b>20</b>	

**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
	<b>Total</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>35</b>	<b>6</b>	<b>44</b>	

## SEMESTER X\*

No.	Title	L	T	E	P	O	C	Cat
HS	Humanities III	3	0	0	0	6	9	H
	Free Electives							
	<b>Total</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>9*</b>	
HS3050	Professional Ethics	2	0	0	0	0	0	H

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### **BTECH (HONOURS) + MTECH PROGRAM**

(Total credit requirement: **553** + 27 = **580**)

- **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.