Programme	**:**	**Diploma in ET**/CE/EE//ME/MT/CM/IT/DDGM
Programme Code	**:**	01/02/**03**/04/05/06/07/08/21/22/**23**/24/26/16/**17**
Name of Course	**:**	**Robotics**
Course Code	**:**	**ET 583**

Teaching Scheme:

	Hours /Week	**Total Hours**
Theory	**04**	**64**
Practical	**02**	**32**

Evaluation Scheme:

	Progressive Assessment	**Semester End Examination**			
		Theory	**Practical**	**Oral**	**Term work**
Duration	**Two class tests, each of 60 minutes**	**3 Hrs.**	**--**	**3 Hrs**	**--**
Marks	**20**	**80**	**--**	**25**	**25**

Course Rationale:

In present situation Diploma Engineer is working on production fields with interdisciplinary technologies. This subject is introduced with the view to make students aware with these technologies.

Course Objectives:

After studying this course, the student will be able to

•	Understand definition and scope of Mechatronics.
•	Know elements of Mechatronic systems.
•	Understand the application of electronics and instrumentation in mechanical and automobile engineering.

Course Content:

Chapter No.	Name of Topic/Sub topic	Hrs	Marks
	SECTION – I		
1.	**Basic Concepts of Robotics**		
	Definition of Robotics, different types of robotics, various generations of Robots. Robots Anatomy, Robotics system Components and schematic design, Robots configurations	**08**	**10**
2.	**Electrical and Mechanical Systems**		
	Electrical systems- AC and DC circuits. Mechanical systems- Hydraulic, Pneumatic, Nozzle-flapper.	**08**	**10**
3.	**Basic Mechanical Components**		
	Definition, types, operation only and applications of- Belts, Chains, Sockets, Cams and Gears.	**04**	**06**
4.	**Robotics sensors**		
	Robots drive system , variable speed arrangements path determination , micro machines in robotics Vision, ranging, fiber optic and tactile sensors. Proximity and Range sensors	**12**	**14**
	SECTION – II		
5.	**Applications of robot**		
	Mutiple robots , machine interface , robots in manufacturing and non- manufacturing applications , Selection of robot..	**06**	**08**
6.	**Control System Components**		
	AC and DC Servomotors, Stepper motors, Synchros, Servomechanism, AC and DC position control, Introduction to Programmable Logic Controllers (PLC)	**12**	**14**
7.	**Robotic Systems**		
	Definition, Types of robots, work envelope, degree of freedom, robot control systems, Speed motion load capacity , End effectors, Grippers, Applications of robots	**14**	**18**
	TOTAL	**64**	**80**

List of Practical/Experiments/Assignments:

Sr. No.	Name of Experiment/Assignment
1.	Study of different types of gears and cams.
2.	Study of Synchros.
3.	Study of Steeper motor control.
4.	Study of Armature and Field control of DC motors
5.	Study of PLC.
6.	Simple programming on PLC.
7.	Study different types of robots by arranging industrial visits.

Instructional Strategy:

Sr. No.	Topic	Instructional Strategy
1.	Basic concepts of Robotics	Classroom Teaching & Lab. work
2.	Electrical and Mechanical Systems	Classroom Teaching & Lab. Work
3.	Basic Mechanical components	Classroom Teaching & Lab. Work
4.	Introduction to control system	Classroom Teaching & Lab. Work
5.	Programmable Logic Controllers (PLC)	Classroom Teaching & Lab. Work
6.	Control System Components	Classroom Teaching & Lab. work
7.	Robotic systems	Classroom Teaching & Lab. work

Text Books:

Sr. No	Author	Title	Publication
1.	Mikell P. Weiss G.M	Industrial Robotics,	McGraw-Hill Singapore

Reference Books:

Sr. No	Author	Title	Publication
1.	Ghosh	Control in Robotics and Automation: Sensor Based Integration	Allied Publishers
2.	Alciatore D.G. Histand M.B.	Introduction to Mechatronics and Measurement systems	Tata McGraw Hill,N.Delhi
3.	John W Webb & Ronald A Reis	Programming Logic Controllers	PHI

Learning Resources: Manuals of PLC and CNC machine, 2 Industrial visits.

Prepared By :

(Dr.N.L.Janrao.) (G.N.Hainalkar..)	(S.V.Chaudhari.)	(R.N.Shikari.)
Lect. In E &TC	Member Secretary, PBOS	Chairman, PBOS