

Semester		Course Code	Course Title	Category
Semester –II		ESC 104	Workshop/Manufacturing Practices (Theory & Lab.)	Engineering Science Courses
Scheme and Credits			Course contents	
L	T	P	Credits	
1	0	4	3	

### **Workshop/Manufacturing Practices[ [L : 1; T:0; P : 0 (1 credit)]**

#### **Lectures & videos: (10 hours)**

#### **Detailed contents**

1. Manufacturing Methods- casting, forming, machining, joining, advanced manufacturing methods (3 lectures)
2. CNC machining, Additive manufacturing (1 lecture)
3. Fitting operations & power tools (1 lecture)
4. Electrical & Electronics (1 lecture)
5. Carpentry (1 lecture)
6. Plastic moulding, glass cutting (1 lecture)
7. Metal casting (1 lecture)
8. Welding (arc welding & gas welding), brazing (1 lecture)

#### **Suggested Text/Reference Books:**

- (i) Hajra Choudhury S.K., Hajra Choudhury A.K. and Nirjhar Roy S.K., “Elements of Workshop Technology”, Vol. I 2008 and Vol. II 2010, Media promoters and publishers private limited, Mumbai.
- (ii) Kalpakjian S. And Steven S. Schmid, “Manufacturing Engineering and Technology”, 4th edition, Pearson Education India Edition, 2002.
- (iii) Gowri P. Hariharan and A. Suresh Babu, Manufacturing Technology-I” Pearson Education, 2008.
- (iv) Roy A. Lindberg, “Processes and Materials of Manufacture”, 4th ed., Prentice Hall India, 1998.
- (v) Rao P.N., “Manufacturing Technology”, Vol. I and Vol. II, Tata McGrawHill House, 2017.

#### **Course Outcomes**

Upon completion of this course, the students will gain knowledge of the different manufacturing processes which are commonly employed in the industry, to fabricate components using different materials.

#### **(ii) Workshop Practice:(60 hours)[ L : 0; T:0 ; P : 4 (2 credits)]**

1. Machine shop (10 hours)
2. Fitting shop (8 hours)
3. Carpentry (6 hours)
4. Electrical & Electronics(8 hours)
5. Welding shop ( 8 hours (Arc welding 4 hrs + gas welding 4 hrs)
6. Casting (8 hours)
7. Smithy (6 hours)
8. Plastic moulding& Glass Cutting (6 hours)

Examinations could involve the actual fabrication of simple components, utilizing one or more of the techniques covered above.

#### **Laboratory Outcomes**

Upon completion of this laboratory course, students will be able to fabricate components with their own hands.

They will also get practical knowledge of the dimensional accuracies and dimensional tolerances possible with different manufacturing processes.

By assembling different components, they will be able to produce small devices of their interest.