

First Year 1st Semester Curriculum Structure for B.Tech. Course

Workshop/ Manufacturing Practices (ESC 104)	
Department: Program: Course Code: Title of Course: Year of Study: Semester:	Basic Science and Humanities B. Tech. ESC 104 Workshop/ Manufacturing Practices First Year First
Contact Hours: Credits: Type of course:	L-T-P: 1-0-4 3 Laboratory
Pre-requisites Courses:	● Knowledge in dimensions and units. ● Usage of geometrical instruments and analytical ability.
Course Outcome (CO):	CO1: Upon completion of this laboratory course, students will be able to fabricate components with their own hands. CO2: They will also get practical knowledge of the dimensional accuracies and dimensional tolerances possible with different manufacturing processes. CO3: By assembling different components, they will be able to produce small devices of their interest. CO4: Exposure to some of the advanced and latest manufacturing techniques being employed in the industry. (Note: CO must be in multiple of 4 only)

List of the Experiments

Choose any 12 experiments from the following list

Expt. No.	Experiment	Link for the experiment
1	Fitting shop : Typical jobs that may be made in this practice module: To prepare a simple type fitting job	http://www.vlab.co.in/broad-area-mechanical-engineering

2	Fitting shop: Typical jobs that may be made in this practice module: To make a Gauge from MS plate.	http://www.edulib.in/
3	Casting : Typical jobs that may be made in this practice module: a. One/ two green sand moulds to prepare, and a casting be demonstrated.	https://www.thevirtualfoundry.com/ https://www.foundrymag.com/ http://www.vlab.co.in/ http://www.edulib.in/
4	Welding shop : Typical jobs that may be made in this practice module: ARC WELDING (4 hours): To join two thick (approx 6mm) MS plates by manual metal arc welding.	https://education.lincolnelectric.com/ http://www.vlab.co.in/
5	Welding shop: Typical jobs that may be made in this practice module: To join two thin mild steel plates or sheets by gas welding.	http://www.edulib.in/
6	Smithy :Typical jobs that may be made in this practice module: Prepare a simple type job by upsetting process	http://www.vlab.co.in/ https://www.oncampus.de/weiterbildung/moocs/mintrelab
7	Smithy: (Typical jobs that may be made in this practice module: Prepare a simple type job by drawing down process	http://www.edulib.in/
8	Carpentry :Typical jobs that may be made in this practice module: To make wooden joints and/or a pattern or like.	http://www.vlab.co.in/ http://www.edulib.in/
9	Machine shop: Typical jobs that may be made in this practice module: To make a pin from a mild steel rod in a lathe.	http://www.vlab.co.in/ https://www.oncampus.de/weiterbildung/moocs/mintrelab
10	Machine shop :Typical jobs that may be made in this practice module: To make rectangular and vee slot in a block of cast iron or mild steel in a shaping and / or milling machine.	http://www.edulib.in/
11	Plastic moulding & Glass cutting : Typical jobs that may be made in this practice module: For plastic moulding, making at least one simple plastic component should be made.	http://www.vlab.co.in/ https://www.oncampus.de/weiterbildung/moocs/mintrelab

12	Plastic moulding & Glass cutting : Typical jobs that may be made in this practice module: For glass cutting, three rectangular glass pieces may be cut to make a kaleidoscope using a black colour diamond cutter, or similar other components may be made.	https://www.solidworks.com/ http://www.edulib.in/
13	Electrical & Electronics: Familiarization with LT switchgear elements, making its sketches and noting down its specification. Kitkat fuse, Glass cartridge fuse, Plastic fuse holders (optional), Iron clad isolators, MCB style isolators, Single phase MCB, Single-phase wire, wiring cable.	http://www.vlab.co.in/
14	Electrical & Electronics: Demonstration of domestic wiring involving two MCB, two piano key switches, one incandescent lamp, one LED lamp and plug point.	http://www.edulib.in/
15	Electrical & Electronics: Simple wiring exercise to be executed to understand the basic electrical circuit.	http://www.vlab.co.in/
16	Electrical & Electronics: .Fabrication of a single-phase full wave rectifier with a step down transformer using four diodes and electrolytic capacitor and to find its volt-ampere characteristics to understand basic electronic circuit fabrication.	http://www.edulib.in/
17	Electrical & Electronics: Simple soldering exercises to be executed to understand the basic process of soldering.	http://www.vlab.co.in/ http://www.edulib.in/

o **Book list:**

1. 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.
2. Kalpakjian S. And Steven S. Schmid, “Manufacturing Engineering and Technology”, 4th edition, Pearson Education India Edition, 2002.

3. Gowri P. Hariharan and A. Suresh Babu, "Manufacturing Technology – I" Pearson Education, 2008.
4. Roy A. Lindberg, "Processes and Materials of Manufacture", 4th edition, Prentice Hall India, 1998.
5. Rao P.N., "Manufacturing Technology", Vol. I and Vol. II, Tata McGrawHill House, 2017