



College: Engineering

Department: Civil Engineering

Course Title: Engineering Workshop

Course No: : **0901201**

Credit Hours: 1

Prerequisite: None

Semester: First /2020-2021

### About The Course

Course Title: Engineering Workshop

Class: 1 Year

Course No: **0901 201**

Credit Hours: 1

Lecture Room: Workshop LAB

Time: 9 am-11 am

Obligatory/ Optional: Obligatory

Text Book: Workshop Processes, Practices and Materials. Fifth edition  
Bruce J. Black, 2015

### The Instructor

Name: Dr. Essam Ali Mahmood

Title: Assistant Professor

Office Tel:

Office No:

Office Hours: **9:30-10:30**

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## **Course Goals: the goal of 0901201**

- To Study of different hand operated power tools, uses and their demonstration.
- To gain a good basic working knowledge required for the production of various engineering products.
- To provide hands on experience about use of different engineering materials, tools, equipments and processes those are common in the engineering field.
- To develop a right attitude, team working, precision and safety at work place.
- It explains the construction, function, use and application of different working tools, equipment and machines.
- To study commonly used carpentry joints.
- To have practical exposure to various welding and joining processes.
- Identify and use marking out tools, hand tools, measuring equipment and to work to prescribed tolerances.

## **Instructional Outcomes for the Course:**

Students will be expected to:

- Study and practice on machine tools and their operations
- Practice on manufacturing of components using workshop trades including plumbing, fitting, carpentry, foundry, house wiring and welding.
- Identify and apply suitable tools for different trades of Engineering processes including drilling, material removing, measuring, chiseling.
- Apply basic electrical engineering knowledge for house wiring practice.

## **Course Contents:**

### **1- INTRODUCTION TO WORKSHOP**

- 1.1 Workshop layout.
- 1.2 Importance of various sections/shops of workshop.
- 1.3 Types of jobs done in each shop.
- 1.4 General safety rules and work procedure in workshop.

### **2- FITTING**

- 2.1 Sketch, specification and applications of fitting work holding tools-bench vise, V-block with clamp and C-clamp.
- 2.2 Sketch, specification, material, applications and methods of using fitting marking and measuring tools-marking table, surface plate, angle plate, universal scribing block, try-square, scriber, divider, centre punch, letter punch, calipers, vernier caliper, etc.
- 2.3 Types, sketch, specification, material, applications and methods of using of fitting cutting tools-hacksaw, chisels, twist drill, taps, files, dies.
- 2.4 Types, sketch, specification, material, applications and methods of using of fitting finishing tools-files, reamers.
- 2.5 Sketch, specification and applications of miscellaneous tools-hammer, spanners, screw drivers sliding screw wrench.
- 2.6 Demonstration of various fitting operations such as chipping, filing, scraping, grinding, sawing, marking, drilling, tapping.
- 2.7 Preparation of simple and male- female joints.
- 2.8 Safety precautions.

### **3- Electrical Installation**

- 3.1 Knowledge of electrical safety and current and voltage.

3.2 Demonstration of parallel and serial connection

3.3 Types of electrical switching.

3.4. safety precautions.

#### **4- CARPENTRY**

4.1 Types, sketch, specification, material, applications and methods of using of carpentry tools-saws, planner, chisels, hammers, pallet, marking gauge, vice, try square, rule, etc.

4.2 Types of woods and their applications.

4.3 Types of carpentry hardwares and their uses.

4.4 Demonstration of carpentry operations such as marking, sawing, planning, chiseling, grooving, boring, joining, etc.

4.5 Preparation of wooden joints.

4. 6 Safety precautions.

#### **5- METAL JOINING**

5 1. Types, specification, material and applications of arc welding transformers.

5 2. Types, specification, material and applications of arc welding accessories and consumables.

5 3. Demonstration of metal joining operations- arc welding, soldering and brazing. Show effect of current and speed. Also demonstrate various welding positions.

5.4. Demonstrate gas cutting operation.

6.5 Preparation of metal joints.

6.6 Safety precautions.

#### **Assessment and Grading**

**1- Design and Implementation of a Project 50%**

**2- Final Exam 50%**