Course Syllabus
Gyanmanjari Institute of Technology
Semester-1

**Subject: Mechanical Workshop Practice – BETME10202**

**Type of course: Skill Enhancement Course**

**Prerequisite: NA**

**Rationale:**

The field of engineering continues to grow rapidly, transcending disciplines & driving economic growth. Workshop practices have become significant in the industrial environment to manufacture products for the service of the mankind. Workshop Practice is a core subject & is highly essential for all engineers & techno craters for formalizing themselves with the latest techniques & concepts of manufacturing & is the basic requirement for all the engineering students. In addition to introduction of various tools, processes & materials, the student has to acquire practical knowledge & skills of using machines & equipment, Various Cutting, measuring & marking tools, performing main operations through simple exercises.

**Teaching and Examination Scheme:**

| Teaching Scheme | | | Credits | Examination Marks | | | | | Total Marks |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Theory Marks | | Practical Marks | | CA | |
| CI | T | P | C | ESE | MSE | V | P | ALA | |
| 0 | 0 | 4 | 2 | - | - | 20 | 20 | 60 | 100 |

*Legends: CI-Class Room Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V – Viva; CA - Continuous Assessment; ALA- Active Learning Activities.*

## Continuous Assessment:

**(For each activity maximum-minimum range is 5 to 10 marks)**

| Sr. No | Active Learning Activities | Marks |
|---|---|---|
| 1 | **Fitting shop**<br>Prepare a part with the help of fitting shop and upload it on moodle. | 10 |
| 2 | **Carpentry shop**<br>Prepare a part with the help of carpentry shop and upload it on moodle. | 10 |
| 3 | **Welding shop**<br>Prepare a part with the help of welding shop and upload it on moodle. | 10 |
| 4 | **Soldering shop**<br>Prepare a part with the help of Soldering shop and upload it on moodle. | 10 |
| 5 | **Plumbing shop**<br>Prepare a part with the help of Plumbing shop and upload it on moodle. | 10 |
| 6 | **Quiz**<br>Unit wise Quiz of 10 MCQs. | 10 |
| Total | | 60 |

## Course Content:

| Unit No | Course content | Hrs | % Weightage |
|---|---|---|---|
| 1 | **Machine shop**<br>• Demonstration of job on Lathe machine<br>• Demonstration of job on Drilling machine<br>• Study of different types of power tools<br><br>**Wood working**<br>Demonstration & practice of different carpentry operation like Planning, sawing & chiseling and joints | 16 | 25% |
| 2 | **Fitting Shop:**<br>• Demonstration of all basic hand tools/ measuring tools & equipment's.<br>• Demonstration of simple operations such as marking, punching, filing, sawing, scrapping, drilling. | 12 | 25% |
| 3 | **Smithy / Tin Shop:**<br>• Demonstration & practice of MS rod into forged MS ring. | 16 | 25% |

| | | | |
|---|---|---|---|
| | **Welding shop:**<br>• Hands on Practice and job making using Electric arc Welding<br>• Demonstration of different types of joints by using arc welding & gas welding.<br>Inspection of metal pipes and welding portion using LPT. | | |
| 4 | **Plumbing and its fitting:**<br>• Demonstrate a plumbing job and inspect the leakage portion.<br>• Precaution to make a leakage free joint in pipelines.<br><br>**Foundry**<br>• Demonstration of Pattern Making by sand molding. | 16 | 25% |

## Suggested Specification table with Marks (Theory):

| Distribution of Theory Marks (Revised Bloom's Taxonomy) | | | | | | |
|---|---|---|---|---|---|---|
| Level | Remembrance (R) | Understanding (U) | Application (A) | Analyze (N) | Evaluate (E) | Create (C) |
| Weightage | - | - | - | - | - | - |

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

## Course Outcome:

| After learning the course, the students should be able to: | |
|---|---|
| CO1 | Perform the operations of plain turning, taper turning, facing, knurling, grooving, drilling on a given steel work piece |
| CO2 | Develop various joints using different welding processes such as electrical arc welding, MIG welding & TIG Welding. |
| CO3 | Perform plumbing fitting for engineering application and interpret various plumbing parts and recognize suitable wood working hand tools & equipment's to make various joints like half lap cross joint, mortise-tenon joint & bridle joint of soft wood. |
| CO4 | Understand various pattern making techniques |
| CO5 | Develop different components using various operations such as marking cutting, measuring, soldering etc. |

## List of Practical

**(Minimum-10practical):**

| Sr. No | Descriptions | Unit No | Hrs |
|---|---|---|---|
| 1 | Demonstration of job on Lathe machine | 1 | 4 |
| 2 | Demonstration of job on Drilling machine | 1 | 4 |
| 3 | Study of different types of power tools. | 1 | 4 |
| 4 | Hands on Practice and job making in Fitting shop. | 2 | 8 |
| 5 | Hands on Practice and job making in Carpentry shop. | 1 | 8 |
| 6 | Hands on Practice and job making using Electric arc Welding / Resistance welding process | 3 | 8 |
| 7 | Hands on Practice and job making using Soldering process. | 2 | 4 |
| 8 | Demonstration of Pattern Making by sand moduling. | 4 | 4 |
| 9 | Hands on Practice and job making in Smithy/ Tin smithy shop | 3 | 8 |
| 10 | Study on Plumbing and its fitting | 4 | 8 |
| | | Total | 60 |

## Instructional Method:

The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory

The internal evaluation will be done on the basis of Active Learning Assignment

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in laboratory.