MEC 3202 Production engineering II

Hours per semester				Weighted total mark	Weighted exam mark	Weighted continuous assessment mark	Credit unit
LH	PH	TH	CH				CU
45	30		60	100	60	40	4

Course description

This course follows on an earlier course, "Production Engineering I". It covers the production processes that are normally grouped as secondary processes and are undertaken in machine shops

Course objectives

The objectives of this course are:

- To introduce the students to the role of machine shops and principles behind plant lay out.
- To give a broad introduction into the principles behind secondary manufacturing processes.

Learning Outcomes:

At the end of this course, a student should be able to:

- Explain the role of machine shops in the manufacturing process
- Develop workshop layouts to address different needs
- Explain the details of secondary processes
- Determine quantitative characteristics of different secondary processes **Course Content:**

Introduction (6 Hours)

- Overview of Workshops:
- Types of workshops
- The machine shop
- Drawings in a workshop
- Introduction to safety

Plant Layout (6 Hours)

- Introduction to plant layout
- Types of layouts
- Factors affecting layout
- Sample layout giving the material flow and space allocation

Machine tools - structure and installation (8 Hours)

- Lathe
- Milling machine
- Shaper
- Drilling machine

Mechanics and economics of metal cutting (6 Hours)

- Cutting Speed
- Cutting forces
- Tool life

- Cutting economics **Machine tool metrology**
- Tools
- Techniques
- Surface roughness **Finishing processes**
- Grinding, honing and super finishing
- Shot blasting
- Electroplating
- Enameling
- Painting

Introduction to chipless machining

- EDM
- Plasma cutting
- Ultrasonic machining

Process Planning

- Generative
- Group technology

Practicals *Delivery Methods:*

The course will be taught by using lectures and tutorials

(4 Hours)

(4 Hours)

(4 Hours)

(4 Hours) (30 Hours)

Assessment Methods:

Course work (assignments and tests) and final examination and their relative contributions to final grade are shown as follows:

Percentage contribution

40% 60% **100%**