LANDMARK UNIVERSITY, OMU-ARAN
COURSE COMPACT TEMPLATE

COLLEGE: Business and Social Sciences
DEPARTMENT: Business studies
PROGRAMME:
COURSE COMPACT for:

Course

Course code: BUS 314
Course title: Production Management
Credit unit: 3
Course status: Compulsory

Lecturer's Data

Name of the lecturer: Henry Inegbedion
Qualifications obtained: Ph.D, M Sc., PGDE, MBA,B Sc.,
Department: Business Studies
College: Business and Social Sciences
E-mail: _inegbedion.henry@lmu.edu.ng_
Office Location: B 219

Consultation Hours: Mondays, 2-3 PM; Thursdays, 12.00PM – 2.00PM

INTRODUCTION TO THE COURSE

Course Description: This course examines the meaning, nature and relevance of production management to business. Focus will be on common productive systems/associated transformations and unique characteristics, the theoretical foundation for production management as well as the application of decision making techniques to production problems in the firm.

Course Justification: Provides the theoretical underpinning for value addition by the businessmen, business managers as well as production managers and thus justification for his earnings

Course Objectives: At the end of the course, students should be able to understand basic production systems and the inputs, components and associated transformations as well as quality control and basic optimization techniques used in various production systems.

Course Content: Basic concepts-input-output, the conversion process, components, types of transformation, etc. product and process design, layout of facilities, demand forecast, production planning, aggregate planning, facility location, Application of decision-making techniques in decision problems, project planning and scheduling techniques, Decision Analysis, quality control, job sequencing and scheduling, inventory control and management,

Course Expectations:

S/N	GRADING	SCORE(%)
1.	**Continuous Assessments** • C.AI • C.AII (Mid-Semester Test) • C.AIII	7% 15% 8%
2.	**Assignment**	10%
3.	**Final Examination**	70%
4.	**Total**	100

Course Delivery Strategies: Lecture, questioning, tutorials, discovery

Course Duration: 3 hours

LECTURE CONTENT

Module 1

> **Week 1:** Introduction to Production management: Definition of production, manufacturing, manufacturing management, production management, operations management; objectives of production management, Definition of production systems Definition of input, output, components, the Conversion (transformation) process – inputs, components and transformations associated with basic production systems such as departmental store, University system, road transport system, health (hospital) system; relationship between production department and other departments (marketing, personnel, finance, maintenance and engineering). Types of production systems and their characteristics/transformations**;**

> **Objectives**

At the end of the lecture students should be able to

1. Conceptualise production and production systems
2. Input, output, components and types of transformation of different production systems
3. Production planning and its objectives
4. Understand basic types of production systems and their relevant inputs, components and outputs
5. Understand the basic transformation process in a production system

> **Description**

First hour: At least **four** different definitions of production, evolution of operations management, definition of production system, the basic transformation process, inputs, components and transformations associated with basic production systems such as departmental store, University system, road transport system, health (hospital) system
Second hour
Explanation of the relationship between production department and other departments (marketing, personnel, finance, maintenance and engineering). Types of production systems and their characteristics/transformations
Third hour

Tutorials

> **Study Question:**

1. Distinguish between production management and operations management
2. The organisation is irrelevant without the production function. Discuss

Module 2
Week II
Topic: Product Design: Meaning of product design, stages of product design –
preliminary, developmental and reproduction of the improved design. Process design
and selection – General product process; material flow process – (Flow shop, job shop
and fixed position); Line balancing;

Objectives:
At the end of the lecture students will
1. Understand what a product design refers to
2. Understand the meaning of process design
3. Be able to distinguish between product and process design

☐ **Description**
First hour: Meaning of product design, stages of product design – preliminary,

developmental and reproduction of the improved design. Process design and selection
Second hour

General product process; material flow process – (Flow shop, job shop and fixed position);

Line balancing;
Third hour
Tutorials
Module 3
Week III
Topic: Layout of facilities: meaning, overview of layout problems, criteria for

effective layout design, basic layout designs; layout solution techniques,

systematic layout planning; and computerized procedures.
Objectives:
At the end of the lecture students will

1. Understand the meaning of facility layout
2. Understand basic layout designs
3. Understand and be able to apply layout solution techniques

☐ **Description**
First hour: meaning and overview of layout problems, criteria for effective layout

design and basic layout designs;
Second hour
Layout solution techniques, systematic layout planning; and computerized procedures
Third hour
Tutorials
Module 4
Week IV **Demand forecast and Production Planning** I – Meaning, Objective,

forecasting techniques – Least squares, simple average and weighted average

methods, Moving Average methods, exponential smoothing methods;
Objectives:
At the end of the lecture students will

1. Conceptualise demand forecast and objectives;
2. Understand the relevance of demand forecasting to production planning;
3. Understand and know how to apply some basic forecasting techniques (least squares, simple average, weighted average methods and moving average methods as well as exponential smoothing methods

Description

First hour: Meaning and overview of demand forecasting, objectives and relevance to production planning as well as forecasting techniques (Least squares and exponential smoothing)

Second hour

Demand forecasting techniques (simple average, weighted average, moving average methods)

Third hour

Tutorials

Module 5

Week V   Aggregate Planning I

Topic: – meaning, aggregate planning strategies, aggregate planning models, Linear programming; Planning production, Linear Programming Models – Graphical method, Simplex method, dual solution from the final tableau of a linear programming problem, dual simplex method, post-optimality analyses

Objectives:

At the end of the lecture students will

1.   Understand the meaning and essence of aggregate planning
2.   Be familiar with basic aggregate planning strategies
3.   Be familiar with aggregate planning Models – LP and Transportation problem
4.   Understand how to plan for production using aggregate planning techniques

First hour: Meaning and overview of aggregate planning and techniques (chase, level, mixed strategies, etc.)

Second hour

Aggregate planning Strategies and application – LP (simplex Method)
Third hour
Tutorials
Week VI   Aggregate Planning II
Topic: – Aggregate planning models continued: Transportation Problem –

objective, initial solution techniques, optimal solution techniques
Objectives:
At the end of the lecture students will
1.   Understand the meaning and essence of another aggregate planning strategy-

Transportation problem
2.   Be able to find initial solution techniques to transportation problems
3.   Be able to provide optimal solutions to transportation problems

First hour: Meaning and overview of transportation problems, including mathematical

formulation of the problem and initial solution techniques (North west corner solution, Least

cost first and Vogel Approximation)
Second hour
Optimal solution techniques to a transportation problem (Stepping stone and modified

distribution methods)

Week VII   Project Planning and Scheduling Techniques I
Topic: Project planning and scheduling techniques I (CPM & PERT); precedence diagram,

project completion time; Network diagram and project completion time – forward and

backward pass;
Objectives:
At the end of the lecture students will
1.   Understand the meaning and essence of project planning
2.   be familiar with basic project planning techniques

3.   Be able to draw a precedence diagram and a network diagram
4.   be able to analyse a network diagram
☐
First hour: meaning and overview of Project planning and scheduling techniques I (CPM

& PERT); precedence diagram, project completion time
Second hour
Network diagram and project completion time – forward and backward pass;
Third hour
Tutorials

Week 8   Mid-semester Test

Week IX   Project Planning and Scheduling Techniques II
Topic: Time-Cost Trade-offs (crashing of activity times), use of Gantt Charts in project

scheduling;
Objectives:
At the end of the lecture students will
1.   Understand the meaning and importance of time-cost trade-off
2.   Be familiar with basic techniques for time-cost trade-off
3.   Be able to draw and apply Gantt charts in project scheduling

First hour:

Meaning of time-cost trade-offs (crashing of activity times) and numerical illustration of time-cost trade-off

Second hour
Use of Gantt Charts in project scheduling
Third hour
Tutorials

Module 6
Week X   Decision Theory

Topic: Definition and objective of Decision theory, situations under which Decisions are made; uncertainty, certainty and risk, decision making techniques, analysing decision trees
Objectives:
At the end of the lecture students will
1.   Understand the meaning and essence of decision theory
2.   Be able to distinguish between decision making under uncertainty and decision
        making under risk
3.   Understand how to determine the expected value of perfect information
4.   Be able to analyse decision trees

First hour:
Definition and objective of decision theory, events, actions, payoff table; decision making under uncertainty, risk and certainty; Maxi-Min, Mini-Max regret, Maxi-Maxi
Second hour
Use of decision trees in decision analysis

Third hour
Tutorials

Module 7
Week XI   Quality Control
Topic: Meaning, objectives of quality control, Quality control procedures – inspection,

acceptance sampling & process control.
Objectives:
At the end of the lecture students will
1.   Understand the meaning and essence of quality control
2.   Understand Quality control procedures – inspection, acceptance sampling & process

        control
3.   Understand and be able to apply statistical quality control procedures
First hour:
Definition and objectives of quality control as well as quality control procedures, statistical

quality control- process sampling
Second hour
Statistical quality control – acceptance sampling
Third hour
Tutorials

Module 8
Week XII   Job Sequencing and Scheduling: Meaning, objectives of job sequencing,

objectives of job scheduling, sequencing techniques – Priority sequencing- FIFO, LIFO, SPT,

Scheduling techniques – Johnson's algorithm, Gantt Load chart
Objectives:

At the end of the lecture students will
1.   Understand the meaning and objective of job sequencing in production planning
2.   Understand the meaning and objective of job scheduling in production planning and

be able to distinguish between job sequencing and job scheduling
3.   Know and be able to apply basic job sequencing and scheduling techniques such as

Johnson's algorithm, Gantt Load chart
☐
First hour:
Meaning and objectives of job sequencing, objectives of job scheduling, sequencing

techniques – Priority sequencing- FIFO, LIFO, SPT
Second hour
Scheduling techniques – Johnson's algorithm, Gantt Load chart
Third hour
Tutorials

Week XIII   Assignment Problem: Meaning and objective of the assignment

problem in production planning. The Hungarian method- assignment problem with cost

minimisation and profit maximisation objectives
Objectives:
At the end of the lecture students will
1.   Understand the meaning and objective of assignment problem
2.   Understand how to implement assignment of jobs to machines and machines to jobs
3.   Be able to implement assignment problems to minimise cost and to maximise profit

First hour:
Meaning and objective of the assignment problem in production planning and the use of

Hungarian method in assignment problem with cost minimisation objective

Second hour
The use of Hungarian method in assignment problem with profit maximisation objective
Third hour
Tutorials

Module 10
Week XIV   Inventory Control and management – Meaning, objective, inventory costs,

EOQ and its assumptions, EPQ (Lot size) and its assumptions
Objectives:
At the end of the lecture students will
1.   Understand the meaning and objective of inventory management
2.   Understand how to determine Economic order quantity (EOQ) and Economic

        production quantity (EPQ)
3.   Be acquainted with the relationships between the basic inventory costs and EOQ
First hour:
Meaning, objective, inventory costs, EOQ and its assumptions, computation of EOQ from

given data
Second hour
EOQ with discount, EPQ (Lot size) and its assumptions, computation of EPQ
Third hour
Tutorials
Week 15
Revision & Examination

        Reading List:
   1. Production and Operations Management by Simbo Banjoko,
   2.   Elementary Operations Research by A.B. Agbadudu
   3. Any other relevant text

HOD's COMMENTS:
_____
_____
_____
_____
___

Name: _____ Signature _____ Date: _____