اعتماد
NCAAA

T4

2020

# Course Specifications

| Course Title: | Management Science |
|---|---|
| Course Code: | MGT 231 |
| Program: | BSBA |
| Department: | Management |
| College: | College of Business Administration |
| Institution: | Prince Sattam Bin Abdulaziz University |

# Table of Contents

# A. Course Identification

| 1. **Credit hours:** |
|---|

| 2. **Course type** |
|---|
| **a.** University ☐  College ☑  Department ☐  Others ☐ |
| **b.** Required ☐  Elective ☐ |

| 3. **Level/year at which this course is offered:** V / Third Year |
|---|

| 4. **Pre-requisites for this course** (if any)**: MGT 201** |
|---|

| 5. **Co-requisites for this course** (if any)**: N / A** |
|---|

## 6. Mode of Instruction (mark all that apply)

| No | Mode of Instruction | Contact Hours | Percentage |
|----|---------------------|---------------|------------|
| 1 | **Traditional classroom** | 44 | 100 |
| 2 | **Blended** | | |
| 3 | **E-learning** | | |
| 4 | **Distance learning** | | |
| 5 | **Other** | | |

## 7. Contact Hours (based on academic semester)

| No | Activity | Contact Hours |
|----|----------|---------------|
| 1 | **Lecture** | 44 |
| 2 | **Laboratory/Studio** | |
| 3 | **Tutorial** | |
| 4 | **Others** (specify) | |
| | **Total** | 44 |

# B. Course Objectives and Learning Outcomes

**1. Course Description :** **The purpose of this course is to expose to some simple mathematical models that can be formulated and solved for large spectrum of managerial problems. As well as reviewing some problems that can be tackled quantitatively, the methods and software available for doing so. The emphasis is on models that are widely used in diverse industries and functional areas. The topics of this course include mathematical programming such as; linear programming (graphical, simplex methods and sensitivity analysis), transportation problem, assignment problem and project scheduling (CPM & PERT), Inventory Models (EOQ, EPQ, and discounted EOQ), queuing models (single-channel queuing problem).**

## 2. Course Main Objective

- **Illustrate some simple mathematical models that can be formulated and solved for large spectrum of managerial problems.**
- **Analyze Linear Programming problems.**
- **Illustrate the Transportation and Assignment Problems.**
- **Demonstrate the Project Scheduling (CPM & PERT)**
- **Define Inventory Models**

## 3. Course Learning Outcomes

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge and Understanding** | |
| 1.1 | List methods for the analysis and synthesis of data using a range of mathematical techniques, supported by appropriate software to inform business decision | K2 |
| 1.2 | Recognize the process and practices for the effective management of organizations and decision making within them | K6 |
| 1.3 | | |
| 1... | | |
| **2** | **Skills :** | |
| 2.1 | Analyse, synthesize and apply the knowledge and understanding of concepts and theories described in the knowledge category above to business problems | C2 |
| 2.2 | Create, evaluate and assess arrange of options together with the capacity to apply ideas and knowledge to a range of business situations using appropriate quantitative and qualitative skill. | C3 |
| 2.3 | Interpret, extrapolate, including data analysis, to issues and problems in business by applying numeracy and quantitative skill. | C4 |
| 2.4 | Design models to analyse business problems and phenomena | C5 |
| | | |
| **3** | **Values:** | |
| 3.1 | Effective work  in solving numerical exercises. | |
| 3.2 | | |
| 3.3 | | |
| 3... | | |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | **Introduction to Management Science**: Problem solving and decision making; quantitative analysis, Management Science techniques. | 3 |
| 1 | **Linear Programming**: Formulation of Linear Programming Problem,  A simple maximization problem, Graphical solution procedure, extreme points and  the optimal solution, <br> Sensitivity analysis: Introduction to sensitivity analysis, graphical sensitivity analysis. <br> The Simplex Method: Algebraic overview of the Simplex method, basic solution, basic feasible solution, tableau form, setting up the initial simplex tableau. | 12 |
| 2 | **Transportation and Assignment Problems:** | 9 |

| | | | |
|---|---|---|---|
| | Transportation Problems: A network model and LP Formulation, Solution Procedures<br>Assignment problem: A network model and LP formulation, Solution Procedure (Hungarian Method) | |
| 3 | **Project Scheduling (CPM & PERT):**<br>Concept and CPM & PERT procedures.<br>Determining the critical path for certain time and uncertain time projects | 8 |
| 4 | **Inventory Models**<br>Principles of inventory management,<br>Economic order quantity (EOQ), economic production quantity (EPQ), and discounted for the EOQ model. | 6 |
| 5 | **Queuing Theory:**<br>Structure of a waiting line system; single channel waiting line model with Poisson arrivals and exponential service times | 6 |
| **Total** | | |

## D. Teaching and Assessment

### 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|---|---|---|---|
| **1.0** | **Knowledge and Understanding** | | |
| 1.1 | List methods for the analysis and synthesis of data using a range of mathematical techniques, supported by appropriate software to inform business decision (@ K-2) | Class Lectures | Quizzes and Exams |
| 1.2 | Recognize the process and practices for the effective management of organizations and decision making within them. (@ K-6) | Class Lectures | Quizzes, Assignments and Exams |
| … | | | |
| **2.0** | **Skills** | | |
| 2.1 | Analyse, synthesize and apply the knowledge and understanding of concepts and theories described in the knowledge category above to business problems (@ C-2) | Class lectures<br>Solving numerical questions | Quizzes, Assignments and Exams |
| 2.2 | Create, evaluate and assess arrange of options together with the capacity to apply ideas and knowledge to a range of business situations using appropriate quantitative and qualitative skill. (@ C-3) | | |
| 2.3 | Interpret, extrapolate, including data analysis, to issues and problems in business by applying numeracy and quantitative skill. (@ C-4) | Class lectures<br>Solving numerical problems | Assignment and Exams |
| 2.4 | Design models to analyse business problems and phenomena. | Class lectures | Exams |

| Code | Course Learning Outcomes | Teaching Strategies | Assessment Methods |
|------|--------------------------|---------------------|--------------------|
|      | (@ C-5) | | |
| 2.5 | Judge business and management issues through research, either individually or as a part of team of projects, investigations and presentations. (@ C-6) | Group exercises | Assignment |
| **3.0** | **Values** | | |
| 3.1 | Analyse, synthesize and apply the knowledge and understanding of concepts and theories described in the knowledge category above to business problems (@ C-2) | Class lectures Solving numerical questions | Quizzes, Assignments and Exams |
| 3.2 | | | |
| … | | | |

## 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|------------------|----------|--------------------------------------|
| **1** | Assignments | At least 2 Assignments | 10 |
| **2** | Mid Term Examination-1 | 5th | 15 |
| **3** | Mid Term Examination-2 | 10th | 15 |
| **4** | Quizzes | At least 2 Quizzes | 10 |
| **5** | Final Examination | 15th | 50 |
| **6** | Total | | 100 |
| **7** | | | |

**\*Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

## E. Student Academic Counseling and Support

**Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :**

**Office hours: 6 hrs/week**

## F. Learning Resources and Facilities

### 1.Learning Resources

| Required Textbooks | Anderson/Sweeney/Williams/Martin, An Introduction To Management Science, Quantitative Approaches To Decision Making, Twelfth edition, Thomson Publication. |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Essential References Materials | Taylor, Bernard W. (2009) "Introduction to Management Science, 10th Edition", Prentice Hall |
| Electronic Materials | |
| Other Learning Materials | Multimedia associated with the text book and the relevant websites |

**2. Facilities Required**

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | Classroom |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | Smart Board |
| **Other Resources**<br>(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | |

## G. Course Quality Evaluation

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Teaching Evaluation | Students | Indirect |
| Course Evaluation | Students | Indirect |
| Learning Resource evaluation | Students | Indirect |
| Achievements of Learning Outcomes | Students | Indirect |
| Faculty Evaluation | Head of the Department | Direct |
| Peer-evaluation | Peer faculty Member | Direct |

**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
**Evaluators** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
**Assessment Methods** (Direct, Indirect)

## H. Specification Approval Data

| | |
|---|---|
| **Council / Committee** | |
| **Reference No.** | |
| **Date** | |