**Dr Samar El Sayad**

# Course Specifications

| Course Title: | BIG DATA AND ARTIFICIAL INTELLIGENCE IN ACCOUNTING |
|---|---|
| Course Code: | ACC 443 |
| Program: | BACHELOR OF SCIENCE IN ACCOUNTING |
| Department: | ACCOUNTING |
| College: | COLLEGE OF BUSINESS ADMINISTRATION |
| Institution: | PRINCE SULTAN UNIVERSITY |

National Accreditation

International Accreditation

## Table of Contents

## A. Course Identification

| 1. **Credit hours:** | 3 credit hours |
|---|---|

**2. Course type**

a. University ☐ College ☐ Department ☑ Others ☐

b. Required ☑ Elective ☐

**3. Level/year at which this course is offered:** 4

**4. Pre-requisites for this course** (if any)**:**
- COMPUTER APPLICATIONS FOR BUSINESS (CS 202)
- MANAGEMENT INFORMATION SYSTEMS (BUS 373)

**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** | X | 70% |
| 2 | **Blended** | | |
| 3 | **E-learning** | X | 30% |
| 4 | **Correspondence** | | |
| 5 | **Other** | | |

## 7. Actual Learning Hours (based on academic semester)

| No | Activity | Learning Hours |
|---|---|---|
| **Contact Hours** | | |
| 1 | **Lecture** | 39 |
| 2 | **Laboratory/Studio** | - |
| 3 | **Tutorial** | - |
| 4 | **Others** (Major Exam, project presentation, etc.) | 6 |
| | **Total** | 45 |
| **Other Learning Hours*** | | |
| 1 | **Study** | 45 |
| 2 | **Assignments** | 5 |
| 3 | **Library** | 5 |
| 4 | **Projects/Research Essays/Theses/Case Studies** | 5 |
| 5 | **Others** (Self Study Professional Certification Program) | 20 |
| | **Total** | 80 |

**\*** The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

# B. Course Objectives and Learning Outcomes

**1. Course Description**

This course introduces big data and data analytics tools and techniques required to leverage data effectively and make informed, real-time, and data-driven business decisions. The focuses include analytic techniques for decision making and the examination of "big data" involving accounting information.  Hands-on experiences will develop skills with select software tools used in data analytics for accounting purposes. In addition, this course, provides an overview of artificial intelligence and how it can impact accounting. This course is highly interactive and based on the problem-based learning philosophy.

**2. Course Main Objective**

Big data and artificial intelligence are the new forces driving business. The main purpose of this course is to prepare students with the necessary knowledge and skills they need to move forward with these new technologies in accounting and to successfully build an automated and innovative accounting strategy.

## 3. Course Learning Outcomes

| | CLOs | Aligned PLOs |
|---|---|---|
| 1 | **Knowledge:** | |
| 1.1 | Demonstrate an in-depth understanding of the different types of big data & analytics and the importance of artificial intelligence to accounting. | PLO 1.1 |
| 1.2 | Identify the different techniques of forecasting & predictive analytics such regression, classification, clustering, optimization, and simulation. | PLO 1.1 |
| 2 | **Skills :** | |
| 2.1 | Critique and assess the strengths and weaknesses of big data & analytics and artificial intelligence tools and platforms and assess to what extent big data and analytics help in enhancing accounting functions. | PLO 2.1 |
| 2.2 | Ability to apply various data analysis, visualization, modeling, and artificial intelligence techniques. | PLO 2.1 |
| 3 | **Competence:** | |
| 3.1 | Ability to articulate and communicate Big Data and analytics issues effectively. | PLO 3.3 |
| 3.2 | Demonstrate ability to communicate effectively in written form about the artificial intelligence landscape and how it's transforming business. | PLO 3.4 |

## C. Course Content

| 1. Topics to be Covered | | |
|---|---|---|
| List of Topics | No. of Weeks | Contact hours |
| Data Analysis Fundamentals<br><br>• Types and uses of data | 2 | 6 |

| Topic | Contact Hours | Total |
|---|---|---|
| • The job roles associated with data analytics<br>• The life cycle of organizational data<br>• The tools used for managing and analyzing data<br>• Challenges to effectively leveraging data | | |
| Big Data & Data Analysis Platforms and Tools<br><br>• Big Data sources<br>• Types of data analytics<br>• Big Data software tools & platforms | 1 | 3 |
| Applications of Big Data & Data Analysis in Accounting<br><br>• Big Data & accounting operations<br>• Data analysis in accounting | 3 | 9 |
| Data Visualization: Charts, Dashboards & Advanced Visualization Techniques<br><br>• Communicating insights from data<br>• Making decisions from data<br>• Visualizing data<br>• BI platforms | 3 | 9 |
| Forecasting and Predictive Analytics for Accounting<br><br>• Predictive analytics techniques<br>• Forecasting with data models<br>• Finding relationships in data | 2 | 6 |
| Ethics & big data<br><br>• Big data and ethical issues<br>• Ethical policy considerations | 1 | 3 |
| Introduction to Artificial Intelligence<br>• A brief history of AI<br>• Definitions of AI<br>• Features & challenges of AI | 1 | 3 |
| Artificial Intelligence Applications in Accounting<br>• AI & accounting<br>• Application examples | 1 | 3 |
| Project work & Presentation | 1 | 3 |

| | | | |
|---|---|---|---|
| | | | |

## 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** | | |
| 1.1 | Demonstrate an in-depth understanding of the different types of big data & analytics and the importance of artificial intelligence to accounting. | Lectures, forums, and seminars. | Quiz, Examinations |
| 1.2 | Identify the different techniques of forecasting & predictive analytics such regression, classification, clustering, optimization, and simulation. | Lectures, forums, and seminars. | Quiz, Examinations |
| … | | | |
| **2.0** | **Skills** | | |
| 2.1 | Critique and assess the strengths and weaknesses of big data & analytics and artificial intelligence tools and platforms and assess to what extent big data and analytics help in enhancing accounting functions. | Lectures, in-class activities, discussions | Quiz, Examinations |
| 2.2 | Ability to apply various data analysis, visualization, modeling, and artificial intelligence techniques. | Lectures, in-class activities, discussions | Examinations |
| … | | | |
| **3.0** | **Competence** | | |
| 3.1 | Ability to articulate and communicate Big Data and analytics issues effectively. | Lectures, in-class activities, discussions | Assignment, Examination |
| 3.2 | Demonstrate ability to communicate effectively in written form about the artificial intelligence landscape and how it's transforming business. | Lectures, in-class activities, discussions | Assignment |
| … | | | |

## 2. Assessment Tasks for Students

| # | Assessment task* | Week Due | Percentage of Total Assessment Score |
|---|---|---|---|
| 1 | Major 1 | 7 | 20% |
| 2 | Participation & Assignments | Weekly | 10 % |
| 3 | Data Analysis Fundamentals Certificate & Data Visualization Certificate | 12 | 20% |
| 4 | Project & Presentation | 15 | 10% |
| 5 | Final Examination | 16 | 40% |

**\*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 :**

Instructors allocate six office hours per week for students' consultation (4 office hours and 2 academic advising hours). In addition, students are welcomed anytime by appointment if they cannot come during the office hours.

# F. Learning Resources and Facilities

## 1.Learning Resources

| | |
|---|---|
| **Required Textbooks** | AICPA Material (Application of Data Analysis Essentials and Data Visualization Certificate Material) |
| **Essential References Materials** | AICPA Material (Application of Data Analysis Essentials and Data Visualization Certificate Material) |
| **Electronic Materials** | To be advised |
| **Other Learning Materials** | • Data Analytics for Accounting, 1st Edition, by Vernon Richardson, Katie Terrell, Ryan Teeter<br>• Other learning material such as computer-based programs/CD, professional standards or regulations and software (To be advised). |

## 2. Facilities Required

| Item | Resources |
|---|---|
| **Accommodation**<br>(Classrooms, laboratories, demonstration rooms/labs, etc.) | Classroom with 25 seating capacity |
| **Technology Resources**<br>(AV, data show, Smart Board, software, etc.) | Laptop, data show, whiteboard, LMS, Microsoft Office, ERP system, Internet Connection |
| **Other Resources**<br>(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | Laptop |

# G. Course Quality Evaluation

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| Effectiveness of teaching and assessment | Course leader<br>Program leaders | **Direct assessment** –<br>Classroom observation<br>**Indirect assessment** -<br>Course Evaluation Survey |
| Extent of achievement of course learning outcomes | Faculty | **Direct assessment** –<br>Academic assessment (AOL) |

| Evaluation Areas/Issues | Evaluators | Evaluation Methods |
|---|---|---|
| | | Rubrics assessment<br>**Indirect assessment**<br>Course Evaluation Survey |
| Quality of learning resources | Student | **Indirect assessment**<br>Course Evaluation Survey |
| Action Plan continuity (Closing the loop) | AOL Committee and course leaders | AOL Report |
| | | |
| | | |
| | | |

**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** | Department of Accounting Council |
| **Reference No.** | Meeting No. |
| **Date** | |