هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission
اعتماد
NCAAA
2024
TP-153

# Course Specification
## (Bachelor)

| | |
|---|---|
| **Course Title:** | **Data Inputs and Manipulation** |
| **Course Code:** | **.2271-INE-2** |
| **Program:** | Bachelor of Industrial Engineering |
| **Department:** | **Industrial Engineering** |
| **College:** | **Engineering** |
| **Institution:** | **King Khalid University** |
| **Version:** | *1* |
| **Last Revision Date:** | *18/11/2025* |

## Table of Contents

## A. General information about the course:

### 1. Course Identification

| 1. Credit hours: (2) | | | | | |
|---|---|---|---|---|---|
| **2. Course type** | | | | | |
| **A.** | ☐ University | ☐ College | ☒ Department | ☐ Track | ☐ Others |
| **B.** | ☒ Required | | ☐ Elective | | |
| **3. Level/year at which this course is offered: (3rd level/2nd Year)** | | | | | |
| **4. Course General Description:** | | | | | |
| This course will provide background and experience in reading, manipulating, and exporting data for engineering, business, and scientific applications. Students will learn to build programs controlled by basic graphical user interfaces. Assignments will be modeled after business, engineering, and scientific problems | | | | | |
| **5. Pre-requirements for this course** (if any)**:** | | | | | |
| **Nile** | | | | | |
| **6. Co-requisites for this course** (if any)**:** | | | | | |
| | | | | | |
| **7. Course Main Objective(s):** | | | | | |
| **Data Inputs and Manipulation focus on teaching students how to accurately collect, enter, validate, and modify different types of industrial data using standard procedures and digital tools. The course emphasizes practical skills essential for supporting efficient operations and informed decision-making in industrial engineering environments.** | | | | | |

### 2. Teaching mode (mark all that apply)

| No | Mode of Instruction | Contact Hours | Percentage |
|---|---|---|---|
| 1 | Traditional classroom | 60 | 100% |
| 2 | E-learning | N/A | N/A |
| 3 | Hybrid<br>• Traditional classroom | N/A | N/A |

| No | Mode of Instruction | Contact Hours | Percentage |
|---|---|---|---|
| | • E-learning | | |
| 4 | Distance learning | N/A | N/A |

### 3. Contact Hours (based on the academic semester)

| No | Activity | Contact Hours |
|---|---|---|
| 1. | **Lectures** | - |
| 2. | **Laboratory/Studio** | 60 |
| 3. | **Field** | - |
| 4. | **Tutorial** | - |
| 5. | **Others (specify)** | - |
| **Total** | | 60 |

## B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

| Code | Course Learning Outcomes | Code of PLOs aligned with the program | Teaching Strategies | Assessment Methods |
|---|---|---|---|---|
| **1.0** | **Knowledge and understanding** | | | |
| 1.1 | Understand and manipulate several languages, provided data structures such as Lists, Dictionaries, and Strings | **K1** | Lecture<br>Tutorial/Lab | Assignment,<br>Quiz |
| 1.2 | Understanding Program interactive graphical user interfaces consisting of a graphically organized set of widgets, including a minimum of one from each of the following classes (Label, Button, and Text Fields). | **K2** | Lecture /Tutorial lab | Assignment,<br>Quiz |

| Code | Course Learning Outcomes | Code of PLOs aligned with the program | Teaching Strategies | Assessment Methods |
|---|---|---|---|---|
| ... | | | | |
| **2.0** | **Skills** | | | |
| 2.1 | Write a program using various data types and using basic techniques such as assignments, methods, calls, while loops, for loops, and conditionals. | S1 | Lecture<br>Tutorial/Lab | Assignment,<br>Quiz, Midterm |
| 2.2 | Write a program that can generate a report in text or HTML format, which includes elements under program control. | S1 | Lecture<br>Tutorial/Lab | Assignment,<br>Quiz, Midterm |
| 2.3... | Connect to an existing SQL Database and insert and retrieve data from the database. | S4 | Lecture /Tutorial /lab | Assignment,<br>Quiz, Midterm |
| **2.4** | Apply known methods to solve real problems using a different language. | S6 | | |
| | | | | |
| 3.0 | Values, autonomy, and responsibility | | | |
| 3.1 | Work individually or within a team and communicate effectively to perform the assigned tasks (Homework/Group Project) | **V3** | Lecture<br>Tutorial/Lab | Assignment,<br>Quiz, Midterm |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1. | 1.Fundamentals of Programming Languages. General Structure of C Programming Language / Python | 16 |
| 2. | 2.FileI/O. String Processing, Variables and Operations, Basic I/O Functions, Sequences. If Statement, Switch Statement, Loops, Nested Loops, Functions, Arrays. | 20 |
| 3 | 3.HTML, CSS, Web Scraping, Writing HTML and Basic Interfacing with SQL Databases (Reading / Writing Datain Pre-existing Tables) | 20 |
| 4 | 4. Software for Commercial Application, Small Projects | 4 |

| Total | 60 |
|---|---|

## D. Students Assessment Activities

| No | Assessment Activities * | Assessment timing (in week no) | Percentage of Total Assessment Score |
|---|---|---|---|
| 1. | Assignments | 3, 10 | 10% |
| 2. | Quizzes | 5, 11 | 20% |
| 3. | ClassWorks and activities | Every weak | 20% |
| 4. | Project | 14 | 10% |
| 5 | Final exam | 16 | 40% |
| | Total | | 100 |

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

## E. Learning Resources and Facilities

### 1. References and Learning Resources

| | |
|---|---|
| **Essential References** | 1Summerfield, M. (2020). Programming in Python 3: A complete introduction to the Python language (3rd ed.). Pearson Education. |
| **Supportive References** | 2. Python in a Nutshell, A Desktop Quick Reference by Alex Martelli Anna Ravenscroft, and Steve Holden, 3rd Edition, O Reilly Publisher, 2020 |
| **Electronic Materials** | 3.Fluent Python: Clear, concise, and effective programming (2nd ed.) و Ramalho, L. O'Reilly Media 2024, ISBN: 9781492056348 |
| **Other Learning Materials** | Lecture Handouts |

### 2. Required Facilities and equipment

| Items | Resources |
|---|---|
| **facilities** (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.) | Classroom with a Capacity of 25 Students |
| **Technology equipment** (projector, smart board, software) | Simulation Software |
| **Other equipment** (depending on the nature of the specialty) | |

## F. Assessment of Course Quality

| Assessment Areas/Issues | Assessor | Assessment Methods |
|---|---|---|
| Effectiveness of teaching | Student and Faculty | Indirect through Online Surveys |

| Assessment Areas/Issues | Assessor | Assessment Methods |
|---|---|---|
| Effectiveness of Students assessment | Faculty and Quality Committee | Direct through Result Analysis |
| Quality of learning resources | Faculty and Students | Indirect through Online Surveys |
| The extent to which CLOs have been achieved | | |
| Other | **N/A** | **N/A** |

**Assessors** (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify)

**Assessment Methods** (Direct, Indirect)

## G. Specification Approval

| | |
|---|---|
| **COUNCIL /COMMITTEE** | Reviewed by the Department Curriculum Committee. Approved by the Department Quality Committee |
| **REFERENCE NO.** | **9-6-47** |
| **DATE** | **25/06/1447** |