

# BS in Data Science & Engineering

## Professional Occupations

- Data Scientist.
- Data Analyst.
- Big Data Analyst.
- Financial Data Analyst.
- Machine Learning Engineer.
- Business Intelligence Analyst.
- Big Data Administrator.
- Data Mining Analyst.
- Big Data Architect.
- Data Visualization Developer

## Program Overview

The Data Science and Engineering program is designed to provide students with a thorough understanding of the theories, techniques, methodologies, and tools essential for analyzing the vast amounts of data generated in today's data-centric world. Graduates of this program will be equipped to extract valuable insights from data, enabling stakeholders to make informed decisions. The program aims to develop graduates who can contribute strategically to problem-solving and decision-making in various industries by leveraging their expertise in data-driven approaches.

## Competitive Edge

Our Data Science & Engineering program is designed to provide a solid foundation in the main topics of the data science and data engineering body of knowledge. This foundation allows our graduates to excel in the designing, and developing data science applications. Our faculty hold degrees from world-renowned western universities; additionally, our faculty have a high success rate in obtaining new research projects in both new and established disciplines. Furthermore, small class sizes provide students with the opportunity for individualized instruction.

## Collaborators



BAE SYSTEMS



BUROHAPPOLD  
ENGINEERING

ABB

THALES



Henning  
Larsen

سابك  
SABIC

IBM

SCS  
شركة السعودية للتقنية

IEEE



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http://coe.alfaisal.edu/departments/ds-home

## Alfaisal University

### BS in Data Science & Engineering | Study Plan Summary | Effective: Fall 2025

4 Year Curriculum: 133 Credit Hours Total

Freshman Year - Fall Semester		
Course Code	Course-Title	CRHs
SE 100	Programming for Engineers	3
SE 100 L	Programming for Engineers Lab	1
MAT 101	Calculus I	3
PHU 103	Mechanics and Waves for Engineers	3
PHU 103 L	Mechanics and Waves for Engineers Lab	1
ENG 101	University Writing	3
ISL 101	Islamic Studies I	2
GE _ _ _	General Education Elective I	2
	<b>Total</b>	<b>18</b>

Freshman Year - Spring Semester		
Course Code	Course-Title	CRHs
SE 120	Object-Oriented Programming I	3
SE 120 L	Object-Oriented Programming I Lab	1
SE 151	Discrete Mathematics	3
MAT 112	Calculus II	3
EE 210	Digital Logic Design	3
EE 210 L	Digital Logic Design Lab	1
ENG 222	Technical Writing	3
	<b>Total</b>	<b>17</b>

Sophomore Year - Fall Semester		
Course Code	Course-Title	CRHs
DSE 200	Introduction to Data Science	3
DSE 212	Probability and Statistics for Engineers	3
SE 215	Data Structures	3
SE 215 L	Data Structures Lab	1
SE 239	Computer Networks	3
MAT 211	Calculus III	3
ARB 101	Arabic Language and Literature I	2
	<b>Total</b>	<b>18</b>

Sophomore Year - Spring Semester		
Course Code	Course-Title	CRHs
SE 252	Database Management Systems	3
SE 252 L	Database Management Systems Lab	1
SE 254	Operating Systems	3
SE 254 L	Operating Systems Lab	1
DSE 201	Data Visualization	3
AI 213	Introduction to Artificial Intelligence	3
MAT 212	Linear Algebra	3
	<b>Total</b>	<b>17</b>

Junior Year - Fall Semester		
Course Code	Course-Title	CRHs
SE 201	Introduction to Software Engineering	3
DSE 300	Data Preparation and Feature Design	3
SE 301	Analysis of Algorithms	3
DSE 302	Optimization for Data Science	3
SE 316	Application Development	3
CSE 330	Introduction to Cybersecurity	3
	<b>Total</b>	<b>18</b>

Junior Year - Spring Semester		
Course Code	Course-Title	CRHs
AI 320	Data Mining	3
AI 347	Introduction to Machine Learning	3
DSE 322	Big Data and Data Warehousing	3
DSE 323	Cloud Computing in Data Science	3
DSE 324	Social Network Analysis	3
	<b>Total</b>	<b>15</b>

Junior Year – Summer Semester		
Course Code	Course-Title	CRHs
DSE 390	Internship	0
	<b>Total</b>	<b>0</b>

Senior Year - Fall Semester		
Course Code	Course-Title	CRHs
SE 400	Theory of Computation	3
DSE 401	Optimization Techniques for ML	3
DSE _ _ _	Technical Elective 1	3
DSE _ _ _	Technical Elective 2	3
DSE 495	Software Engineering Capstone Project I	3
	<b>Total</b>	<b>15</b>

Senior Year - Spring Semester		
Course Code	Course-Title	CRHs
AI 480	Natural Language Processing	3
SE 481	Ethics and Professional Development	1
DSE _ _ _	Technical Elective 3	3
DSE _ _ _	Technical Elective 4	3
DSE 496	Software Engineering Capstone Project II	3
GE _ _ _	General Education Elective II	2
	<b>Total</b>	<b>15</b>