

# Certified Data Scientist (CDS) Assessment and Syllabus for Candidates

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## Introduction

This document is intended to provide information to prospective Certified Data Scientist (CDS) candidates and indeed anyone interested in the format and content of the CDS Examination.

It includes:

- ✓ Certified Data Scientist (CDS) Examination Overview – general information and overview of the exam format
- ✓ Certified Data Scientist (CDS) Syllabus for Candidates – detailing:
  - The format of the exam and the learning outcomes from the delegates' course of study that will be assessed in each section
  - The specific criteria by which each learning outcome is assessed

## Certified Data Scientist Examination Overview

**Pre-requisite qualifications:** Candidates pursuing this examination should hold Data Science professional certification from IABAC.

**Training:** Though formal training is not mandatory, attendance at Registered Education Partner (REP) course is strongly recommended.

**Material permitted:** This is an open assessment. Candidate can refer to any sources.

**Assessment duration:** Project Work Submission within 5 business days of assignment.

**Format:** A project case is given with business requirement and relevant Data. The goal is to create a Data Science model as required to serve the<sup>1</sup> case.

**Pass Criteria:** Assessment of the project is based on various knowledge areas as per below chart. Project acceptance is considered as satisfying Pass criteria. In case of minor corrections of the project, candidate shall receive an email with comments with instructions to resubmit.

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<sup>1</sup> a

# Syllabus for Candidates

## Exam Sections, Syllabus and Bloom's Assessment Index

Knowledge Area	Syllabus Details	Project Weightage	Bloom's Index
<p>KAG1-DSDA: Data Analytics group including Machine Learning, statistical methods, and Business Analytics</p>	<p><b>Case Study on Statistical Analysis</b> Curating the Data and performing, Discrete Mathematics, Probabilistic reasoning Statistical methods, including descriptive statistics, exploratory data analysis (EDA) and confirmatory data analysis (CDA)</p> <p><b>Case Study &amp; Creating Machine Learning Model With detailed implementation of algorithms :</b> Artificial Intelligence ,Natural Language Processing Knowledge Representation and Reasoning , Data mining and knowledge discovery, Text analysis, Data mining, Text analytics including statistical, linguistic, and structural techniques to analyse structured and unstructured data</p> <p><b>Creating Predictive forecasting Models</b> Decision Analysis and Decision Support Systems Data Mining</p>	<p>25%</p>	<p>6</p>
<p>KAG2-DSENG: Data Science Engineering group including Software and infrastructure engineering</p>	<p><b>Set Up Infrastructure and Big Data applications</b> Computer networks for high-performance computing and Big Data infrastructure Cloud enabled applications development</p> <p><b>Modelling and simulation</b> Modelling and simulation theory and techniques (general and domain oriented) Large scale modelling and simulation systems</p> <p><b>Set up Big Data (Data Science) applications design</b> Programming languages for Big Data analytics: R, python, others Models and languages for complex interlinked data presentation and visualisation</p>	<p>25%</p>	<p>5</p>

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KAG3-DSDM: Data Management group including data curation, preservation and data infrastructure	<p><b>Creating Database Models and Data Curation</b> Data Modelling, Databases and Database Management Systems ,Data Models and Query Languages, Database administration</p> <p><b>Set up Data Management and Enterprise data infrastructure</b> Data management, including Reference and Master Data ,Data Warehousing and Business Intelligence , Data storage and operations Data archives/storage compliance and certification Metadata, linked data, provenance Data infrastructure, Data Management and organisation Research data infrastructure, Open Science, Open Data, Open Access, Data infrastructure compliance and certification, Ethical principle and data privacy</p>	25%	4
KAG4-DSRM: Scientific and Research Methods group	<p><b>Scientific/Research Methods</b> Research methodology, paradigms and research cycle , Modelling and experiment planning Data selection and quality evaluation Use cases analysis: research infrastructures and projects Research data management plan and ethical issues</p>	25%	6
KAG5-DSBPM: Business process management group	<p><b>Business Process Management</b> Business processes and operations, Project scope and risk management</p> <p><b>Business Analysis organisation and management</b> Business Analysis Planning and Monitoring Requirements Analysis and Design Definition Requirements Life Cycle Management (from inception to retirement) Solution Evaluation and improvements recommendation</p> <p><b>Business analysis and enterprise organisation</b> Agile Data Driven methodologies, processes and enterprises Use cases analysis: business and industry</p>	NA	4
KAG6 - DSDK: Data Science Domain Knowledge group includes domain specific knowledge	Applied Data Science case cases in Domains, HR, Retail, Fraud Analytics, Finance Trends, Health Care, Infrastructure Management.	NA	2

## Bloom's Taxonomy Reference

Bloom's Learning Index	Description
1	<b>Remembering:</b> Recall or retrieve previous learned information.
2	<b>Understanding:</b> Comprehending the meaning, translation, interpolation, and interpretation of instructions and problems. State a problem in one's own words.
3	<b>Applying:</b> Use a concept in a new situation or unprompted use of an abstraction. Applies what was learned in the classroom into novel situations in the work place.
4	<b>Analysing:</b> Separates material or concepts into component parts so that its organizational structure may be understood. Distinguishes between facts and inferences.
5	<b>Evaluating:</b> Make judgments about the value of ideas or materials.
6	<b>Creating:</b> Builds a structure or pattern from diverse elements. Put parts together to form a whole, with emphasis on creating a new meaning or structure.