Programme specification

1. Overview/ factual information

Programme/award title(s)	1. BSc (Hons) Data Science (360 points) 2. DipHE IT & Computing (Data Science) (240 points) 3. CertHE IT & Computing (Data Science) (120 points)
Teaching Institution	Arab Open University (AOU)
Awarding Institution	The Open University (OU) The Arab Open University (AOU)
Date of first OU validation	3 June 2021
Date of latest OU (re)validation	------
Next revalidation	2026
Credit points for the award	360 points
UCAS Code	NA
HECoS Code	100406 - Statistics (Major/20.83%) 100403 - Mathematics (Major/16.67%) 100367 - Computing and information technology (Major/62.5%)
LDCS Code (FE Colleges)	NA
Programme start date and cycle of starts if appropriate.	September 2021
Underpinning QAA subject benchmark(s)	• Subject Benchmark Statement Mathematics, Statistics and Operational Research 2019 https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/subject-benchmark-statement-mathematics-statistics-and-operational-research.pdf? • Subject Benchmarks for Computing 2019 https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/subject-benchmark-statement-computing.pdf?sfvrsn=ef2c881_10
Other external and internal reference points used to inform programme outcomes. For apprenticeships, the standard or framework against which it will be delivered.	**External:** • Computer Science Curricula Guidelines 2013, ACM-IEEE Computer Society - https://www.acm.org/binaries/content/assets/education/cs2013_web_final.pdf • Computing Competencies for Undergraduate Data Science Curricula -ACM Data Science Task Force 2021 http://dstf.acm.org/DSTF_Final_Report.pdf • OU, UK Website : www.open.ac.uk • The Future of Jobs Report 2020-World Economic Forum https://www.weforum.org/reports/the-future-of-jobs-report-2020 **Internal:**

	• AOU Mission, Vision and Values - https://www.arabou.edu.kw/university/Pages/vision-and-mission.aspx • Learning and Teaching Strategy, Arab Open University https://www.arabou.edu.kw/blended-learning/Pages/about.aspx • The Bachelor Degree Award Requirements Bylaws, Arab Open University https://www.arabou.edu.kw/university/Documents/Regulations/student/en/The%20Bachelor%20Degree%20Award%20Requirements%20Bylaws.pdf • The Bachelor Award Examinations and Assessment Bylaws, Arab Open University https://www.arabou.edu.kw/university/Documents/Regulations/student/en/The%20Bachelor%20Award%20Examinations%20and%20Assessment%20Bylaws.pdf
Professional/ recognition	Recognised by Ministries of Higher Education in KSA, Kuwait, Lebanon, Egypt, Oman, Jordan, Bahrain, Sudan, Palestine and validated by Open University Validation Partnerships (OUVP), UK
For apprenticeships fully or partially integrated Assessment.	NA
Mode(s) of Study (PT, FT, DL, Mix of DL & Face-to-Face) Apprenticeship	Blended Learning
Duration of the programme for each mode of study	[3.5 - 12] Years
Dual accreditation (if applicable)	• The Open University (OU), United Kingdom • The Arab Open University (AOU), accredited from the Ministry of Higher Educations (MoHEs)
Date of production/revision of this specification	March 22, 2021

2. **Programme aims and objectives**

2.1 Educational aims and objectives

Data Science is a new field that is still evolving and spreads across a wide range of discipline areas based in the enabling disciplines of computer science, statistics and applied mathematics. There is a need for universities to offer curriculum to equip employees with the multi-skilled data talent which employers are increasingly seeking. There is a growing demand for Data Scientists in both public and private sectors to identify and solve complex business problems. The emergence of Data Science, has recently led to a surge of demand globally for relevant courses, typically at the interface between Statistics and Computer Science with much of that demand coming from mature students wishing to up-skill in mid-career.

The graduate of this honours degree will acquire a deep understanding of statistical and machine learning methods, programming and software development, algorithms and data structure. The graduates will develop expertise in communicating and visualizing data, including to non-specialists, and skills in thinking critically about the possibilities and limits of big data. The graduates will learn theories and techniques that will equip you with a range of skills to analyse complex data and guide evidence based decision and policy making across a range of public and private businesses. Together with developing knowledge and understanding of the fundamental concepts, techniques and technologies, and issues involved in their application, the DS programme aims to:

- Enable the student to keep ahead in a rapidly changing subject area by helping him/her to develop as an independent learner
- Develop relevant skills in communication and problem solving
- Imbue the qualities that come with being a graduate in any subject: specialist knowledge, intellectual self-confidence and independent, analytical ability and the life-long learning skills needed to keep up with fast-changing technologies and techniques
- Develop the capability to work with abstract concepts
- Develop an understanding of the concepts underlying relational databases and the database language SQL and ability to make complex queries.
- Develop in depth understanding of the key technologies in data science, business analytics, data mining, machine learning, visualization techniques, predictive modelling, and statistics.
- Familiarise the students with mathematical techniques involving matrices, linear algebra and calculus which are fundamental to applied mathematics and needed to analyse data using advanced numerical analysis, optimisation, network and graph theory
- Provide practical experience in the use of information and communication technologies
- Contribute understanding of machine learning, artificial intelligence and computer programming

• Give the ability to model real world situations and apply knowledge of statistics, mathematics and computing to develop solutions to practical problems. • Uphold ethical practices in professional and industrial projects and work.

2.2 Relationship to other programmes and awards (Where the award is part of a hierarchy of awards/programmes, this section describes the articulation between them, opportunities for progression upon completion of the programme, and arrangements for bridging modules or induction)
To obtain the BSc. Honours degree students must achieve 360 credit points in core modules.

2.3 For Foundation Degrees, please list where the 60 credit work-related learning takes place. For apprenticeships an articulation of how the work based learning and academic content are organised with the award.
NA

2.4 List of all exit awards
• DipHE IT & Computing (Data Science) (240 points) • **http://www.openuniversity.edu/courses/qualifications/w77** • CertHE IT & Computing (Data Science) (120 points) • **http://www.openuniversity.edu/courses/qualifications/t42**

3. Programme structure and learning outcomes
(The structure for any part-time delivery should be presented separately in this section.)

<u>**Programme Structure**</u>

Compulsory modules		Credit points	Optional modules	Credit Hours	Is module compensatable ?	Semester runs in
Level 0 (AOU): Foundation Year including University and Faculty requirements						
Level 1 (AOU) = Level 4 (OU)	M140 Introducing statistics	30	Nil	8	No	A.Y. 2021-2022
	MT131 Discrete Mathematics	15	Nil	4	No	
	MT132 Linear Algebra	15	Nil	4	No	
	M110 Python Programming	30	Nil	8	No	
	TM112 Introduction to computing and information technology	30	Nil	8	No	
Level 2 (AOU) = Level 5 (OU)	M218 Relational Databases	15	Nil	4	No	A.Y. 2022-2023
	M238 Data Visualization	15	Nil	4	No	
	MST224 Mathematical methods	30	Nil	8	No	
	MT248 Analysing data	15	Nil	4	No	
	MT249 Practical modern statistics	15	Nil	4	No	
	M269 Algorithms, data structures and computability	30	Nil	8	No	
Level 3 (AOU) = Level 6 (OU)	M348 Applied statistical modelling	30	Nil	8	No	A.Y. 2023-2024
	TM358 Machine learning and artificial intelligence	30	Nil	8	No	
	TM351 Data management and analysis	30	Nil	8	No	
	TM471 Graduation Project	30	Nil	8	No	

Intended learning outcomes are listed below:

Learning Outcomes
3A. Knowledge and understanding

Learning outcomes:	Learning and teaching strategy/ assessment methods
When you complete your studies for this qualification, you will have knowledge and understanding of: A1. A range of simple and more advanced methods for analysing statistical data and working with statistical models and carrying out statistical inference A2. Calculus, differential equations, linear algebra, multivariable calculus and vector calculus A3. The fundamental principles, concepts and techniques underlying computing and IT, relational databases, SQL language and the range of models used to support the analysis and design of computing and IT systems A4. The range of situations in which computing and IT systems are used in data science and the possibilities and limitations of such systems	**Learning and teaching strategy:** Knowledge and understanding is acquired from specially prepared teaching texts for majority of modules, supported by self-assessment and in-text questions, reference texts, multi-media packages, directed reading, computer mediated conferencing, web-based resources, and video and audio recordings. Student learning is supported by a tutor, who is the student's first and main point of contact, answering their queries, grading and commenting on their work. AOU's learning/teaching strategy provides contact hours that are equal to 25% of what traditional universities require. Thus, AOU students experience the benefits of both the open and traditional university systems. The DS programme will be delivered through two complementary modes: 1. Face-to-face interactive tutorials, constituting 25% of course credit hours.

Learning Outcomes
3A. Knowledge and understanding

A5. Core disciplines of machine learning and artificial intelligence
 	
A6. The ethical and legal issues associated with data science
 	
A7. Advanced data management and analysis, data visualization, mathematical methods and fundamental algorithms and data structures in computer science.
	2. Interactive self-learning delivered through specially designed teaching and support materials that are conducive for self-learning, constituting 75% of course credit hours.
	
	Students work independently with the teaching materials but are encouraged to form self-help groups with other students.
	
	Assessment Strategy: Assessment of the knowledge and understanding components of the DS programme is achieved through a combination of continuous assessments:
	
	   ▪ Tutor marked assignments (TMAs)
	
	   ▪ Midterm Assessment (MTA)
	
	and final exam.
	
	However, other assessment mechanisms are used for specific modules and graduation project.

3B. Cognitive skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
On completion of this qualification you will have developed the following cognitive skills: **B1.** Use your judgement in applying and selecting a wide range of mathematics and statistics tools and techniques to solve real world problems **B2.** Construct appropriate mathematical, statistical and data visualization models to draw justifiable inferences in qualitative and quantitative problem-solving skills **B3.** Reason with abstract concepts **B4.** Apply and critically evaluate key computing and IT concepts in a range of contexts **B5.** Select and apply appropriate techniques and tools for abstracting, modelling, problem-solving, designing and testing computing and IT systems, designing relational databases and be aware of the limitations involved	**Learning and teaching strategy:** Cognitive skills and processes are introduced at a very simple level at Level 1, primarily via material specifically designed to develop, mathematical, statistical and technological skills in a progressive way. Although modules at Levels 2 and 3 continue this work, there is significant variation between modules in the degree to which skills are taught explicitly in the module materials. Cognitive skills are promoted in the teaching materials via a range of activities including self-assessment exercises, multi-media tasks and computer-based investigations. They are supported by tutor led face to face discussions and activities. Computer conferencing facilities provide an environment for interaction bringing students, tutors and module team's members together for critical discussions and guidance. Tutor feedback aids the development of these skills. **Assessment Methodology**: Assessment of the cognitive skills of the programme is achieved through a combination of continuous assessment: ▪ Tutor marked assignments (TMAs) ▪ Midterm Assessment (MTA) and final exam The cognitive skills are assessed by questions asking for the application of concepts in new situations for analysis, for synthesis, etc., In some

3B. Cognitive skills
modules, this skill will be assessed using more open-ended design, investigative and project activities.
However, other assessment mechanisms are used for specific modules and graduation project

3C. Practical and professional skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
When you complete this qualification you will be able to: **C1.** Be an independent learner, able to acquire further knowledge with minimal guidance or support **C2.** Use appropriate professional tools, including programming languages and designing database models to support your work **C3.** Apply mathematical, statistical and computational concepts, principles and methods **C4.** Analyse and evaluate problems and plan strategies for their solution **C5.** Analyse, design, visualize, evaluate and/or test models and systems, using appropriate simulation and modelling tools as appropriate	**Learning and teaching strategy:** Practical and professional skills are taught cumulatively throughout the programme. Students are exposed to a variety of introductory courses, which would lead to more advanced courses in data science. These skills are developed and enhanced through the teaching and communication with the tutor. Modules will include supplementary material that will enrich the learning experience and increase the knowledge learnt. Some modules will adopt the practical hands-on approach that aim to develop the student's skills in the contexts of computation, modelling, analysis and simulation. Some modules will include specialised software and tools that will improve the teaching strategy. Modules also provide study guides, assignment and project guides and specimen examination papers. Feedback on assignments provides individual tuition and guidance.

3C. Practical and professional skills	

C6. Identify and address the ethical, social and legal issues that may arise during the development and use of computing and IT systems	Students are taught this material through interactive classroom activities and presentations. In writing their TMA, students make use of different electronic resources such as the internet and the e-library. AOU has developed its e-library through the addition of relevant databases which include academic refereed journals, publications, and conference proceedings to support the students in research based assignments.
	
	Assessment Methodology: Assessment of the practical skills of the programme is achieved through a combination of continuous assessment:
	
	   ▪ Tutor marked assignments (TMAs)
	
	   ▪ Midterm Assessment (MTA)
	
	   ▪ and final exam.
	
	However, other assessment mechanisms are used for specific modules and graduation project

3D. Key/transferable skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
When you complete this qualification you will be able to: **D1.** Communicate information, arguments, ideas and issues clearly and in appropriate ways, bearing in mind the audience for and the purpose of the communication **D2.** Find, assess and apply information from a variety of sources, using information technology where appropriate **D3.** Select, and use accurately, appropriate numerical and analytical techniques to solve problems **D4.** Prepare mathematical, statistical, visualization, database design and computational content for a range of purposes, which may include writing for both specialist and non-specialist audiences **D5.** Recognise and understand a range of technological and practical problems and select suitable techniques for solving them	**Learning and teaching strategy:** Transferable skills are developed throughout the programme. The skills of research, presentation, self-reflection and communication are essential to all modules and are increasingly developed as the student progresses throughout the programme. The interactive blended learning delivered through specially designed support material helps students to enhance their own independent learning skills. AOU expect students to naturally develop the skills of learning to learn as they develop through the suite of modules, and this is drawn to their attention through a combination of skills based assessment and tutor feedback during face-to-face tutorials and feedback to assignments. Level-1 and level-2 modules supports the students in acquiring basic skills and level 3 modules expect students to show application of skills developed earlier levels. Higher level modules aim to develop students' ability to conduct independent research using a variety of databases and websites, and to develop group-working skills. As work becomes more complex at these modules, students are tested on their abilities to respond positively to feedback from a variety of audiences, as well as to manage increasingly large workloads. **Assessment Methodology**: Assessment of the key skills of the programme is achieved through a combination of continuous assessment:

3D. Key/transferable skills	
	- Tutor marked assignments (TMAs) - Midterm Assessment (MTA) - and final exam. In some cases the assessment is implicit, but where the relevant skills have been taught in the related course material the assessment is generally explicit. However, other assessment mechanisms are used for specific modules and graduation project

Title(s) of exit award(s)

Exit Award-1: CertHE IT & Computing (Data Science)

Description: Computing and data analysis play an important role in almost all private and public sector employment. The need to understand how to use IT and data to inform business decisions has never been more important. This qualification introduces Students to some basic skills in exploring and analyzing data sets and solving practical problems using mathematics, statistics and computing. It forms a foundation for further study or employment in the fields of mathematics, statistics, computing or data science.

Requirements; this qualification has one stage, comprising 120 credits.

Students will complete one 30-credit mathematics, one 30-credit statistics and two 30-credit computing & IT modules.

Module Code	Module Title	Credits
M110	Python Programming	30
TM112	Introduction to computing and information technology	30
M140	Introducing statistics	30
MT131	Discrete Mathematics	15
MT132	Linear Algebra	15

Educational aims

Students will learn theories and techniques that will equip them with a range of basic skills in computer programming and data analysis that form the basis of evidence-based decision and policy making across a range of public and private businesses. This qualification will provide students with a base across discipline areas and the opportunity to specialize in one or more of these if they pursue further study or employment in computing or data science. Together with developing knowledge and understanding of the fundamental concepts, techniques and technologies, and issues involved in their application, it will also:

Learning outcomes

Knowledge and understanding

When students complete their studies for this qualification, they will have knowledge and understanding of:

A1. A range of methods for analyzing statistical data

A2. Basics of calculus, matrices and vectors

A3. The fundamental principles, concepts and techniques underlying computing and IT

A4. The range of situations in which computing and IT systems are used and the possibilities and limitations of such systems

A5. The ethical and legal issues associated in data science

Cognitive skills

On completion of this qualification students will have developed the following cognitive skills:

B 1. Use their judgement in selecting and applying a range of basic mathematical and statistical tools and techniques to solve some elementary real world problems

B 2. Construct appropriate statistical models and draw justifiable inferences using qualitative and quantitative problem-solving skills

B 3. Apply computing and IT concepts, techniques and tools appropriately

Practical and/or professional skills

When students complete this qualification they will be able to:

C.1. Be an independent learner, able to acquire further knowledge with minimal guidance or support

C.2. Use appropriate professional tools, including programming languages, to support your work

C.3. Apply basic mathematical, statistical and computational concepts, principles and methods

C.4. Identify and address the ethical, social and legal issues that may arise during the development and use of computing and IT systems

Key skills

When students complete this qualification they will be able to:

D 1. Communicate information, arguments, ideas and issues clearly and in appropriate ways, bearing in mind the audience for and the purpose of the communication

D 2. Find, assess and apply information from a variety of sources, using information technology where appropriate

D 3. Select, and use accurately, appropriate statistical and mathematical techniques to solve problems

D 4. Recognize and understand a range of technological and practical problems and select suitable techniques for solving them

Exit Award-2: DipHE IT & Computing (Data Science)

Description: Data plays an important role in almost all private and public sector employment. The need to understand how to use data to inform business decisions has never been more important. This qualification equips you with the key skills to explore and analyze complex data sets and solve practical problems using applied mathematics, statistics and computing. It forms a strong foundation for further study or employment in the field of data science.

Requirements: Course details

This qualification has two stages, each comprising 120 credits.

Level	Module Code	Module Title	Credits
Level 4	M140	Introducing statistics	30
	MT131	Discrete Mathematics	15
	MT132	Linear Algebra	15
	M110	Python Programming	30
	TM112	Introduction to computing and information technology	30
Level 5	M218	Relational Databases	15
	M238	Data Visualization	15
	MST224	Mathematical methods	30
	MT248	Analysing data	15
	MT249	Practical modern statistics	15
	M269	Algorithms, data structures and computability	30

Educational aims

Students will learn theories and techniques that will equip them with a range of skills to analyze and visualize complex data and guide evidence-based decision and policy making across a range of public and private organizations. This qualification will provide them with a broad base across discipline areas and the opportunity to specialize in one or more of these if they pursue further study or employment in data science. Together with developing knowledge and understanding of the fundamental

concepts, techniques and technologies, and issues involved in their application. The learning outcomes are given below:

Learning outcomes

Knowledge and understanding

On completion of this diploma, students will have knowledge and understanding of:

A1. a range of simple and more advanced methods for analyzing and visualizing statistical data

A2. calculus, differential equations, linear algebra, multivariable calculus and vector calculus

A3. the fundamental principles, concepts and techniques underlying computing and IT, relational databases and the range of models used to support the analysis and design of computing and IT systems

A4. the range of situations in which computing and IT systems are used in data analysis and the possibilities and limitations of such systems

A5. the ethical and legal issues associated with computing

Cognitive skills

On completion of this diploma, students will be able to:

B 1. use their judgement in applying and selecting a wide range of mathematics and statistics tools and techniques to solve real world problems

B 2. construct appropriate mathematical, statistical and visualization models to draw justifiable inferences in qualitative and quantitative problem-solving skills

B 3. reason with abstract concepts

B 4. select, apply and critically evaluate key database, computing and IT concepts and tools in a range of contexts

Practical and/or professional skills

On completion of this diploma, students will be able to:

C.1. be an independent learner, able to acquire further knowledge with minimal guidance or support

C.2. use appropriate professional tools, including database, programming languages and algorithms to support your work

C.3. apply mathematical, visualization, statistical and computational concepts, principles and methods

C.4. analyze and evaluate problems and plan strategies for their solution

C.5. identify and address the ethical, social and legal issues that may arise during the development and use of computing and IT systems.

Key skills

On completion of this diploma, students will be able to demonstrate the following skills:

D 1. communicate information, arguments, ideas and issues clearly and in appropriate ways, bearing in mind the audience for and the purpose of the communication

D 2. find, assess and apply information from a variety of sources, using information technology where appropriate

D 3. prepare mathematical, visualization, statistical and computational content for a range of purposes, which may include writing for both specialist and non-specialist audiences

D 4. recognize and understand a range of database, technological and practical problems and select suitable techniques for solving them.

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4. Distinctive features of the programme structure

- **Where applicable, this section provides details on distinctive featurs such as:**
- ➢ where in the structure above a professional/placement year fits in and how it may affect progression
- ➢ any restrictions regarding the availability of elective modules
- ➢ where in the programme structure students must make a choice of pathway/route
- **Additional considerations for apprenticeships:**
- ➢ how the delivery of the academic award fits in with the wider apprenticeship
- ➢ the integration of the 'on the job' and 'off the job' training
- ➢ how the academic award fits within the assessment of the apprenticeship

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The DS Programme will equip students with a set of analytical and programming skills to work across the disciplines of statistics, mathematics and computing. This qualification meets the requirements of AOU frameworks and principles, such as the Quality Assurance guidelines for undergraduate qualification delivery and academic framework policies.

The main distinctive feature of the DS programme is that it combines modules developed by AOU and other core modules adopted from OU. FCS developed level-4 modules to respond to the needs of the students, to prepare them for the challenges of OU courses and to increase the retention rate for first and second year students.

The profile of admitting students is according to the mission of AOU and also in compliance with the programme aims and available resources in the various branches. All freshmen shall sit for the Language Placement Test in English pursuant to the standards approved by the University Council. The students score low grade in the admission test shall register for the English orientation course. However, the credit hours due to such courses shall not be included in his/her cumulative averages. Students may study for the first semester of the programme, only the university general requirements. Elective modules are not part of the 360 points validated by the OU but are present to satisfy overall aims of the programme and the labour market needs. The programme comprises of two types of elective modules: faculty mandatory electives and faculty

general electives. Students are allowed to choose modules from the faculty general electives. The elective modules assess a number of learning outcomes that blend well in terms of covering some of the learning outcomes of practical and professional skills, and key/transferable skills from the DS programme.

In addition to the above mentioned, the programme has the following distinctive features:

- Flexibility (Duration up to 8 years with face to face tutoring sessions and independent study, wide range of project topics related to data science)
- Tutorials are delivered by tutors with professional experience in Data Science and Mathematics in addition to their academic experience, which contributes to preparing our graduates for the industry.
- The practical nature of the programme
- Boosted by the collective intelligence of multiple tutor teams at different branches.
- The programme will be offered by complying the local requirements of the higher education ministries in the offering countries.
- The Industrial Advisory Board (IAB) members in each branch will update the demanding labour market skills and support in getting industrial training for the graduates.

Overall Programme Structure

The 96 Credit Hours core modules are placed in section-3 for validation. Students seeking a BSc Honours degree in Data Science at AOU must complete at least 131 credit hours including the 96 CH core modules and 35 AOU requirements.

1. Overall DS Programme Requirements (AOU) (Table-1)
2. University Requirements/ Mandatory (Table-2)
3. University Requirements/ Electives (Table-3)
4. Faculty Requirements/ Mandatory (Table-4)
5. Faculty Requirements/ Electives (Table-5)
6. Programme Core Requirements (Table-6)

Table 1: Programme Requirements

Requirement type	Credit Hours
University Requirements/ Mandatory	18
University Requirements/ Electives	3
Faculty Requirements/ Mandatory	8
Faculty Requirements/ Electives	6
Programme Core Requirements	96
Total Credit Hours	131

The details of the previous requirements will be described as follows:-

University Requirements/ Mandatory (60 points) (18 Credit Hours)

Table 2: Details of University Requirements (Mandatory)

Module	Module Title	Credit	Pre-requisites
AR113	Arabic Communication Skills	3	--
GB102	Principles of Entrepreneurship	3	--
GR118	Life Skills and Coexistence	3	--
GT101	Learning and Information	3	--
EL111	English Communication Skills I	3	--
EL112	English Communication Skills II	3	EL111
Total		18	

University Requirements/ Electives (10 points) (3 Credit Hours)

Table 3: Details of University Requirements (Electives)

Module Code	Module Title	Credit Hours	Pre-requisites
GR111	Arabic Islamic Civilization	3	--
GR112	Issues and Problems of Development in the	3	--
GR115	Current International Issues and Problems	3	--
GR116	Youth Empowerment	3	--
GR117	Women Empowerment	3	--
GR121	Environment and Health	3	--
GR131	General Branch Requirement	3	--
CH101	Chinese for Beginners (I)	3	--
CH102	Chinese for Beginners (II)	3	CH101
SL101	Spanish for Beginners (I)	3	--
SL102	Spanish for Beginners (II)	3	SL101
FR101	French for Beginners (I)	3	--
FR102	French for Beginners (II)	3	FR101

Faculty Requirements / Mandatory (30 points) (8 Credit Hours)

Table 4: Details of Faculty Requirements (Mandatory)

Module code	Module title	Credit Hours	Points	Source	Pre-requisites
MST129	Applied Calculus	4	15	AOU	EL099
TM260	Ethics, Law and the Governance in IT	4	15	AOU	M110

Faculty Requirements / Elective (20 points) (6 -9 Credit Hours)

Table 5: Details of Faculty Requirements (Electives)

Module code	Module title	Credit Hours	Points	Source	Pre-requisites
M115*	Python for DS and ML	3	10	AOU	M110
TM338	Data Mining	3	10	AOU	MT249
TM339	Big Data Analytics	3	10	AOU	MT249
MS102	Physics	3	10	AOU	EL111
M109	.NET Programming	3	10	AOU	EL111
MT101	General Mathematics	3	10	AOU	None

Note- It is strongly recommended that students study M115 for Data Science at Level 1 as recommended by the Validation Panel. This will be ensured by proper academic advising. The student will not be allowed to take more than one elective module per level from the above Table-5, according to proper Academic Advising.

Programme Core Requirements (96 Credit Hours)

The students will be encouraged to finish each level before moving on to the next level. The details of core modules are given as follows:-

The core modules of the Data Science programme are shown in Table 6 below. The table shows the 360 points (96 CHs) of the core modules of study for this programme. It is clear from the table that the programme shares introductory modules at the Level-1 stage of study. However, the programme has more specialized modules at the higher Level-2 and Level-3 stages. The programme requires students to complete the project module, namely, TM471 (Parts 1 & 2) in order to successfully complete this programme of study. The TM471 module includes the completion of an extensive piece of practical project, which has to be completed on an individual basis. The table also shows the pre-requisites for each of the core modules of the Data Science programme. The elective modules that are involved in the study of the Data Science programme are shown in the electives table below. Level-1 electives are available for the entire programme. In

fact, it is clear from the table that the students are not allowed to select more than one elective module from Level-2 and Level-3.

Table 6: Details of Specialization/Core Requirements

Level	Code	Module Title	Source	Point	CHs	Prerequisite
Level 1 (AOU) = Level 4 (OU)	M140	Introducing statistics	OU	30	8	EL111
	MT131	Discrete Mathematics	AOU	15	4	EL111
	MT132	Linear Algebra	AOU	15	4	EL111
	M110	Python Programming	AOU	30	8	EL111
	TM112	Introduction to Computing and Information Technology	OU	30	8	M110
Level 2 (AOU) = Level 5 (OU)	M218	Relational Databases	AOU	15	4	M110, MT131
	M238	Data Visualization	AOU	15	4	M110
	MT248	Analyzing data	OU	30	8	M140
	M269	Algorithms, Data Structures and Computability	OU	30	8	M110 and MT131
	MST224	Mathematical Methods	OU	30	8	MST129 & MT132
	MT249	Practical Modern Statistics	OU	30	8	MT248
Level 3 (AOU) = Level 6 (OU)	M348	Applied Statistical Modelling	OU	30	8	MT248
	TM358	Machine learning and artificial intelligence	OU	30	8	M269
	TM351	Data management and analysis	OU	30	8	M269

	TM471	Graduation Project	AOU	30	8	M348 or TM351 or TM358

Table 7: Data Science Programme-4 Year Study Plan

First Year					
Semester	**Modules**	**Title**		**Credit Hours**	**Prerequisite**
1ˢᵗ **(13 CHs)**	EL111	English Communication Skills I		3	-
	GR118	Life Skills and Coexistence		3	-
	GT101	Computing Essentials		3	-
	MST129	Applied Calculus		4	EL099
2ⁿᵈ **(14 CHs)**	AR113	Arabic Communication Skills		3	-
	EL112	English Communication Skills II		3	EL111
	MT131	Discrete Mathematics		4	EL111
	MT132	Linear Algebra		4	EL111

Second Year					
Semester	**Modules**	**Title**		**Credit Hours**	**Prerequisite**
1ˢᵗ **(14 CHs)**	GB102	Principles of Entrepreneurship for Non-Specialists		3	-
	M110	Python Programming		8	EL111
		A module from University Requirement/Elective		3	-
2ⁿᵈ **(20 CHs)**	TM112	Introduction to Computing and Information Technology		8	M110
	M140	Introducing statistics		8	EL111
	TM260	Ethics, Law and the Governance in IT		4	M110

Third Year					
Semester	**Modules**	**Title**		**Credit Hours**	**Prerequisite**
1ˢᵗ **(16 CHs)**	M218	Relational Databases		4	M110, MT131
	MT248	Analyzing data		4	M140
	M269	Algorithms, Data Structures and Computability		8	M110 and MT131
2ⁿᵈ **(19 CHs)**	M238	Data Visualization		4	M110
	MST224	Mathematical Methods		8	MST129 & MT132
	MT249	Practical Modern Statistics		4	MT248
		Faculty Elective		3	

Fourth Year					
Semester	**Modules**	**Title**		**Credit Hours**	**Prerequisite**

	M348	Applied Statistical Modelling	8	MT248
1ˢᵗ **(20 CHs)**	TM351	Data management and analysis	8	M269
	TM471A	Graduation Project-A	4	M348 or TM351 or TM358
2ⁿᵈ **(15 CHs)**	TM358	Machine learning and artificial intelligence	8	M269
	TM471B	Graduation Project-B	4	TM471A
		Faculty Elective	3	

Table 8: Data Science Programme structure

Level	Programme Structure
Level 0	**University Requirements (Student may select from variety of modules)**
Level 1 (AOU) = Level 4 (OU)	**Faculty Requirements** MST129 Applied Calculus (4 CHs) **Specialization/Core Requirements** MT131 Discrete Mathematics (4 CHs) / MT132 Linear Algebra (4 CHs) / M110 Python Programming (8 CHs) M140 Introducing Statistics (8 CHs) / TM112 Introduction to computing and information technologies (8 CHs) **Faculty Elective** M115 Python for Data Science and Machine Learning (3 CHs)
Level 2 (AOU) = Level 5 (OU)	**Faculty Requirements** TM260 Ethics, Law and the Governance in IT (4 CHs) **Specialization/Core Requirements** MT248 Analysing Data (4 CHs) / MT249 Practical Modern Statistics (4 CHs) / MST224 Mathematical Methods (8 CHs) M269 Algorithms, Data Structures and Computability (8 CHs) / M218 Relational Databases (4 CHs) / M238 Data Visualization (4 CHs)
Level 3 (AOU) = Level 6 (OU)	**Specialization/Core Requirements** M348 Applied Statistical Modelling (8 CHs) / TM358 Machine learning and artificial intelligence (8 CHs) TM351 Data management and analysis (8 CHs) / TM471 Graduation Project (8 CHs) **Faculty Electives** TM338 Data Mining (3 CHs) / TM339 Big Data Analytics (3 CHS)

5. Support for students and their learning.
(For apprenticeships this should include details of how student learning is supported in the work place)

AOU provides various services to ensure that all students enjoy peaceful and calm stay, and assists them in dealing with any psychological, behavioural, social, educational, financial, health and safety. Students at AOU, including FCS students, are offered various methods of student support. These include:

Learning Management System (LMS)
LMS is a software application / Web-based technology that is used as the major media of communication between students and tutors. LMS main page gives up-to-date information about AOU branches to students from concerned programmes.

LMS features help students to post queries, search for information over a certain topic, read daily posts and comments. Some of the LMS features are as follows:
• 	Assignment submission through the TMAs submission links
• 	Discussion forum between all users
• 	Downloading and uploading processes
• 	Getting marks
• 	Using Moodle Instant Messages
• 	Doing online quizzes
• 	Accessing mock up exams
• 	Having access to the E-Library
• 	adding course page for student/tutors (introduction, communication tools, announcement section, TMA & MTA grades section, contact your teacher section)
• 	Providing a free plagiarism online checker websites on the LMS to help students in checking their TMA similarity.
• 	Check all university announcements through the LMS Home Page
• 	Joining LMS online training link
• 	Having access to all official social media accounts and YouTube channel through the LMS
• 	Availability of exams schedule and semester calendar etc.
• 	Availability of E-Books materials are available for all courses as a PDF files

SIS (Student Information System)
AOU established a centralized SIS that integrates data obtained from the branches' student databases. The SIS comprises security, student information, financial services, academic advising and online registration.
The system allows the student to benefit from various electronic services, which include:
• 	Online Registration: to register, update and delete course to be studied at AOU.
• 	Online Payment: to view and pay the fee online.
• 	View/Print Semester Timetable:

- • View/Print Student Schedule: to view a detailed schedule whenever needed
- • View/Print Academic Plan: to view or print academic plan which is reflective of the studied courses and the remaining courses.
- • View/Print Examination Results: to view or print unofficial slip of the academic performance (transcript).
- • Create a Student Personal Development Plan (PDP): to facilitate the achievements of academic and career goals.
- • Edit Students' Contact profile: to update the contact details at any time assuring appropriate channel of communication with AOU.
- • View student Exam Slip: to view the location of the exams.
- • View Advising details: to view the advising details logged by the advisor.
- • Student Support Services.
  - o Exam Postponing System: To submit a request to postpone a midterm or final exam with attaching the excuse.
  - o Appeal System: To submit a request for formal review of an academic decision regarding course final examination grade or course continuous assessment marks.
  - o Complaint System: To submit any claim unrelated to academic grades.
  - o Inquiries System: To submit an inquiry related to subject other than appeal and complaint.
  - o Disability and Dyslexia Support System: To submit a description of any disabilities or learning difficulties, so the university can take it in consideration and to provide the necessary services to enable the student to fulfil the intended learning outcomes of their study in a friendly educational and social environment.

- • Induction Programme/Orientation Day: Students Affairs Department organizes an induction program/orientation day for the new students, in coordination with all administrative and academic departments at the beginning of each semester.

- • Practical laboratory sessions for programming courses.

- • The university website www.arabou.edu.kw embodies a lot of guidance and support materials such as: Course Guides, Study Calendars etc.

- • Tutor Contact: Tutors hold weekly office hours. Tutors are committed to helping students with their problems. All tutors have regular office hours to meet students. The tutors can also be contacted through email. All part-time and full-time tutors are requested to hold two weekly office hours for each taught section. There are also chat sessions online with tutors, and face-to-face feedback sessions. Additionally, emails are constant means by which tutors and students can discuss important ideas related to course material. Furthermore, tutors are available via phones, as well, to answer any urgent queries and offer support.

- Academic Advising: Proper academic advising is regarded as a very critical factor affecting student's success and retention and is given exceptional attention in all branches. Each student is assigned to an advisor. Each advisor should show his advisee the ultimate way to achieve his/her goal while taking into account his strengths, weaknesses, and past performance.

  Given that, AOU adopts a blended learning approach that fosters flexibility for the students; two types of advising are offered at the AOU: Face to face advising and E- Advising. Both are offered within certain context and in accordance to specific criteria and guidelines. Advising usually starts at the beginning of the semester, before registration, but continues throughout the semester, where students can meet their advisors in their office during the semester. Face to face advising is mandatory for new comers, and for old students who are not eligible for e-advising. The advisor takes into consideration several factors, among these factors, the financial situation of the student, his workload (part time/full time job), and the student's results in the placement test. The e-advising is offered for continuing students with good GPA and according to the academic advising policy.

- **Student Counselling Unit:** The unit, available at some branches and being adopted for future implementation in many, provides a range of services and activities that help the student to achieve social and psychological adaptation. Individual sessions in which the student meets with the Psychological Counsellor. These sessions help the students to identify the problems facing them or the difficulties that prevent them from achieving their objectives. The Psychological Counsellor helps them to develop skills and capabilities which can help them to handle all kinds of problems.

- **Written guidance including**
  - Student Handbook
  - Student Guide on Plagiarism
    https://www.arabou.edu.kw/files/plagiarism_mat.pdf
  - Teaching and Learning policy https://www.arabou.edu.kw/blended-learning/Pages/about.aspx
  - The Bachelor Degree Award Requirements Bylaws
  - https://www.arabou.edu.kw/university/Documents/Regulations/student/en/The%20Bachelor%20Degree%20Award%20Requirements%20Bylaws.pdf
  - The Bachelor Award Examinations and Assessment Bylaws,
    https://www.arabou.edu.kw/university/Documents/Regulations/student/en/The%20Bachelor%20Award%20Examinations%20and%20Assessment%20Bylaws.pdf
  - Equal opportunity policy
  - https://www.arabou.edu.kw/university/Documents/Regulations/aou/en/Equal%20Opportunity%20and%20Respect%20for%20Diversity.pdf

- ICT facilities
- IT Help Desk

- •   Student email
- •   Wireless Internet access most of the AOU country campuses.
- •   Student representatives in the Student Council and Branch Council allowing students to share in the decision making process.
- •   Career planning guidance and services.

6. Criteria for admission
(For apprenticeships this should include details of how the criteria will be used with employers who will be recruiting apprentices.)

AOU, based on its belief in equal-opportunity education and the two interconnected principles of lifelong learning and education for all, tries to reach out to as many learners as possible. This is why it tries – in those branch countries where there are interested learners – to open, in addition to the main branches themselves, centres in remote areas, making education available to those who may not have an opportunity otherwise.

The standard criterion for admission to FCS programme is a high school certificate or its equivalent in the scientific pathway. The FCS follows the AOU's policies and Rules and Regulations, considering the students' entry into the undergraduate DS programme. The main Entry Requirement into the DS Programme is a valid High School certificate.

Nevertheless, it is worth noting that the admission criteria should fulfil any other conditions determined by the university or competent authorities of the offering branch countries.

7. Language of study

English

8. Information about non-OU standard assessment regulations (including PSRB requirements)

AOU assessment strategy is based on general principles and procedures aiming to organize and monitor the examinations at all AOU branches. AOU regulations include validation (pre-assessment moderation) of examination questions and answer keys by external examiners (EE), audit tutors' marking, post-assessment moderation; and 4 tiers of examination committees.

Below is a brief about the major assessment principles, policies, and procedures adhered to by FCS.

1. Main principles underpinning the processes of assessment at AOU

AOU has explicit procedures for ensuring that student performance is properly judged and for evaluating how academic standards are maintained through assessment practice. The following are some of the procedures which FCS implements:

- All forms of assessment must aim to test the Learning Outcomes (LOs) associated with the module.
- The creation and administration of all types of assessment is a team work (e.g. branch module coordinators (BCCs), module chairs (GCCs), programme coordinators (PCs), Deanship team, and External Examiners (EEs)).
- All assessment components are reviewed and approved by EEs.
- Strict quality measures take place to guarantee fair/correct marking at all branches and across them through Cross branch marking (CBM)
- Sample of students' marked work/scripts from all the modules per branch as well as the CBM are review by EEs.
- There are four tiers of Examination Board structure to approve the final students' results at the end of each semester.

The FCS maintains contact with EEs throughout the semester, and informs them about any issues that arise concerning student assessment. The EEs and the OU Academic Reviewer are involved in establishing the quality of the academic delivery, academic material preparation, assessment and guidance throughout the semester.

2. Composition of the examinations committees

AOU has a four-tiered Examination Board structure consisting of the following:
- Branch Examination Committee (BEC)
- Module Assessment Committee (CAC)
- Faculty Examination Committee (FEC)
- Central Examination Committee (CEC)

All EEs are members of CAC and FEC. The Chief External Examiner is a member of CEC. The composition of all examination boards has been clearly spelled out in the AOU Examination Rules and Regulations. The composition of all examination boards is appropriately maintained by the AOU administration. Marks submitted by

branches are considered at HQ by CAC, FEC and ultimately by the CEC. In this way, cross-branch review is achieved.

3. Assessment Components, Weights, and Criteria

The FCS follows the AOU's assessment policies, rules and regulations. The assessments at AOU comprise of 3 essential components with their relative weight as follows:

- Tutor Marked Assignment (TMA) → 20%
- Mid-Term Assessment (MTA) → 30%
- Final Exam → 50%

Weightages of Assessment Components for TM471 Graduation Project module:

For the graduation module TM471 the assessment components and the associated weightages are as follows:

- Preliminary presentation: 5 %
- Project Report Part-1: 25%
- Project Presentation (Final): 10%
- Project Report (Final): 35%
- Project deliverable: 25%

Formative and Summative parts of Assessments:

The TMA and the MTA parts of the assessment form the Continuous Assessment component at AOU. The TMA assessment component is part of the Formative Assessment at AOU and detailed feedback is provided to students on their TMA work. The MTA and Final Examinations are part of the Summative Assessment at AOU.

Feedback on Assessment:

The students are provided detailed feedback on their TMA work and this is an essential part of learning at AOU. Tutors use a detailed form for this purpose in which marks for each part of the TMA are clearly distributed. The feedback form also has specific area for the tutors to provide feedback to students concerning their strengths, weaknesses and steps for improvement. The tutor uses this form to provide detailed feedback to students and to suggest corrective and

improvement actions. Feedback is also provided to students during in class face-to-face tutorials and during laboratory and office hours maintained by the tutors.

4. The Grade Point Average and Equivalent Letter Grades:

AOU follows the Grade Point Average (GPA) on a scale of 0 to 4 in its grading processes, i.e., the different categories of achievement are distinguished by awarding students grades on a scale from 0 to 4.

5. Quality of Assessment:

The mapping between the GPA and with the equivalent Letter Grades is given below in tabular form:

Table 9: GPA and equivalent Letter Grades

Cumulative Average	Grade
3.67-4.00	Excellent
3.00-3.66	Very Good
2.33-2.99	Good
2.00-2.32	Pass

QAA defined Benchmark standards and the excellence level are taken into consideration in the preparation of the assessment materials. The assessment materials contain questions of appropriate difficulty level standard in order to differentiate students according to their knowledge level and skills. The assessment materials are subject to External Examiners' scrutiny to ensure that standards are compatible to institutions of similar standings in the UK.

6. Marking, Double-marking, and Cross Branch Marking.

The FCs adopts transparent and fair mechanisms for marking and for moderating marks. All tutors responsible for marking are provided with model answers (approved by EEs) to the questions they will be marking. In addition, grades given by branch tutors are audited by internal staff member to ensure correct marking process.

There is appropriate arrangement for Group Marking and Double Marking. During Group marking under the supervision of the BCC, internal review is undertaken. Double-marking is undertaken as part of the tutor monitoring process in which the BCC evaluates the performance of the tutors.

Cross Branch Marking (CBM) is performed in FCS to ensure uniformity of script marking. The Deanship collects scripts from branches for various modules and these are distributed to other selected branches for the purpose of CBM. CBM reports are generated by the concerned tutors and the Deanship ensures that marking across branches is standardised and uniform.

7. The Assessment Procedures

The assessment procedures are secure and we have full confidence in their integrity and trustworthiness. The following steps are implemented to ensure the security and integrity of the assessment procedures:

- A secured web-based framework is created and organized by the Deanship at the beginning of each semester to exchange the assessment documents. Through such framework, the Deanship centrally control and organize the whole flow of the assessments and documents with all the members involved in the assessment process, where a personal account is created for each GCC, EE, Exam officer of each branch.
- Each GCC prepare the assessment components of his/her module (i.e., TMA, MTA, Final with the model answers and marking guide) and submit them through the aforementioned framework.
- The FCS Deanship communicates the EEs to start their review/feedback on examination papers (through the framework).
- Once the examinations are finalised the Deanship sends them to the Exam Officer at each branches (through the framework)
- The examinations officer prints and keeps them in sealed envelopes under lock and key in a safe storage place at his/her branch.
- The examination officer takes out the examination papers about half-an-hour prior to the start time to give them to invigilators.
- All examinations across all branches are time-synchronized to avoid students of one branch leaking exams to students of other branches.
- Branch directors and branch programme coordinators supervise the administration of the examinations.
- All stages of test administration, the marking of scripts, and the recording of marks are regulated by explicit written instructions and monitored by concerned bodies (programme coordinators, course coordinators, examination committees).
- To guarantee objectivity in marking, students' names and registration numbers do not appear on final examination scripts. Furthermore, in courses taught by more than one tutor, the principle of 'group marking' is applied in the marking of all scripts

- For TMAs, the integrity of the solutions is ensured by providing the solutions to tutors very close to the cut-off date to avoid leakages of solutions due to intentional or unintentional means.
- Plagiarism on TMAs is an issue which all education institutions are grappling with. We now have Turnitin plagiarism detection software to address the issue.
- Once each assessment is marked at each branch, samples of students marked work/script is uploaded along with the audit-trail forms (for finals and MTAs), similarity report (for TMAs), and feedback forms (for TMAs) on a secure shared space in order to be reviewed by the EEs.
- The samples of the final exams are subject for Cross branch marking to ensure the fairness of the marking process. The output of the CBMs are made available for the EEs.
- The final results for each course are reviewed by the course assessment committee (CAC), then by the faculty examinations committee (FEC), and finally by the central examination committee (CEC).

The assessment process is objective in nature since the entire process is open and accessible to EEs' scrutiny.

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9. For apprenticeships in England End Point Assessment (EPA).
(Summary of the approved assessment plan and how the academic award fits within this and the EPA)

NA

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10. Methods for evaluating and improving the quality and standards of teaching and learning.

As a partner of the OU, UK, AOU is required to meet all academic standards required for validation and accreditation set for UK universities and institutes of higher education. This includes engagement with the QAAD Academic Infrastructure and guidelines provided by the OU, UK. AOU offers its programme in 9 Arab countries, it is crucial to meet the local quality assurance requirements in the offering countries as well.

FCS continuously evaluates the quality and standards of teaching and learning of the programmes and its delivery using different well-designed appraisal and evaluation systems that include key indicators for assessing the performance of the offered

programmes. Following are the methods for evaluating and improving the quality and standards of teaching and learning adopted in AOU.

10.1 Quality of the Programmes

- Periodic review and revalidation of programme by an external panel (Revalidation every 5 years)
- Programme review by the Quality Assurance agency in the offering countries.
- Annual Monitoring Report (AMR): AMR is a comprehensive document produced at the end of every academic year. The AMR focuses on the developments and challenges related to all matters of teaching and learning environment. The evidence it contains is both qualitative and quantitative in nature. Academic programmes give a detailed account of student enrolment, withdrawal, progression, achievement trends. It also includes an analytical commentary related to the course material, assessment designs, students' learning outcomes, tutor performance, appeals and complaints, grievance systems, student and tutor feedback. This takes account of the views of tutors, students and any issues raised by the external examiners. A detailed action plan is produced accordingly and communicated to all programme coordinators at the eight branches to leverage the strengths and address the weaknesses of the faculty.
- Annual Programme Evaluation (APE): The programme management team at the branches completes an annual programme evaluation report which is submitted as part of the AMR at the end of every academic year. The report consists of analytical commentary of the course material, assessment design, student and tutor feedback, external examiners' comments and responses to external examiners' reports in addition to programme achievements and good practices.
- External Verifier/Examiner
- Quarterly Periodic Reports (QR)
- Subject areas committees at FCS
- Internal Moderation
- Academic reviewer's involvement in the programme review
- Reviews made by local ministries of Higher Education and Quality Assurance agencies.
- Feedback from students: AOU recognizes the importance of student views and feedback. For this purpose student's views survey is circulated during each semester where students are expected to give a formal feedback on the tutorial, content, delivery style, clarity of learning outcomes, and helpfulness of the tutor towards the student. Student feedback will duly be communicated to the respective module tutor and appropriate measures will be taken, if necessary.
- Feedback from employers: A feedback is gathered through the survey that is conducted at various interval to collect the expectation and feedback of the employers.

- Feedback from Alumni: A feedback is collected about the graduates of AOU by Students Affairs departments in the respective branches at the end of every academic semester. The survey asks about various aspects such as: employment status, field of employment, relation of employment to the student programme, etc.
- Academic standards committee involvement in programme updates
- Industrial Advisory Board: Keeping abreast of industry developments is an essential aspect of preparing students for their future careers. IAB has been functioning in all the branches at FCS. IAB creates a strong link between industry and the FCS and is contributing in achieving the FCS's goals and objectives. Members of this board are professionals in industry and government who collaborate and build cooperative efforts with the FCS, advice on academic programs, and help in building future faculty direction. FCS alumni are members of this board in all the branches.

10.2 Quality of Teaching and Learning

- Feedback from students (through Questionnaires, meetings with PCs, Deans, and VRAA)
- Tutorial/peer monitoring: Peer monitoring is a collegiate approach to identifying tutor's strengths and weaknesses in delivering the course content during tutorials
- General Module Chair (GCC) and Branch Module Coordinators (BCCs) monitor the delivery of their respective modules.
- Exit surveys
- Feedback from AOU Alumni
- Annual staff appraisal
- Tutor development activities such as faculty development forum, workshops and research seminars
- Best tutor awards encourage excellence in tutoring
- Academic Appraisal: is an appraisal system used to evaluate the soundness of academic staff knowledge and skills in delivery. This appraisal system is crucial to deciding the efficacy of their services rendered to the University in terms of the continued need for your services or otherwise. This appraisal process also helps you and the university identify you training needs. The academic appraisal is conducted once a year.

10.3 Quality of Assessment

- Quality assurance and oversight by the deanship
- External Examiners' involvement in module assessment committees (CACs)
- External Examiners' reports and FCS-Action Pans
- Feedback from tutors

- Prompt feedback on student's continuous assessments (TMAs, MTA)

10.4 Ensuring quality through General feedback

- Cross-programme discussions with all branches through the members of the academic committee.
- Faculty Council meetings.
- Implementation of best practices in 8 different branches with 4 different faculties.

10.5 Committees for monitoring and evaluating quality and standards:

- Module Assessment Committee (CAC)
- Faculty Council (FC)
- Academic Committee (AC)
- Academic Standards Committee (ASC)
- AOU's Quality Assurance Committee (QAC)
- Revalidation Panel
- Student-Staff Liaison Committee (SSLC)

10.6 Local recognition by the local Authorities of Higher Education and Validation Agencies

It is worth mentioning that the programme offered at FCS is subject to the conditions and criteria of accreditation in the branch countries where the programmes are offered. Local accreditation and re-accreditation of the programmes always goes smoothly, as they always meet the standards applied by the accrediting bodies in the branch countries. Nevertheless, the critical recommendations received from these authorities are always taken care with highest importance and FCS use them as an opportunity for further improvement.

All parties of the FCS and each in its own capacity, contribute significantly to the improvement of the FCS programme in the following areas:
- Encouraging examples of good practice among the different branches to enhance the FCS programme and disseminating them across AOU branches.
- Preparing the Self Evaluation Document (SED)
- Conducting Faculty Development Workshops

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11. Changes made to the programme since last (re)validation

This is the validation of the DS Programme.

Annexe 1: Curriculum map

Annexe 2: Notes on completing the OU programme specification template

Annexe 1 - Curriculum map

This table indicates which study units assume responsibility for delivering (shaded) and assessing (✓) particular programme learning outcomes.

Level	Study module/unit	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6	D1	D2	D3	D4	D5
1	M140 Introducing statistics	✓			✓			✓	✓	✓			✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
	MT131 Discrete Mathematics	✓	✓	✓					✓		✓	✓		✓		✓	✓			✓	✓	✓	✓	✓
	MT132 Linear Algebra	✓	✓	✓					✓		✓	✓		✓		✓	✓			✓	✓	✓	✓	✓
	M110 Python Programming	✓		✓	✓			✓	✓	✓	✓		✓	✓	✓	✓	✓	✓			✓		✓		✓
	TM112 Introduction to computing and informationtechnology		✓		✓	✓					✓		✓					✓		✓	✓	✓		

Level	Study module/unit	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6	D1	D2	D3	D4	D5
2	MT248 Analysing data	✓	✓	✓	✓				✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	
	M269 Algorithms, data structures and computability			✓	✓			✓			✓	✓		✓	✓		✓	✓		✓			✓	✓
	MST224 Mathematical methods	✓	✓	✓					✓		✓	✓		✓			✓		✓	✓	✓	✓	✓	✓
	MT249 Practical modern statistics	✓		✓	✓			✓	✓	✓			✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
	M218 Relational Databases		✓	✓		✓					✓	✓	✓		✓	✓	✓			✓	✓	✓	✓	✓
	M238 Data Visualization	✓		✓	✓		✓	✓	✓	✓		✓			✓	✓	✓	✓	✓		✓	✓	✓		✓

Level	Study module/unit	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6	D1	D2	D3	D4	D5
3	TM348 Applied statistical modelling	✓			✓			✓	✓	✓			✓	✓	✓			✓		✓	✓	✓	✓	✓
	TM358 Machine learning and artificial intelligence	✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓		✓		✓		✓
	TM351 Data management and analysis	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
	TM471 Graduation Project	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Annexe 2: Notes on completing programme specification templates

1 **-** This programme specification should be mapped against the learning outcomes detailed in module specifications.

2 – The expectations regarding student achievement and attributes described by the learning outcome in section 3 must be appropriate to the level of the award within the **QAA frameworks for HE qualifications**: http://www.qaa.ac.uk/AssuringStandardsAndQuality/Pages/default.aspx

3 – Learning outcomes must also reflect the detailed statements of graduate attributes set out in **QAA subject benchmark statements** that are relevant to the programme/award: http://www.qaa.ac.uk/AssuringStandardsAndQuality/subject-guidance/Pages/Subject-benchmark-statements.aspx

4 – In section 3, the learning and teaching methods deployed should enable the achievement of the full range of intended learning outcomes. Similarly, the choice of assessment methods in section 3 should enable students to demonstrate the achievement of related learning outcomes. Overall, assessment should cover the full range of learning outcomes.

5 - Where the programme contains validated **exit awards** (e.g. CertHE, DipHE, PGDip), learning outcomes must be clearly specified for each award.

6 - For programmes with distinctive study **routes or pathways** the specific rationale and learning outcomes for each route must be provided.

7 – Validated programmes delivered in **languages other than English** must have programme specifications both in English and the language of delivery.