COURSE OUTLINE

ICT110 Introduction to Data Science

Course Coordinator: Anne Ozdowska (aozdowsk@usc.edu.au) **School:** School of Science, Technology and Engineering

2021 | Semester 1

USC Sunshine Coast USC Moreton Bay	ON CAMPUS	Most of your course is on campus but you may be able to do some components of this course online.
Online	ONLINE 1	You can do this course without coming onto campus.

Please go to the USC website for up to date information on the teaching sessions and campuses where this course is usually offered.

1. What is this course about?

1.1. Description

Data is the new oil. Data is the underlying drivers of the knowledge economy. This class is an introduction to the practice of data science, and you will learn both the foundational knowledge and practical skills about data collection, representation, storage, retrieval, management, analysis, and visualisation. In addition, you will learn the impact of business analytics and big data on business performance. The course helps you to combine technical and statistical skills, analytical thinking, and business acumen.

1.2. How will this course be delivered?

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
ON CAMPUS			
Tutorial/Workshop – In-class tutorial	2hrs	Week 2	11 times
Online – Pre-recorded concept videos and associated activity	1hr	Week 1	12 times
ONLINE 1			
Tutorial/Workshop – Interactive zoom tutorial	2hrs	Week 2	11 times
Online – Pre-recorded concept videos and associated activity	1hr	Week 1	12 times

1.3. Course Topics

Data and data science

Introduction to R

Data collection

Data storage and retrieval

Data quality and pre-processing

Exploratory data analysis

Descriptive data analysis

Predictive data analysis

Data visualisation

Data in business 1

Data in business 2

Cloud computing for data processing

2. What level is this course?

100 Level (Introductory)

Engaging with discipline knowledge and skills at foundational level, broad application of knowledge and skills in familiar contexts and with support. Limited or no prerequisites. Normally, associated with the first full-time study year of an undergraduate program.

3. What is the unit value of this course?

12 units

4. How does this course contribute to my learning?

COURSE LEARNING OUTCOMES On successful completion of this course, you should be able to...		GRADUATE QUALITIES Completing these tasks successfully will contribute to you becoming...
1	Use the foundational concepts related to data science.	Empowered
2	Apply statistical tools and software (R) to perform data analysis.	Knowledgeable Empowered
3	Discuss and demonstrate fundamental data science concepts.	Creative and critical thinker
4	Relate Data Science to solving business problems.	Creative and critical thinker
5	Illustrate knowledge and uses of modern data management and analysis strategies and techniques.	Knowledgeable

5. Am I eligible to enrol in this course?

Refer to the USC Glossary of terms for definitions of “pre-requisites, co-requisites and anti-requisites”.

5.1. Pre-requisites

Not applicable

5.2. Co-requisites

Not applicable

5.3. Anti-requisites

Not applicable

5.4. Specific assumed prior knowledge and skills (where applicable)

Not applicable

6. How am I going to be assessed?

6.1. Grading Scale

Standard Grading (GRD)

High Distinction (HD), Distinction (DN), Credit (CR), Pass (PS), Fail (FL).

6.2. Details of early feedback on progress

Early feedback will be formative. Comprehensive SWAY and H5P learning guides have been developed for online learning. After each module there will be a quiz that will provide immediate feedback for students to assess their understanding of each module.

6.3. Assessment tasks

DELIVERY MODE	TASK NO.	ASSESSMENT PRODUCT	INDIVIDUAL OR GROUP	WEIGHTING %	WHAT IS THE DURATION / LENGTH?	WHEN SHOULD I SUBMIT?	WHERE SHOULD I SUBMIT IT?
All	1	Examination	Individual	20%	1 hour	Week 5	Online Test (Quiz)
All	2	Examination	Individual	40%	2 hours	Week 9	Online Assignment Submission with plagiarism check
All	3	Artefact - Technical and Scientific, and Written Piece	Individual	40%	1500 words	Exam Period	Online Assignment Submission with plagiarism check

All - Assessment Task 1: Exam

GOAL:	The purpose of this assessment is to apply foundation concepts of data storage, retrieval and analysis using hands-on tools.
PRODUCT:	Examination
FORMAT:	Individual assessment to be undertaken independently. The exam is based on the content of Week 1 – 4. This task will help to build your knowledge of data formats, and retrieval and analysis techniques. Further details will be available on Blackboard.
CRITERIA:	

No.		Learning Outcome assessed
1	analysis and application of data retrieval methods	
2	analysis and application of data analysis techniques	
3	Assessment criteria are mapped to the course learning outcomes.	1 2 3 4 5

All - Assessment Task 2: Exam

GOAL:	The purpose of this assessment is to apply data processing skills to the context of a business scenario. It helps a deeper understanding of the importance of data and information in business.
PRODUCT:	Examination
FORMAT:	This assessment will require you to provide data analysis based on given data. You need to apply various data processing and analysis skills to investigate the data, draw conclusions, and make recommendations. Further details will be available on Blackboard.
CRITERIA:	

No.		Learning Outcome assessed
1	understanding of concepts and theories in data science	
2	define a business problem and present the data structure to solve the problem	
3	apply data processing skills to develop a deeper understanding of the data in a business context	

All - Assessment Task 3: Report

GOAL:	The purpose of this report is to apply your data processing skills to solve an abstract business problem and to make recommendations that meet business objectives.
PRODUCT:	Artefact - Technical and Scientific, and Written Piece
FORMAT:	This assessment will require you to write a report that analyses a data set and makes recommendations based on the data analysis. These recommendations should align with business objectives.
CRITERIA:	

No.	Learning Outcome assessed
1	understanding of concepts and theories in data science
2	analysis of data
3	synthesis of relevant information

7. Directed study hours

A 12-unit course will have total of 150 learning hours which will include directed study hours (including online if required), self-directed learning and completion of assessable tasks. Directed study hours may vary by location. Student workload is calculated at 12.5 learning hours per one unit.

8. What resources do I need to undertake this course?

Please note: Course information, including specific information of recommended readings, learning activities, resources, weekly readings, etc. are available on the course Blackboard site– Please log in as soon as possible.

8.1. Prescribed text(s) or course reader

Please note that you need to have regular access to the resource(s) listed below. Resources may be required or recommended.

REQUIRED?	AUTHOR	YEAR	TITLE	PUBLISHER
Required	Joel Berrier, Chris Chan, Scott Nestler, Iain Pardoe, Ron Siu, Rodney X. Sturdivant, Krista Watts	2020	Applied Regression Analysis (R)	Wiley / Zybooks

8.2. Specific requirements

Not applicable

9. How are risks managed in this course?

Health and safety risks for this course have been assessed as low. It is your responsibility to review course material, search online, discuss with lecturers and peers and understand the health and safety risks associated with your specific course of study and to familiarise yourself with the University's general health and safety principles by reviewing the online induction training for students, and following the instructions of the University staff.

10. What administrative information is relevant to this course?

10.1. Assessment: Academic Integrity

Academic integrity is the ethical standard of university participation. It ensures that students graduate as a result of proving they are competent in their discipline. This is integral in maintaining the value of academic qualifications. Each industry has expectations and standards of the skills and knowledge within that discipline and these are reflected in assessment.

Academic integrity means that you do not engage in any activity that is considered to be academic fraud; including plagiarism, collusion or outsourcing any part of any assessment item to any other person. You are expected to be honest and ethical by completing all work yourself and indicating in your work which ideas and information were developed by you and which were taken from others. You cannot provide your assessment work to others. You are also expected to provide evidence of wide and critical reading, usually by using appropriate academic references.

In order to minimise incidents of academic fraud, this course may require that some of its assessment tasks, when submitted to Blackboard, are electronically checked through SafeAssign. This software allows for text comparisons to be made between your submitted assessment item and all other work that SafeAssign has access to.

10.2. Assessment: Additional Requirements

Eligibility for Supplementary Assessment

Your eligibility for supplementary assessment in a course is dependent of the following conditions applying:

The final mark is in the percentage range 47% to 49.4%
The course is graded using the Standard Grading scale
You have not failed an assessment task in the course due to academic misconduct

10.3. Assessment: Submission penalties

Late submission of assessment tasks may be penalised at the following maximum rate:
- 5% (of the assessment task's identified value) per day for the first two days from the date identified as the due date for the assessment task.
- 10% (of the assessment task's identified value) for the third day - 20% (of the assessment task's identified value) for the fourth day and subsequent days up to and including seven days from the date identified as the due date for the assessment task.
- A result of zero is awarded for an assessment task submitted after seven days from the date identified as the due date for the assessment task. Weekdays and weekends are included in the calculation of days late. To request an extension you must contact your course coordinator to negotiate an outcome.

10.4. Study help

For help with course-specific advice, for example what information to include in your assessment, you should first contact your tutor, then your course coordinator, if needed.

If you require additional assistance, the Learning Advisers are trained professionals who are ready to help you develop a wide range of academic skills. Visit the Learning Advisers web page for more information, or contact Student Central for further assistance: +61 7 5430 2890 or studentcentral@usc.edu.au.

10.5. Wellbeing Services

Student Wellbeing provide free and confidential counselling on a wide range of personal, academic, social and psychological matters, to foster positive mental health and wellbeing for your academic success.

To book a confidential appointment go to Student Hub, email studentwellbeing@usc.edu.au or call 07 5430 1226.

10.6. AccessAbility Services

Ability Advisers ensure equal access to all aspects of university life. If your studies are affected by a disability, learning disorder mental health issue, , injury or illness, or you are a primary carer for someone with a disability or who is considered frail and aged, AccessAbility Services can provide access to appropriate reasonable adjustments and practical advice about the support and facilities available to you throughout the University.

To book a confidential appointment go to Student Hub, email AccessAbility@usc.edu.au or call 07 5430 2890.

10.7. Links to relevant University policy and procedures

For more information on Academic Learning & Teaching categories including:

- Assessment: Courses and Coursework Programs
- Review of Assessment and Final Grades
- Supplementary Assessment
- Administration of Central Examinations
- Deferred Examinations
- Student Academic Misconduct
- Students with a Disability

Visit the USC website: http://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching

10.8. General Enquiries

In person:

- **USC Sunshine Coast** - Student Central, Ground Floor, Building C, 90 Sippy Downs Drive, Sippy Downs
- **USC Moreton Bay** - Service Centre, Ground Floor, Foundation Building, Gympie Road, Petrie
- **USC SouthBank** - Student Central, Building A4 (SW1), 52 Merivale Street, South Brisbane
- **USC Gympie** - Student Central, 71 Cartwright Road, Gympie
- **USC Fraser Coast** - Student Central, Student Central, Building A, 161 Old Maryborough Rd, Hervey Bay
- **USC Caboolture** - Student Central, Level 1 Building J, Cnr Manley and Tallon Street, Caboolture

Tel: +61 7 5430 2890
Email: studentcentral@usc.edu.au