STAT6100: Systems Thinking for an Integrated Workforce

Online Semester 2 - 2023



OVERVIEW

Course Description

Through a quality improvement and data analytics lens, the course develops the student's ability to leverage workplace data and synergies, analyse and improve organisational systems, and realise quality processes and outcomes.

Students will become systems thinkers, able to: engage appropriate statistical techniques for assessing, describing and improving systems, processes and outcomes; and, lead databased decision making and quality improvement considerate of the system's many stakeholders, utilising the science, psychology, and management of systems and the underlying statistical principles.

The course provides a holistic industry-oriented approach which develops the student's analytical, management and leadership prowess and advances their T-shaped skillset.

Without data you're just another person with an opinion.

Contact Hours

Online Lecture (Recorded)

Online 2 hour(s) per Week for Full Term

Workshop Online

2 hour(s) per Week for Full Term

Unit Weighting Workload

10

Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10 unit course.



www.newcastle.edu.au CRICOS Provider 00109J



site.

CONTACTS

Course Coordinator	Online Dr Kirill Glavatskiy Kirill.Glavatskiy@newcastle.edu.au Consultation: to be advised on Canvas	
Teaching Staff	Other teaching staff will be advised on the course Canva	
School Office	School of Information and Physical Sciences SR233, Social Sciences Building Callaghan CESE-SIPS-Admin@newcastle.edu.au +61 2 4921 5513	

SYLLABUS

Course Content	 Total Quality Management (TQM) and systems thinking how statistician W.E. Deming founded and implemented TQM, engaging systems thinking principles, for competitive advantage within Japan and internationally the Deming Quality philosophy and that of other Quality theorists techniques and tools for assessing, measuring and improving systems, processes and outcomes understanding, learning from and reducing variability of processes through statistical thinking the role of management and leadership in a TQM organisation the role and implementation of quality improvement teams the "seven simple tools" for process improvement fundamental statistical methods and data collection, visualisation and interpretation more advanced statistical techniques such as control charts, statistical process control, surveys and experimental design complementary quality techniques such as benchmarking and quality standards (ISO9000) 		
Course Learning Outcomes	On successful completion of this course, students will be able to: 1. Describe and defend the fundamental principles of Total Quality Management and systems thinking		
	2. Understand and utilise fundamental principles and methods underpinning holistic and integrated analytic thinking and process improvement within systems of both learning and organisational practice		
	3. Choose appropriate statistical techniques and methods for improving systems, processes and the quality and value of their outcomes		
	4. Write reports describing processes and recommending ways to improve them		
	5. Keep abreast of changes in, and practical applications of, the field of systems, process and quality improvement		
	6. Appreciate and apply the value arising from the process of learning and discovery		
Course Materials	Lecture Materials: Provided on the course Canvas site. Please visit the course Canvas site regularly each week and ensure you check for emails sent to you from this site.		
	Lecture Materials: Weekly Microsoft Powerpoint Lecture Slides and video recordings provided and discussed on Canvas.		
	Workshop: Weekly exercises will be provided and discussed.		



Course Notes: Six modules complementing the course's lecture content (approx. 220 pages) to be used to support your understanding of lecture and workshop materials.

Other Resources: The statistical software package JMP. Prior knowledge or use of the software is not expected. JMP is available on-campus and is free to download for personal use from https://www.newcastle.edu.au/current-students/support/it/software-and-tools#statistical.

Recommended Reading:

Familiarity with statistical concepts may assist your learning. Whilst such concepts will be addressed during the course, many may benefit from reading introductory statistical textbooks. The course will reference sections of the textbook 'Business Statistics in Australia: Methods and Applications' by Howley and Gerlach (e-copy is available via https://payhip.com/b/pF1D); however, students are advised to consider various sources to establish those which best supports their learning

Rao, A., Carr L.P., Dambolena I., et al. (1996) Total Quality Management: A Cross Functional Perspective. J. Wiley and Sons.

This textbook discusses much of the foundational material in the course.

The aforementioned Course Notes reference sections of this text as further support for understanding the lecture content and course modules, where students feel the needs for such additional perspectives; however, students are advised to consider various sources to establish those which best supports their learning.

The TQM field has contributors from a wide variety of backgrounds. Similarly, students taking this course come from a variety of backgrounds and will have differing requirements with respect to the material they wish to focus upon. You are encouraged to read from the relevant literature, focussing on aspects pertinent to your field of study, workplace or interest.

ASSESSMENTS

This course has 4 assessments. Each assessment is described in more detail in the sections below.

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1	Assignment 1	23:55 Sunday of Week 5	Individual	25%	1, 2, 3, 4
2	Assignment 2	23:55 Sunday of Week 10	Individual	25%	1, 2, 3, 4
3	Essay and Final written assignment	23:55 Sunday of Week 12	Individual	40%	1, 2, 4, 5, 6
4	Online Participation	Ongoing by close dates (TBA on Canvas) for discussion topics.	Individual	10%	1, 2, 3, 4, 5, 6

Late Submissions

The mark for an assessment item submitted after the designated time on the due date, without an approved extension of time, will be reduced by 10% of the possible maximum mark for that assessment item for each day or part day that the assessment item is late. Note: this applies equally to week and weekend days.

Assessment 1 - Assignment 1

Assessment Type Written Assignment



Description	A series of short-answer style questions, the two assignments meet the objectives of knowledge acquisition and demonstrated integration of data, upon reflection and analysis, to produce coherent and concise documents which convey evidence-based understanding of concepts, methods and applications. They are designed to enable students to apply skills developed in the lecture and workshop materials which will be used throughout their program and careers.
Weighting	25%
Due Date	23:55 Sunday of Week 5
Submission Method	Online
	Electronically via Turnitin – this must be a single Word or PDF file
Assessment Criteria	Detailed assessment criteria will be available on Canvas
Return Method	Online
Feedback Provided	Returned Work

Assessment 2 - Assignment 2

Assessment Type Description	Written Assignment A series of short-answer style questions, the two assignments meet the objectives of knowledge acquisition and demonstrated integration of data, upon reflection and analysis, to produce coherent and concise documents which convey evidence-based understanding of concepts, methods and applications. They are designed to enable students to apply skills developed in the lecture and workshop materials which will be used throughout their program and careers.
Weighting	25%
Due Date	23:55 Sunday of Week 10
Submission Method	Online
	Electronically via Turnitin – this must be a single Word or PDF file
Assessment Criteria Return Method Feedback Provided	Detailed assessment criteria will be available on Canvas Online Returned Work

Assessment 3 - Essay and Final written assignment

Assessment Type	Written assignment
Description	The examination meets the objectives of knowledge acquisition and demonstrated integration of data, upon reflection and analysis, to convey evidence-based understanding of the concepts and topics. The assessment is designed to enable students to apply skills developed in the course materials and activities which will be used throughout their program and careers. The final written assignment will be similar in nature to assignments 1 and 2. The essay is designed to allow you to explore and report upon (in essay form) a particular TQM-related aspect or area of your choosing. The essay allows you to engage and develop your skills in research, critical appraisal, and aggregation of information and the coherent and concise presentation of material in support of a central thesis. The assessment is your final springboard to support future application in the workforce.
Weighting	40%
Due Date	23:55 Sunday of Week 12
Submission Method	Online Electronically via Turnitin – this must be a single Word or PDF file for each of the two submissions
Assessment Criteria	Detailed assessment criteria for each assessment task and any additional material will be available on the course's Canvas site no less than two weeks prior to the due date of each assessment. The essay requires engagement throughout the course - assessment criteria will be provided
	on Canvas.
Return Method	Not Returned
Feedback Provided	NO FEEDDACK

Assessment 4 - Online Participation

Assessment TypeParticipationDescriptionFacilitating ongoing course engagement and interaction with other students using
Blackboard, this is designed to incite reflection upon, and practical discussion of, topics and
experiences. Workshop-style exercises and questions will be provided as the principal



motivator.

	Whilst not always easy to overcome, please do not be reluctant to contribute; it is likely that other students will have similar ideas, questions, observations and concerns, or otherwise benefit from your contributions. In any event, everyone should be heard; such contributions may provide additional insight that others had not considered or enable another to help you to better understand an issue (or to help you reflect upon their ideas). Please consider everyone in the manner in which you compose your comments and responses.
Weighting	Consistency of effort and engagement, as well as the value and insight of contributions as a whole, will contribute to the final determination of the score for this assessment item. 10%
Due Date	Ongoing by close dates (TBA on Canvas) for discussion topics.
Submission Method	Online
	Online – Posting comments online in designated sections of Discussion Board.
Assessment Criteria	Consistency of effort and engagement, as well as the value and insight of contributions as a whole, will contribute to the final determination of the score for this assessment item.
Return Method	NA
Feedback Provided	Online

ADDITIONAL INFORMATION

Grading Scheme

This course is graded as follows:

Range of Marks	Grade	Description
85-100	High Distinction (HD)	Outstanding standard indicating comprehensive knowledge and understanding of the relevant materials; demonstration of an outstanding level of academic achievement; mastery of skills*; and achievement of all assessment objectives.
75-84	Distinction (D)	Excellent standard indicating a very high level of knowledge and understanding of the relevant materials; demonstration of a very high level of academic ability; sound development of skills*; and achievement of all assessment objectives.
65-74	Credit (C)	Good standard indicating a high level of knowledge and understanding of the relevant materials; demonstration of a high level of academic achievement; reasonable development of skills*; and achievement of all learning outcomes.
50-64	Pass (P)	Satisfactory standard indicating an adequate knowledge and understanding of the relevant materials; demonstration of an adequate level of academic achievement; satisfactory development of skills*; and achievement of all learning outcomes.
0-49	Fail (FF)	Failure to satisfactorily achieve learning outcomes. If all compulsory course components are not completed the mark will be zero. A fail grade may also be awarded following disciplinary action.

*Skills are those identified for the purposes of assessment task(s).

Communication Methods Communication methods used in this course include:

- Canvas Course Site: Students will receive communications via the posting of content or announcements on the Canvas course site.

Course Evaluation Each year feedback is sought from students and other stakeholders about the courses offered in the University for the purposes of identifying areas of excellence and potential improvement.

Oral Interviews (Vivas) As part of the evaluation process of any assessment item in this course an oral examination



	(viva) may be conducted. The purpose of the oral examination is to verify the authorship of the material submitted in response to the assessment task. The oral examination will be conducted in accordance with the principles set out in the <u>Oral Examination (viva) Procedure</u> . In cases where the oral examination reveals the assessment item may not be the student's own work the case will be dealt with under the <u>Student Conduct Rule</u> .
Academic Misconduct	All students are required to meet the academic integrity standards of the University. These standards reinforce the importance of integrity and honesty in an academic environment. Academic Integrity policies apply to all students of the University in all modes of study and in all locations. For the Student Academic Integrity Policy, refer to https://policies.newcastle.edu.au/document/view-current.php?id=35.
Adverse Circumstances	 The University acknowledges the right of students to seek consideration for the impact of allowable adverse circumstances that may affect their performance in assessment item(s). Applications for special consideration due to adverse circumstances will be made using the online Adverse Circumstances system where: the assessment item is a major assessment item; or the assessment item is a minor assessment item and the Course Co-ordinator has specified in the Course Outline that students may apply the online Adverse Circumstances system; you are requesting a change of placement; or the course has a compulsory attendance requirement. Before applying you must refer to the Adverse Circumstance Affecting Assessment Items Procedure available at: https://policies.newcastle.edu.au/document/view-current.php?id=236
Important Policy Information	The Help button in the Canvas Navigation menu contains helpful information for using the Learning Management System. Students should familiarise themselves with the policies and procedures at https://www.newcastle.edu.au/current-students/no-room-for/policies-and-procedures that support a safe and respectful environment at the University.

This course outline was approved by the Head of School. No alteration of this course outline is permitted without Head of School approval. If a change is approved, students will be notified and an amended course outline will be provided in the same manner as the original.

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