MATH3599

Professional Practice for Mathematical Sciences

Session 2, Special circumstances 2021

Archive (Pre-2022) - Department of Mathematics and Statistics

Contents

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Session 2 Learning and Teaching Update

The decision has been made to conduct study online for the remainder of Session 2 for all units WITHOUT mandatory on-campus learning activities. Exams for Session 2 will also be online where possible to do so.

This is due to the extension of the lockdown orders and to provide certainty around arrangements for the remainder of Session 2. We hope to return to campus beyond Session 2 as soon as it is safe and appropriate to do so.

Some classes/teaching activities cannot be moved online and must be taught on campus. You should already know if you are in one of these classes/teaching activities and your unit convenor will provide you with more information via iLearn. If you want to confirm, see the list of units with mandatory on-campus classes/teaching activities.

Visit the MQ COVID-19 information page for more detail.

General Information

Unit convenor and teaching staff
Ayse Bilgin
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Frank Valckenborgh
frank.valckenborgh@mq.edu.au

Credit points
10

Prerequisites
(Admission to BMathSci or BSc or BCom) and (20cp from STAT or MATH units at 3000 level)

Corequisites

Co-badged status

Unit description
This PACE unit draws together learning in previous units to prepare students for the workplace through engaging with a partner organisation. Students will work in close collaboration throughout the session with a project sponsor that has provided a problem to be solved or a study to be designed. Students will develop the ability to appreciate the nature of statistical/mathematical problems and discuss the problem solving cycle; listen to a client's statement of a problem and ask appropriate questions for clarification; recognise appropriate statistical/mathematical techniques for use in a variety of problems, and apply these techniques competently; recognise situations in which familiar techniques do not apply and search the literature for appropriate alternative techniques; write reports at an appropriate technical level for a client or a colleague; give a verbal summary of a statistical/mathematical investigation at a level appropriate for the audience; and discuss the ethical aspects and implications of professional statistical/mathematical work.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

On successful completion of this unit, you will be able to:

ULO1: Critically analyse and describe the client's problem and apply principles, models, tool, techniques, technology and processes to provide a solution.

ULO2: Effectively communicate stages and results of the project (in both written and oral form)

ULO3: Recognise and address ethical issues when they arise based on an understanding of professional ethic

ULO4: Improve ability to work co-operatively as a team member

General Assessment Information

The projects that you will be working on are real problems belong to real clients. You need to keep everything confidential. Assessment submissions All assessments should be submitted electronically on iLearn, by the given due date and time.

LATE SUBMISSION OF WORK: All assessment tasks must be submitted by the official due date and time. In the case of a late submission for a non-timed assessment (e.g. an assignment), if special consideration has NOT been granted, 20% of the earned mark will be deducted for each 24-hour period (or part thereof) that the submission is late for the first 2 days (including weekends and/or public holidays). For example, if an assignment is submitted 25 hours late, its mark will attract a penalty equal to 40% of the earned mark. After 2 days (including weekends and public holidays) a mark of 0% will be awarded. Timed assessment tasks (e.g. tests, examinations) do not fall under these rules.

Assessment Tasks

Name	Weighting	Hurdle	Due
Participation	10%	No	Weekly
Project Plan	10%	No	Week 4
Self Reflection	10%	No	Weeks 2 & 13
Project Report	50%	No	Week 12
Project Presentation	20%	No	Weeks 12 & 13

Participation

Assessment Type [1]: Participatory task
Indicative Time on Task [2]: 6 hours
Due: **Weekly**
Weighting: **10%**

Contribution to weekly activities such as workshops, client meetings, group meetings and discussions.

On successful completion you will be able to:

- Critically analyse and describe the client's problem and apply principles, models, tool, techniques, technology and processes to provide a solution.
- Effectively communicate stages and results of the project (in both written and oral form)
- Recognise and address ethical issues when they arise based on an understanding of professional ethic
- Improve ability to work co-operatively as a team member

Project Plan

Assessment Type [1]: Plan
Indicative Time on Task [2]: 5 hours
Due: **Week 4**
Weighting: **10%**

The project plan is a document where students outline what they are going to do to address the issues raised by the partner (i.e. designing a study or solving a problem) in a given time frame (i.e. project milestones achieved within the session).

On successful completion you will be able to:

- Critically analyse and describe the client's problem and apply principles, models, tool, techniques, technology and processes to provide a solution.
- Effectively communicate stages and results of the project (in both written and oral form)
- Recognise and address ethical issues when they arise based on an understanding of professional ethic
- Improve ability to work co-operatively as a team member

Self Reflection

Assessment Type [1]: Reflective Writing
Indicative Time on Task [2]: 5 hours
Due: **Weeks 2 & 13**
Weighting: **10%**

Self Reflection on Previous Learning, Group Process, technical aspects of the group project and working with partner experience.

On successful completion you will be able to:

- Effectively communicate stages and results of the project (in both written and oral form)
- Recognise and address ethical issues when they arise based on an understanding of professional ethic

Project Report

Assessment Type [1]: Report
Indicative Time on Task [2]: 15 hours
Due: **Week 12**
Weighting: **50%**

Written report to demonstrate a solution to client problem.

On successful completion you will be able to:

- Critically analyse and describe the client's problem and apply principles, models, tool, techniques, technology and processes to provide a solution.
- Effectively communicate stages and results of the project (in both written and oral form)
- Recognise and address ethical issues when they arise based on an understanding of professional ethic
- Improve ability to work co-operatively as a team member

Project Presentation

Assessment Type [1]: Presentation
Indicative Time on Task [2]: 5 hours
Due: **Weeks 12 & 13**
Weighting: **20%**

All members of a group will present a 5-7 minutes talk on a particular aspect of the project.

On successful completion you will be able to:

- Critically analyse and describe the client's problem and apply principles, models, tool, techniques, technology and processes to provide a solution.
- Effectively communicate stages and results of the project (in both written and oral form)
- Recognise and address ethical issues when they arise based on an understanding of

professional ethic

- Improve ability to work co-operatively as a team member

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[1] If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the Writing Centre for academic skills support.

[2] Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

Classes

They will start in Week 1. You should plan 10 hours of learning each week including attending lectures each week.

Required and Recommended Texts and/or Materials

Note that some of the following will be provided to students during semester.

Boen J & Zahn D, The Human Side of Statistical Consulting, Lifetime Learning Pubs, Belmont CA, 1982. (Not available in library)

Boomer K, Rogness N & Jersky B, Statistical consulting courses for undergraduates: fortune or folly, JSE, 15(3), 2007. (Electronic version QA276.18)

Chatfield C, Problem Solving: A Statistician's Guide, 2nd ed., Chapman and Hall, London, 1995. (QA276.12 .C457 1995)

Derr J, Statistical Consulting: A Guide to Effective Communication, Duxbury 2000. (HA29 .D386/ 2000)

Finch S & Gordon I, Lessons we have learned from post-graduate students, ICOTS8, 2010.

Hand DJ and Everitt BS (eds.), The Statistical Consultant in Action, Cambridge Uni Press, 1987. (Sections 1, 2 and 4 are available in Google.books)

Mackisack M & Petocz P, Projects for advanced undergraduates, ICOTS6, 2002.

McGinn M, Learning to use statistics in research: a case study of learning in a university-based statistical consulting centre, SERJ, 2010.

Peter Petocz, Anna Reid (2010) On Becoming a Statistician - A Qualitative View. International Statistical Review. 78(2): 271-286.

Rothman E, Teaching students and staff consultancy skills, ICOTS7, 2006.

Smith H & Walker J, Experiences with research teams comprised of graduate students, faculty researchers and a statistical consulting team, ICOTS8, 2010.

Wild C & Pfannkuch M, Statistical thinking in empirical enquiry, International Statistical Review, 67(3), 1-12.

ICOTS, SERJ and International Stat Review papers are available at http://www.stat.auckland.ac.nz/~iase/publications.php

International Statistical Institute http://www.isi-web.org/

The Statistical Society of Australia http://www.statsoc.org.au/

American Statistical Association http://www.amstat.org/

Statistical Society of Canada http://www.ssc.ca/en/whats-new

EURO (The Association of European Operational Research Societies) website: https://www.euro-online.org/web/pages/1/home

Australian Society for Operations Research http://www.asor.org.au/

INFORMS (The Institute for Operations Research and the Management Sciences) website: https://www.informs.org/

Technologies used and required

We will use iLearn for distribution of course notes, readings, data sets, solutions, announcements and discussions. We would like you to use the 'Discussions' to communicate with other students and the lecturers to enable transparency between all the students and the lecturers. You can access the unit iLearn site from http://ilearn.mq.edu.au using your Student ID number and myMQ Portal password. If you have any problems go to the http://www.mq.edu.au/iLearn/student_info/

If you have a personal question, please send an e-mail to one of the lecturers through the iLearn e-mail facility (called dialogue) or alternatively a regular e-mail using your Macquarie University student e-mail account.

The lecturers will make announcements via iLearn. Accordingly, you should make sure you log in and read the posts at least twice a week. You might consider subscribing to iLearn posts this way you will not miss any posts.

Teaching and Learning Strategy

- Readings will be provided through iLearn.
- Weekly learning activities are designed for students to work together in groups and to learn together.
- Assessments are designed to enhance self reflection and peer assessment as well as providing individual learning if a real life problem requires an unknown statistical or mathematical technique to be used for a proper solution to the problem at hand.

Unit Schedule

WEEK	TOPIC	Staff
1	Introduction to consulting in statistical and mathematical sciences	A^2B^2 & FV
2	Asking the right questions (oral communication skills) & Literature Review	A^2B^2 & FV
3	Data preparation for analysis	A^2B^2 & FV
4	Working in a group (skills required for effective group work)	A^2B^2 & FV
5	Statistical Graphics	A^2B^2 & FV
6	Writing a report (written communication skills)	A^2B^2 & FV
7	Statistical and mathematical thinking	A^2B^2 & FV
	Mid semester break (not holiday)	
8	Human side of consulting (Guest lecture)	A^2B^2 & FV
9	Ethics in Statistics and Mathematics	A^2B^2 & FV
10	Project Work	A^2B^2 & FV
11	Project Work	A^2B^2 & FV
12	Presentations of final projects	A^2B^2 & FV
13	Presentations of final projects	A^2B^2 & FV

The order of the lectures might change, as some classes depend on the availability of clients and guest lecturers.

A^2B^2 = Ayse Aysin Bombaci Bilgin

FV = Frank Valckenborgh

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Grade Appeal Policy
- Complaint Management Procedure for Students and Members of the Public

- Special Consideration Policy

Students seeking more policy resources can visit Student Policies (https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit Policy Central (https://policies.mq.edu.au) and use the search tool.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/admin/other-resources/student-conduct

Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- Getting help with your assignment
- Workshops
- StudyWise
- Academic Integrity Module

The Library provides online and face to face support to help you find and use relevant information resources.

- Subject and Research Guides
- Ask a Librarian

Student Services and Support

Students with a disability are encouraged to contact the Disability Service who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

If you are a Global MBA student contact globalmba.support@mq.edu.au

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.

Changes from Previous Offering

This unit is offered first time in 2021 S2. However the content is similar to STAT399 or STAT3199 with addition of material to cater for students majoring in Mathematics.