



Introduction

Welcome

Welcome to Mathematical Communication!

Mathematics is sometimes referred to as a language of its own, and indeed learning to use the logic and symbols of mathematics is much like learning a new language. Mathematics plays a vitally important role in our world and is the basis for all the technology, engineering, finance and economics that drive our society. In order to apply mathematics appropriately, mathematicians and others who use and teach mathematics must be able to communicate well. These people include, among others, engineers, economists, scientists, teachers and the general public. It is just as important for mathematicians and others who use mathematics to communicate effectively through the written and spoken word as it is for other professions.

This course is designed to provide students with the knowledge and skills to communicate mathematical ideas, in three important ways. First, you will learn tools to help you write professional documents containing written and mathematical text. Second, you will develop your oral presentation skills. Third, you will acquire skills and knowledge that are useful for managing large projects.

We hope you enjoy Mathematical Communication!

L.W.

Course Teaching Staff

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Course Overview

Prerequisite(s)

There are no prerequisite courses to be completed before this course can be undertaken.

Corequisite(s)

There are no corequisite courses to be completed in conjunction with this course.

Course Aim

To prepare students in areas of written and oral technical communication in the Mathematical Sciences.

Course Objectives

On completion of this course, students should be able to:

CO1. Use techniques of mathematical communication appropriate for writing a paper, writing a thesis, or prepare and deliver a professional presentation.

CO2. Write a Mathematical Paper on a topic of the student's choice.

CO3. Use the mathematical typesetting software LaTeX.

CO4. Use some elementary techniques of project management for major projects, together with consultant-client communication.

CO5. Participate in an online cultural forum and write a reflective piece in the area of mathematics and Indigenous culture.

CO6. Identify the knowledge, skills and attributes required for a particular career direction, and write a resume and cover letter in response to a job advertisement.

Upon completion of this course, students will have achieved the following combination of Graduate Qualities and Course Objectives:

Graduate Qualities being assessed through the course							
	GQ1	GQ2	GQ3	GQ4	GQ5	GQ6	GQ7
CO1	•		•			•	
CO2	•	•				•	
CO3	•		•			•	
CO4	•		•	•	•	•	
CO5		•			•	•	•
CO6	•	•				•	

Graduate Qualities

A graduate of UniSA:

GQ1. operates effectively with and upon a body of knowledge of sufficient depth to begin professional practice

GQ2. is prepared for life-long learning in pursuit of personal development and excellence in professional practice

GQ3. is an effective problem solver, capable of applying logical, critical, and creative thinking to a range of problems

GQ4. can work both autonomously and collaboratively as a professional

GQ5. is committed to ethical action and social responsibility as a professional and citizen

GQ6. communicates effectively in professional practice and as a member of the community

GQ7. demonstrates international perspectives as a professional and as a citizen

Course Content

Topics include: Mathematical writing, English usage, writing a paper, writing a talk, giving a talk, preparing a poster, the use of the document preparation software LaTeX, finding resources in the mathematics literature, client-consultant communication, mathematics and Indigenous culture (ICUP), operational and technical aspects of project management, the use of web-based mathematical resources.

Teaching and Learning Arrangements

Lecture	2 hours x 13 weeks
Computer Practical	1 hour x 13 weeks
Tutorial	2 hours x 13 weeks

Unit Value

4.5 units

Additional assessment requirements

Students are expected to attend all lectures, tutorials and computer practicals, due to the participatory nature of the course material.

Learning Resources

Textbook(s)

You will need continual access to the following text(s) to complete this course. Where possible the Library will make the book available for student use. Please check the Library catalogue before purchasing the book(s). The Library will always seek to purchase resources that allow an unlimited number of concurrent users, however availability is dependent on license arrangements with book publishers and platforms. <http://www.library.unisa.edu.au>

Nicholas J Higham (1998). *Handbook of Writing for the Mathematical Sciences* (2nd edition). Society for Industrial and Applied Mathematics.

Reference(s)

George Grätzer, *More Math into LaTeX*, 4/e, Springer, New York, 2007.

Scott Berkun, *The Art of Project Management*, O'Reilly, 2005.

Stephen G. Krantz, *Handbook of Typography for the Mathematical Sciences*, Chapman & Hall/CRC, 2001.

Materials to be accessed online

learnonline course site

All course related materials can be accessed through your learn**online** course site which you will be able to access from the my Courses section in myUniSA.

myUniSA

All study related materials can be accessed through: <https://my.unisa.edu.au>

Assessment

Assessment Details

Details of assessment submission and return are listed under each assessment task. Assessment tasks will be returned to you within two to three weeks of submission.

If the Course Coordinator allows submissions in hard copy format, you will be required to attach an Assignment Cover Sheet which is available on the learnonline student help (<https://lo.unisa.edu.au/mod/book/view.php?id=1843&chapterid=567>) and in myUniSA.

Assessment Summary

#	Form of assessment	Length	Duration	Weighting	Due date (Adelaide Time)	Submit via	Objectives being assessed
1	Career planning	500 word equivalent	N/A	10%	15 Aug 2018, 4:00 PM	learnonline, In person	CO4, CO6
2	Mathematical typesetting	500 word equivalent	N/A	10%	29 Aug 2018, 4:00 PM	learnonline, In person	CO1, CO3
3	Indigenous knowledge (ICUP)	500 word equivalent	N/A	10%	12 Sep 2018, 4:00 PM	learnonline, In person	CO1, CO3, CO4, CO5
4	Good mathematical writing	500 word equivalent	N/A	10%	10 Oct 2018, 4:00 PM	learnonline, In person	CO1, CO3
5	Mini-presentations - 5 minutes per week	500 word equivalent	N/A	10%	Weekly	In person	CO1
6	Mathematical Paper project and presentations	2000 words equivalent	2 x 10 minute oral presentations	50%	See assessment activities for details	See assessment activities for details	CO1, CO2, CO3, CO5

Feedback proformas

The feedback proforma is available on your course site.

Assessments

Assignment 1: Career Planning (Graded)

Students will prepare a job application in response to an advertised position. The application will include a resume and a cover letter.

Assignment 2: Mathematical Typesetting (Graded)

Students will be given pieces of text to be converted into a PDF document using the LaTeX typesetting software. This exercise will require the LaTeX techniques discussed in the first three weeks of classes, including the use of special characters and commands; formatting using paragraphs, line breaks and page breaks; the use of titles and sections; LaTeX environments such as the center environment; the incorporation of tables and figures into a document; and some basic mathematical typesetting.

Assignment 3: Cultural Awareness (Graded)

The aims of this assignment are: (1) to deepen awareness of how a person's background (notions of culture etc.) can shape their attitudes and behaviour; (2) to relate this awareness to Indigenous Australians and culturally diverse groups, and (3) to understand culture within the context of mathematics and professional practice. Students will use reflective thinking to explore their concepts of culture. They will begin with an informational lecture, interactive presentation and discussion of the Blue Wren vignettes, panel and discussion in class, next respond to several threads in an online discussion forum, then reflect on how their awareness of the concept of culture has changed, and finally write a 700-word document summarising their reflection and learning.

Assignment 4: Good Mathematical Writing (Graded)

This assignment will include exercises in the creation of a document that requires more sophisticated mathematical typesetting, including an annotated bibliography. The assignment will also include some material on English usage and on writing a mathematical paper.

Mini-presentations: 9 x 5 minutes (Graded)

Each week for 9 weeks, during lectures, each student will give a 5-minute talk to another student on a mathematical topic. The topics for these talks will be provided by the Course Coordinator.

Mathematical Paper project and presentations (Graded)

Assessment Activities

Name	Sub-weighting	Due date (Adelaide Time)	Submit via
Talk 1 on Mathematical Paper	10%	21 Aug 2018, 2:00 PM	In person
Draft of Mathematical Paper	20%	7 Sep 2018, 4:00 PM	learnonline, In person
Final Mathematical Paper	50%	24 Oct 2018, 4:00 PM	learnonline, In person
Talk 2 on Mathematical Paper	20%	30 Oct 2018, 2:00 PM	In person

Mathematical Paper topics will be provided and discussed in class in Week 1. Students must select their paper topic and notify the Course Coordinator by no later than the Monday of Week 2 so that they can discuss their proposed topic individually with the Course Coordinator during Week 3. Students will also meet the Course Coordinator in Week 8 to review their draft Mathematical Paper, which is due in Week 7. Individual 10-minute appointment times will be set up. The final version of the Mathematical Paper is due in Week 12.

Each student will give two short talks on their Mathematical Paper topic: an introduction to the topic (Week 5) and a report on their work (Week 13). Guidance and checklists on what is required will be distributed to students.

Exam Arrangements

This course does not have an exam.

Variations to exam arrangements

Variation to exam arrangements does not apply to this course.

Supplementary Assessment

Supplementary assessment or examination offers students an opportunity to gain a supplementary pass (SP) and is available to all students under the following conditions unless supplementary assessment or examination has not been approved for the course:

1. if the student has achieved a final grade between 45-49 per cent (F1) in a course
2. if a student who has successfully completed all of the courses within their program, with the exception of two courses in their final study period, a supplementary assessment or examination may be granted where the final grade in either or both of these courses, is less than 45 percent (F1 or F2) and all assessments in the courses were attempted by the student.

More information about supplementary assessment is available in section 7.5 of the Assessment Policy and Procedures Manual.

<http://w3.unisa.edu.au/policies/manual/default.asp>

Important information about all assessment

All students must adhere to the University of South Australia's policies about assessment:
<http://w3.unisa.edu.au/policies/manual/default.asp>.

Students with disabilities or medical conditions

Student with disabilities or medical conditions or students who are carers may be entitled to a variation or modification to standard assessment arrangements. See Section 7 of the Assessment Policy and Procedures Manual (APPM) at: <http://w3.unisa.edu.au/policies/manual/default.asp>

Students can register for an Access Plan with UniSA Access & Inclusion Service. It is important to make contact early to ensure that appropriate support can be implemented or arranged in a timely manner. See the Disability Hub for more information: <http://www.unisa.edu.au/Disability/Current-students>

Students are advised there is a deadline to finalise Access Plan arrangements for examinations. Further information is available at: http://i.unisa.edu.au/campus-central/Exams_R/Before-the-Exam/Alternative-exam-arrangements/

Deferred Assessment or Examination

Deferred assessment or examination is not available for this course. APPM 7.6.4

Special Consideration

Special consideration is available for this course. Note: Special consideration cannot be granted for a deferred assessment or examination, or a supplementary assessment or examination. APPM 7.7.6

Variations to assessment tasks

Variation to assessment methods, tasks and timelines may be provided in:

Unexpected or exceptional circumstances, for example bereavement, unexpected illness (details of unexpected or exceptional circumstances for which variation may be considered are discussed in clauses 7.8 - 7.10 of the Assessment Policy and Procedures Manual). Variation to assessment in unexpected or exceptional circumstances should be discussed with your course coordinator as soon as possible.

Special circumstances, for example religious observance grounds, or community services (details of special circumstances for which variation can be considered are discussed in clause 7.11 of the Assessment Policy and Procedures Manual). Variations to assessment in expected circumstances must be requested within the first two weeks of the course (or equivalent for accelerated or intensive teaching).

Marking process

1. Submission:

The Assignments and the Draft and Final versions of the Expository Paper should be submitted

BOTH (a) in the Math 2024 assignment box in the foyer of the OC Building by 4pm on the due date,

AND (b) electronically through learnonline.

Marked assignments will be returned at a subsequent lecture or tutorial, within two or three weeks.

2. Format:

Please attach to each assignment a completed Assignment Cover Sheet. Staple your assignment at the top left corner. Please **DO NOT** put your assignment in a binder or plastic sleeve.

3. Keep a copy!

You may want access to your work while the assignment is being marked. Also, occasionally assignments go missing during submission and return. It is your responsibility to **keep a photocopy** of each assignment you submit, and to **keep your marked assignments** until final course grades have been published.

4. Late penalties:

10% of your assignment mark will be deducted if the assignment is submitted after 4pm on the due date, but

before 4pm on the following business day. A further 10% will be deducted for each further day late, up to 40%. Work more than four days late will not be accepted without the **prior agreement** of the Course Coordinator, except in unexpected circumstances.

IMPORTANT! HOW NOT TO PLAGIARISE!

1. Zero marks for copies.

Identical or near-identical solutions or parts of solutions will be given **zero marks**, and/or **referred to the Academic Integrity Officer**.

2. Write your own solutions.

While you're working on the assignments you may discuss your work-in-progress with other students, but you **MUST** write up your solutions **by yourself**. You are **NOT allowed** to use anyone else's written work when you are writing up your work.

3. Don't copy.

Do not copy work from any printed or electronic source or from any person.

4. Don't give inappropriate help.

Giving inappropriate help is just as serious as receiving it, and will have the same consequences. Don't let anyone see your completed assignments or project.

5. Acknowledge help and joint work.

If you receive any help from other students, former students, the Maths Help Centre, the lecturer, the tutors, private tutors, or anyone else, you **MUST** make a note of it on your assignment, mentioning their name and how they helped you. Examples: 'Frances Wu helped me with Question 2'; 'Worked with Michael Brown on Question 4 of this assignment'; 'Got help from Maths Help Centre on Question 4'; 'Explained Q3 to Ravi Gupta'.

6. More info:

Please read Section 9: Academic Integrity of the UniSA Assessment Policies and Procedures Manual (<http://www.unisa.edu.au/policies/manual/>). Note especially the definitions of plagiarism and of academic misconduct, so that you know what to avoid.

Academic Integrity

Academic integrity is the foundation of university life and is fundamental to the reputation of UniSA and its staff and students. Academic integrity means a commitment by all staff and students to act with honesty, trustworthiness, fairness, respect and responsibility in all academic work.

An important part of practising integrity in academic work is showing respect for other people's ideas, and being honest about how they have contributed to your work. This means taking care not to represent the work of others as your own. Using another person's work without proper acknowledgement is considered Academic Misconduct, and the University takes this very seriously.

The University of South Australia expects students to demonstrate the highest standards of academic integrity so that its degrees are earned honestly and are trusted and valued by its students and their employers. To ensure this happens, the University has policies and procedures in place to promote academic integrity and manage academic misconduct. For example, students must not submit the same work in whole or in part, for assessment in multiple UniSA courses and work submitted electronically by students for assessment will be examined for copied and un-referenced text using the text comparison software Turnitin <http://www.turnitin.com>.

More information about academic integrity and what constitutes academic misconduct can be found in Section 9 of the Assessment Policies and Procedures Manual (APPM): <http://w3.unisa.edu.au/policies/manual/default.asp>. The Academic Integrity Module explains in more detail how students can work with integrity at the University: <https://lo.unisa.edu.au/mod/book/view.php?id=252142>

Submission and return of assessment tasks

See above under Assessment details.

Action from previous evaluations

You are invited to provide feedback on the course by answering the myCourseExperience questionnaires.

You are also invited to fill in an informal midterm evaluation, about a third of the way through the study period. These evaluations will be done in class on paper. They will go only to the Course Coordinator and other teaching staff in Math 2024: Mathematical Communication, and are intended to give a snapshot of how students are finding the course and any suggestions for changes, while there is still time for staff and students to make changes.

Unplanned learnonline outages

Extensions may be given for key assessment items if there are unplanned learnonline outages. The length of any extension will depend on the length and timing of related outages.

Course Calendar

Study Period 5 - 2018

	Weeks	Topic	Tutorial	Practical	Notes	Assessment Details (Adelaide Time)
	09 - 15 July	Pre-teaching				
	16 - 22 July	Pre-teaching				
1	23 - 29 July	Course overview. Introduction to LaTeX typesetting software. Advice on giving maths talks. Set up Mini-talk 1 for Week 3.	Continue LaTeX topics. Go through topics for Mathematical Paper.	LaTeX exercises.	Choose topic for your Mathematical Paper. Write a few dot points, or make a mindmap, about your topic.	
2	30 July - 5 August	Career planning. A selection from: job market, career options; knowledge, skills and attributes that employers seek; selection criteria; resume; cover letter; interview; self-marketing.	Clarify career direction; start gap analysis; start developing strategies; analyse job ads; draft resume; draft cover letter. Bring a previous resume. Move to computer pool; type your draft resume and cover letter for Assgt 1 (Careers).	Library Workshop 1. Library website (including subject guides). Plan your search. Searching the Library catalogue & Google Scholar. Scholarly Sources explained. Search for info on your Mathematical Paper (MP) topic.	Continue work on Assgt 1 (Careers) and on research for your MP.	
3	06 - 12 August	Mini-talk 1. Intro to Aboriginal Content in Undergraduate Programs (ACUP). More on LaTeX: typesetting text using LaTeX, special characters, dashes, fonts, lines, paragraphs, pages, spacing, sections, table of contents. Good Problems 1: Laying out the Problem.	In computer pool. More on LaTeX: Cross-references, title, the 'center' environment, list environments. LaTeX exercises.	Library Workshop 2. Library databases. Evaluating information. Managing references. Assignment Help. Search for info on your MP topic.	Students meet Course Coordinator individually about your MP topic (10 minutes); bring your dot points or mindmap. Work on Assgt 1 and Talk 1. Review advice on giving maths talks.	

4	13 - 19 August	Mini-talk 2. More on LaTeX: tables, figures, math environments, formatting your texfile, text in math mode, displayed equations. Good Problems 2: Flow and 3: Mathematical Symbols.	in computer pool. LaTeX exercises: tables, displayed equations. Planning session for Mathematical Paper (sticky notes).	Set up and test texfile for your Mathematical Paper. Start drafting some content and required LaTeX items.	Hand up Assgt 1 (Careers). Finish prep of Talk 1. Start posting on ACUP online discussion forum. Start work on Assgt 2 (Mathematical Typesetting).	Assignment 1: Career Planning due 15 Aug 2018, 4:00 PM
5	20 - 26 August	ACUP cultural competency sessions: guest lecture on historical and legal context, interactive Blue Wren vignettes. More on LaTeX: maths symbols, equation alignment, arrays, matrices, cases.	Student 5-minute talks on Mathematical Paper topic.	LaTeX exercises: typesetting mathematical formulas in LaTeX. Equations, aligning equations, arrays.	Continue posting to ACUP forum. Deliver Talk 1 on your MP topic. Refine plans for your Mathematical Paper. Work on Assgt 2 (Mathematical Typesetting).	Mathematical Paper project and presentations: Talk 1 on Mathematical Paper due 21 Aug 2018, 2:00 PM
6	27 August - 2 September	ACUP presentation, panel discussion and small-group discussions.	Mini-talk 3. More on LaTeX: equation alignment, matrices. Bibliographies using 'thebibliography'. Menuhin sample article. Bibliographies using BibTeX. Annotations in bibliographies.	LaTeX exercises on bibliographies. Set up a bibliography for your Mathematical Paper. Include an annotated item in your bibliography. Work on your draft MP.	Continue posting to ACUP forum. Hand up Assgt 2. Finalise draft of Mathematical Paper.	Assignment 2: Mathematical Typesetting due 29 Aug 2018, 4:00 PM
7	03 - 9 September	Mini-talk 4. Mathematical writing. Ch 3, 4 of Higham. English usage and the LaTeX context. Theorems and friends, notation, words and symbols, dos and don'ts. Good Problems 4: Logical Connectives.	In computer pool. Finish draft of Mathematical Paper. Work on ACUP reflective piece for Assgt 3 (ACUP).	Finish draft of MP. Work on ACUP reflective piece and assignment.	Continue posting to ACUP forum. Hand up draft of MP. Write reflective piece for Assgt 3 (ACUP).	Mathematical Paper project and presentations: Draft of Mathematical Paper due 07 Sep 2018, 4:00 PM
8	10 - 16 September	Mini-talk 5. English usage. When English is a foreign language. Good Problems 5: Graphs. Ch 4, 5.	Proof that the square root of 2 is irrational.	Type the proof from this week's tutorial.	Students meet Course Coordinator individually to review draft of MP (10 minutes). Hand up Assgt 3 (ACUP). Start work on Assgt 4 (Good Mathematical Writing).	Assignment 3: Cultural Awareness due 12 Sep 2018, 4:00 PM
	17 - 23 September	Mid-break				
	24 - 30 September	Mid-break				

9	01 - 7 October	Mini-talk 6. Writing a paper. Organisation, title, authors, abstract, introduction, citations, conclusions, acknowledgements, reference list. Good Problems 6: Introductions and Conclusions. Ch 6.	A geometric proof (volume of cube in cone), and a proof by induction (sum of first n positive integers).	Type the proofs from this week's tutorial.	Work on Assgt 4 (Good Mathematical Writing). Continue work on Mathematical Paper.	
10	08 - 14 October	Mini-talk 7. Revising a draft. Checklist for revision. Examples with prose. Examples with mathematical formulas. Ch 7.	Revise a draft article (Numerical Linear Algebra in the Sky). Time management: task list, time estimates, calendar.	Work on Mathematical Paper.	Continue work on Mathematical Paper. Hand up Assgt 4.	Assignment 4: Good Mathematical Writing due 10 Oct 2018, 4:00 PM
11	15 - 21 October	Mini-talk 8. Preparing and presenting a mathematics talk: designing a talk, writing slides, example slides. The Beamer documentclass for talk slides. Ch 10, 11.	Planning session for Talk 2 on your Mathematical Paper (sticky notes). Work on Mathematical Paper.	Set up Beamer texfiles for Talk 2 on Mathematical Paper topic. Work on Mathematical Paper and Talk 2.	Finalise Mathematical Paper. Continue work on Talk 2.	
12	22 - 28 October	Mini-talk 9. Project management. A selection from: Gantt charts; Program Evaluation and Review Technique (PERT); Critical Path Method; the Time Schedule.	Students rehearse draft Talk 2, in pairs. Give and receive feedback on draft talk. Implement feedback.	Examples for project management. Project network. Critical path. Time schedule. Work on Talk 2.	Rehearse and finalise Talk 2. Review advice on giving maths talks. Hand up Mathematical Paper.	Mathematical Paper project and presentations: Final Mathematical Paper due 24 Oct 2018, 4:00 PM
13	29 October - 4 November	Student 10-minute talks on Mathematical Paper topic.	Student 10-minute talks on Mathematical Paper topic.	Student 10-minute talks on Mathematical Paper topic.	Deliver Talk 2.	Mathematical Paper project and presentations: Talk 2 on Mathematical Paper due 30 Oct 2018, 2:00 PM
	05 - 11 November	Swot-vac				
	12 - 18 November	Exam week				
	19 - 25 November	Exam week				