

MA3L3-15 Communicating Mathematics

26/27

Department

Warwick Mathematics Institute

Level

Undergraduate Level 3

Module leader

Helena Verrill

Credit value

15

Module duration

10 weeks

Assessment

Multiple

Study location

University of Warwick main campus, Coventry

Description

Introductory description

This module will give students training in public engagement in mathematics, and opportunities to put this into practice. Students will gain communication skills and confidence in engaging with a variety of different audiences. Students will use various forms of multimedia and social media, and in person events, working in groups and on solo projects. A core component of the module is a group project, where students develop and deliver a two hour in person public engagement event.

Module aims

This module will equip students with various methods of communicating mathematics. Students will develop practical skills in a diverse range of engagement methods. Students will have the opportunity to reflect on and articulate the relevance of mathematics to society. We will learn how to evaluate what makes good mathematical engagement. They will develop an understanding of modern mathematical culture, and an awareness of mathematical history and folklore.

This module helps students develop transferable communication skills, including public speaking, event planning, and multimedia use.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Indicative topics to be covered.

- 1: Introduction to public engagement in mathematics. The public perception of mathematics. The potential impact of public engagement. Different kinds of public engagement. The work of the Warwick Institute of Engagement.
- 2: Introduction to assessment one: Written public engagement. Discussion of popular maths books.
- 3: Writing maths articles, posters, blogs, and other written pieces for a variety of audiences.
- 4: Introduction to assessment two: Creation of videos or podcasts. Mathematics in social media. Digital story telling.
- 5: Practical skills of video creation and podcasting.
- 6: Introduction to assessment three: Developing a public engagement mathematics event. Engaging with schools, museums, community groups.
- 7: Introduction to the Royal Institute Masterclasses for year 9 students.
- 8: Skills of hands on participatory maths activities for audiences of all ages, e.g., escape rooms, maths trails, etc.
- 9: Skills of public speaking and engaging a large audience.
- 10: How do we assess public engagement? Feedback and assessment.

Learning outcomes

By the end of the module, students should be able to:

- Communicate mathematical knowledge and ideas effectively in a variety of contexts.
- Create public engagement in mathematics in online spaces.
- Evaluate the effectiveness of various engagement methods.
- Create interactive activities for younger audiences.
- Plan engagement for varied audiences.
- Deliver face to face public engagement in mathematics
- Develop transferable skills in critical thinking, problem solving, communication, information literacy, professionalism, teamwork, and time management
- Have an understanding of the importance of Public Engagement in Mathematics and what good public engagement is

Indicative reading list

[Reading lists can be found in Talis](#)

Research element

Students will have the option to research areas of mathematics to be communicated to the public, or to other groups. For example, independently learning about mathematical modelling of the

spread of disease, interviewing researchers, and researching how this is communicated to governments.

Interdisciplinary

Talks will be given by members of other departments, such as the Centre for Teacher Education and the Warwick Institute of Engagement.

Subject specific skills

- (i) Evaluate the effectiveness of existing communication in maths
- (ii) Effectively communicate mathematical ideas using written, oral, and multimedia methods
- (iii) Communicate mathematical knowledge and ideas effectively and to a variety of audiences

Transferable skills

Public speaking, presentation skills, translating abstract ideas into accessible terms, communication (written, oral and multimedia), team work, analysis of existing and own work, social media.

Skills relevant to the Warwick Awards (Communication, Digital literacy, Teamwork).

Study

Study time

Type	Required
Lectures	10 sessions of 2 hours (24%)
Seminars	10 sessions of 1 hour (12%)
Project supervision	(0%)
External visits	1 session of 4 hours (5%)
Online learning (independent)	(0%)
Private study	50 hours (60%)
Total	84 hours

Private study description

Students will be expected to prepare for each class, by doing background reading or research, e.g., exploring various public engagements in mathematics materials. Students will produce three pieces of assessed work: written, electronic, and in person.

Costs

Category	Description	Funded by	Cost to student
Other		Department	£0.00

Assessment

You do not need to pass all assessment components to pass the module.

Assessment group A

	Weighting	Study time	Eligible for self-certification
Written public engagement in mathematics	20%	10 hours	No

Students will choose an advanced topic in mathematics, and an audience type. They will write an article/poster/blog/press release/other written format on the given topic for the chosen audience. Students will also write a brief description of how this topic can be adapted for presentation for different audiences, and why their article is appropriate for their choice of audience. Expected length will depend on the type of format.

Video, podcast, animation or social media engagement piece.	20%	10 hours	No
Students will produce a 5 minute public engagement video or audio podcast.			

In person public engagement event.	40%	28 hours	No
------------------------------------	-----	----------	----

Students will have a choice in developing an activity of approximately 2 hours long. This can be one of the following:

A masterclass for year 9 students (2 1/2 hours with 15 minutes break).

A session for the AMSP year 10 or 12 day.

An activity at Foleshill creative community centre, leading a mathematical activity for the general public.

An activity at the university Slice of Science event, which is part of British Science week.

Other options may be added.

These activities are in person face to face events. Part of the mark is for a written plan of the activity, which must be approved before the activity is delivered.

Reflective piece on the public engagement activity	20%	10 hours	No
--	-----	----------	----

Students should write up an individual report on their assessment of the group in person public engagement activity.

Assessment group R

	Weighting	Study time	Eligible for self-certification
Engagement piece Either in written form (2000 words) or a video/ audio podcast (10 minutes).	60%		No
Reflective piece on the public engagement activity Students should write up an individual report on their assessment of the public engagement activity.	40%		No

Feedback on assessment

Written and verbal

Availability

Courses

This module is Optional for:

- Year 1 of TMAA-G1P0 Postgraduate Taught Mathematics
- TMAA-G1PC Postgraduate Taught Mathematics (Diploma plus MSc)
 - Year 1 of G1PC Mathematics (Diploma plus MSc)
 - Year 2 of G1PC Mathematics (Diploma plus MSc)
- Year 3 of UCSA-G4G1 Undergraduate Discrete Mathematics
- UCSA-G4G3 Undergraduate Discrete Mathematics
 - Year 3 of G4G1 Discrete Mathematics
 - Year 3 of G4G3 Discrete Mathematics
- Year 4 of UCSA-G4G4 Undergraduate Discrete Mathematics (with Intercalated Year)
- Year 4 of UCSA-G4G2 Undergraduate Discrete Mathematics with Intercalated Year

This module is Core option list A for:

- Year 4 of UMAA-GV18 Undergraduate Mathematics and Philosophy with Intercalated Year

This module is Core option list C for:

- Year 3 of UMAA-GV17 Undergraduate Mathematics and Philosophy
- Year 3 of UMAA-GV19 Undergraduate Mathematics and Philosophy with Specialism in Logic and Foundations

This module is Core option list F for:

- Year 4 of UMAA-GV19 Undergraduate Mathematics and Philosophy with Specialism in Logic and Foundations

This module is Option list A for:

- UMAA-G105 Undergraduate Master of Mathematics (with Intercalated Year)
 - Year 4 of G105 Mathematics (MMath) with Intercalated Year
 - Year 5 of G105 Mathematics (MMath) with Intercalated Year
- Year 3 of UMAA-G100 Undergraduate Mathematics (BSc)
- UMAA-G103 Undergraduate Mathematics (MMath)
 - Year 3 of G100 Mathematics
 - Year 3 of G103 Mathematics (MMath)
 - Year 4 of G103 Mathematics (MMath)
- Year 4 of UMAA-G107 Undergraduate Mathematics (MMath) with Study Abroad
- Year 4 of UMAA-G101 Undergraduate Mathematics with Intercalated Year