Course Outline
Department of Mathematics

Course: MATH 20222: Introduction to Geometry (10 credits)
Term: Session 2 - 2022/2023
Class Dates: Mondays and Fridays 11:00 - 12:00 (in Moseley Theatre - Schuster Building)
Bank Holidays: Monday 1 May and Monday 8 May (Tutorials will be rescheduled, Classes are cancelled)

Instructors:
- Aram Dermenjian (aram.dermenjian@manchester.ac.uk) - Weeks 1 - 6
- David Stewart (david.i.stewart@manchester.ac.uk) - Weeks 7 - 12

Class Style: Blended learning
Tutorials: Date/Time is different for everyone. Please check your timetable.
Student Hours: Thursdays 15.30 - 16.30; Or send an email if you can't make the student hours.

Hi human! Our names are Aram (he/him) and David (he/him). We'll be teaching introduction to geometry this semester! Aram's ok to be called Aram or Dr. Dermenjian, or any mix that makes you feel comfortable. David's ok to be called David or Dr. Stewart.

This class is begin taught using a blended learning style approach (sometimes called a flipped style). What this means is that instead of learning in class and doing problems at home, you'll be doing the learning at home and the problems in class. Each week we will put online the lectures for the week and a set of gapped notes. The gapped notes, if you chose to use them, are there to help you take notes instead of having to write down everything. (More details are on the notes themselves). Since lectures will be done at home, class time will be used differently. During class, we'll go over whatever you found difficult in the video lectures. This means that we're relying on you to let us know what you didn't understand! It's the perfect time to ask questions and make sure you understand fully what's going on. In the tutorials, we'll go over exercises to help cement all the things we learned during that week.

If at any point things are becoming to much, or you need help, *please* let us know immediately. We're here to help as much as we can (and if we can't help, we'll know who to ask to make sure you get the help you need). We're both excited to have you in our class this semester! Let's go learn some geometry together.

-Aram & David

Official Course Description: This course unit introduces the basic ideas of Euclidean and affine geometry, differential forms, conic sections and the first ideas of projective geometry. These notions permeate much of modern mathematics and its applications.

Weekly release schedule: The following is the release schedule for all the content in the course.

- Mondays: Homeworks
- Tuesdays: Next weeks content (Lecture notes + videos + exercises + tutorial)
- Wednesdays: Tutorial solutions, Annotated student notes
- Sundays: Exercise solutions

Weekly learning plan: Each of you are taking multiple courses at one time. As we do not want you to over work, you should be approximately spending the following amount of time on each activity each week:

- Course videos/lectures: 2-2.5 hours
- Exercises: 1.5 - 2 hours
- Tutorials: 1 hour
- In class review sessions: 2 hours.
- **Total:** 6.5 - 7.5 hours.

Recommended reading:

- David A. Brannan, Geometry, Cambridge University Press, 2011-12-22, 2nd edition.
- B.A. Dubrovin, A.T. Fomenko, S.P. Novikov. Modern geometry, methods and applications. Part I: The Geometry of Surfaces, Transformation Groups, and Fields, Vol. 93, 1992,
- Geometry of Differential, forms. Morita (Shigeyuki),AMS,vol.201
- Barrett O' Neill, Elementary Differential Geometry, Academic Press.
- Andrew Pressley, Elementary Differential Geometry, Springer;

COURSE POLICIES

Late policy/extensions: Life happens. A short extension on homework will be granted if needed. Please contact us if you need an extension (with an explanation of why you need the extension).

Websites:

- Blackboard: Blackboard will be the primary website used for the online course website.
- Aram's personal website will serve as a backup for all course content in case blackboard is ever offline.
- Piazza is there to ask questions on everything (class, exercises, lectures, etc.)

Email: Feel free to either email Aram or David if you have questions about anything, if you need an extension on a homework, or whatever. *Note that we will only respond to emails between **10.00** and **17.00** Mondays - Friday.* We will try and respond to all emails within 24 hours of receiving the email.

Course Evaluation/Grades: The final grade for the course will be weighted as indicated below:

Homeworks:	**20%**	6 total, (1 dropped)
Final Exam:	**80%**	1 total

Course Assessments:

- **Homeworks:** You will have one homework assignment roughly every two weeks (6 homeworks in total). Your lowest homework grade will be dropped. One time during the semster, you're allowed to turn in one homework up to 2 days late with no questions asked if you forgot to ask for an extension. After the one free allowance, if an extension is not requested there is a 20% penalty for each day the homework is late.
- **Exam:**
  - **What will be on the exams:** For each question asked about what material will be on the exam, we will increase the difficulty of the exam. It is to be assumed that any and all material covered in class can and will be on the exam.
  - **But, we really want to know!** Don't worry. We will do a practice exam in class the last week of teaching. So you'll get a rough idea of what will be on the exam. In addition, you'll have access to previous exams from the course.

Cheating policy: Just as with any class, we ask that you please not cheat in this class. In a maths class, cheating normally means having someone else do the work for you, although it can be a lot more nuanced than that. Below you'll see a more detailed description of what classifies as cheating for each assessment type.

If you're having difficulty in class, we'd rather you come to us or another student and ask for help rather than copying/cheating because in the end, you're only hurting yourself. The point of this class is to learn how to problem solve and to face difficult tasks (and also learn some geometry

in the process). There is nothing wrong nor abnormal with struggling and not understanding concepts (geometry is confusing!). Don't be afraid to ask for help – that's what we're here for. Let's work together to help you succeed in this class.

Homework:

- **Offline material:** All offline resources allowed (this includes scientific calculators).
- **Online material:** Blackboard and an online version of the textbook.
- **Collaboration:** You are allowed to collaborate with other members of the class. (This does not mean copy off one another. This means work together in order to learn the material.)
- Asking homework questions online to people not registered in this class is considered cheating.
- You are not allowed to have someone else do an assignment (or a part of an assignment) for you.

Final exam:

- **Offline material:** No offline resources allowed.
- **Collaboration:** No collaboration between others is allowed.
- You are not allowed to have someone else do an exam (or a part of an exam) for you.