II CATAM Introduction

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- CATAM manual: http://www.maths.cam.ac.uk/undergrad/catam/II

- Find these slides (PDF with links) at the CATAM webpage http://www.maths.cam.ac.uk/undergrad/catam

- Helpline: catam@maths.cam.ac.uk
Why CATAM?

Computer-Aided Teaching in All Mathematics

- Another way to teach and learn mathematics
- Increasingly, academic and industrial maths relies on computing
- Significant number of Tripos marks available for CATAM

see Schedule and CATAM manual for more detail
Marks available — Part II

- Maximum of 150 Tripos marks
- For the average student, CATAM contributes ~20%
- Credit added directly to marks total: no $\alpha$ or $\beta$’s

see Schedule and CATAM manual for more detail
Mark counting — Part II

Each project is allocated a number of units based on its difficulty.

From the CATAM Manual:

To obtain maximum credit, you should submit projects with unit allocations that sum to 30 units. If you submit $N$ units, where $N > 30$ (i.e. if you submit more then the maximum number of units), then the following algorithm applies:

If your weakest project is $M$ units with $M > N - 30$ then the mark on that project will be rescaled by $[M - (N - 30)]/M$. If $M \leq N - 30$ then that project will be discarded entirely, a revised $N$ will be calculated, and the algorithm will be applied recursively.

see Schedule and CATAM manual for more detail
Deadline — Part II

- **Wednesday, 1 May 2019, 10am — 4pm**

- There are many reasons to work diligently and finish well ahead of deadline
  - to deal with unforeseen problems including graphs, tables, program listings
  - to *proofread* your submission
  - to have ample time to print/turn in report

- Be aware some projects link more closely than others with lecture courses,
  
e.g. 4.3 The Rotating Top is closely linked with Classical Dynamics.

  see [CATAM manual](#) for more detail
MATLAB

• MATLAB makes computational maths easier
• You don’t have to learn to be an ace programmer.
• You *can* learn to be an ace programmer!

  ‣ The University Information Services (UIS) offers short courses in C++, python, R, and MATLAB: http://www.ucs.cam.ac.uk/training

  ‣ Another option: Julia - Matlab-like ease with C speed

• You can use these languages and others for CATAM*

  *Ask helpline if an in-built function makes question/task trivial

see CATAM manual for more detail
Openendedness

• Unlike tripos questions, CATAM projects often have open-ended questions, e.g. invitations to comment

• This is deliberate

• Figuring things out for yourself is a “transferable skill”

• Frustration might actually be productive discomfort (think: yoga, strength/athletic training, music practice, essay writing)

see CATAM manual for more detail
Communicating mathematics

• Communicating by writing is a “transferable skill”

• Proofread for typos & mistakes

• Re-read, imagining you are not the author:
  – Would you like to read your write-up?
  – Would you learn any mathematics from it?
Academic integrity

• All of you work very hard studying mathematics
• You have earned an examination procedure which respects your efforts
• Achievement of tripos marks by unfair means is an insult to all of you
• We promise to protect the academic integrity of CATAM
Unfair means

**Unacceptable** collaboration includes (but is not limited to):

- Copying any person’s program
- Using someone else’s program or any part of it as a model, or working from a jointly produced detailed program outline
- Copying or paraphrasing someone else’s report in whole or in part
- Posting questions on the internet, e.g. StackExchange
- Sharing your work with other students

see [CATAM manual](#) for more detail
Plagiarism detection

• Unfortunately, upholding Academic Integrity means we all have to undertake some administrative tasks

• Submit **code/programs** *electronically*
  – Comparison with projects submitted this year *and previous years*

• Produce & submit **write-up** *electronically*
  – Checked against Turnitin UK database

• Student declaration form (e-mail to be sent soon)

see [CATAM manual](#) for more detail
Consequences of plagiarising

From the manual:

“If it is concluded that you have used unfair means for the whole or any part of the Computational Projects the likely outcome is that you will receive a mark of zero for the Computational Projects in their entirety.”

If you “donate” computer code to someone else you may also lose marks.

see CATAM manual for more detail
Electronic submission

• Submit your code and write-up electronically

• Free to produce your write-up using
  – LaTeX — Introductory lecture by Dr Stephen Eglen
    6 Nov 2018, 1-2pm CMS
  – Microsoft Word
  – LibreOffice/OpenOffice
  – most any word processor (see CATAM manual)

• **Not permitted:** anything scanned
Have a great year!