# IB CATAM Introduction

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

- 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?

**C**omputer-**A**ided **T**eaching in **A**ll **M**athematics

- Has been part of the Tripos since 1969

- 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 IB

- Maximum of 160 Tripos marks

- For the average student, CATAM contributes ~20%

- Credit added directly to marks total: no $\alpha$ or $\beta$'s



**Part IB**

2015 data

**Part II**

2015 data
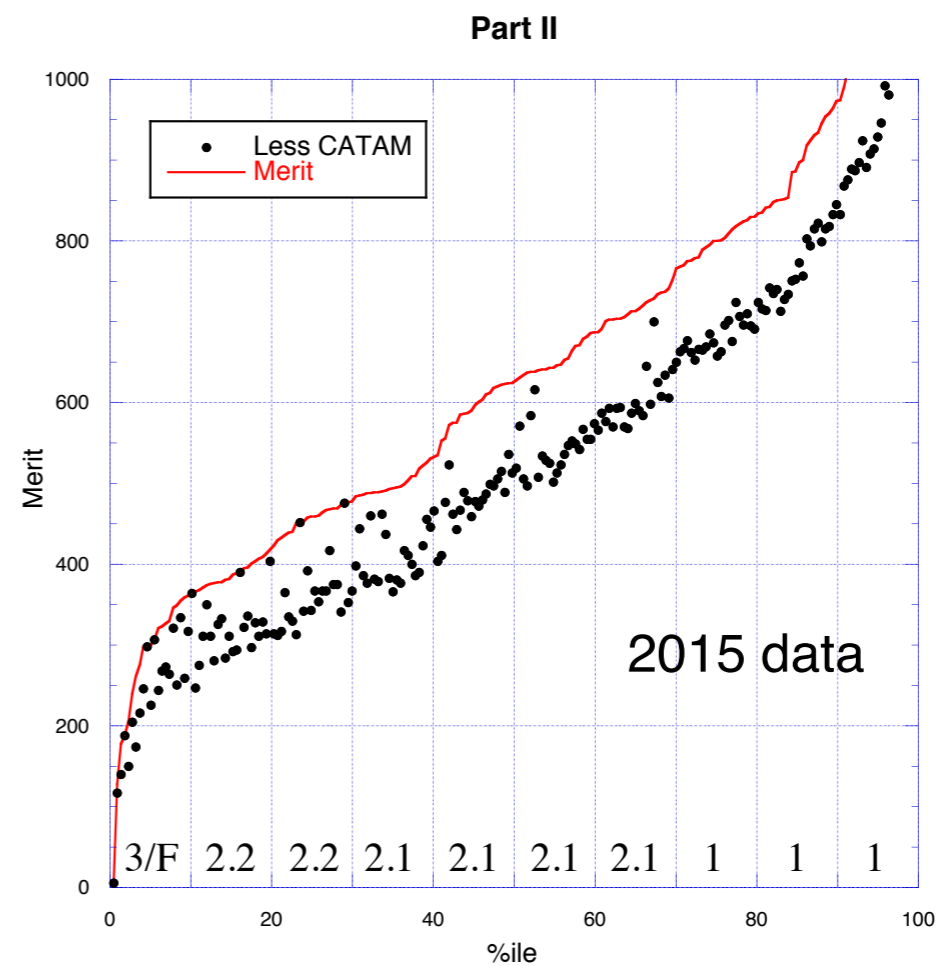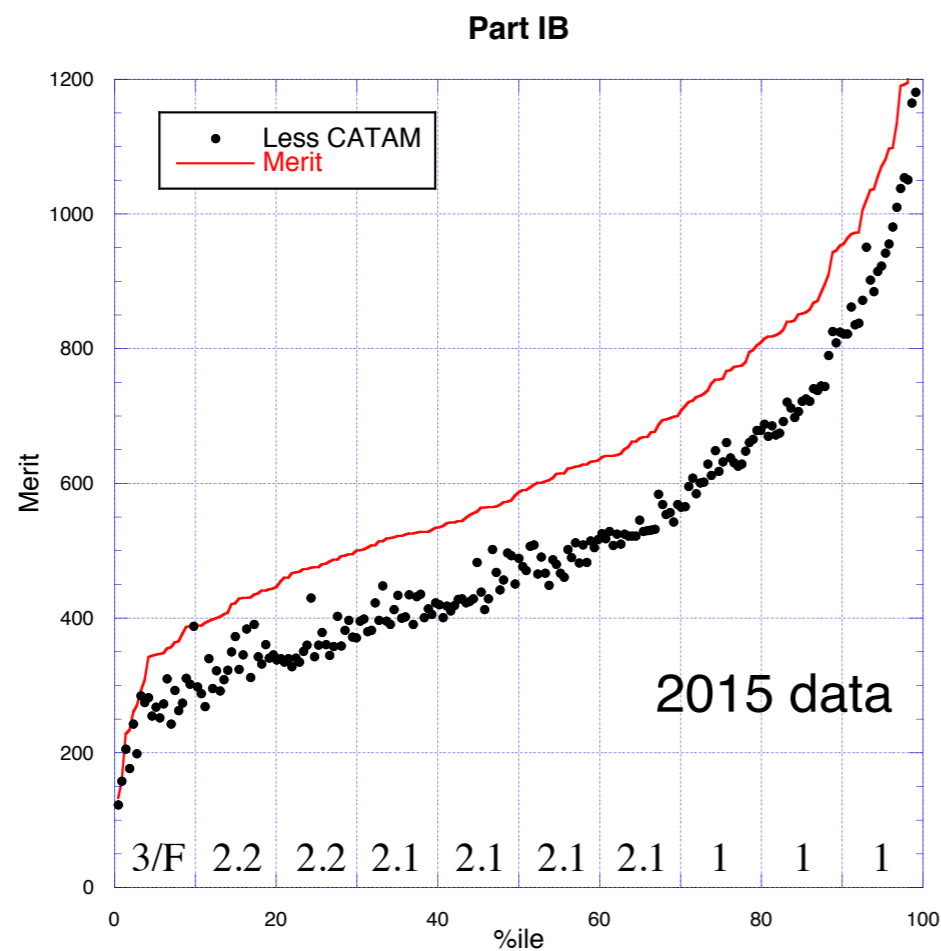
see Schedule and CATAM manual for more detail

# 2019/2020 projects - Part IB

*Introduction*

*Optional Introductory Non-Examinable Project*

*Core Projects*

*Additional Projects*

For maximum credit, you should attempt both projects from section 1 (*Core Projects* above), and then two additional projects chosen from section 2 (*Additional Projects*). You may not attempt more than two additional projects. All projects carry equal credit.

see <u>CATAM manual</u> for more detail

# Deadlines — Part IB

- **Core**: <span style="color:red">**Tuesday 21st January 2020, 10am–4pm**</span>

- **Additional**: <span style="color:red">**Tuesday 28th April 2020, 10am–4pm**</span>

- 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

see <u>CATAM manual</u> 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 <u>CATAM manual</u> for more detail

# Communicating mathematics

- Clear, concise 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

**Unfair means** 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

If in doubt, contact us via catam@maths.cam.ac.uk

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 <u>CATAM manual</u> for more detail

# Consequences of unfair means

From the manual:

If the Chair of Examiners deems that unfair means were used, the case may be brought to the **University courts**. According to the Statues and Ordinances of the University [14]

> suspected cases of the use of unfair means (of which plagiarism is one form) will be investigated and may be brought to one of the University courts or disciplinary panels. The University courts and disciplinary panels have wide powers to discipline those found to have used unfair means in an examination, including depriving such persons of membership of the University, and deprivation of a degree.

If you assist someone else in using unfair means (e.g. by providing your report or computer code), you may also be subject to discipline.

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

  - Microsoft Word

  - LibreOffice/OpenOffice

  - most any word processor (see CATAM manual)

- ***Not permitted:*** anything scanned

# Resources — Part IB

- MATLAB classes and online booklet

- CATAM manual

- CATAM LaTeX guide, LaTeX intro slides from Stephen Eglen

- CATAM FAQ

- Helpline: catam@maths.cam.ac.uk

- Ask your DoS to arrange a supervision on introductory project, or on core projects *after* you receive the marks back

- Lecture on introductory project:
  watch e-mail & CATAM page http://www.maths.cam.ac.uk/undergrad/catam

- Library

- Computer room: GL.04 (Basement of Pav. G in CMS)

*Have a great year!*