Two components of MSc

• Taught component (80 credits)
  - lectures, tutorials, coursework, exams
  - learn established techniques that work

• Research component (100 credits)
  - do something that’s never been done before
    - study a new problem, develop a new method, etc.
    - probably the most exciting (and hard) part of MSc
  - culminates in you writing a ~50-page dissertation
    - mark is based solely on the quality of your write-up

- two courses prepare you:
  - IRR: write a literature review in area of interest
  - IRP: write a detailed plan for your MSc project

MSc project timeline

- Semester 1 (IRR)
  - learn about a relevant area: read research papers
  - write a 3000-word summary of what you learned
- January:
  - faculty supervisors propose project topics
  - you pick topics that you like, talk to supervisors
- Semester 2 (IRP):
  - write a detailed plan for what you’re going to do
- April/May:
  - pass 120 credits with 50% average
  - IRR+IRP are Pass/Fail but worth 20 credits each
- Summer:
  - work on your project (build things, test them, analyse results)
  - write a dissertation

IRP vs IRR

- Proposal of a research project
  (your summer project)
  - Assessed by project supervisor
  - Meeting with supervisor and mandatory tutorial groups
  - Full proposal around six pages

- Literature review
  - Assessed by tutors
  - Mandatory tutorial groups
Components of the IRP

• Regular meetings with project supervisor:
  • schedule a regular time, do not let it slip
  • supervisor marks your IRP (not the tutor)

• Continue to meet with IRR groups:
  • same groups, same tutors (mostly)
  • meet every week, tutor will arrange meeting times
  • tutors are there to help you. Use them.
  • attendance is mandatory: ignore meetings = fail IRP

Relation with supervisor

• Weekly meetings are a good starting point, but cancel if you had no time to work on things.
• Bad: Last minute cancellations
• Bad: Ask feedback on many versions
• Good: Show initiative
• Good: Search for and read secondary literature
• Good: Start thinking about doing the actual project

Goal of IRP

• Learn skills of research planning
• Confirm choice of research area
• Scope out your summer project
• Compulsory course in your MSc degree

Projects

• Will be announced shortly.
• Talk to the supervisors before making choice
• Room for self-proposed projects
Further goals of IRP

- Knowing **what** to **work** on is a big **part of research**
  - **Motivation** is identifying a **void** in the **literature**, or a real-world **problem** that has **not** been **solved**
- Coming up with a feasible way to address the problem
- Propose **ways** of **evaluating** the **techniques**
- Present **expected outcomes** **succinctly** and **objectively**

- **Important skill:**
  - For PhD applications
  - For grant writing

What to do

- Select your MSc project (available Sunday 19\textsuperscript{th} January)
  
  \url{https://projects.inf.ed.ac.uk/msc/projects}

- Establish **aims and objectives** of the project
- Establish **hypothesis and evaluation**
- Break project into **work-packages**
- Submit **full proposal** by **16:00, Friday 11 April 2014**
  - Two paper copies to the ITO
  - PDF to Turnitin

Structure of proposal

- **Motivation**: aims and objectives, hypothesis, timeliness, significance, feasibility, novelty, beneficiaries
- **Background** material (use your IRR if you can)
- **Methodology** and **techniques** to be used
- **Metrics** for evaluation
- **Outcomes**
  - application? experimental results? new data?
- **Research plan** (in the form of a Gantt chart, or simple list)

Getting started

- The **supervisor’s proposal** is a good starting place
- How would you **change it** to make it **clear what to do**?
  - consider both **research** perspective, and **skills** perspective
  - your IRR may also be helpful here
- **Further study** to identify the **exact scope** of the project?
- What is the actual **hypothesis/claim** you will be **investigating**?
- What **evidence** is necessary to **support** the hypothesis/claim?
Typical claims in Informatics

- X is better than Y on task Z along some dimension W
- What kind of things are X and Y?
  - system?
  - technique?
  - parameter?
- What is task Z?
- What is the dimension W?
  - behaviour, coverage, efficiency, usability, dependability, maintainability

How can claims be established?

- **Theoretical** claims: proof of some property
  - Correctness, soundness, completeness, complexity, etc.
- **Experimental** evidence: analytical metrics
  - Running times (raw performance)
  - Success rates (e.g., precision and recall in IR)
  - Comparison between different approaches
  - Comparison between computer and human output

Evaluation

- A crucial part of the project (although it is dependent on the field)
- Identify the metrics
  - metrics help you form the hypothesis and solution
  - in essence, the nature of the project
- Must be clear in the proposal
  - discuss it with your supervisor
  - do not leave it until the last minute

Plan ahead

- Break your project into work-packages
- What are their dependencies?
  - How should you tackle them?
  - In series, or in parallel?
  - Some will be essential, some will be optional
- How much time will each work-package need?
  - Build in some slippage time
  - Do they fit into the time available?
  - If not, trim the project!
- For the project (not the IRP) assume one month for writing.
Assessment

- Your report will be marked (pass/fail) by your supervisor

- Assessment will be based on:
  - How well project is motivated
  - Quality of research plan
  - Demonstrated understanding of area
  - Clarity of expression and presentation

Basic criteria (you need these!)

- Clear explanation and justification of each of the following
  - Project aims and hypothesis
  - Project deliverables
  - Research plan, with timetable of dependencies
  - Plans for evaluating work
  - Relation to previous work

Additional criteria (it would be nice to have these)

- Convincing arguments about each of the following
  - Timeliness and significance of research
  - Potential commercial or academic impact
  - Backup plan if original plan fails
Marking guidelines

- Pass: adequate on basic criteria
- Fail: inadequate on two or more basic criteria

If you fail IRP, then whether you pass the MSc overall will depend on decisions taken at the BoE meeting.

Common problems

- **Hypothesis** is unclear, ill-formed
- Assuming without reason that you will succeed where others have failed
- Insufficient detail to assess outcomes
- Unaware of related research
- Bad presentation, incomprehensible report
- **KISS** = Keep It Simple, Student (words to live by)
- Too ambitious (better two good results, than five half results)

Avoid plagiarism

- Copying text from online sources is plagiarism
  - if you edit the words, it is still plagiarism
  - copy text verbatim (with no changes) and place it in quotation marks
  - explicitly cite where you copied from
- All text should be written in your own words from the start
  - not an edited version of someone else’s text
- Guides on plagiarism

  - [http://www.ed.ac.uk/schools-departments/academic-services/students/undergraduate/discipline/academic-misconduct](http://www.ed.ac.uk/schools-departments/academic-services/students/undergraduate/discipline/academic-misconduct)

Plagiarism carries severe penalties

- Better to submit nothing than to submit plagiarized material
- Submit nothing ➔ lose 20 credit points
  - You may still progress to the MSc dissertation, decided by the Board of Examiners on a case-by-case basis
- Submit plagiarized report ➔ Academic Misconduct review
  - Average case: downgraded to a diploma (not an MSc but something)
  - Worst case: kicked out of the program altogether
Re-using IRP in your MSc

• University policy: **cannot be marked twice for the same work**

• Cannot copy-and-paste sections from IRP into your MSc dissertation

• Two options:

  1. **Quote the included sections** with a citation to your own IRP
     They will not be considered original material during the marking

  2. **Re-narrate those sections**. This is the better option.
     By August you will have a different understanding of the material

• Further questions – contact the MSc Project Organizer (Jane Hillston)

As usual, pace yourself

• Work out a **timetable** for your writing

  • **Split** your time into **reading**, **thinking**, and **writing**

  • Leave plenty of **time** for **feedback**

  • Write at a **steady pace**

  • **Meet** with your **supervisor regularly**

    • if they say no, keep contacting them

    • If problem persists, contact me: mvanross@inf

IRP Timeline

- **15 Jan.** Introductory Lecture
- **16 Jan.** IRR DEADLINE
- **19 Jan.** MSc project topics announced
- **29 Jan.** submit your project preferences
- **7 Feb.** projects assigned to students
- **10 Feb - 11 Apr:** IRP
  - attend weekly tutorials
  - ask your tutor about:
    • presentations within group
    • first draft deadline + feedback
- **11 Apr.** submit IRP by 4pm