Designing a new Informatics course

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(as DDoLT for curriculum)

What is a “new” course?

For purposes of this talk, includes:

- Completely new course
- Expanding course from 10 to 20 pts (or vv)
- Significant redesign of existing course to address changing needs/audience
  - May involve changing the course title

Outline

- Should I propose a new course?
- If so, what are the steps and considerations?

Why do it? (Common staff thinking)

- Other Uni's have a course in X but we don't.
- I'm interested in Y and would like to teach it.
- We should give students more options.
- I can't cover all the important material in only 10 credits (this topic requires greater depth).
- If I teach this new course, it will get me out of other less appetizing duties.

What you should be asking instead

- Can I provide evidence of demand?
- Who is the target audience?
- What are the curricular pathways into and beyond this course?

Bigger picture

- UG students on our four-year degrees have relatively few slots for optional courses.

UG3, Sem 1	UG3, Sem 2
Compulsory: ILP (20), PI (10)	Compulsory: SDP (20), CS (20)
Option 1 (20) [but 70% take ML]	Option 3 (20)
Option 2 (10)	
UG4, Sem 1	**UG4, Sem 2**
Compulsory: Project (40)	
40 credits of options	40 credits of options

- This AY, we have ~35 UG4 options running, plus another 10+ not running.
  - Similar story for UG3 and MSc

Bigger picture (cont.)

- More options aren't always better.
  - Running more courses takes extra resource; increases total workload for the school.
  - May make students *less* happy (paradox of choice).
- Chunkier courses aren't always better.
  - Can make delivery more efficient and reduce total assessment, but reduces student flexibility and breadth (forcing difficult choices).
- "Advanced" courses aren't always feasible.
  - Outside of very popular areas, few students will want/ be able to take courses with Level 10/11 prerequisites.

Current curricular strategy

Considerations for whether to approve/run a course:

- Resilience
  - Slightly reduced portfolio and more co-teaching (relative to pre-pandemic).
- Student experience
  - Aim to better resource courses we do run
  - Consider “cohort” effect for some MSc programmes (e.g., using core course(s)).
- Pathways, course groupings, and rationalization
  - Review an area (ML, IPAB, Neuro) rather than just one course.
- School/Uni strategy
  - E.g., experiential learning, sustainability, ethics, attracting students from target growth areas.

If you are considering a new course

- Please visit the Board of Studies page[1]
  - Guidance for new courses and for changes.
  - BoS approval is needed *by late Nov* for resourcing a new course for the following AY. So,
- Get in touch as early as possible, with:
  - Tentative course title, level, year, and credit points
  - Target audience, and why the course is needed
    - We may ask for additional evidence or consultation (e.g., a survey of students).
    - This takes time and may work best as part of a course you are teaching; i.e., needs lots of lead time.

[1]https://restricted.web.inf.ed.ac.uk/infweb/admin/committees/bos

Outline

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Approaches to course design

- Very tempting to start by focusing on content.
  - Topics we want students to "*know about*".

- Instead, try to focus on learning outcomes.
  - What students should be able to *do* by the end, i.e., what we can observe (assess) that will demonstrate their learning.
  - Use specific verbs to connect LOs to assessment and SCQF course level.

Example learning outcomes

- Vague and un-assessable:

> Know the main types of machine learning methods and understand how to use them.

- Two very different better-specified versions:

exam

> Explain the differences between supervised and unsupervised learning and hand-simulate methods of each type on example datasets.

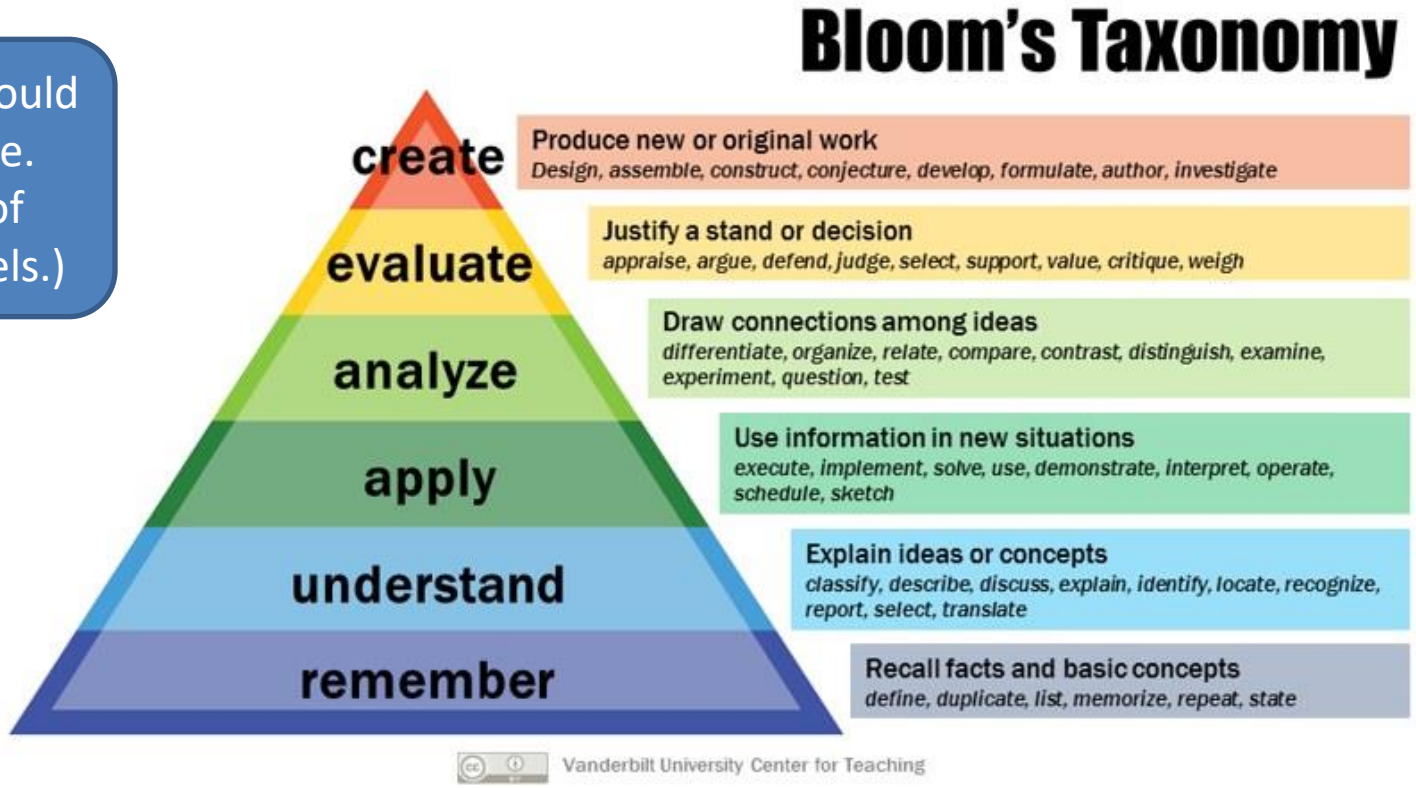
course work

> For a given data set and task, choose an appropriate machine learning method from a range of options (e.g., regression, classification, models for structured data) and evaluate the results.

Verbs reflect the level of learning

Level 11 courses should require more here. (Also top range of marks at other levels.)

Level 8 courses may weight heavier here



For more help with writing LOs, see:
Writing Student Learning Outcomes
https://assessment.provost.wisc.edu/student-learning-outcomes/writing-student-learning-outcomes/
Armstrong, P. (2010). Bloom's Taxonomy. Vanderbilt University Center for Teaching.
https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/

Design backwards

- Once you know what you want students to be able to do, ask what is needed to get them there.
  - Formative activities and feedback
  - Support for skills, not just content
  - Design content around the learning path, don't just add topics because "everyone does this".
  - Consider accessibility and inclusion from the start.
- What is the minimum content required to achieve the LOs, and the minimum to assess?
  - Many of our courses are over-stuffed with content and/or assessment.

Does content even matter?

- Informatics changes extremely rapidly.
  - New methods, models, tools.
  - Will any particular topic still be relevant in five or ten years?
- We need our students to learn basic principles, critical thinking, and how to learn more.
  - Plus communication, collaboration, integrity, …
  - Course content should service these goals, not be an end in itself.

Course activities and time

- Students should be spending 6-7h/wk per 10 credits on *all course activities*.
- 10pt courses should be half of 20pts, ie
  - ~15h lectures (not 20),
  - No more than 4-5 tutorials or labs (not 4 of each)
  - One (manageably sized) summative coursework
    - Assessment size and other issues: discussed on Wed.
- What will your students be expected to do in a typical week (ideally: each week)? Does it work?
  - Also a helpful exercise for existing courses!

Further help and consultation

- BoS web page now has a 3pg guidance document for designing Informatics courses.[2]
- Consultation with learning designers:
  - Starting AY22/23, we expect ILTS involvement in preparing BoS course proposal forms.
    - Anything from 1h consultation to full 2-3 day ELDeR workshop[3] – your choice.
    - We encourage but don't mandate ELDeR. (See later session today for more about ELDeR and Cristina's experience of it.)
- Please consider whether and how students could be involved in the design process.

[2]https://web.inf.ed.ac.uk/sites/default/files/atoms/files/soi_course_design_guidance.pdf
[3]Link to Uni's page on ELDeR, but note that ILTS now run in-house workshops:
https://www.ed.ac.uk/information-services/learning-technology/learning-design/elder