

5 min...

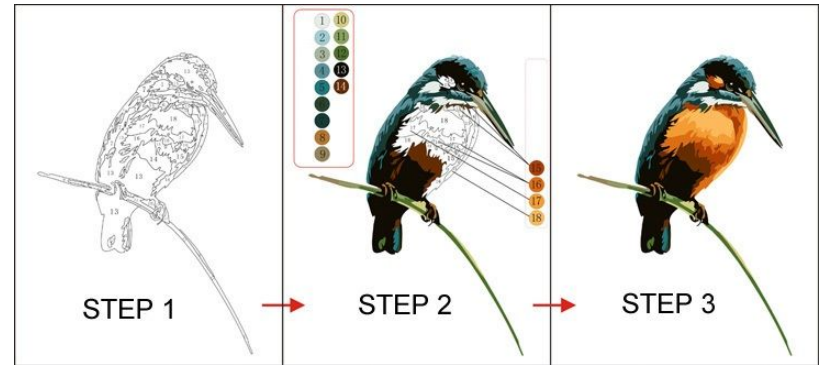


An exam
study
service for
STEM
courses
@U-M

3 min...

Academic Reporting Tools

Painting U-M by its numbers...

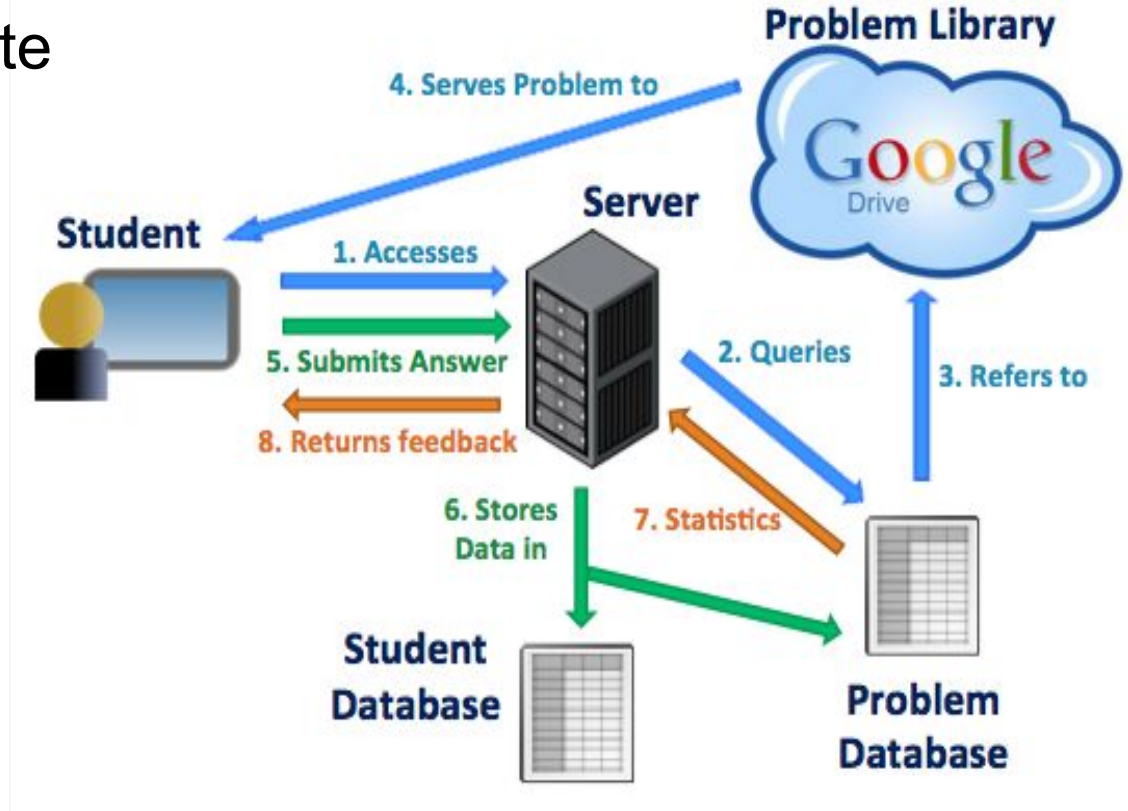


August (Gus) Evrard
Arthur F. Thurnau Professor of
Physics and Astronomy
University of Michigan
[ORCID:0000-0002-4876-956X](https://orcid.org/0000-0002-4876-956X)

Quick look at Problem Roulette

- Low-risk optional study service: *no points to lose!*
- Topical random access to past exam problems: *local content*
- Serves 8 STEM courses across 5 departments
- 3.7M problems served since 2013
- Analysis (just starting...)
 - * 0.1–0.3 grade point boost for regular users
 - * reduced gender bias relative to final grade
 - * A-students: 1-day earlier, 50% more problems than non-A

Problem Roulette schematic view



Problem Roulette: Studying Introductory Physics in the Cloud,
A. Evrard et al., American J. Physics, 83, 76 (2015)

sample problem

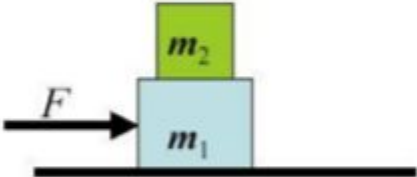
Home Show/Hide Problem URL

A B C D E Give Up

Submit or Skip

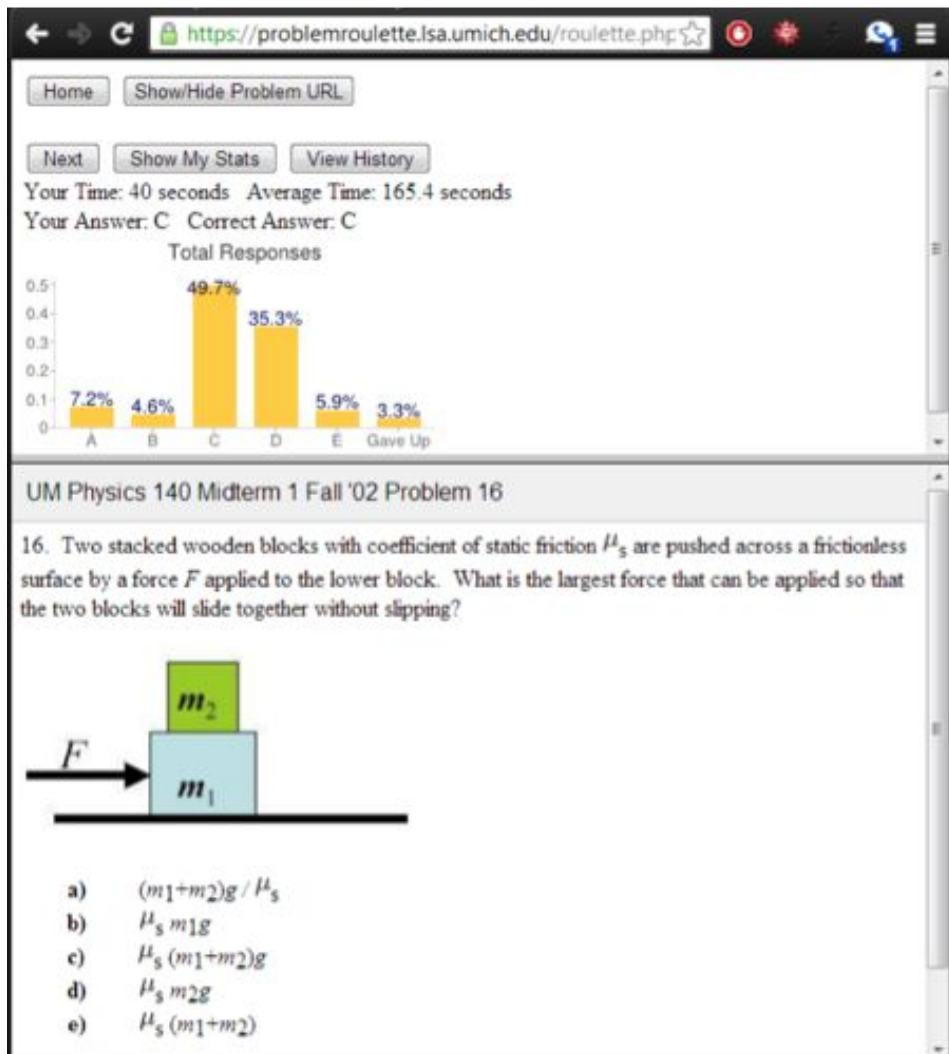
UM Physics 140 Midterm 1 Fall '02 Problem 16

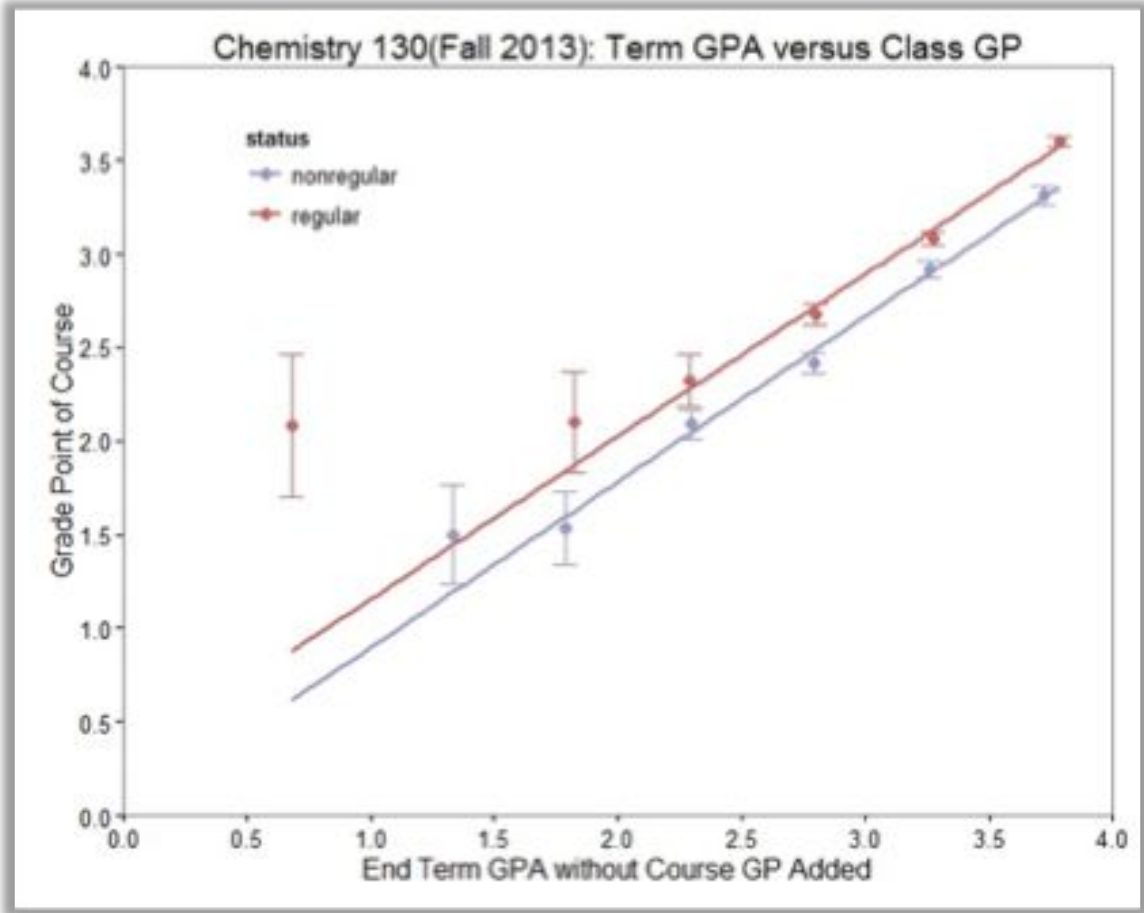
16. Two stacked wooden blocks with coefficient of static friction μ_s are pushed across a frictionless surface by a force F applied to the lower block. What is the largest force that can be applied so that the two blocks will slide together without slipping?



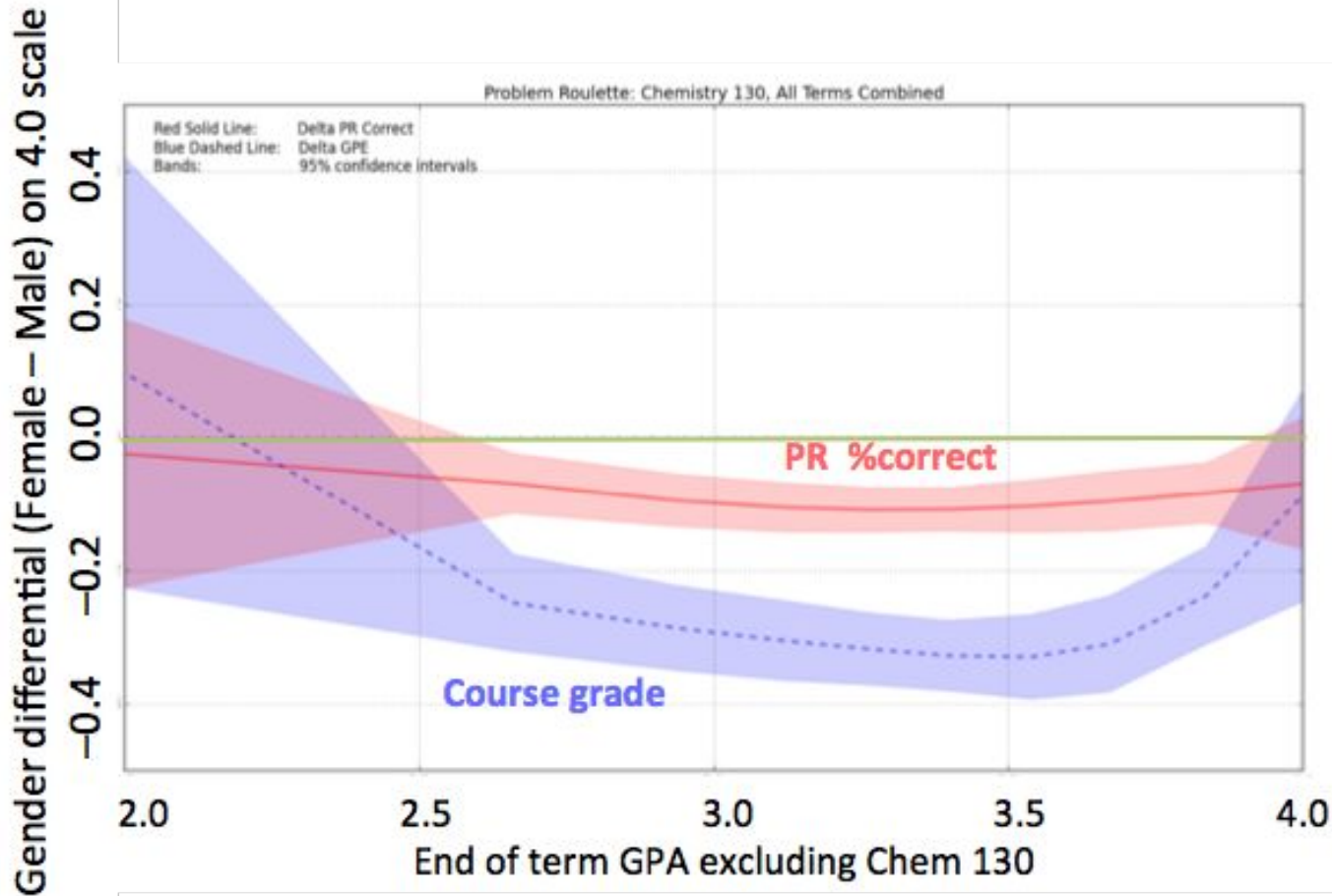
a) $(m_1+m_2)g / \mu_s$
b) $\mu_s m_1 g$
c) $\mu_s (m_1+m_2)g$
d) $\mu_s m_2 g$
e) $\mu_s (m_1+m_2)$

feedback after
answer submission





Average grade improvement
0.1 to 0.3 grade points
persistent across all intro
courses for “regular”
(> median # probs) PR users



reduced
gender bias
for PR problems
relative to final
course grade

Want to get involved?

- service extensions (e.g., problem weights based on difficulty)
- further analysis - much more to be done!

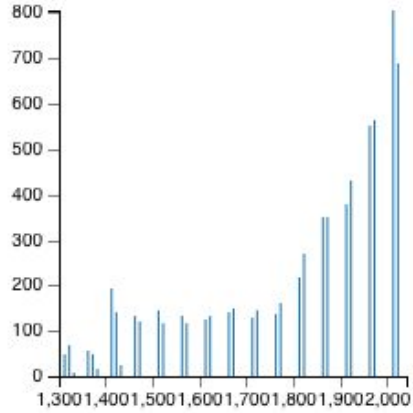
3.7 Million problems served...

ART2.0



- refactoring and major extension of Academic Reporting Tools (2006 –)
- access levels
 - 0: students (~public)
 - 1: faculty/staff
 - 2: assoc. chairs/chairs/deans
- steering committee of 14 members; 3rd Century grant (DIG, PI Tim McKay)
- **“beta” versions of level 0 and 1 to pilot this fall**
- “Pokémon-style” card deck (one card per course)
- natural extension to “Pokémon-style” instructor deck
- **opportunity: build reporting/advising services that utilize these decks**

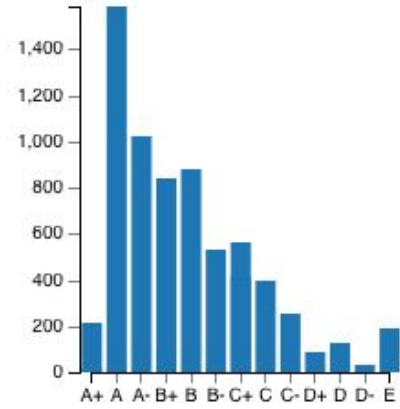
Enrollment



Terms



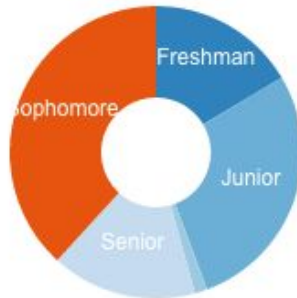
Grades



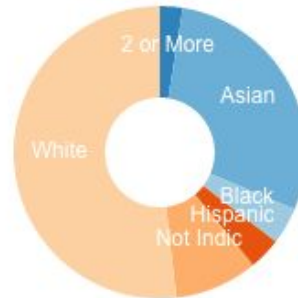
Career



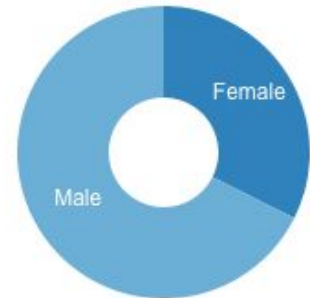
Level



Ethnicity

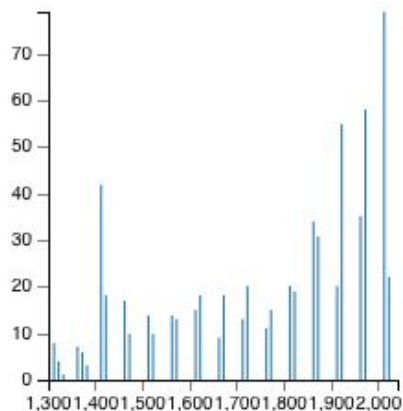


Gender



Provide Feedback

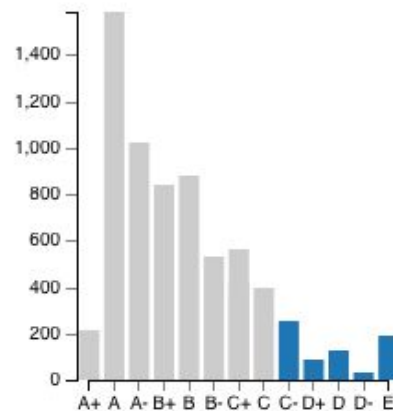
Enrollment



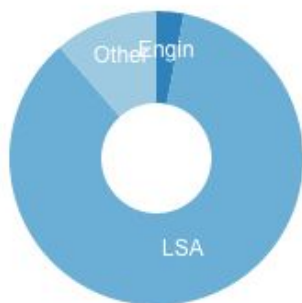
Terms



Grades (E, D-, D, D+, C-)



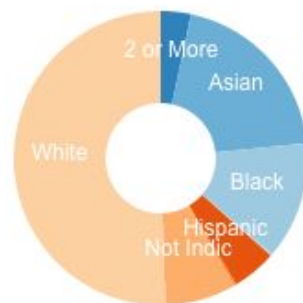
Career



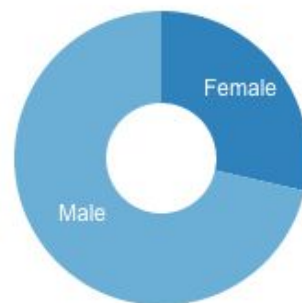
Level



Ethnicity

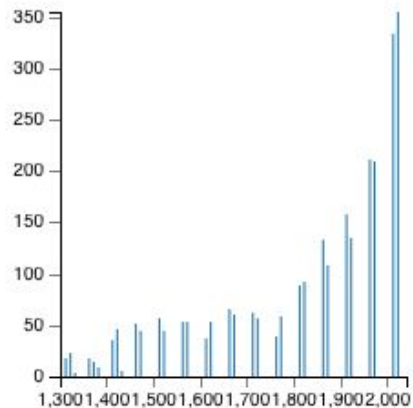


Gender



Provide Feedback

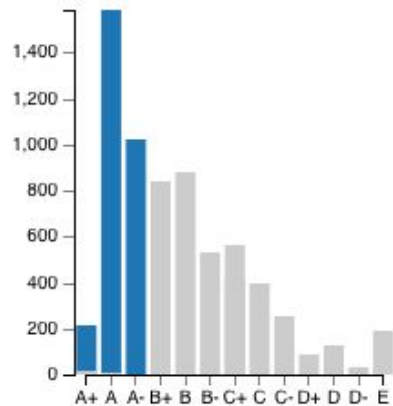
Enrollment



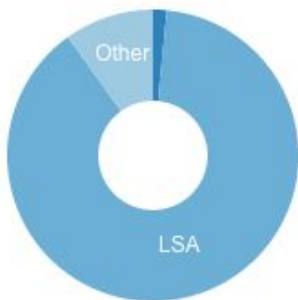
Terms



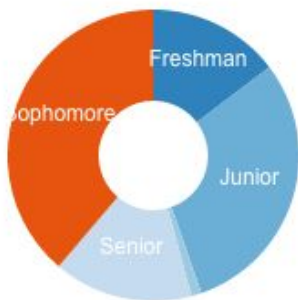
Grades (A+, A, A-)



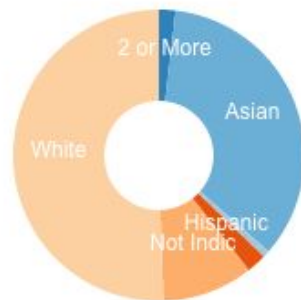
Career



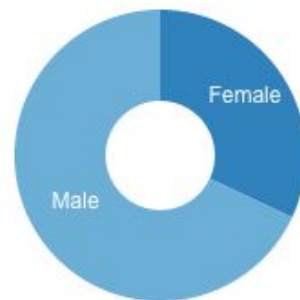
Level



Ethnicity



Gender



Provide Feedback

ART2.0



ART's purpose: to inform academic decision makers of all kinds

ism? Is it not rather our doctrine, that a free people cannot know too much, and that the more we know, the more strongly shall we lay hold upon freedom? The clearer, the more perfect the element of light, the better we shall see.

Henry P. Tappan, U-M Chancellor's Inauguration address, 21 Dec 1852

accessed via Hathitrust <http://hdl.handle.net/2027/hvd.hn59gi>