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LESSONS LEARNED FROM AN INTEGRATED CALCULUS AND PHYSICS LEARNING COMMUNITY

EMCC Learning Community

- Calculus 1 (with modifications) and University Physics 1
- Meet twice a week for 4 hours 45 minutes
- Both instructors in room whole time and switch off on instruction (and at times working together)
- Tests are given on same days at same time

Results

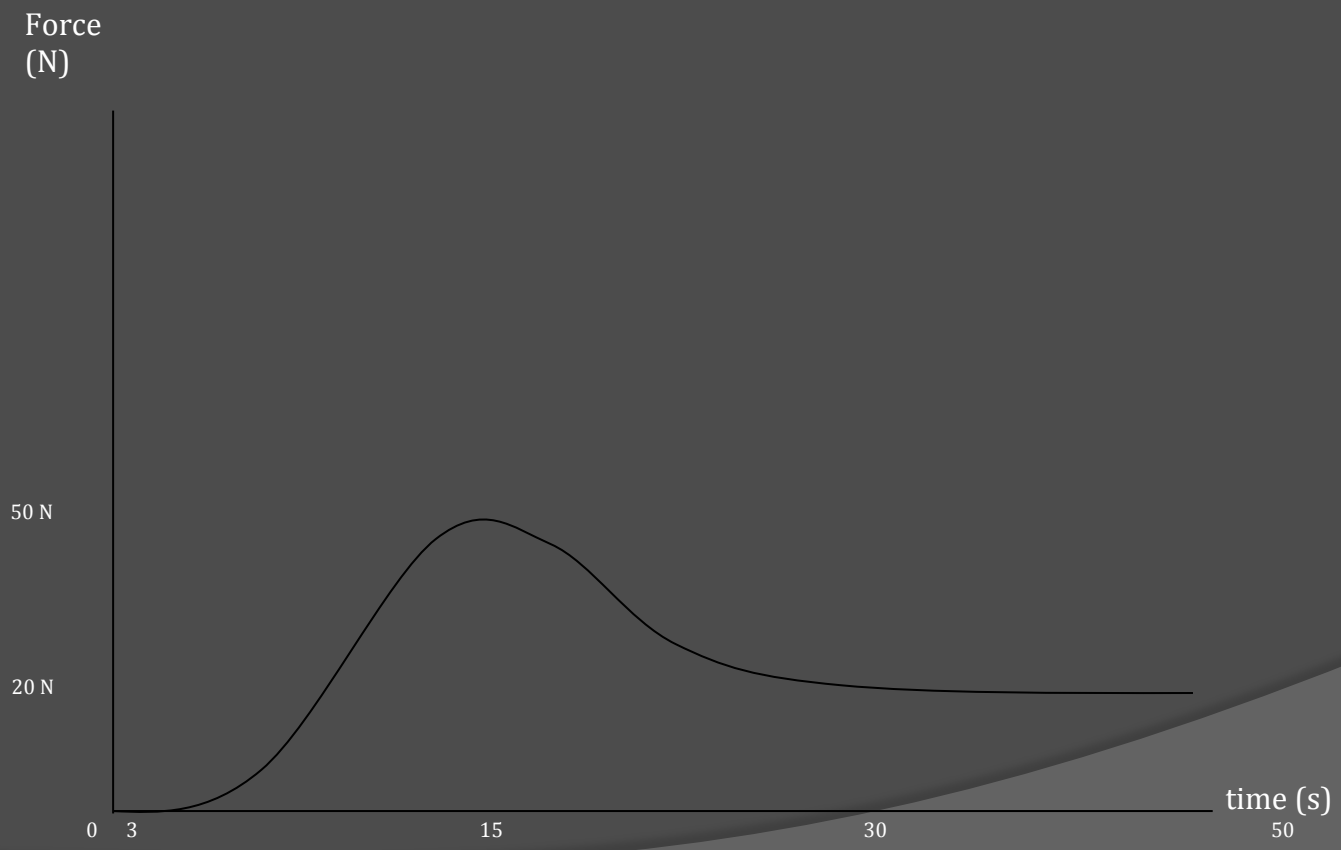
- FCI scores
- Post test average for LC classes was 22.3 (with gain of 0.7) (N=64). “Traditional” class taught by me was 21.5 (with gain of 0.64) (N=73)
- LC class exam average was 4% higher than traditional class
- For Calculus exam scores started out lower, but LC out performed normal by 25% on final.
- LC students outperform traditional students in subsequent Calculus and Physics classes (CSEM by 18%, Calculus II final 23%)

What are we doing?

- True Integration of Classes
- Derivatives and Integrals taught conceptually at start of calculus with formality added as needed/warranted
- Look for areas where topics meet each week and build on those.
- Workbook for each class aimed at complementing other class
- Consistency on language and symbolism.

Example

- Riemann Sums



Other Examples

- Slopes
- Euler method for solving DE (rocket problem with changing mass, drag and variable thrust).
- Areas under curves

Thank you

- Questions