Before We Get Started

Remember to register your attendance and complete session evaluations.

Session 209

bit.ly/ProsperSAC23

Introduction to the UIL Science Contest 2023-2024

Science Directors

- Dr. Michelle McGehee
  Biology
- Dr. Brian Anderson
  Chemistry
- Dr. David Bixler
  Physics

Purpose of UIL Exams

- to challenge students in the basic fundamental principles of science
- to promote learning in biology, chemistry, and physics
- to foster a sense of enthusiasm about advanced topics and courses in the sciences
- to help prepare students for the rigor of college level courses

The Science Contest

- Biology, Chemistry & Physics are all combined on one exam, with awards given for each subject and for overall score.
- The exam is both an individual and a team competition.
- The contest covers a broad base of knowledge, and models STEM degree requirements at most Universities.

Contest Structure

- 60 Multiple Choice Questions, which are divided into 20 of each topic Biology, Chemistry & Physics.
- Contestants are given 6 pts. for a correct answer, 0 pts. for unanswered questions, and lose 2 pts. for incorrect answers.
- The best possible answer is the correct answer.

A Few Details…

- At the state competition only, there is no limit on the number of answer choices given on a question, e.g. A through J, not just up to five answer options A through E.
- There is no restriction that numeric wrong answers must differ by ±5%
- This will allow for more realistic pH problems in chemistry and will better model actual college-level exams.

Academic Meets 2024

- Invitational Meets (practice - not governed by UIL)

  A: Jan 12-27 **B**: Feb 7-Mar 2

- District Meet : Apr 1-6
- Regional Meet: Apr 26-27
- State Meet: May 13-15

Advancement/Qualification

- Competitions are separated by division (1A-6A)
- Each HS may enter 6 contestants at their district meet, where a minimum of 3 contestants constitutes a team.
- Advances to the next level:
  - 1st, 2nd & 3rd place overall scorers
  - Top scorer in each subject area
  - Top team by combined score*
  - One alternate in each category

*second place teams are eligible for possible advancement as a wildcard team

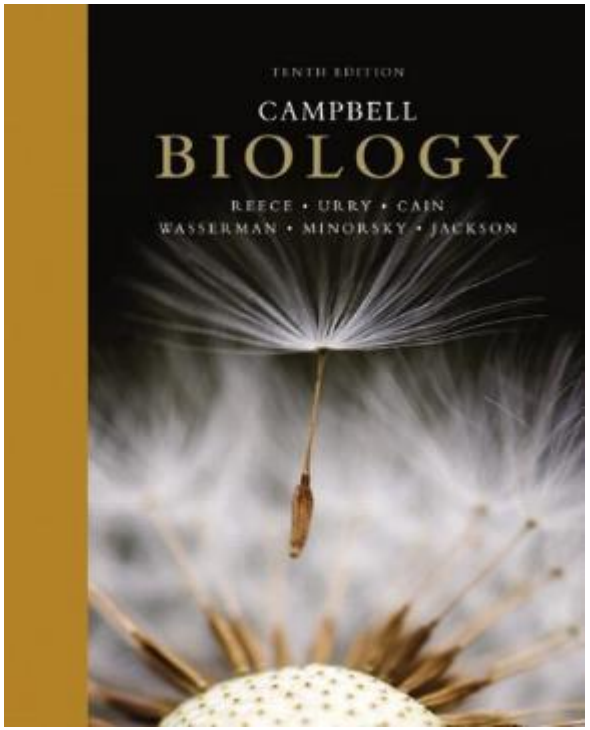
Things to keep in mind…

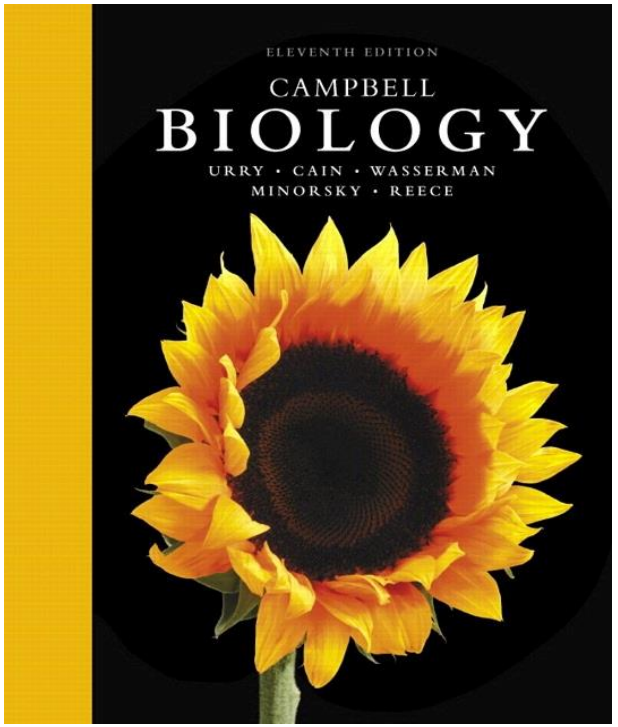
- The contest is hard!
- Top scores at the State Contest will be nearly perfect in each subject.
- There needs to be a clear cut winner and this will require a selection of hard questions on the contest.
- All schools divisions 1A – 6A compete with the same contest, but the scores are only compared with schools in the same division.
- Do not be discouraged: there are benefits for all of the effort spent in preparing for the contest…

Some Contest Rules

- Contestants have up to 2 hours, but must remain for at least 30 minutes.
- You may use additional scratch paper provided by the contest director.
- Simple Scientific Calculators
  - Casio FX-260Solar
  - Sharp EL-501X
  - TI-30Xa
  - TI-30X II or TI-30X IIs

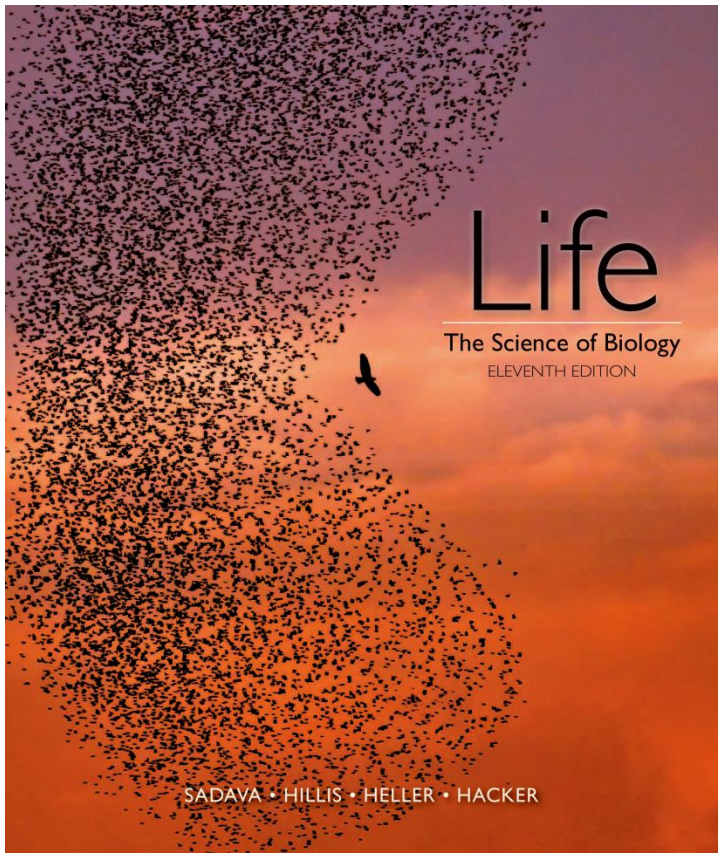
Biology Texts





Pearson's *Biology*, 10th or 11th edition, Campbell, et. al.

Biology Texts

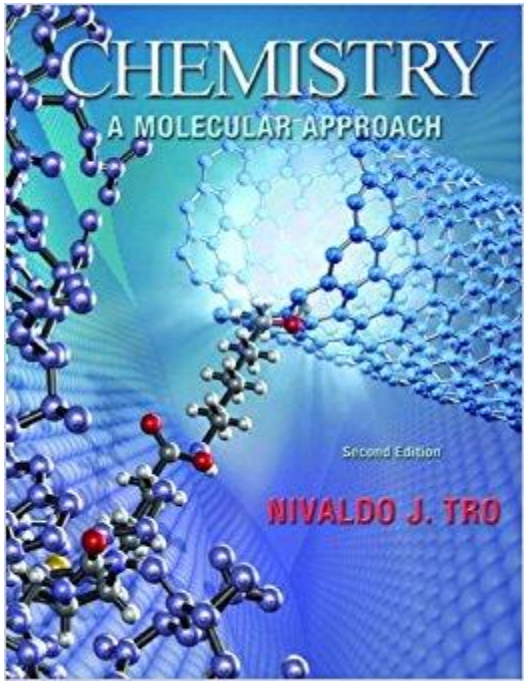


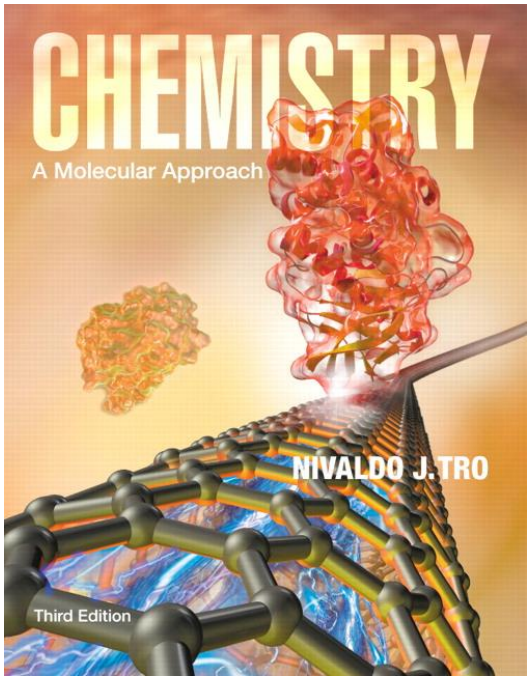
MacMillan's *Life*, 11th edition, Sadava, et. al.

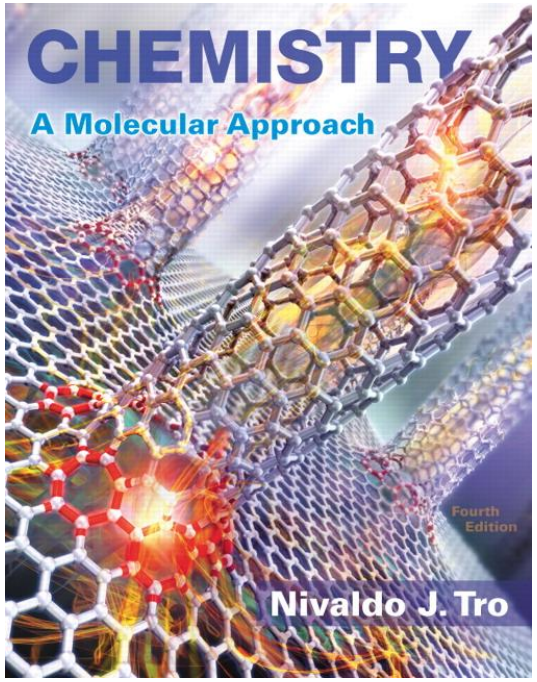
Online Biology Resources

- Learn Genetics University of Utah
  http://learn.genetics.utah.edu/
- Paul Anderson, Bozeman Science
  http://www.bozemanscience.com/about/
- Centers for Disease Control and Prevention
  https://www.cdc.gov/
- World Health Organization
  http://www.who.int/

Chemistry Texts



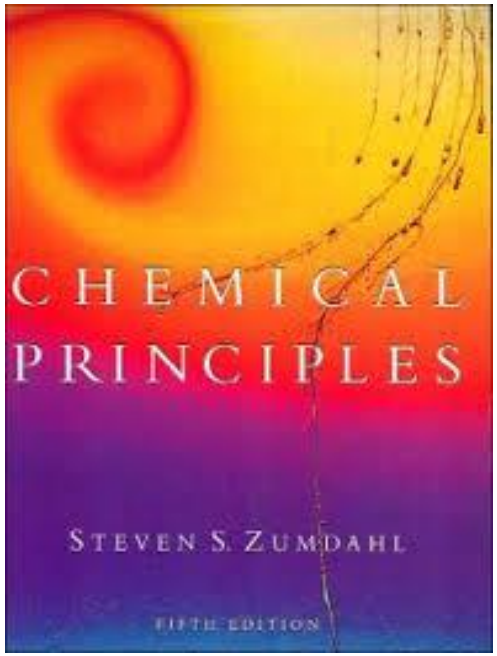


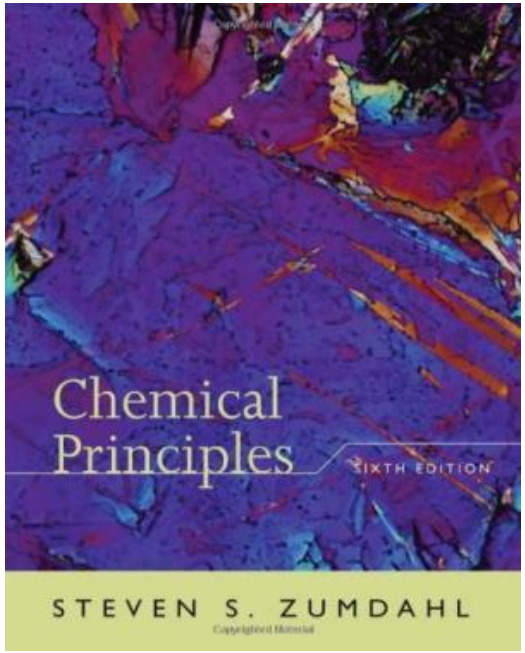


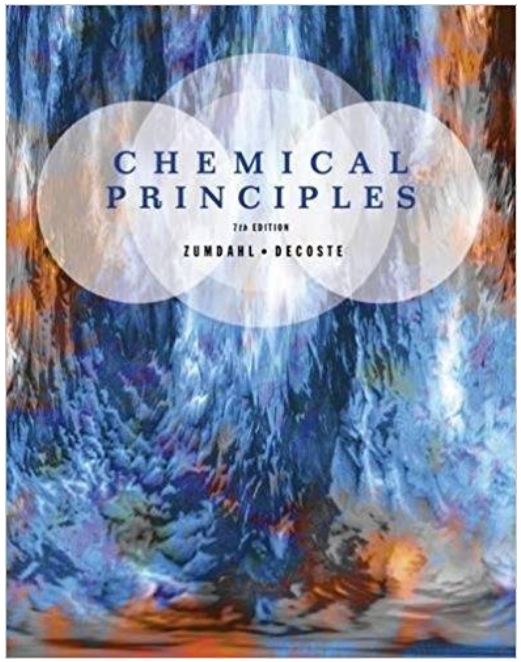
Chemistry: A Molecular Approach

by Nivaldo Tro

Chemistry Texts



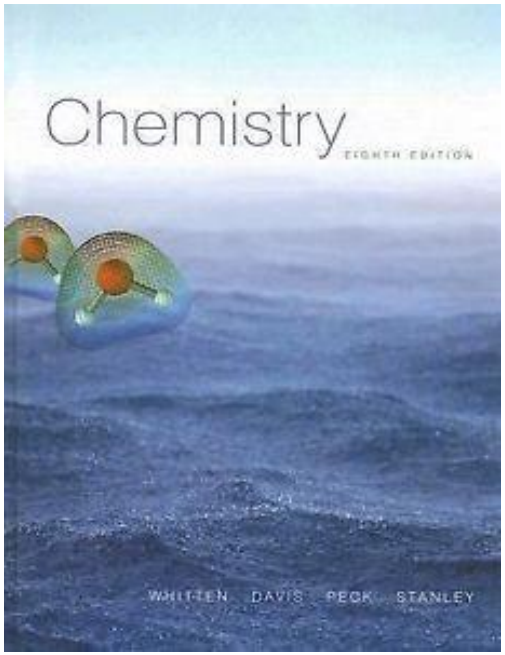


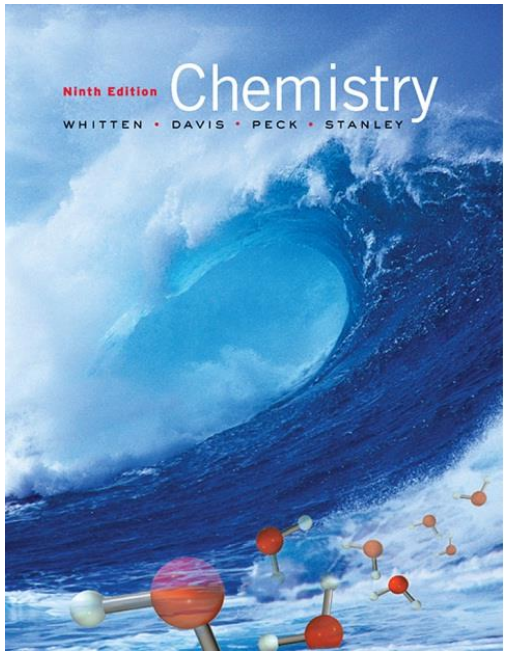


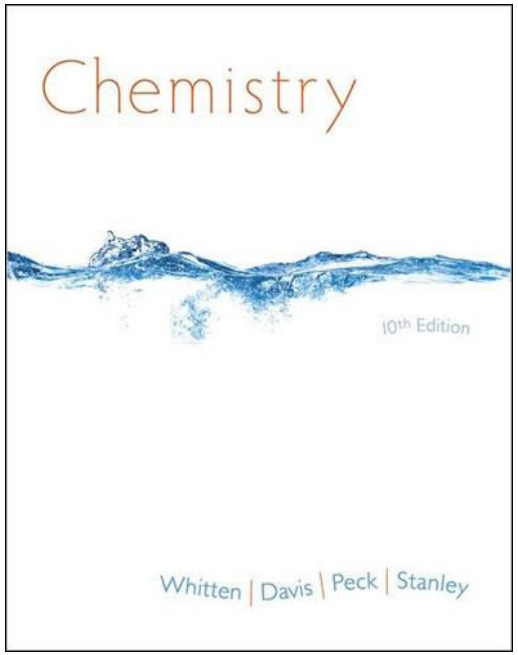
Chemical Principles

by Zumdahl (& Decoste) 5th, 6th, and 7th editions

Chemistry Texts







Chemistry

by Whitten, Davis, Peck & Stanley

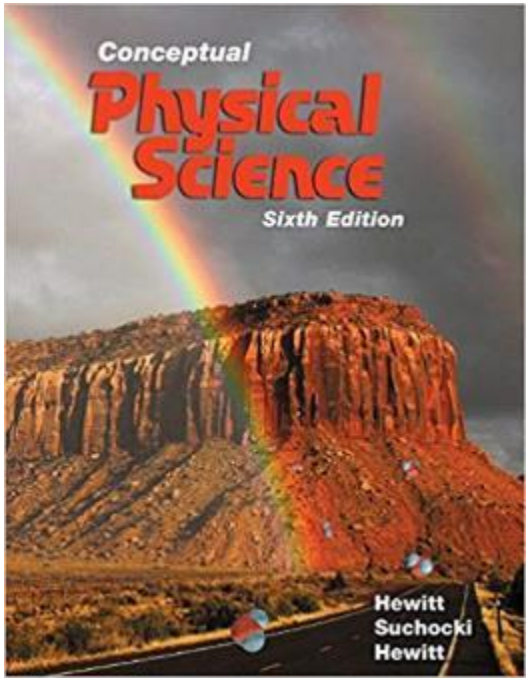
Online Chemistry Resources

University of Texas gchem site:
https://gchem.cm.utexas.edu/

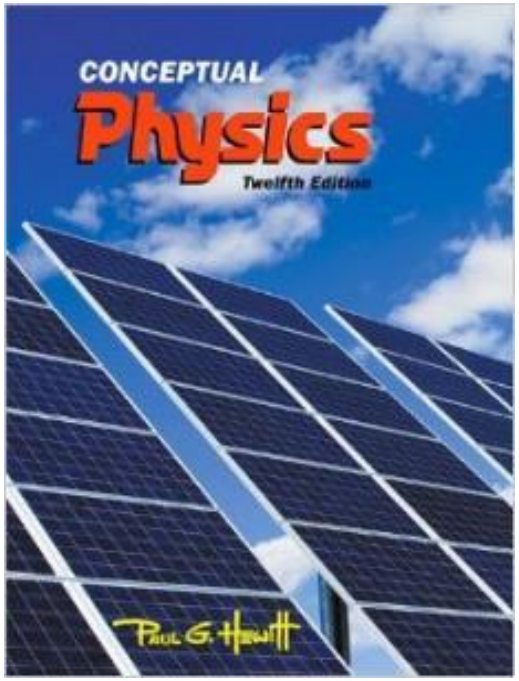
OpenStax Chemistry (Rice University)
https://openstaxcollege.org/textbooks/chemistry

Chemistry LibreTexts (UC Davis)
https://chem.libretexts.org/

Introductory Physics Texts



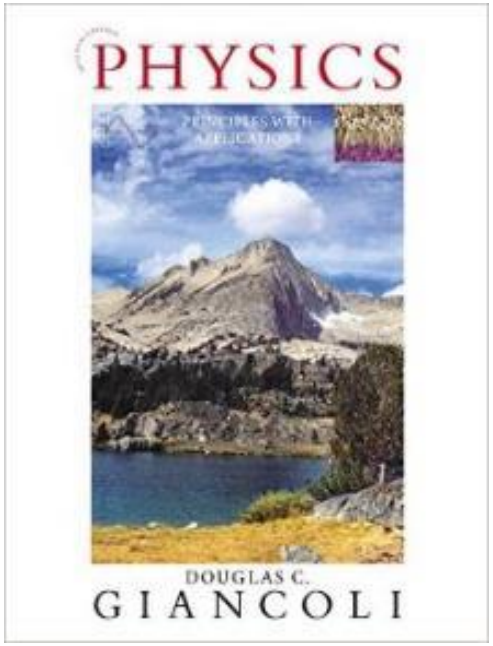
Conceptual Physical Science
by Hewitt



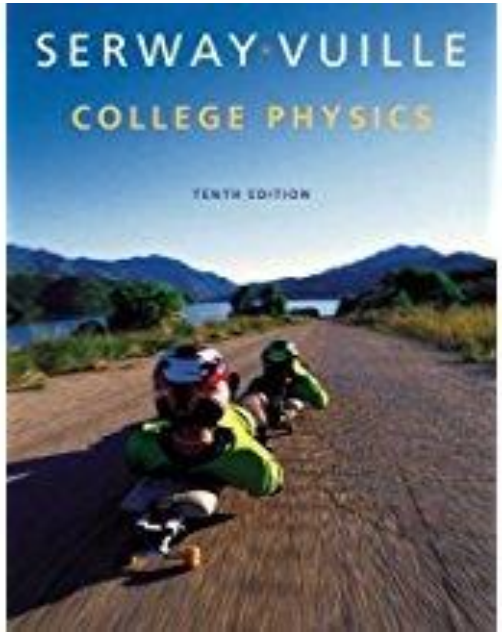
Conceptual Physics
by Hewitt

College Physics Texts

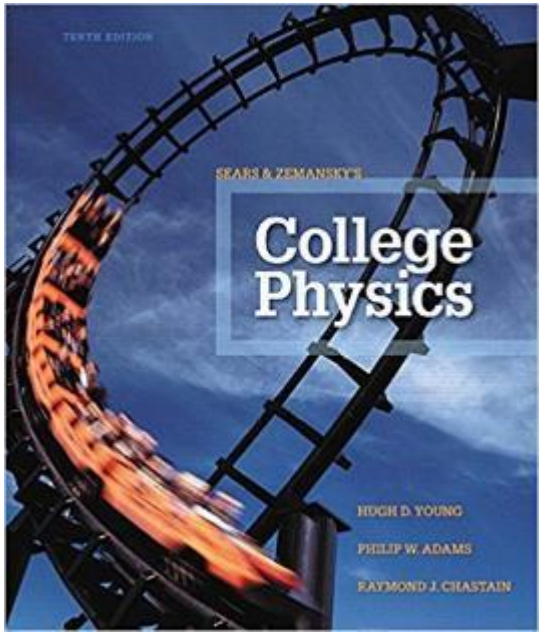
(algebra/trigonometry)



Physics
by Giancoli



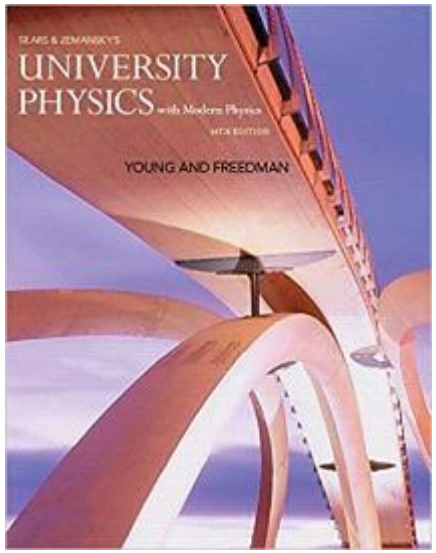
College Physics
by Serway & Vuille



College Physics
by Young

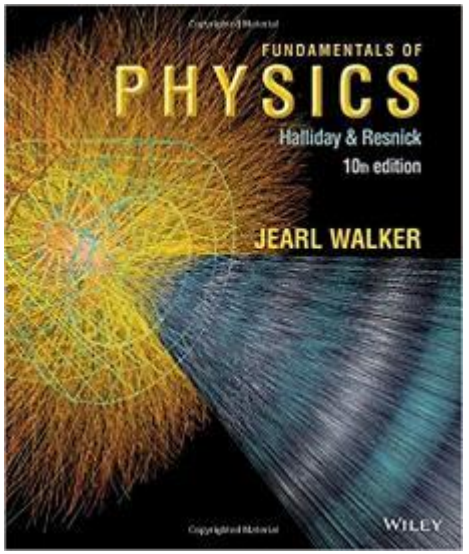
University Physics Texts

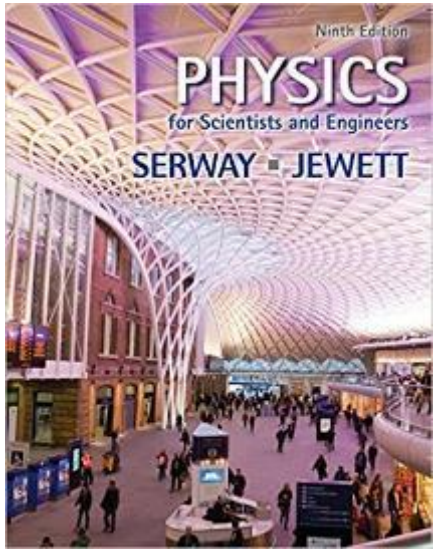
(Calculus)



University Physics
by Young and Freedman

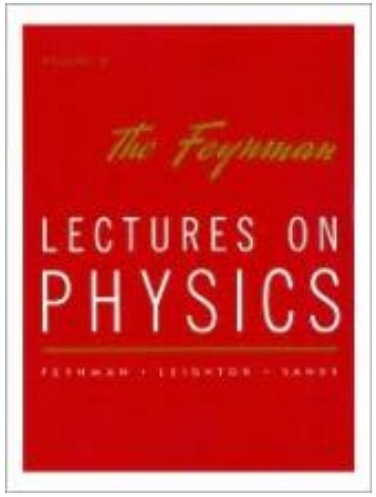
Fundamentals of Physics
by Halliday, Resnick, and Walker

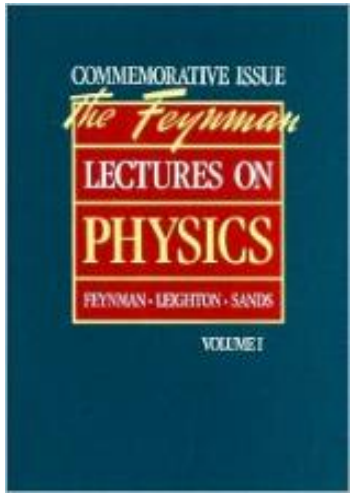


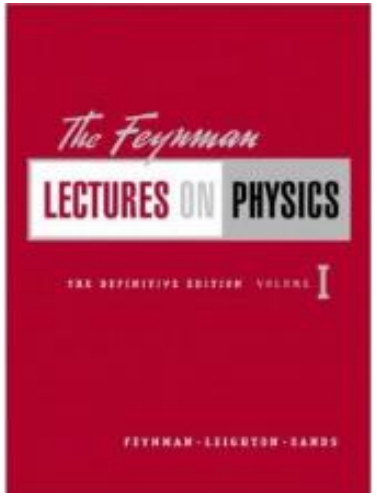


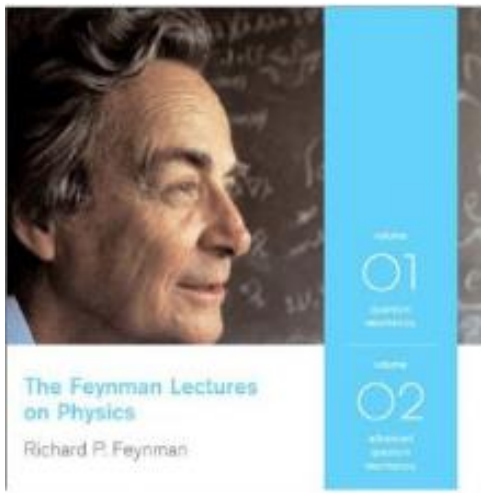
Physics for Scientists and Engineers
by Serway and Jewett

Advanced Physics Texts





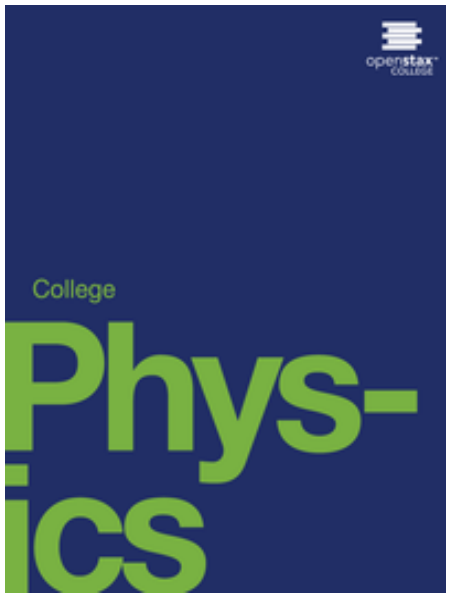




The Feynman Lectures on Physics

by Feynman, Leighton & Sands

Physics Online Resources



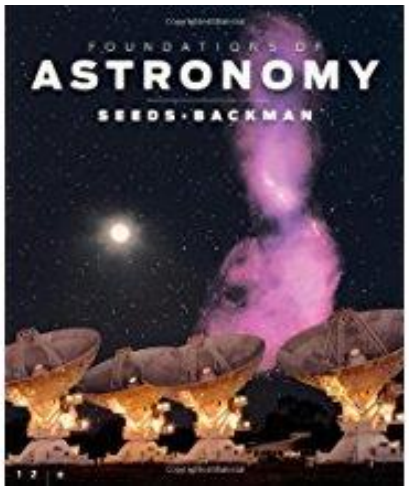
OpenStax Physics Text

https://openstaxcollege.org/textbooks/college-physics

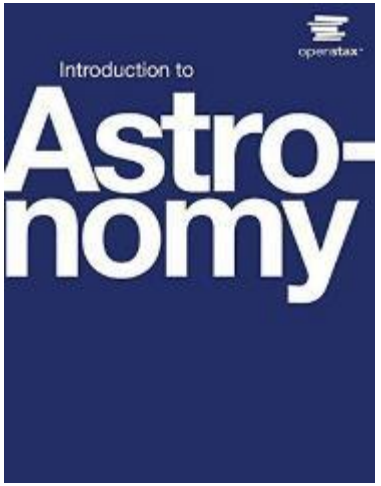
ComPadre Physlet Physics:
http://www.compadre.org/physlets/

ComPadre Interactive Video Vignettes:
http://www.compadre.org/ivv/

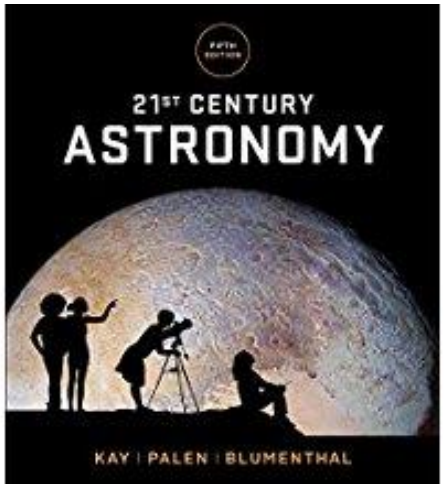
Astronomy Texts



Foundations of Astronomy by Seeds and Backman



Openstax Astronomy



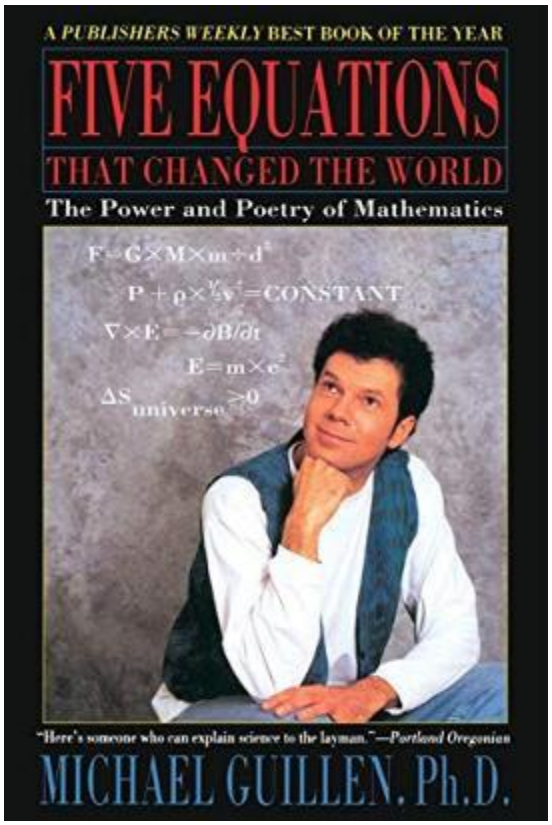
21st Century Astronomy by Kay and Palen

Physics Directed Study Text

Five Equations that Changed the World

By

Michael Guillen



Not in C&CR, but is posted on UIL site.

FAQs on Textbooks

- Do I need to get these exact texts?
- Does it need to be the same edition?
- Does the text matter?
- What about other texts?
- Options:
  - Half-price books / Online book sellers
  - Interlibrary loan
  - Google “Free _____ textbook”

UIL Online Resources

- http://www.uiltexas.org/academics
  - UIL Academics home page

- go to STEM > SCIENCE
  - Information from the Contest Directors will be posted here.
  - The new Physics directed study information is posted here.

Some Contest Strategies

- Watch units!
- Make diagrams with labels
- Look for order of magnitude answers
- Work backwards
- Problem identification…

  Quick/Easy, Moderate or Hard

- Use these identifiers to work on speed
- Recognize when to skip or when to come back later

Coaches/Team Suggestions

- Goal setting for student morale is very, very important!
- Have students solve old contests UIL or TMSCA exams & help out other students.
- Practice contests as posted on UIL invitational meet site or attend TMSCA contests.
- If possible coordinate with other teachers to arrange for help when needed.
- Positive reinforcement & food are good motivators.


Any
Questions