What to Teach (what not to teach….)

- Thanks to Lisa Carosi

There is clearly too much material to effectively cover in 24-30 weeks of classes, so what to leave out?

- As much radical chemistry as possible; halogenation of methane, allylic/benzylic halogenation
  – Teach earlier, as the only real reaction of alkanes.

- Is it possible to teach the entire course only using the concept of Lewis acids and Lewis bases?

- Duplication of reagents. Offer the one or two most common/important reductants or oxidants, and call it good at that - leave the rest for an upper division course.

- Outdated, irrelevant, arcane chemistry.

- Generic examples leading to fewer examples, show imine formation in detail, the introduce oximes, hydrazones, etc. Try to initiate choices based on real life examples. Clearly many will memorize all 5 or six as individual mechanisms without seeing the connection, while the others will make the analogy for the detailed example.

- Try to focus on unifying concepts tying it together for students, either mechanistic or MO or both
  – Based on the premise that too many complex concepts intertwined by defeat the purpose.
  – Fundaments are essential and shouldn't be compromised to cover more material.

Don't teach how memorize teach how to think.
 – If they are taught to think, then the topic matters less.

Don't repeat what's in the text, but rather supplement this with other examples.
 – but mixed response, i.e., does it work?

Don't forget the passion. Examples that tie into real life you ones own research; so they can make the connection.

What's important, based on composition of final exam

By and large, problem solving is the main focus.

Synthesis
Mechanisms
Reactions
Spectroscopy

Road map problems, A goes to B goes to C, etc.
Single concepts questions, multiple choice, etc.

Challenge questions. An acknowledged difficult question directed at ONLY the top10-15%.

Nomenclature - teaching for the MCAT????
Important to learn the system or a systematic approach?

Things not really mentioned, interesting?

molecular orbitals, conformational analysis, chirality, aromaticity, kinetics/thermodynamics, resonance

Important for students to know early on that everything is an approximation, a collection of models/theories, some simple, some complex, many don't work all the time, many seem to contradict

What to do about biology?

Common opinion that biochemists will only compress chemistry into a nice neat box, minimizing fundamentals and only memorizing as much as possible.

Thus, Biochemistry should be taught by chemists - we should be teaching three terms of intro chemistry. But we can't, so what to do?

Integrate it into main lecture, earlier chapters, when appropriate based on functional group association: cholesterol is an alcohol, peptides are amides, fats are alkanes, etc.

Don't pander to them