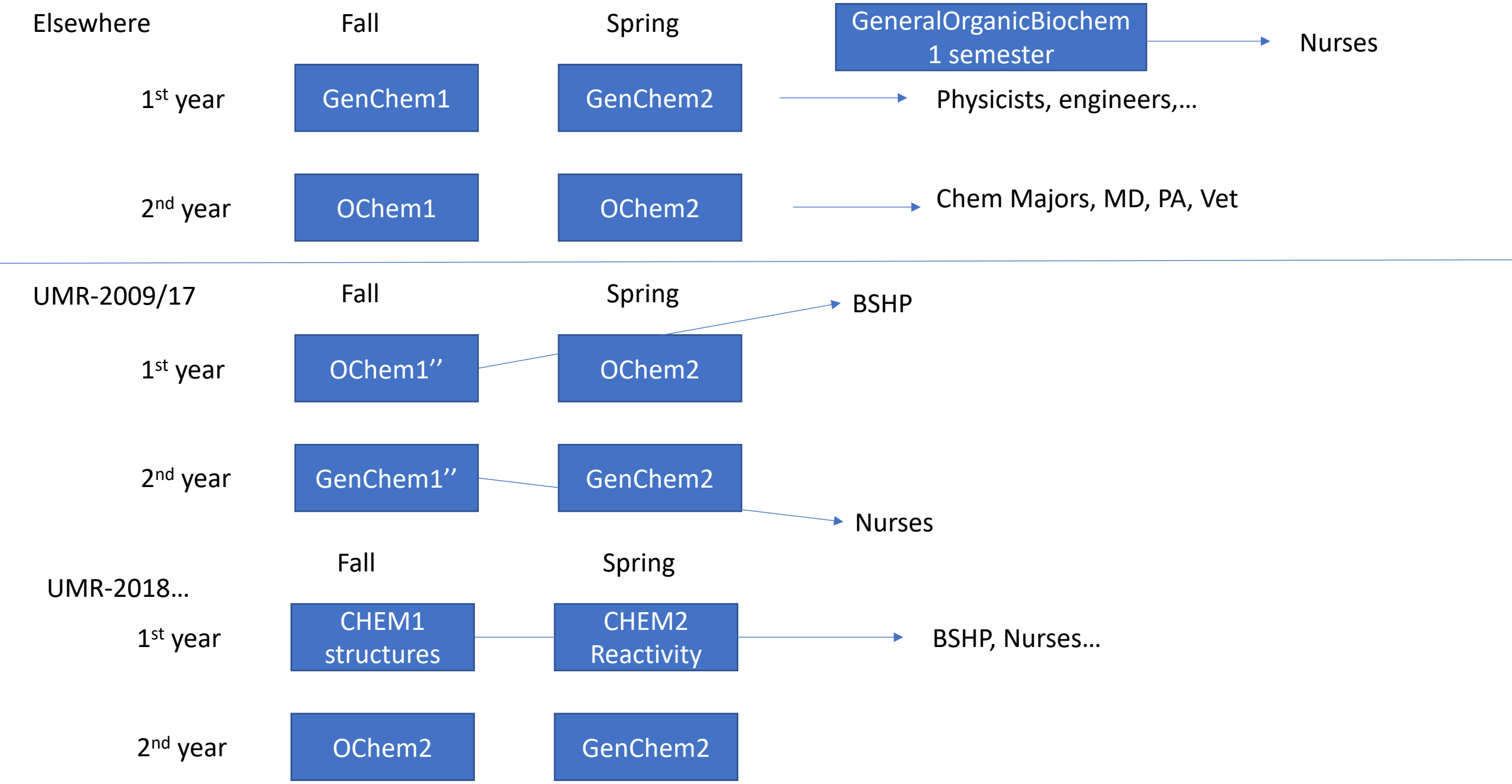
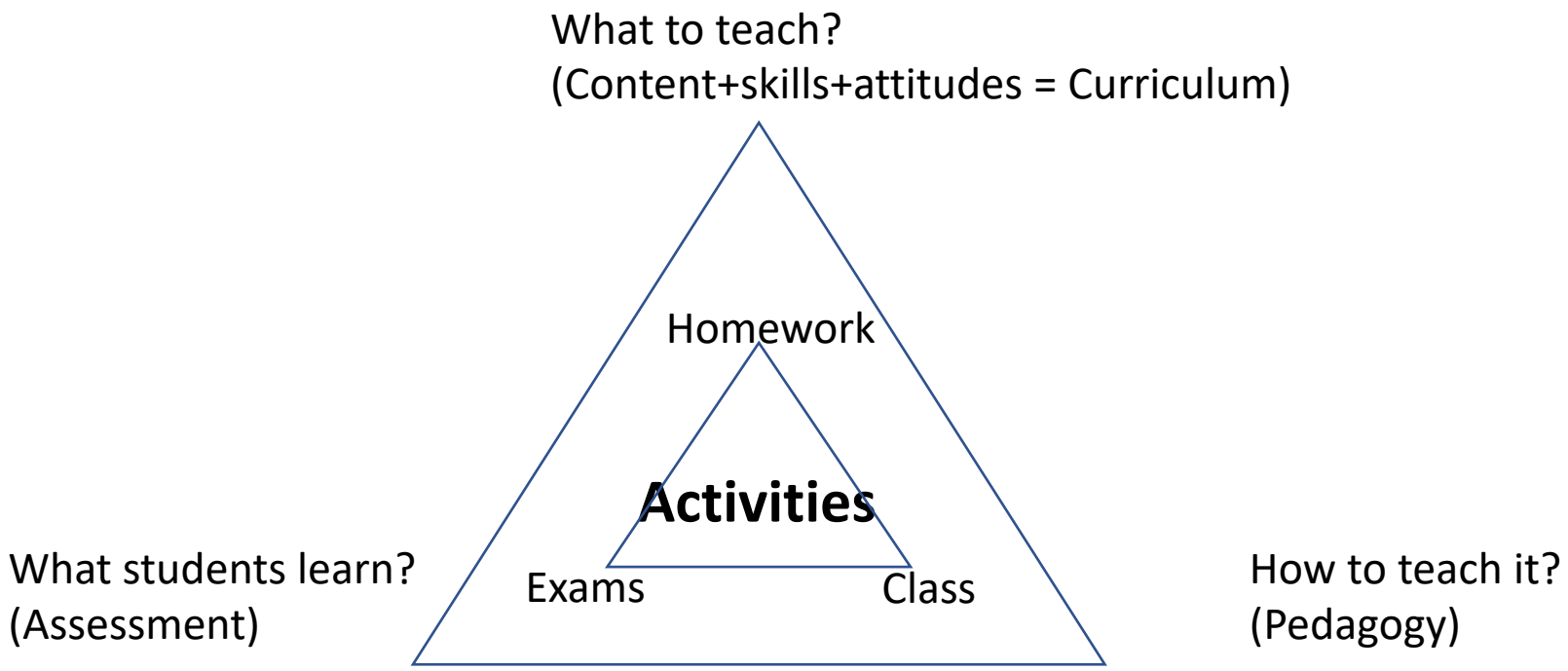
Implementation of the New Chemistry Curriculum

…looking for ways to identify interventions that “work”

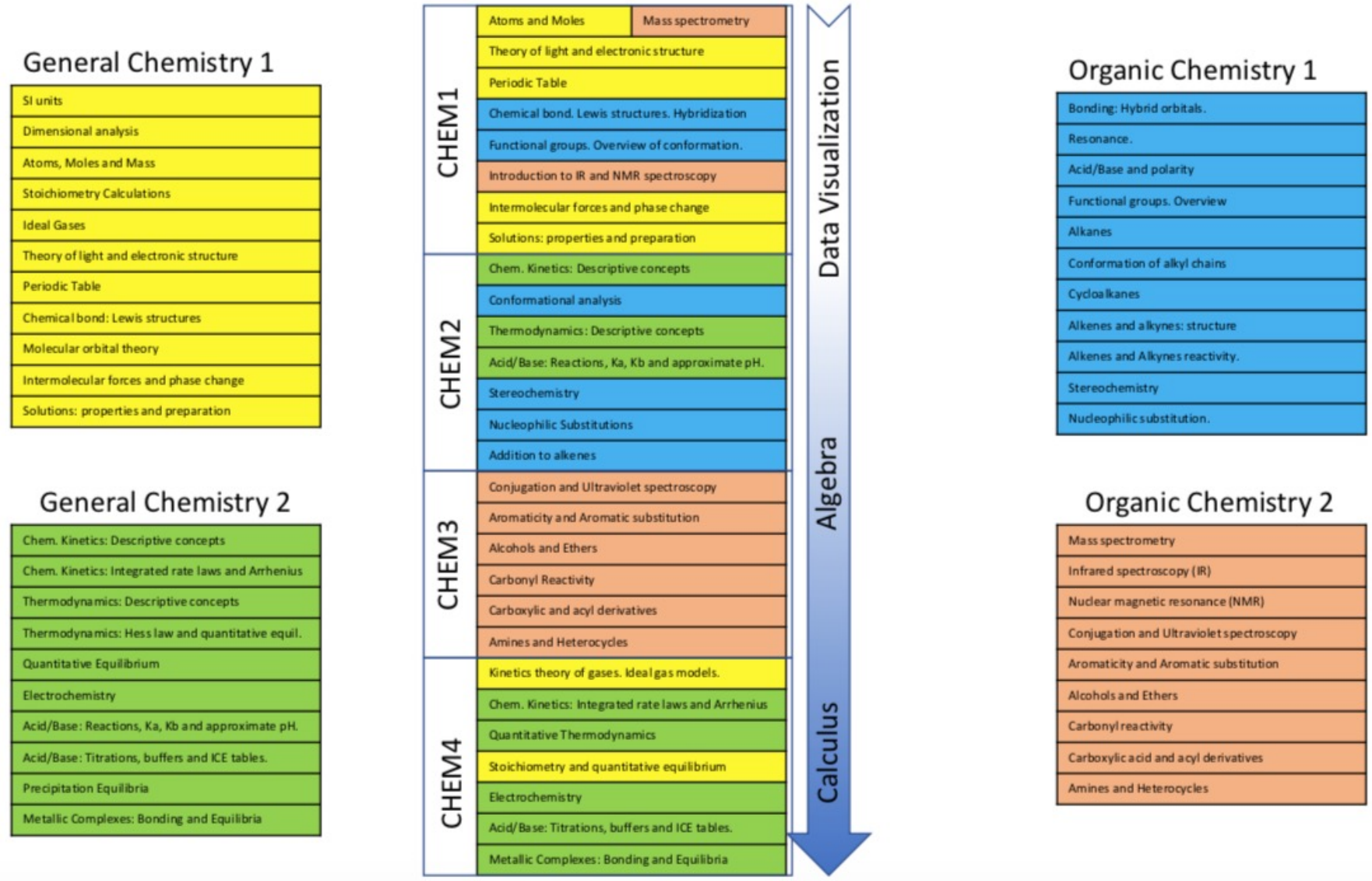

Elsewhere
Fall
Spring
GeneralOrganicBiochem
1 semester
Nurses
1st year
GenChem1
GenChem2
Physicists, engineers,…
2nd year
OChem1
OChem2
Chem Majors, MD, PA, Vet
UMR-2009/17
Fall
Spring
BSHP
1st year
OChem1''
OChem2
2nd year
GenChem1''
GenChem2
Nurses
UMR-2018…
Fall
Spring
1st year
CHEM1
structures
CHEM2
Reactivity
BSHP, Nurses…
2nd year
OChem2
GenChem2

The triangles of curriculum design



The big changes: The sequence

- https://sites.google.com/r.umn.edu/chemistry-at-umr



Implemented Interventions

- High Impact Practices (active learning et al)
  - Preclass:
    - Homemade videos
    - Submit a picture of preclass answers as attendance – write them on paper (emphasis on paper)
    - Analytics on watching videos – who's engaged?
  - During class: accountability vs comfortable environment
    - They are not assessed during class. (Low stakes)
    - But I give them a paper copy of activities so that it is easier to be engaged
    - We solve them together / some accountability - Table lottery
  - After class:
    - Weekly homework. The same questions as in the milestone
- The Grading: Specifications grading – The A/C/F scale
  - Laboratory
  - Preclass + Attendance
  - Milestones
- Splitting examinations between Milestones (low-level, memorize questions) and Science practices (high-level, open ended problems)
- Curriculum Sequence – The content
  - Postponing the quantitative thinking and focusing on the Drawing-Representing-Explaining

Assessment?

- Are students learning the same as elsewhere?
  - ACS exams: nation wide accepted tool for majoring in chemistry. It would tell us that at least we are not damaging and
- Identifying what works
  - Will the new sequence help make connections?
  - Will milestones help them retain basic topics?
  - Is watching videos related to performance?

How is grade calculated

- Written exams: 3 semester (20%) + 1 final exam (10%)
  - Drop the lowest score during the semester
- Milestones 30% graded on A/C/F scale
  - Three attempts
- Attendance 10% graded on A/C/F scale
- Laboratory 20%
- Online Homework – every Thursday
  - 5 attempts – Drop the lowest score