Discrete Structures Courses

The Current Schedule

- We offer two Discrete Structures courses in first year, CIS*1910 and CIS*2910.
- The Computer Science majors are required to take both courses.
- The Software Engineering students take only the first course.
- The first course, CIS*1910, is used as a prerequisite for later courses in the B.Comp. The second course, CIS*2910, is not used as a prerequisite for any CIS courses.

History

- We initially offered a single first year discrete structures course.
- When the second discrete structures course was added there was a suggestion to make it a third year course.
- The School has previously considered the option of returning to a single, first year, Discrete Structures course. This included the creation of a third or fourth year Discrete Math and Theory elective course. This proposal was not approved.

The Current Situation

- The SOE is developing a plan for a summer academic semester but they are running into scheduling issues with CIS*2910.

- We already allow the CENG students to take an engineering course in place of CIS*1910. They requested that the SOCS Curriculum Committee consider another engineering course as a substitute for CIS*2910. The SOCS Curriculum Committee did not believe the proposed course was a suitable replacement for CIS*2910.

- The Associate Dean Academic has asked if we can consider the idea of a single Discrete Structures course in first year.

- Although this was initiated by the Associate Dean it provides an opportunity for the School.

Benefits to B.Comp. Students

- A single first year Discrete Structures course would mean that all B.Comp. students would be required to take the same material and would be equally prepared for later courses. The SENG students do not currently take CIS*2910. As a result, CIS*2910 cannot easily be used as a prerequisite for any later courses as it would limit the options for the SENG students.

- The teaching task that is currently allocated to CIS*2910 could be used to create a new senior course. The third and fourth year courses are currently very full so another senior course would relieve some pressure on existing courses and provide more options for our students.

- The new senior course could be used to engage students with the material and to encourage them to consider pursuing graduate studies.

- It isn't clear that the students need more discrete mathematics in first year. They may be doing more rote learning that actually understanding the material. Presenting it at a more senior level could be more appropriate.

Problems with this Idea

- Students are not entering the program with a strong mathematics preparation. This will not help.

What the ACM Suggest

- There are three documents which describe the curriculum which the ACM recommends (2001, 2008, 2013).

- They describe options with both a single and two first year discrete structures courses. Examples of courses have between 30 and 40 contact hours. (2001)

- In some cases they include digital logic and digital systems as part of this material. (2001)

- It isn’t unusual for some more senior courses such as data structures, and algorithm analysis to introduce more advanced material involving discrete structures.

What the ACM Suggests

From the 2013 Curriculum Guidelines for Undergraduate Programs in Computer Science. Topic and contact hours.

Sets, Relations, and Functions	4
Basic Logic	9
Proof Techniques	10
Basics of Counting	5
Graphs and Trees	3
Discrete Probability	6

Motion: Delete CIS*2910 from the curriculum and replace it with a senior Math/Theory course.