**Spring 2022**

**Title of the Elective Course:**Computing and data science for soft materials innovation & discovery

**Co-Instructors**: Arthi Jayaraman (CHEG) & Sunita Chandrasekaran (CIS)

**Credits -**3 credits

**When -**  Monday and Wednesday 3:35PM - 4:50PM

**Crosslisted Course number -** CHEG 867-015 and CIS 869

**CIS Pre-reqs:**Graduate students should have completed at least 4 breadth courses (look under Degree Requirements, Part B)

<https://www.cis.udel.edu/academics/graduate-programs/master-of-science-in-computer-science/>

**CHEG Pre-reqs:**Graduate students should have completed the core chemical engineering graduate courses

**Max enrollment total** 20 graduate students.

Individual max limit **10 for CHEG and 10 for CIS**

Interested graduate students from MSEG and BME can enroll in the CHEG course number and interested graduate students from ECE can enroll in CIS course number

We choose this approach because we need an equal split of students with materials background and students with computing/data science background.

**Course Description**

This elective course will involve graduate students working together in teams to solve (over the semester) soft materials (MAT) problems submitted by academic labs, industry, and national laboratories using high-performance computing (HPC) and/or data science (DS) tools. Researchers in industry and national lab partners who will provide such MAT problems will also serve as mentors to the teams during this hackathon course.

This course will be co-instructed by the two (or more) faculty members who have convergent research expertise. Each MAT problem will be tackled by a team of 3-4 students potentially with 1 from HPC background, 1 from DS, and 1 from MAT. This team composition will force the students to learn to communicate with researchers outside of their primary expertise. The  co-instructors and industrial/national lab partners mentors will guide the teams through teamwork, collaboration, and oral & written communication exercises.

Course outcome:  The trainees and enrolled students will a) develop and sharpen their technical skills in MAT, HPC and/or DS applied towards practical problem solving; b) learn to communicate across research expertise; and c) develop strong interpersonal negotiation, teamwork, and collaborative skills.

**Textbook:** Course notes

**Final Exam :**Presentation form not a written exam.