Indiana University I590-FALL 2017
Drug Discovery, Health and Translational Medicine (DSDHT)
Visiting Associate Professor Joanne S. Luciano
With Jeremy Yang and John Wolohan

Background: Data Science and the Healthcare Ecosystem (Background)

- Week 1 (Aug 21) Module 1: Course Overview, Data Science Concepts
- Week 2 (Aug 28) Module 2: Healthcare Part 1: Ecosystem, Data
- Week 3 (Sept 4) Module 3: Healthcare Part 2: Metadata, Ontologies
- Week 4 (Sept 11) Module 4: Health Web Science: The role of the Web in healthcare and 21st Century Medicine

Science Applications in Drug Discovery
Q1: How can data science help researchers find new drugs and reuse old ones?

- Week 5 (Sept 18) Module 5: Q1-1 The Drug Discovery Process: History, epochs and paradigms of drug discovery
- Week 6 (Sept 25) Module 6: Q1-2 Bioinformatics: genomics, proteomics, the Central Dogma, the Human Genome Project and its offspring
- Week 7 (Oct 2) Module 7: Q1-3 Bioinformatics: medicine as a molecular information science
- Week 8 (Oct 9) Module 8: Q1-4 Cheminformatics: molecular graphs and databases, the vastness of chemical space, the search for new drugs, a high dimensionality challenge

Data Science Applications in Medicine
How can data science help doctors and clinicians treat patients better?

- Week 9 (Oct 16) Module 9: Q2-1 Electronic Medical Records, Clinical Trials, Precision Medicine
- Week 10 (Oct 23) Module 10: Q2-2 Apps for Doctors, Nurses, Clinicians
- Week 11 (Oct 30) Module 11: Q2-3 Clinician Perspective (Grant Cumming), Government (TBD), Public Health (TBD)

Data Science Applications in Personal Health
And how can data science help us all lead healthier lives?

- Week 12 (Nov 6) Module 12: Q3-1 Patient Focused. (Quantified Self, Electronic Diaries, Your Medical Mind)
- Week 13 (Nov 13) Module 13: Q3-2 Crowdsourcing, online communities, ePatients, patient advocates
  -- NO CLASS (Nov 19-26) *Thanksgiving Holiday* --
- Week 14 (Nov 27) Module 14: Q3-3 Patient Perspective (Grant Cumming) Personal Genomics

Virtual Poster Session – Student Showcase and Course Wrap-up
- Week 15 (Dec 4) Module 15: Virtual Poster Session (presentation of student projects)

30 March 2017