

FIRE151 - Sustainability Analytics

Description of course revisions for Chesapeake Project

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I teach FIRE151 – Sustainability Analytics each spring semester. Sustainability Analytics is one of the original research streams from the university’s First-Year Innovation and Research Experience (FIRE). Students participating in the FIRE program earn degree credit while being immersed in an authentic research experience and developing skills necessary to thrive in an academic environment. After an introductory class in the fall semester (FIRE120), students are sorted into different streams based on their interests. Students then complete two additional semesters of coursework with this stream. In Sustainability Analytics, our research pertains to sustainable fisheries management, household adoption of energy efficient appliances, and fuel efficiency and vehicular use, and our work is done with the support of multiple faculty members from the department of Agricultural and Resource Economics.

Whereas Sustainability Analytics’ fall course (FIRE251) represents a continuation of research efforts from the spring course (FIRE151), the spring course introduces each of the research topics to students before they are assigned to a particular research project. Students first familiarize themselves with each research topic by reading relevant research papers and completing training modules to become proficient in data analytics. During my participation in the Chesapeake Project, I sought new ways to incorporate more sustainability-related material into the course to better motivate our research agenda and keep students engaged throughout the semester. I have identified several changes that I will implement next year.

First, the materials I provide for training purposes have been updated to better incorporate sustainability topics. Because a significant portion of stream research pertains to fisheries, I have decided to establish a training module on the Tragedy of the Commons and include a multiplayer game to better motivate the topic, engage students, and introduce them to the Sustainability Analytics computer lab. MIT’s Fishbanks has been identified as one possible tool and will be tested in the fall for its educational merit and ease of use, though an alternate tragedy of the commons game can be secured if necessary.

Students in Sustainability Analytics gain firsthand experience managing and analyzing data. Currently, students are exposed to data work by completing modules that describe the organization of data as well as analytical methods. Previously, students’ first data-related assignment focused on energy use from publicly available data sets from the Energy Information Administration. In the future, students will instead prepare a joint data set by calculating their commuter carbon footprints and then analyzing the aggregated data set by generating multiple graphs to explore the data. This change to the course content will also serve to keep the Sustainability Analytics research stream active in the Green Office Program. Our computer lab and office recently opted to participate in the program, and we intend to maintain our certification status by tracking and managing our collective commuter carbon footprint.

The final change I have decided to institute is the addition of a “Sustainable Events” assignment to the graded course content. To satisfy this requirement students will attend an

outside talk that pertains to sustainability in some meaningful way, then submit a write up summarizing what they learned from the event. Students will be provided with a list of pre-approved events that they can choose from, but they may also attend any event for credit with prior approval. Candidate events will likely come from the university's Sustainable Tuesday lecture series, as well as research seminars from departments in the College of Agriculture and Natural Resources. The "Sustainable Events" assignment should help better motivate students by exposing them to additional sustainable research topics, furthering their understanding of how research is communicated, and helping them realize the extent of sustainable research done on and near campus.

Attached is an updated syllabus for FIRE151 - Sustainability Analytics, with changes attributable to the Chesapeake Project highlighted in green. Some changes are not explicit in the syllabus but are detailed here (i.e., a training module on the Tragedy of the Commons and having students calculate their commuter carbon footprint). Additional information about FIRE can be found at <http://www.fire.umd.edu>.