

The **Measurement and Parameters of Sustainability** course will engage statistical quantitative methods to explore various sustainability measurement parameters. Students will understand these holistic methods for defining different types of sustainability problems using a dynamic systems framework. Students will examine public data sets to formulate and solve technical problems recognizing the interconnectedness of environmental parameters such as water, carbon, phosphorus, nitrogen, sulphur and oxygen cycles coupled with the related social and economic systems of local, regional and global business enterprises.

1. **Data Sources:** Lectures will demonstrate skills to find and review the appropriate data of an environmental and social system. Students will locate and understand the concepts and methods used in areas such as environmental economics, hydrology, environmental biology, engineering, ecology, earth systems management, environmental chemistry, and other social and political disciplines relevant to sustainability. Each student will find online data sources to produce policy-relevant results within their selected country.
2. **Risk and Uncertainty Measurement:** Student will use product related assessments, indicators / indices, and integrated assessment tools to evaluate wider concepts and methods to interpret sustainable strategies for land, air, water, and urban management at the global, regional and local level. Students will submit an evaluation of these tools to expand the objectives of assessing sustainability within their selected country.
3. **Evaluate Sustainability Technology:** Lectures will conceptualize Life Cycle Assessments by reviewing existing studies for changes in the built environment, environmental regulations, and policies. This literature review will address particular problems in the sustainability of the economic and natural environment. Processes learned will begin with assessing the system boundaries through to the Regression and Avona techniques for comparing final data regression plots and variances.
4. **Case Study:** Urban Forest Management is a critical issue, this study presents i) review literature, ii) survey data, iii) design for data collection, iv) required infrastructure, v) fire, seeding and thinning, vi) scales and comparisons, vii) results normalization and variances, and viii) data interpretation and recommendations. Each student group will be assigned a data set to complete a new analysis for discussion and presentation to peers.
5. **Review:** Students will present lessons-learned reports detailing a proposed analysis of a local, regional or global sustainability system applying the methods learned and applied in the course (5000 word min).

The main objective of this course is to research, explore and apply statistical methods to assess sustainability alternatives. Students must demonstrate analytical processes during class and complete additional readings. The course will detail a system to formulate specific problems and decision-making methods to evaluate these problems. In conclusion, students will determine boundaries, create variable tables and evaluate uncertainties that can be seen through the comparison of matrices for different sustainability options selected for their own research.

