What is Sustainable Design?

Sustainable design seeks to produce buildings and communities that

- reduce negative impacts on the environment,
- health and comfort of building occupants,
- improve building performance.
- reduce consumption of non-renewable resources
- minimize waste,
- create healthy, productive environments

Integrated, holistic approach that encourages compromise and tradeoffs to positively impacts all phases of a building's life-cycle, including design, construction, operation and decommissioning without compromising the bottom line. (GSA)
Goals of the Course

• Provide an in-depth introduction to the principles and practices of sustainable (or “green”) design of buildings and communities.

• Provide an introduction to the physics and science behind sustainable design

• Demonstrate the importance of a multi-disciplinary approach to solving environmental problems; science, aesthetics, social justice

• Practice in argumentative writing

• Opportunity to exercise personal creativity and collaboration on projects
Course Delivery Format

Daily lectures on zoom 9:30-10:45 am CST Monday – Friday. Typically the first 45-50 minutes will be a PowerPoint presentation, with the remainder of time for discussion and questions..

Scheduled Office hours on zoom TBD (to avoid conflicts with other course)

Individual meetings as arranged
Assignments

• Homework/short projects assigned most classes (**50% of grade**); submission format will depend on assignment and will include
  - PowerPoint slides
  - Written assignments (questions/research/reflection)
  - Scanned or photographed problem sets

• Final paper (individual) including feedback on draft (**25% of grade**).

• Final project presentation (groups of 3-4) (**25% of grade**)
Resources

The following texts are required:

1. **Sustainable Design: A Critical Guide** By David Bergman
2. **Cradle to Cradle: Remaking the Way We Make Things** By William McDonough and Michael Braungart
3. **From Soap to Cities** by Dio Cramer

There will also be readings posted on Moodle.

All assignments will be posted on Moodle. Submission of assignments will be specified either to Moodle or to a shared Google Drive.
Tentative Course Outline

Unit 1: Introduction and Overview (4-5 classes): including examples of SD, indigenous and local practices and an overview of biomimicry

Unit 2: Physical Foundations (8-10 classes): topics include Energy and Thermodynamics, Heat Flow and Insulation, Nature of Light and Life Cycle Analyses and Carbon Footprint


Unit 4: Integration (8-10 classes): topics include Building Siting, Building Structure, Cool and Green Roofs, Water Use and Efficiency, Recycling, Aesthetics and Biophilia, Food, Transportation, Green Space, Combined Heating and Power, Microgrids, Equity Issues