

SAMPLE COURSE STRUCTURE

Since different universities and academic programs have different academic requirements, providing a standard syllabus or course outline was not feasible. This section instead provides information on a sample course structure for a typical semester-long course using the curriculum, which can be adapted into a course syllabus at a particular institution.

DESCRIPTION

An example course description is provided as follows.

Planning, Design, and Construction of Sustainable Transportation—This course examines various sustainability elements in the planning, design, and construction of infrastructure with a particular focus on transportation systems; introduction to and use of the sustainability evaluation tool INVEST will be central to the course. The primary objective of this course is to understand how sustainability influences infrastructure, particularly transportation systems. The major topics discussed in the course include roles of planners, designers, and constructors; the economic, environmental, and social considerations of transportation; and available tools for assessing and evaluating the efficacy of sustainability practices.

STUDENT LEARNING OUTCOMES

Specific student learning outcomes include:

1. Identify primary indicators of sustainability as they relate to transportation systems.
2. Define functional area roles (such as planning, design, and construction) regarding sustainability and their application to transportation.
3. Explain sustainable practices used in transportation.
4. Identify reference resources for continued learning in this topical area.

REFERENCE TEXT

Required:

1. *NCHRP Report 750: Strategic Issues Facing Transportation, Volume 4: Sustainability as an Organizing Principle for Transportation Agencies* (2014), Booz Allen Hamilton.
2. *NCHRP Report 708: A Guidebook for Sustainability Performance Measurement for Transportation Agencies* (2011), J. Zietsman, T. Ramani, J. Potter, V. Reeder, and J. DeFlorio.
3. *NCHRP Research Report 916: Sustainable Highway Construction Guidebook* (2019), S. Muench, G. Migliaccio, J. Kaminsky, M. Ashtiani, A. Mukherjee, C. Bhat, and J. Anderson.

Optional:

1. *Sustainable Transportation: Indicators, Frameworks, and Performance Management* (2016), H. Gudmundsson, R. Hall, G. Marsden, and J. Zietsman, Springer Texts in Business and Economics, <https://doi.org/10.1007/978-3-662-46924-8>.
2. *TCRP Research Report 205: Social and Economic Sustainability Performance Measures for Public Transportation: Final Guidance Document* (2019), H. Unger, A. Heller, L. Blackmon Lane, and D. Matherly.

COURSE PLAN

Table 1 shows an example plan to fit the course materials into a 14-week semester. The table includes suggested lectures to cover each week, and allows for quizzes, assignments, and a final project using INVEST. Instructors who wish to use the curriculum for a semester-long course may modify the course plan as needed.

Table 1 Example Semester-Long Class Plan

Week	Topic	Lecture(s)	Assignment(s)
1	Introduction to Transportation and Sustainability Issues	Lecture 1: Transportation—Current Trends, Challenges, and Opportunities Lecture 2: Introduction to Sustainability	
2	Delivering Transportation Infrastructure	Lecture 3: Transportation Infrastructure Delivery and Decision Making	Assignment #1 Quiz #1
3	Sustainable Transportation Concepts	Lecture 4: Sustainability and Transportation—Key Concepts	
4	Measuring Sustainable Transportation	Lecture 5: Sustainability and Transportation—Frameworks, Indicators, and Performance Measures	Assignment #2
5	Sustainable Transportation Rating Systems	Lecture 6: Sustainable Transportation Rating Systems—Part 1	Quiz #2
6	Sustainable Transportation Rating Systems	Lecture 7: Sustainable Transportation Rating Systems—Part 2	Assign INVEST Project
7	Midterm Exam		
8	Sustainable Practices in Planning and Project Development	Lecture 8: Sustainability in Transportation Planning and Project Development	Assignment #3
9	Sustainable Practices in Construction, Operations, and Maintenance	Lecture 9: Sustainability in Highway Construction Practices and Transportation Operations and Maintenance	Assignment #4
10	Implementing Sustainable Practices	Lecture 10: Achieving Sustainability through Business Practices	Quiz #3
11	Using INVEST	Lecture 11: Overview of INVEST Lecture 12: Using INVEST for Scoring and Evaluation	Work on INVEST Project
12	INVEST Practice Session and Work on INVEST Project		
13	Present Final INVEST Projects		
14	Present Final INVEST Projects		