



ARCH 1250 Applied Environmental Studies (2 credits, 3 hours)

Syllabus

Course Description: The application of the fundamental techniques of site planning principles and the use of topographical maps and models. This course will explore the importance of site development as it relates to architecture and sustainable site development. Graphic and model presentation skills are required.

Prerequisite: ARCH 1100 with a grade of C or higher

Pre or co-requisites: ARCH 1211 and MAT 1275 or higher

Required Materials: Architectural and Engineering Scales, Calculator, Colored Pencils, Notebook, Model Making Tools

Attendance Policy: No more than 2 absences are permitted during the semester. For the purposes of record, two late arrivals are equal to one absence. Exceeding this limit will expose the student to failing at the discretion of the instructor.

Grading: Every worksheet, quiz and project will be graded and the student's progress will be evaluated and monitored. Professionalism and punctuality in meeting deadlines will be stressed. Copied, borrowed or 'shared' work will be considered cheating, and will result in a grade of F for the project and possibly a final grade of F. **Three absences will result in a complete final grade lower than earned.** Three times arriving to class late will equal one absence.

Final grades will be determined as follows:

35% Homework

30% Quizzes

35% Team Project (entire team received the same grade)

Academic Integrity: Students and all others who work with information, ideas, texts, images, music, inventions and other intellectual property owe their audience and sources accuracy and honesty in using, crediting and citation of sources. As a community of intellectual and professional workers, the college recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity. Accordingly, academic dishonesty is prohibited in The City University of New York and is punishable by penalties, including failing grades, suspension and expulsion.

Learning Objectives:

Upon successful completion of this course the student should be able to:

1. **Explain** the different factors to be considered to produce a field study for a given site.
2. **Grade** a site using cut and fill to alter existing contours.
3. **Apply** zoning concepts and restrictions including OSR and FAR.
4. **Understand** how climate, topography, hydrology, geology and views affect site and building design.
5. Effectively **integrate** site planning into the architectural design process.
6. **Explain** how sun and daylight influences site planning and the building envelope.
7. **Understand** how the fundamentals of ecological design are applied to building sites and create integrated opportunities between buildings and site.
8. **Define** and **compare** rating systems for evaluating sustainable planning.

Assessment:

Students will be given quizzes and homework, will participate in class discussions and will complete a group project that tests their ability to:

1. **Identify** the different factors of a site that are important in evaluating its best use.
2. **Re-grade** a site to accommodate a new use and to properly direct the flow of run-off while minimizing the effects of erosion and the disruption of existing topography and vegetation.
3. **Perform and evaluate** zoning study calculations and identify setback restrictions to determine the buildable volume options of a proposed building site.
4. **Produce** a set of inventory and analysis drawings based on a site visit.
5. **Perform** a site inventory and analysis and evaluate these for a specific programmed use, to determine appropriate locations available for a new building.
6. **Work as a team** to create an organized presentation of a design that responds to basic site planning principles and present it to the professor and student peers for discussion and review.

Assignments: Each student is responsible for turning in all assignments on the day the assignment is due even if absent. **Late work will be downgraded.** A student will receive a penalty of 1/3 grade for each class the assignment is late. If the project deserves an A- but was delivered two classes late, the student will receive a B grade. (From A-, to B+, to B.) This penalty will be enforced even if the student is absent from class on the deadline day. Do not stay home from class if your assignment is not complete. Instead, present your questions and difficulties to the instructor so we can all learn.

Quizzes: Quizzes when given will begin promptly at the start of class and will last no more than 15 minutes. A student arriving 10 minutes late to class will only have 5 minutes to complete the quiz. There are no make-up quizzes so don't be absent and do not arrive late!

Team Project Presentations / Weekly Assignments: Each student is responsible to turn in an assignment even if absent the day it is assigned. If you will miss a team presentation you must get your work to a teammate in advance so that it can be presented in your absence and your portion of the presentation will be downgraded by 1/3 grade. It is the student's responsibility to have the email address or telephone number of another student in the class, or to speak with the instructor when absent. Late assignments will be downgraded 1/3 grade for each class date they are late. If the assignment deserves an A-, but was delivered two classes late, the student will receive a B. (**A- to B+ to B**)

Course Outline:

Week 1: Overview and Introduction to Site Planning

What is Site Planning? What is Ecological Design? Overview of the site planning process and use of Topography, Climate, Hydrology, Vegetation and Geology. Applied Environmental Studies (sustainable site design) integrates best practice site planning with ecological design fundamentals.

Week 2: Climate – Macroclimate and Microclimate

Our atmosphere, climate regions, the influence of large land forms, global warming, climate change and the urban heat island. The role of the sun, orientation and seasonal change. Microclimate and the influence of local landforms, buildings and vegetation. Illustrate how building and site forms shape microclimate and affect human comfort. Introduce bioclimatic chart.

Week 3: Field Trip – Downtown Brooklyn (Meet in our classroom)

Field trip to downtown Brooklyn to familiarize yourself with the subject of the semester's group term project. Students will begin the process of inventory, analysis and research through direct observation of site conditions.

Week 4: Site Ecology – Geology, Soils

Earth and rocks, soil ecology, weathering, bearing capacity, drainage, erosion, sliding, subsidence, seismic activity and swelling. Review of soil testing tools including borings and test pits. Review environmental contaminants, remediation strategies and definitions.

Week 5: Site Ecology – Hydrology

The Hydrologic Cycle, rainwater as a resource, surface (stream, pond, lake, wetland) and ground water systems. Site water balances (use, reuse and treatment systems). Changing municipal storm water requirements.

Week 6: Site Ecology – Biology (flora and fauna)

Introduction to site biology and the role of plants and animals in sustaining ecosystems. Discussion of biodiversity, habitat loss, green corridors and urban food supply systems. Review of plant requirements and the particular challenges of our urban settings, including heat islands, pollution, access to water, roof gardens and vertical gardens. Introduce plant illustration conventions.

Week 7: Site Inventory and Analysis

Review of natural and built site assets central to resourceful site design. Tools and conventions for surveying, mapping, notation and visualization. Include understanding of neighborhood/district and city/regional resource flows and built infrastructure. Introduce methods of site analysis through overlay mapping and flow and connectivity diagrams. Include role of shadow studies and historical and cultural resources. Discuss qualitative vs. quantitative approaches.

Week 8: Site Circulation

Explore how the flow of people and resources shapes site planning and building. Review methods including public transit systems, vehicular roadways, pedestrian pathways and their requirements.

Week 9: Site Circulation

Enlarge upon site circulation opportunities and built form through case studies. Term project team working session.

Week 10: Topography & Grading 1

Overview of topography and how it influences site design. Introduction to the concepts of grading, cut and fill, and application to surface drainage.

Week 11: Topography & Grading 2

Problem solving and in-class grading worksheets. Strategies for reducing earth work and protection of soil ecology and groundwater, minimizing erosion, protecting flora and fauna. Review Civil Engineering drawing conventions and site planning systems including retaining walls and drainage systems.

Week 12: Land Use and Zoning

Occupancy, Use, Open Space Ratio (OSR), Floor Area Ratio (FAR), setbacks, site coverage and density. Development of these concepts in NYC including history and recent contextual and PlaNYC supporting initiatives. Zoning maps.

Week 13: Land Use and Building

Wetland, endangered species and other ecological protections including green corridors. NY State DEP, NYC Zoning maps and other online resources for legal site descriptions, site protections/constraints and information visualization. PlaNYC.

Week 14: Organizing Presentations

Review of final presentation requirements and techniques for organizing information. Term project team work session

Week 15: Final Presentations