Modeling for Landscape Planning

EAS 687

Instructor Info —

- Derek Van Berkel
- Office Hrs: By appointment
- 4036 Dana
- @ dbvanber@umich.edu

Course Info ——

- Prereq: None
- Mon, Wed and Fri
- 9-11.30
- Studio: 3040 Dana

Lab Info ——

- Mon, Wed and Fri
- 10-11.30
- Lab: 3325 Dana

TA Info ——

- Jianxing Guan
- Office Hrs: By appointment
- Zoom - keyline@umich.edu

Overview

The general goals of this course are: to acquaint students with the important issues, problems, and approaches of landscape planning; to create an awareness and understanding that stakeholder engagement, site planning and land-use planning are part of a continuum and are inseparable from each other within the design process; to provide an awareness and understanding of how spatial information can be collected, analyzed, then combined to generate maps and models that allow stakeholders to investigate land planning alternatives; and to create an awareness and applied understanding of various landscape planning methods (e.g. participatory modeling, scenario development, landscape visualizations, geovisualization and multicriteria analysis). Students will gain critical thinking and applied skills related to how we might better engage stakeholders broadly (e.g. the design process, planning and as scientists).

Material

All required journal articles and book chapters will be provided via Canvas.

Grading Scheme

15%	Lab exercises
15%	Participation
70%	Studio project

You will be evaluated based on lab exercises (15%) participation (15%), and group studio projects (70%). Labs will consist of shorter exercises to provide key skills for development of you final studio project. Consider them test runs for your project where the emphasis will be gaining feedback. They will be evaluated as pass/fail, and you will only need to complete 4 of the total 6 labs. Evaluation of participation will be based on your engagement with readings, discussion, role playing exercises and collaborative feedback. Readings and class discussions will be used for critical reflection on landscape planning and modeling methods. Readings will be provided digitally (via Canvas). For the studio project, students will work in groups (approx. 5 individuals) towards a strategy for supporting a planning challenge for a specific region. The different required elements of the groups project will be phased throughout the semester. Groups will be responsible to meet 4 specific specific milestones and submit deliverable that contribute to the final project. This will include: a Community Profile (10%), Stakeholder Profiles (10%), Landscape Modeling (20%) and Decision support tool (20%). The final presentation of the project will be worth 10%.

The winter semester will also see the return of our traditional grading systems for undergraduate students. As such NRC (No Record COVID) will no longer be utilized, the option to change letter grades to "pass" will no longer be available and students may still withdraw from a course until the last day of classes but the W will once again appear on their official transcripts.If you choose to begraded the following cuto points will apply (in terms of percentages) as follows:A+ (100%), A (95.00 to 99.99%), A-(90.00 to 94.99%), B+ (87.00 to 89.99%),B (83.00 to 86.99%), B-(80.00 to 82.99%), C+ (77.00 to 79.99%), C (73.00 to86.99%), C-(70.00 to 72.99%), D+(67.00 to 69.99%), D (63.00 to 66.99%), D-(60.00 to 62.99%), E(40.00 to 59.99%).

Learning Objectives

This course provides an opportunity to develop critical thinking, design, and technical skills needed to excel at modeling for landscape planning and analysis projects across a variety of spatial scales. Group projects will encourage an understanding and application of scientific theory, data synthesis, contextual sensitivity, as well as creative design expression. In addition, this course will provide connections to professional practice by linking studio work to real world projects and critical present day issues. Course projects are structured to foster an intentional work ethic, effective project scoping, and interdisciplinary collaboration.

Relevant Theory, Practices, and Influences

Processes, frameworks, and approaches for tackling landscape analysis + planning projects, including computer simulation models, model projections, alternative futures, and suitability analysis, participatory GIS, Modeling with Stakeholders. Adaptation, hierarchy theory and methods for working across spatial scales. The social and human dimensions of landscape pattern and process, including visual preference and other public engagement methods.

Relevant Technical Practices + Skills

Project definition, scoping, and planning; Data mining, collection, preprocess and validation; Scientific research and application; Digital tools, including QGIS, R, and others; Suitability analysis; Vector + raster data manipulation and synthesis; Model building; Scenario design; Land use modeling and allocation; Indicators and metrics development; Public engagement approaches; Presentation and graphic communication effectiveness; Critique and critical thinking; and Process graphics and sketching.

Studio Projects

Cities and regions are increasingly affected by multiple and overlapping stressors that are expected to be amplified by climate change. Addressing these complex challenges will not only require ecological transformation, but also radical interventions, social change, and adaptation that reorient thinking away from planning that is disconnected and distinct from 'natural' ecosystems.

In the studio project, you will work towards a strategy for supporting a planning challenge for a specific region using geodesign. Geodesign is a set of concepts and methods used to involve all stakeholders and various professions in collaboratively designing and realizing socially and environmentally solutions for spatial challenges in the built and natural environments that often utilizes novel techniques and spatial data in an integrated process.

Groups will have considerable flexibility. They will decide the project case location and the themes addressed. Themes might include flooding in coastal areas, increased precipitation, heat island effects, exposure to pollutants – and socio-environmental stressors, such as aging infrastructure, economic decline, depopulation and social inequality. Changing climatic conditions have likewise raised expectations of growth and redevelopment based on climate-resilience and livability.

There will be an expectation that all project works and course work incorporate appropriate research and inquiry into the project to support your studio project's assumptions, claims, and analysis. All groups projects will include: 1) research on your chosen geography, understanding of your targeted stakeholders and strategy for their integration in the processes 2) design rationale and method including workflow diagram, planning framework(phases, timeline, how when stakeholder engagement will occur 3) evaluation measures that can aid in better understanding factors significant in decision making processes 4) a decision support tool that can help in deliberation around design/management preferences; and 5) recommendations for climate wise solutions. An overarching goal will be to provide recommendations that are resilient in the face of future changes and therefore projects should consider alternative scenarios and design typologies.

Each project will be evaluated based on the following: Appropriateness, integrity, and depth of analysis; Incorporation of relevant research, case studies, precedents, and reading materials; Continued advancement in design/planning process and methods; Clarity and effectiveness of written and verbal communication; Applicability of findings and conclusions

Diversity and Inclusivity Statement

The classroom is a place where you will be treated with respect. Individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability - and other visible and non-visible differences are welcome. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment.

Accommodations for Disabilities or Religious holidays

We will make every effort to accommodate the needs of students with hearing, visual, or other physical impairments and/or learning disabilities. Likewise, we will try to accommodate for major religious holidays. Be sure to let us know your needs well in advance.

Academic Integrity

Students are expected to understand and follow Rackham policies for academic and professional integrity (`https://rackham.umich.edu/policy/section8/`). Pay particular attention to rules regarding plagiarism and original work. Students may work together on assignments, may ask for help from students or others outside the class, and may draw on any information in the library or on the internet. However, the assignment that you present and turn in must be your own individual work in your own words. You may not borrow from published work in any assignments without clearly attributing it to the authors. The way to attribute ideas or results in published work is to cite the source. If you copy a source word for word, cite the source and indicate this with quotation marks. Similarly, you may clearly cite work that you find on web pages (list the URL and the date as you would a citation), but you may not borrow text, figures, or other graphics from a web page without clearly attributing it to the source.

Student Well-Being

Students may experience stressors that can impact both their academic experience and their personal well-being. These may include academic pressure and challenges associated with relationships, mental health, alcohol or other drugs, identities, finances, etc.

If you are experiencing concerns, seeking help is a courageous thing to do for yourself and those who care about you. If the source of your stressors is academic, please contact me so that we can find solutions together. For personal concerns, U-M offers many resources, some of which are listed at Resources for Student(`https://wellbeing.studentlife.umich.edu/resources-list`) Well-being on the Well-being for U-M Students website. You can also search for additional resources on that website.

Health and Safety: Covid-19

For the safety of all students, faculty, and staff on campus, it is important for each of us to be mindful of safety measures that are required for our protection. By returning to campus, you have acknowledged your responsibility for protecting the collective health of our community. Your participation in this course on an in-person basis is conditional upon your adherence to all safety measures mandated by the State of Michigan and the University, including: maintaining physical distancing of six feet from others and properly wearing a face covering in class. Other applicable safety measures may be described in the Wolverine Culture of Care, the University's Face Covering Policy for COVID-19, and SEAS Questions Concerns document. Your ability to participate in this course in-person as well as your grade may be impacted by failure to comply with campus safety measures. Individuals seeking to request an accommodation related to the face covering requirement under the Americans with Disabilities Act should contact the Office for Institutional Equity. If you are unable or unwilling to adhere to these safety measures while in a face-to-face class setting, you will be required to participate on a remote basis (if available) or to disenroll from the class. I also encourage you to review the Statement of Students Rights and Responsibilities and check-in with the Office of Academic Affairs Director to navigate support and resources available to you.

SEAS COVID safety guidelines for in-person instruction:

- Each room will have a defined layout to accommodate social distancing.
- Each room will be equipped with disinfectant wipes and hand sanitizer.
- Students are responsible for disinfecting their table/chair and using hand sanitizer when they enter the room at the start of class.
- Each student will be provided with a starter kit containing two masks, two bandanas, and a small bottle of sanitizer.
- Students are required to wear face coverings, wash the face coverings after each day of use, and bring their own hand sanitizer for personal use.

Accommodations for students who must suddenly stay home:

All in-person/hybrid classes will be recorded to accommodate students who cannot attend the class. Course lectures will be recorded (audio/video) and made available to other students in this course. As part of your participation in this course, you may be recorded. If you do not wish to be recorded, please contact Hannah the first week of class (or as soon as you enroll

in the course) to discuss alternative arrangements. Otherwise you will be asked to consent to be recorded for the purpose of sharing the recording with your classmates.

Copyright/Privacy Information.

Both in-person/hybrid and fully remote lectures and discussions will be recorded so that all students can access the material. These recordings should not be shared outside of your course and will only be available to registered students to protect the privacy of both instructors and students. Students are prohibited from recording/distributing any Class Activity without written permission from the instructor, except as necessary as part of approved accommodations for students with disabilities. Any approved recordings may only be used for the student's own private use. You can find ITS Recording and Privacy Concerns FAQ here.

Grading and withdrawals

The Rackham Executive Board also has approved modifications to policies for withdrawals from courses and for disenrolling for a term for the 2020-21 academic year:

- Students may decide to withdraw from a course through the last day of classes of the term without a "W" appearing on the official transcript.
- Students in Ph.D., Master's, and D.M.A. degree programs may also disenroll from a term through the last day of classes of the term. To maintain good standing, Ph.D. students who disenroll from a fall or winter term must obtain a leave of absence or the student is presumed to have withdrawn and will be discontinued from the program. International students must consult with the International Center before disenrolling, as this will affect their visa status.

Instructors and students should also take note of the following additional available options that can be used to provide flexibility for coursework:

- With permission of the instructor, and up until the last day of classes of the semester, a student may elect S/U grading in a course that would otherwise be letter graded. A grade of "S" is considered to be a grade of B or better and is counted toward the credit requirements of the program. Grades of S/U are not factored into the calculation of the GPA.
- Instructors may choose to issue an Incomplete (I) to a student and approve an extension with a deadline for completion of final work due in the course. An incomplete will not be permanently recorded on the transcript when the instructor submits the final grade.

Class Schedule

* Note that elements of the syllabus, assignments, and course structure may change based on potential public health developments. I will try to provide as much advance warning as possible. All assigned reading will be found on Canvas

Schedule

Week 1-3	Community Profile: In the first short-term project, you are tasked with developing a community profile for your case/project area, and providing a high level summary of possible recommendations to explore in order to advance the sustainability and resiliency of the area. Each group is tasked with collecting data evidence of this community context.
Week 4-5	Stakeholder Profiles: This short-term project tasks you with summarizing and identifying stakeholders in your case/project area, and providing a high level summary of your proposed engagement strategy. Each group will develop and design strategies for collecting stakeholder feedback from their project/case community.
Week 6-9	Landscape Modeling: For this project, you are tasked with developing an assessment model and landscape indicator(s) for your project case. This will require integrating multiple sources and types of data into measures that can aid in better understanding factors significant in decision making processes. This indicator should reveal a novel piece of information, new classification approach, key relationship or insight that would be beneficial to land use decisions and policies.

Week 10-16 Decision Support: In the final project, in addition to combining the different elements for a polished planning strategy, we will be developing decision support tools. Decision support tools can be either fully computerized or human-powered, or a combination of both. This entire project is intended to engage you in the practice of community-based planning by linking studio work to real world projects and critical present day issues. Course projects are structured to foster a strong work ethic, effective project scoping, and interdisciplinary collaboration.