



Azrieli School of **Architecture & Urbanism**

COURSE OUTLINE

ARCU 4801

Fall 2020 / Fridays 11:35-2:25 / via Zoom, synchronous (in real-time) not recorded

Instructor / Catherine Bonier catherine.bonier@carleton.ca

Office Hours / Tuesdays 11-12 pm, by zoom appointment (& zoom drop-in Fridays 2:30-3)

Between Architecture and Infrastructure

Urban Systems // Nature, Technology, and Health

ARCU 4801 [0.5 credit] Selected Topics in Urbanism

Advanced seminar in selected topics related to urbanism. Topics may include histories and theories related to urban systems, design, and planning. (Core course) Prerequisite(s): third-year standing in B.A.S. (Urbanism) or permission of the Instructor. Seminar three hours per week.

INTRODUCTION

This seminar investigates the relationship between the themes of landscape, technology, and health. Students will evaluate the ways in which the dialog between these 3 forces shape the growth and design of cities. Water is one of the central elements of this inquiry, weaving together these themes and linking basic sustenance with the highest cultural aspirations. Students will learn from past and contemporary urban challenges, and evolving hopes for safety, equity, democracy, freedom, power, and beauty.

COURSE DESCRIPTION

This is an advanced seminar in selected topics related to urbanism. The course combines lecture and seminar formats. Each three-hour session will include presentations by students and introductions to weekly topics by the instructor. In addition, students will develop their own research questions, and generate final projects that engage issues of urbanism for the 21st century in the global context.

Discussion and active questioning are key course components.

This class demands independent intellectual effort and engagement on the part of students. Weekly readings will challenge students to grasp complex urban issues past and present. From this perspective, students will be required to develop their own questions and ideas. Final projects require that students research, document, and understand the challenges of a specific city, in order re-imagine an innovative, improved future based on the realities of that place.

COURSE AIMS and LEARNING OUTCOMES

Upon completing this course, students should be able:

1. To develop and demonstrate their knowledge of urban landscape, technology, and health in relation to the growth and design of cities.
2. To interrogate the relationship between ideas and techniques of urban environmental and infrastructural management within historical and global context.
3. To thoughtfully consider how designers, planners, and engineers engage the inherent complexity of social, political, cultural, technical, and scientific issues surrounding cities and settlement.
4. To develop excellent skills of interpretation and comparison, using clear and succinct written, visual, and verbal communication to understand historical issues and propose contemporary solutions.

COURSE METHODOLOGIES, THEORIES, and PRINCIPLES

Research, discussion, and writing are central components of the course. Students will advance their research abilities and critical faculties through the following methods:

1. Weekly readings and reading responses posted to CULearn forum
2. Weekly course discussions with classmates and instructor
3. Verbal and visual presentations that address readings within course themes
4. Draft and final term presentations and projects including scholarly research and design illustrations

SCHEDULE and TOPICS (full reading list available on CULearn)

Week 01:	Sept 11	TOPICS in Urbanism / Water, Culture, “Nature” / Reading presentations assigned
Week 02:	Sept 18	Discussion & Presentation Demo / Houston, Illich / Toronto, The Big Story podcast
Week 03:	Sept 25	Flood / Mississippi River, McPhee / New Orleans, Baum
Week 04:	Oct 02	Soak / Mumbai, Mathur & da Cunha / Toronto, Waldheim & Mossop
Week 05:	Oct 09	19th-Century Pipes & Parks / London, Halliday / Boston & NYC, Olmsted <i>++ Email city + topic proposal to instructor by 5pm.</i>
Week 06:	Oct 16	Urbanists & Architects / Lagos, Gandy / Lagos, Koolhaas
Week 07:	Oct 23	Walled, Informal, & Smart Cities / Alphaville & Sao Paolo, Davis / Songdo City, Picon
Week 08:	Oct 30	<i>* No Class Meeting – Fall break.</i>
Week 09:	Nov 06	Midterm Presentations / <i>Topic, Abstract, Image, + Bibliography Due via CULearn</i>
Week 10:	Nov 13	Designing with Water / Seattle, Weiss / Tel Aviv, Latz
Week 11:	Nov 20	Urban Agriculture, Environmental Justice, Infrastructural Reuse
Week 12:	Nov 27	In-Class presentations (part 1) / <i>All Term Projects & Presentations Due via CULearn</i>
Week 13:	Dec 04	In-Class presentations (part 2)
Week 14:	Dec 11	Last Day of Fall Term – Monday Schedule – No Class Meeting
Week 15:	Dec 18	Final Examination Period – No Class Meeting.
Week 16:	Dec 23	<i>Final Date to Hand in TERM PROJECT with revisions – No Class Meeting.</i>

+ SCHEDULE WILL BE FINALIZED DURING WEEK 02 OF SEMESTER, FOLLOWING REGISTRATION CONFIRMATION.

Assignments and Grading

- weekly reading response posts and replies = 20%
- in-class participation, professionalism, attendance = 15%
- in-class presentations = 20%
- midterm project topic, abstract, bibliography, & image presentation = 15%
- term project in-class presentation = 15%
- final term project (updated to incorporate suggestions & revisions) = 15%

Project Evaluation

Projects will be evaluated on the (1) evidence of clear understanding of readings and case studies (2) development and articulation of an argument according to the objectives set forth in the project assignment, and (3) the clarity, craft and completeness of the work submitted at the hand-in deadline. Please note that:

- Every day late is a 2% reduction in the project grade, starting immediately after the deadline time.
- Computer failures, uploading problems, and lost data are not valid excuses for late work. Back up all files and plan to finish and to submit work early to avoid difficulties.

Work Expectation

A large portion of your time for this course will be devoted to the weekly readings, which average 50 pages per week but may be slightly more or less. Although some of the readings are difficult, it is expected that you will dedicate the time to develop your own understanding of the texts. If you are having difficulty, please schedule a meeting during office hours. Also use the blog as a means to work with your colleagues to discuss your questions regarding the readings.

Class Participation

- You are required to read all the required texts and to post to the blog every week prior to class.
- You are required actively participate in all class discussions.
- You are required to attend all classes, and to arrive (join zoom) on time.
- Cell phones may not be used during class.

How to // Weekly Reading Responses

Uploaded by all students, except those presenting for the week. (CULearn Forum)

Do your readings with the following questions in mind:

What is the author's expertise, focus, and point of view? What is the understanding of health in this time and place? What are the challenges to urban health or environment?

What is the social or governmental response?

What is the architectural, planning, or engineering response?

What systems are involved in the issues described? (green, grey, black, blue, other)

What is the result to city form, city life, public space, and civic society?

By 5pm Wednesdays, post a comment and response to CULearn which includes the following:

- Comment/ Key idea, or interesting argument by the author:
This might be an idea you'd like to discuss further in class, even if you don't agree with it.
You should take the quote and try to learn more to understand it.
"Direct quote from the text." (author's last name, pg no)
1-2 Sentences: Your first understanding or analysis of the quote, from reading
1 Question: Question about the quote, or what you'd like to know more about or debate.
** Each quote from the text **can only be uploaded twice**, so review your peer's comments.
- Response
Post one comment or question regarding a quote posted by a peer.
- Definitions?
1-2 Terms that you found new or interesting, with 1-2 sentences defining each.
Use the OED for all definitions: <http://www.oed.com.proxy.library.carleton.ca/>

How to // Weekly Reading Presentations (revised 29 Sept)

****Digital copies of 2 of the required parts of presentations -slides and handouts - are due before the start of class via CULearn. Text may be uploaded as late as Sunday evening after the day of presentation. Students who are presenting must join zoom promptly at 11:30 to test screen-sharing.**

Each of you will be responsible for presenting critical summaries of urban case studies and readings understood together and presented as a team. **You will lead the class discussion on the scheduled theme of the week by creating questions to be discussed in break-out sessions.** You must do enough research to thoroughly understand the author's point of view. See the following page for revised description of zoom-presentation format.

+ As presenters your first job is to explain the author's key points, with relevant direct quotations, and to explain how these ideas relate to the case study. You will also provide your own critical position on the issues described.

*++ Groups of students presenting on the same week have the option to meet with the instructor 1 - 2 weeks prior to their presentation. ++ Preferable meeting times are before or after class (11 or 2:30 Friday). The initiative lies with the student to email and arrange this required meeting in advance. **At this meeting they will have already completed the readings for their presentation**, and will be prepared to discuss their beginning research, images, bibliography, and focus, and get help with sources and ideas. The students must have a draft plan for the outline and angle of their presentation.*

1. You are responsible for creating a powerpoint or pdf presentation:

- + Usually, it takes 1-2 minutes to present each slide. So, plan on having about 10-20 slides.
- + Include weblinks for borrowed images. Insert on each slide in smallest font size, or on an endslide with image subject and link. Projects without citation and bibliography will not receive a passing grade.
- + Organize a consistent, clear visual presentation.
- + Include maps, plans, drawings, and images for any case studies. By the end of your talk, other students should clearly understand the layout and features of the city you are describing.
- + Do not use clip art. Do use high quality images in plan, aerial, and street view.

2. You are responsible for writing a typed, scripted text version of your presentation:

Your text presentation is not an informal outline or a book report, but a formal critical presentation with thesis, supporting images, quotes, citations, research, and a conclusion and questions. You may read it directly, as one would a conference paper. It must be accompanied by a bibliography of all sources consulted in order to receive a passing grade.

+ A 20 minute presentation is roughly 10 double-spaced pages of 12 pt text or 2,500 words.

<https://www.visualthesaurus.com/cm/wc/seven-ways-to-write-a-better-speech/>

+ Web research is not sufficient to complete a scholarly presentation. You must reference a minimum of two scholarly sources (books, articles from MacOdrum or jstor) which are not web-sourced.

Chicago-style citations: <https://www.chicagomanualofstyle.org/home.html>

+ The Carleton MacOdrum Library provides access to many information resources, including books and journals (both electronic and paper-based), as well as useful databases and maps.

<https://library.carleton.ca/>

<https://library.carleton.ca/find/databases>

<https://library.carleton.ca/find/gis>

3. You are responsible for a presentation outline and framing questions for discussion, which you will print and distribute at the start of your presentation. (this must be uploaded before class begins!)

Include key terms and definitions that are important to the project or reading. Handouts should include key terms and arguments and dates and must be printed prior to the start of class.

REVISED REQUIREMENTS (29 Sept) – to encourage discussion through breakout groups.

1. **REDUCE RESEARCH & INCREASE CLOSE ATTENTION to the READING: Presenters no longer need to do significant research outside of the primary reading.** Instead, they must just do enough research to thoroughly understand the author's point of view. I am reducing the need to introduce additional sources, but you will still need to figure out every aspect of the reading you will present. You'll begin the presentation by summarizing the author's main points, with examples of how they make their argument, and key quotations on slides for the biggest points.

2. **BREAKOUT QUESTIONS: Each presentation should include one breakout group exercise (any time during the presentation) including 2-3 questions that will allow students to discuss a question for 10 minutes in a group, with another 15 minutes to bring their ideas back to the class to share.**

(presentation 20-25 min, breakout discussion 10, general group discussion 15-20 = 55-60 minutes / informal conversation of blog posts and other instruction takes up the rest of the class time)

For instance, when Kiara asked us the meaning of "Folkways," we couldn't discuss it, because we didn't yet know what it meant, but it was a great question to introduce briefly, because it allowed her to teach us the definition. The idea then provided a superb framework for understanding the dilemma of losing one's neighborhood. A great next step would have been to break into groups and ask: "What folkways particular to New Orleans did Baum bring up in his article? How were those folkways disrupted after Katrina, and how were they maintained? What folkways are particular to your neighborhood?" People who did the reading would have already learned about Second Line, bounce music, Mardi Gras Indians, shotgun houses made of cypress, social aid clubs, etc., and then could share page numbers with peers who did not do the reading. A quick google would get even more information and images.

+ **The questions for breakout rooms should be used primarily to look more closely INTO the topics addressed by the author, and to extract more from the readings, NOT just to share personal opinions.** A question that begins "do you think..." might be fine for a quick feedback question during a presentation, but may not help students know any more than they did previously about the reading. Questions that push us back into the reading help increase understanding, for instance for the readings during week 03 some good questions might have been:

(Baum) "What were the challenges faced by the Mayor in supporting the city's rebuilding and how did his efforts fail to building trust with the community of the Lower Nine?" or

(McPhee) "What are some of the interest groups that depend on the flow of the Mississippi River staying where it is? How does that contribute to the Corps of Engineers' decisions about managing the flow?"

3. **ZOOM-NAME by Reading Number: When you log on to zoom, please name yourself starting with the number of the reading you did,** for example 03a Katie Bonier. This way I can make sure that each breakout group has someone who did the reading that's being discussed. All students can open the pdfs in the breakout room and glance at the reading they did not do in order to help the conversation forward.

NOTE: YOU STILL HAVE TO INCORPORATE CASE STUDY RESEARCH WITHIN PRESENTATIONS.

STUDENT RESPONSIBILITIES in this course

BASIC ETIQUETTE for ONLINE LEARNING

- **Arrive on-time on Zoom, just as in a normal classroom.**
- **Mute your microphone when you are not the person speaking.**
- **Do not use cellphones or chat features during class. (conversations should be verbal and shared)**
- **Be courteous and attentive to your classmates and instructor.**

ATTENDANCE

Attendance via Zoom during arranged class hours is mandatory and an essential part of a student's contract with the School and their instructor. It is a student's responsibility to be informed of decisions and announcements made during these hours. Frequent unaccounted-for absences from class meetings, seminars, reviews and desk crits may result in a failing grade whether or not assignments have been completed. Partial attendance on any class day is equivalent to an absence.

PLAGIARISM

- Students should properly cite information/data collected during research and maintain all standards of academic excellence and integrity in written/research aspects of the project. When directly citing an author, use direct quotes and provide page numbers.
- If you are downloading images, be sure to right-click to save image source, rather than trying to find it again later!
- Regarding precedent studies, always reference: building or site name, location, designer, and date of completion. Ensure you indicate why the image is relevant to your project.
- Please use the Chicago style manual as guidance.
- Please refer to the academic handbook for guidance. If in doubt, please consult the instructor

TIME MANAGEMENT

It is your responsibility to plan your time accordingly. Do not plan shift work, appointments or other non-academic activities during class time.

COMMUNICATION

- E-mail is a permanent record of communication and should be used professionally. Prior to contacting your instructor please reference the Course Outline, Project Brief, and CULearn.
- E-mail should be used to make an appointment prior to any meeting
- We will try to respond to non-emergency student e-mails within 48 hours.
- Please do not contact the via phone. If you need to make an appointment, please do so during class or set up a preferred date and time via e-mail
- If you are not receiving e-mails through your Carleton Account it is the student's responsibility to contact CCS to resolve the issue.

CALENDAR (See Schedule PDF on CULearn)

ACCEPTABLE ABSENCES & EXTENSIONS

- Illness, with proper medical documentation, and family grievance are examples of acceptable absences.
- Employment responsibilities, whether on or off campus, are not an acceptable reason for lateness, lack of attendance or an extension.
- It is the student's responsibility to periodically back-up their work. While we empathize with data loss due to corruption, deletion or loss is not grounds for an extension.

STUDENT RESPONSIBILITY

If for any reason the goals of the class seem unmanageable, it is the student's responsibility to schedule a meeting with the instructor to discuss the issue and to actively seek a solution. Meetings can be scheduled outside of office hours upon request. Many support agencies are available on campus to assist students with academic, medical, emotional, or other challenges which may arise.

GRADING

For the grade in the “A” range, the instructor will have judged the student to have satisfied the stated objectives of the course in an outstanding to excellent manner; for the “B” range, in an above average manner; for the “C” range, in an average manner with C- being the lowest acceptable grade in the BAS - Design Core courses; for the “D” range, in the lowest acceptable manner in non-Core courses, and for “F”, not to have satisfied the stated objectives of the course. Grades will be assigned as A+ (90-100%), A (85-89%), A- (80-84%), B+ (77-79%), B (73-76%), B- (70-72%), C+ (67-69%), C (63-66%), C- (60-62%), D+ (57-59%), D (53-56%), D- (50-52%), F (0-49%) and ABS. A grade of C- or better in each course of the BAS - Design Core is required for a student to remain in *Good Standing*.

Please refer to the Undergraduate Calendar for regulations concerning grades and other program requirement information:

<https://calendar.carleton.ca/undergrad/regulations/academicregulationsoftheuniversity/grading/>

Regulations concerning grades and other program requirement information specific to the Architecture program can be found here:

<https://calendar.carleton.ca/undergrad/undergradprograms/architecturalstudies/>

** Each grade will be based upon a comparison (1) with other students in the course and/or (2) with students who have previously taken the course and/or (3) with the instructor’s expectations relative to the stated objectives of the course, based on his/her experience and expertise.

ACADEMIC ACCOMMODATIONS

Updated: July 29, 2020

You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Pregnancy obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details see link below

Religious obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details see link below

Academic Accommodations for Students with Disabilities: The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the [PMC website](#) for the deadline to request accommodations for the formally-scheduled exam (if applicable).

<https://devsite.carleton.ca/equity/accommodation/academic/course-outline-wording/>

ACCESSIBILITY

Students with disabilities requiring academic accommodation in this course must register with the Paul Menton Centre for Students with Disabilities (PMC) for a formal evaluation of disability-related needs. Documented disabilities could include but are not limited to mobility/physical impairments, specific Learning Disabilities (LD), psychiatric/psychological disabilities, sensory disabilities, Attention Deficit Hyperactivity Disorder (ADHD), and chronic medical conditions. Registered PMC students are required to contact the PMC, 613-520-6608 every term to ensure that instructor receives your Letter of Accommodation no later than two weeks before the first assignment is due or the first in-class test/midterm requiring accommodations. If you only require accommodations for your formally scheduled exam(s) in this course, please submit your request for accommodations to PMC by the deadlines published on the PMC website:

<https://carleton.ca/pmc/>

<https://carleton.ca/registrar/registration/dates-and-deadlines/>

STUDENT CONDUCT

Please refer to <https://calendar.carleton.ca/undergrad/regulations/academicregulationsoftheuniversity/> for specific information regarding Student Conduct and Academic Integrity standards.

STUDENT RESPONSIBILITY

<https://calendar.carleton.ca/undergrad/regulations/academicregulationsoftheuniversity/student-responsibility/>

CONDUCT DISCRIMINATION AND HARRASSMENT

<https://calendar.carleton.ca/undergrad/regulations/academicregulationsoftheuniversity/academic-integrity-and-offenses-of-conduct/>

ACADEMIC INTEGRITY

The University has adopted a policy to deal with allegations of academic misconduct. This policy is expressed in the document *Carleton University Academic Integrity Policy*, found here:

<https://calendar.carleton.ca/undergrad/regulations/academicregulationsoftheuniversity/academic-integrity-and-offenses-of-conduct/>

SECURITY AND SAFETY

Avoid Working Alone After Hours · In Case of Emergency, Dial Extension 4444 from any campus phone.

Carleton Foot Patrol offers “safe-walk” services:

<https://www.cusaonline.ca/services/servicecentres/footpatrol/>

University Safety

613-520-3612 carleton.ca/safety

OTHER SUPPORT:

Health and Counselling Services

613-520-6674 carleton.ca/health

Student Affairs

613-520-2573 carleton.ca/student-affairs

Academic Advising Centre

613-520-7850 carleton.ca/academicadvising

ACCREDITATION AND PROFESSIONAL EXPERIENCE

In Canada, all provincial associations recommend a degree from an accredited professional degree program as a prerequisite for licensure. The Canadian Architectural Certification Board (CACB), which is the sole agency authorized to accredit Canadian professional degree programs in architecture, recognizes two types of accredited degrees: the Bachelor of Architecture and the Master of Architecture. A program may be granted a five-year, three-year, or two-year term of accreditation, depending on its degree of conformance with established educational standards.

Master's degree programs may consist of a pre-professional undergraduate degree and a professional graduate degree, which, when earned sequentially, comprise an accredited professional education. However, the pre-professional degree is not, by itself, recognized as an accredited degree.

STUDENT PERFORMANCE CRITERIA (CACB 2017 EDITION)

For the purposes of accreditation, graduating students must demonstrate understanding or ability in the student performance criteria listed below, according to an established sequence. Specifically, this course meets the following criteria: **A5, A6, B1, B2, B3, B4, B5**

The 24 SPCs are as follows:

- A1. Design Theories, Precedents, and Methods

The student must demonstrate an ability to articulate a design process grounded in theory and practice, an understanding of design principles and methods, and the critical analysis of architectural precedents.

- A2. Design Skills

The student must demonstrate an ability to apply design theories, methods, and precedents to the conception, configuration, and design of buildings, spaces, building elements, and tectonic components.

- A3. Design Tools

The student must demonstrate an ability to use the broad range of design tools available to the architectural discipline, including a range of techniques for two-dimensional and three-dimensional representation, computational design, modeling, simulation, and fabrication.

- A4. Program Analysis

The student must demonstrate an ability to analyze and respond to a complex program for an architectural project that accounts for client and user needs, appropriate precedents, space and equipment requirements, the relevant laws, and site selection and design assessment criteria.

- A5. Site Context and Design

The student must demonstrate an ability to analyze and respond to local site characteristics, including urban, non-urban, and regulatory contexts; topography; ecological systems; climate; and building orientation in the development of an architectural design project.

- A6. Urban Design

The student must demonstrate an ability to analyze and respond to the larger urban context where architecture is situated; its developmental patterning and spatial morphologies; the infrastructural, environmental, and ecological systems; to understand the regulatory instruments that govern this context; the broader implications of architectural design decisions on the evolution of cities; and the impact of urbanism on design.

- A7. Detail Design

The student must demonstrate an ability to assess, as an integral part of design, the appropriate combinations of materials, components, and assemblies in the development of detailed architectural elements through drawing, modeling, and/or full-scale prototypes.

- A8. Design Documentation

The student must demonstrate an ability to document and present the outcome of a design project using the broad range of architectural media, including documentation for the purposes of construction, drawings, and specifications.

B. Culture, Communications, and Critical Thinking (Five SPCs):

- B1. Critical Thinking and Communication

The student must demonstrate an ability to raise clear and precise questions; record, assess, and comparatively evaluate information; synthesize research findings and test potential alternative outcomes against relevant criteria and standards; reach well-supported conclusions related to a specific project or assignment; and write, speak, and use visual media effectively to appropriately communicate on subject matter related to the architectural discipline within the profession and with the general public.

- B2. Architectural History

The student must have an understanding of the history of architecture and urban design in regard to cultural, political, ecological, and technological factors that have influenced their development.

- B3. Architectural Theory

The student must have an understanding of conceptual and theoretical frameworks and how they have shaped architecture and urban design.

- B4. Cultural Diversity and Global Perspectives

The student must have an understanding of the diverse needs, values, behavioural norms, and social/spatial patterns that characterize different global cultures and individuals and the implications of diversity on the societal roles and responsibilities of architects.

- B5. Ecological Systems

The student must have an understanding of the broader ecologies that inform the design of buildings and their systems and of the interactions among these ecologies and design decisions.

C. Technical Knowledge (Five SPCs):

- C1. Regulatory Systems

The student must have an understanding of the applicable building codes, regulations, and standards for a given building and site, including universal design standards and the principles that inform the design and selection of life-safety systems.

- C2. Materials

The student must have an understanding of the basic principles used in the appropriate selection and application of architectural materials as it relates to fundamental performance, aesthetics, durability, energy, resources, and environmental impact.

- C3. Structural Systems

The student must have an understanding of the principles of structural behavior in withstanding gravitational, seismic, and lateral forces, including the selection and application of appropriate structural systems.

- C4. Envelope Systems

The student must have an understanding of the basic principles used in the design of building envelope systems and associated assemblies relative to fundamental performance, aesthetics, durability, energy, material resources, and environmental impact.

- C5. Environmental Systems

The student must have an understanding of the basic principles that inform the design of passive and active environmental modification and building service systems, the issues involved in the coordination of these systems in a building, energy use and appropriate tools for performance assessment, and the codes and regulations that govern their application in buildings.

D: Comprehensive Design (One SPC):

- D1. Comprehensive Design

The student must demonstrate an ability to produce an architectural design based on a concept, a building program, and a site which broadly integrates contextual factors, structural and environmental systems, building envelopes and assemblies, regulatory requirements, and environmental stewardship.

E: Professional Practice (Five SPCs):

- E1. The Architectural Profession

The student must have an understanding of the organization of the profession, the Architects Act(s) and its regulations, the role of regulatory bodies, the paths to licensure including internship, and the reciprocal rights and responsibilities of interns and employers.

- E2. Ethical and Legal Responsibilities

The student must have an understanding of the ethical issues involved in the formation of professional judgment; the architect's legal responsibility under the laws, codes, regulations, and contracts common to the practice of architecture; intellectual property rights; and the role of advocacy in relation to environmental, social, and cultural issues.

- E3. Modes of Practice

The student must have an understanding of the basic principles and types of practice organization, including financial management, business planning, entrepreneurship, marketing, negotiation, project management, and risk mitigation, as well as an understanding of trends that affect the practice.

- E4. Professional Contracts

The student must have an understanding of the various contracts common to the practice of architecture.

- E5. Project Management

The student must have an understanding of the relationships among key stakeholders in the design process; the methods for selecting consultants and assembling teams; building economics and cost control strategies; the development of work plans and project schedules; and project delivery methods.