Use this form to propose a new course.

<table>
<thead>
<tr>
<th>New Course</th>
<th>Effective Term: <strong>Fall 2017</strong> (must be a future term)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department: <strong>Architecture</strong></td>
<td><strong>Required:</strong> Academic Support Resources (ASR) Needed</td>
</tr>
<tr>
<td>Course Designator: <strong>Arch</strong></td>
<td>□ Libraries</td>
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<tr>
<td>Program: <strong>MArch</strong></td>
<td>□ Computer Lab</td>
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<td></td>
<td>□ Digifab Lab</td>
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<td>□ Goldstein</td>
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<td>□ Imaging Lab</td>
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<td></td>
<td>□ Other Technology</td>
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<td></td>
<td>□ Workshop</td>
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<tr>
<td></td>
<td>□ ASR Support not needed.</td>
</tr>
</tbody>
</table>

**Career:** □ Undergraduate □ Graduate

**Course Number:** 5518

**Submission Date:** 2/27/2017

**Submission from:** Richard Graves

I. Does this course change the program (including addition as elective)?

- □ No
- □ Yes. If so, also submit Program Change.

II. Summarize new course and rationale. (Executive Summary field in Workflow Gen)

- **Why is the course needed?** Describe the planning and development activities that generated this proposal.
- **Which students are served?**
- **Is this course required?**
- **Projected enrollment?**
- **New FTE Faculty?**
- **TA support?**

This course is needed to fulfill the sequence of technology courses that M. Arch students need to complete. The course has been successfully taught 2 times under a topics designator, Arch 5550. 3rd year M. Arch students are served. The course is required. The enrollment is projected to be 35-45. No new faculty is needed. One TA is needed.

III. Consultation is required by the University Curriculum Committee. Before submitting, verify there are no comparable courses at the University of Minnesota. The course proposer should send the proposed syllabus to the department head(s) of any unit in other college(s) that may already offer courses with overlapping content, as well as the undergraduate associate dean(s) of those college(s). Request that the consulted parties identify any concerns regarding content overlap.

This course is unique to the M. Arch program and does not overlap with courses in other units. This conclusion was reached based on knowledge of curriculum in other units by the M. Arch program director and the instructor of this proposed course.

Departmental Faculty Vote: Ayes 5 Nays 0 Abstain 0
ARCH 5518: ENVIRONMENTAL TECHNOLOGY - FALL 2017
INTEGRATIVE ECOLOGICAL DESIGN FOR RESPONSIVE ARCHITECTURE
3 CREDITS; NAAB CRITERIA: B.6, B.8 (C.1, C.2, AND C.3)

“...The building is not a fixed object but part of the larger pattern that flows with change – a permeable membrane responding to changes in use and place...Architecture is part of the process of ‘re-membering’ – putting back together our collective dreams. I like to design buildings that are places for learning, healing, reflection, coming together. The building should tell a story about place and people and be a pathway to understanding ourselves within nature.”

– Sim Van der Ryn, Ecological Design Pioneer

Instructors
Richard Graves, AIA, Director CSBR and Associate Professor School of Architecture
v. 612.626.8783
e. rmgraves@umn.edu
Office hours: by appointment

Jim Lutz, AIA, Director of the MS Sustainable Design
v. 612.626.2482
e. lutzx120@umn.edu
Office hours: by appointment

Office hours can be used to discuss course work, review work in-process, get additional readings, or to talk about the subject matter in relation to your special interests.

Teaching Assistant/Software Training
Elizabeth Kutschke (kutsc009@umn.edu)
Office hours: Friday 10:00-12:00 Rapson Courtyard or by appointment
COURSE DESCRIPTION
ARCH 5518 Integrative Ecological Design for Responsive Architecture

Introduction

Architects and designers are uniquely positioned to address the complex ecological, technological, and social challenges of our day. Arch 5518: Environmental Technology requires you to take an integrated approach to architectural thinking, processes, and tools can provide creative solutions to pressing design challenges. Simultaneously, it will require students to consider and balance global ecological consideration, with health and well-being, technological solutions, and aesthetic issues.

This course asks you to consider and apply an integrated approach to design, exploring how it can inspire visionary solutions for a sustainable and regenerative architecture. Central to the question of a regenerative future is the consideration of architecture as part of a larger living ecological system. While there are many issues related to carbon neutral and zero energy design, this investigation will focus on the roles of daylighting, thermal, and bioclimatic considerations to meaningfully inform architectural design while also reducing fossil fuel consumption and carbon emissions.

Architect Bill Reed suggests that, “the concept of sustainability moves us into a thoughtful relationship with our life support systems. It opens the gates of communication with various subsystems, hydrology, geology, plants, animals and humans in a way that can move us from the condition of disinterested observer toward an awareness of the evolving linkages between all of these elements.” This course will teach students tools and processes to design buildings that respond to and enhance living systems.

Course Focus & Objectives

ARCH 5518 introduces the ecological design concepts and principles of daylighting, thermal, energy, and building systems integration. The course will provide students with an understanding of the primary architectural and technological implications of lighting and thermal to inform design and ecological thinking and to support sustainable design decision-making. An integrated approach to the course topics will be explored from a variety of perspectives to address the following course objectives:

1. Promoting Ecological and Holistic Systems Thinking: To provide students with daylighting and thermal design processes and integrated tools that enable them to evaluate, assess, and apply a holistic approach to zero-energy and carbon-neutral design.
2. Understanding and application of design analysis to size and integrate passive and active systems to meet programmatic environmental building needs with an understanding of broader ecological impact of choices.
3. Introduce students to the formal, aesthetic, and experiential opportunities of an ecological approach to daylighting, thermal, and systems integration in design. Environmental factors and technology should enhance architectural design quality with tectonic expression of place based design.
4. Integrating Appropriate Design and Technology Applications: Learn to employ design and technology appropriately to achieve optimal social and ecological effectiveness.
5. Developing Methods of Design and Performance Assessment and Testing: To introduce and apply qualitative and quantitative methods and design tools for ecological assessment and performance analysis.
Format  
The course will meet concurrently with the comprehensive studio. The parallel and integration of the course material with the comprehensive study provides a platform to move students from understanding to ability in a hybrid seminar format. Students will gain firsthand experience of the phenomena of thermal and luminous design, and their ecological design opportunities through application of environmental technology in their developing studio projects. Rigorous investigation through parametric testing utilizing both qualitative and quantitative assessment will form a basis of decision making. Emphasis will be placed on conceptual and schematic level interventions to provide students with core understanding of environmental systems, system selection, and systems impact and integration in design. This cross pollination will enrich comprehensive studio and environmental technology curricula.

Schedule  
The proposed schedule is 15 weeks with some cross over teaching with the Comprehensive Studio. The course will meet 2 days (M/W) a week for the semester.

Monday/Wednesday - Rapson 54  
11:15a - 12:30p

All classes will start promptly. Attached tentative schedule is subject to change.

Recommended Text  
Palette 2030 (2030palette.org)

Required Software  
Climate Consultant 6.0 (Windows or Mac OS X 10.8 or later), free online. Sefaira and Sefaira Plug-in for Sketch-up.
### Course Work and Assignments

Assignments build on each other throughout the semester as students gain understanding of the material. Each individual assignment is intended to serve as a lens to probe and examine a particular issue. Overall, the course will address building systems in an additive manner. Project 5: Case Study for ARCH 5518 will compliment the students’ concurrent studio project. This will allow for the integration of the course material to be explored through design and is intended to compliment the comprehensive studio experience leading to stronger demonstration of environmental issues in the students’ work.

The course will include three design projects, which enable students to assess and apply concepts, strategies, and assessment methods through direct application to design.

Projects are tentatively weighted accordingly:

<table>
<thead>
<tr>
<th>Project 1: Site and Bioclimatic Design</th>
<th>10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project 2: Daylighting Design and Analysis</td>
<td>20%</td>
</tr>
<tr>
<td>Phase 1: Building Form Analysis and Passive Studies</td>
<td></td>
</tr>
<tr>
<td>Phase 2: Design with Daylighting (room)</td>
<td></td>
</tr>
<tr>
<td>Project 3: Thermal Design and Analysis</td>
<td>20%</td>
</tr>
<tr>
<td>Phase 1: Baseline Analysis and Passive Studies</td>
<td></td>
</tr>
<tr>
<td>Phase 2: Conceptual Building System Design</td>
<td></td>
</tr>
<tr>
<td>Project 4: Integrated Design - Facade and Room</td>
<td>20%</td>
</tr>
<tr>
<td>Project 5: Case Study</td>
<td>30%</td>
</tr>
</tbody>
</table>

**TOTAL** 100%

All projects, assignments and in class exercises are due at the beginning of class on the project due date (or it will be considered late). Late projects will be lowered one grade for each calendar day that it is late (i.e. from an A to A- if it is submitted late on the due date, from an A to a B+ if it is submitted the day following the due date, etc.). Attendance is required for all class periods unless there is a legitimate reason. Completion of all assignments is required for the course and must be completed to receive a passing grade.

### Grading Standard

The UMN grading standards will be used for project grading.

University of Minnesota Grading Standards:

- **A**: Achievement that is outstanding relative to the level necessary to meet course requirements
- **B**: Achievement that is significantly above the level necessary to meet course requirements
- **C**: Achievement that meets the course requirements in every respect
- **D**: Achievement that is worthy of credit even though it fails to meet fully the course requirements
- **S**: Achievement that is satisfactory, which is equivalent to a C- or better
- **F** (or **N**): Represents failure (or no credit) and signifies that the work was either: 1) completed but at a level of achievement that is not worthy of credit or 2) was not completed and there was no agreement between the instructor and the student that the student would be awarded an incomplete.
- **I**: (Incomplete) Assigned at the discretion of the instructor when, due to extraordinary circumstance, e.g., hospitalization, a student is prevented from completing the work of the course on time. Requires a written agreement between instructor and student.
Academic Dishonesty

Academic dishonesty in any portion of the academic work for a course shall be grounds for awarding a grade of F or N for the entire course.

Credit/Workload Expectations

This 3 credit course will run for 15 weeks. The expected workload for this course is approximately 10 hours per week based on University of Minnesota policy. We will work with students to assess the workload and make adjustments as needed.

Schedule and Attendance

The courses meet on Monday and Wednesday (locations are listed in the schedule for each day). Attendance is required at all reviews and class meetings. It is critical that you fully participate and attend all class periods (lectures, computer methods, and reviews). Please make every effort to be on time. Punctuality is important in maintaining and building community and as a means of minimizing class disruptions. A semester schedule is attached. Weekly agendas will be issued on Monday of each week, with a two week outlook and update.

Sexual Harrassment Policy

“Sexual harassment” means unwelcome sexual advances, requests for sexual favors, and/or other verbal or physical conduct of a sexual nature. Such conduct has the purpose or effect of unreasonably interfering with an individual’s work or academic performance or creating an intimidating, hostile, or offensive working or academic environment in any University activity or program. Such behavior is not acceptable in the University setting. For additional information, please consult Board of Regents Policy: http://regents.umn.edu/sites/default/files/policies/SexHarassment.pdf

Acknowledgements

This course draws on a rich and successful history of environmental and design teaching within the School of Architecture. As such, we would like to acknowledge the teaching cohorts of ARCH 5516 – Luminous and Thermal Design: An Ecological Approach to Zero-Energy Carbon Neutral Design, and ARCH 8288 - Ecological Comprehensive Design Studio: Architecture for the 22nd Century, including the following: Mary Guzowski, Loren Abraham, Ian McLellan, Jim Lutz, and Jeff Niemesz.
Reverence Texts in the College of Design Library, Rapson Hall

Listed below are reference books on daylighting, thermal, passive design, systems integration, and zero-energy design in the College of Design library for your reference.

Please note related case study and carbon-neutral websites at the end of the list.

Daylighting Design


Electric Lighting Design


Envelope Design (Daylight and Thermal Issues)


**THERMAL, PASSIVE SOLAR, ZERO AND LOW ENERGY DESIGN, AND/OR INTEGRATED SYSTEMS**

**WEB SITES: CASE STUDIES AND CARBON-NEUTRAL DESIGN**

Syllabus
# Electronic Course Authorization System (ECAS)

## ARCH 5518 - VIEW COURSE PROPOSAL

- **Approvals Received:**
  
- **Approvals Pending:**
  
- **Effective Status:** Active
- **Effective Term:** 1189 - Fall 2018
- **Course:** ARCH 5518
- **Institution:** UMNTC - Twin Cities/Rochester
- **Campus:** UMNTC - Twin Cities
- **Career:** GRAD
- **College:** TALA - College of Design
- **Department:** 10827 - School of Architecture

### General

- **Course Title Short:** Environmental Technology
- **Course Title Long:** Environmental Technology: Integrative Ecological Design for Responsive Architecture
- **Max-Min Credits for Course:** 3.0 to 3.0 credit(s)

This course introduces the ecological design concepts and principles of daylighting, thermal, energy, and building systems integration. The course will provide students with an understanding of the primary architectural and technological implications of lighting and thermal to inform design and ecological thinking and to support sustainable design decision-making.

- **Print in Catalog?:** Yes
- **Grading Basis:** A-F only
- **Topics Course:** No
- **Honors Course:** No
- **Online Course:** No
- **Freshman Seminar:** No
- **Is any portion of this course taught outside of the United States?:** No

- **Community Engaged Learning (CEL):** None
**Instructor Contact Hours:**
3.0 hours per week

**Course Typically Offered:**
Every Fall

**Component 1:**
LEC (no final exam)

**Auto-Enroll Course:**
No

**Graded Component:**
LEC

**Academic Progress Units:**
Not allowed to bypass limits.
3.0 credit(s)

**Financial Aid Progress Units:**
Not allowed to bypass limits.
3.0 credit(s)

**Repetition of Course:**
Repetition not allowed.

**Course Prerequisites for Catalog:**
<no text provided>

**Course Equivalency:**
No course equivalencies

**Cross-listings:**
No cross-listings

**Add Consent Requirement:**
No required consent

**Drop Consent Requirement:**
No required consent

**Enforced Prerequisites:**
Arch 5564

**(course-based or non-course-based)**

**Editor Comments:**
<no text provided>

**Proposal Changes:**
<no text provided>

**History Information:**
<no text provided>

**Faculty Sponsor Name:**
Richard Graves

**Faculty Sponsor E-mail Address:**
rmgraves@umn.edu

---

**Liberal Education**

**Requirement this course fulfills:**
None

**Other requirement this course fulfills:**
None

**Criteria for Core Courses:**

Describe how the course meets the specific bullet points for the proposed core requirement. Give concrete and detailed examples for the course syllabus, detailed outline, laboratory material, student projects, or other instructional materials or method.

Core courses must meet the following requirements:
They explicitly help students understand what liberal education is, how the content and the substance of this course enhance a liberal education, and what this means for them as students and as citizens.

They employ teaching and learning strategies that engage students with doing the work of the field, not just reading about it.

They include small group experiences (such as discussion sections or labs) and use writing as appropriate to the discipline to help students learn and reflect on their learning.

They do not (except in rare and clearly justified cases) have prerequisites beyond the University’s entrance requirements.

They are offered on a regular schedule.

They are taught by regular faculty or under exceptional circumstances by instructors on continuing appointments. Departments proposing instructors other than regular faculty must provide documentation of how such instructors will be trained and supervised to ensure consistency and continuity in courses.

Criteria for Theme Courses:

Describe how the course meets the specific bullet points for the proposed theme requirement. Give concrete and detailed examples for the course syllabus, detailed outline, laboratory material, student projects, or other instructional materials or methods.

Theme courses have the common goal of cultivating in students a number of habits of mind:

- thinking ethically about important challenges facing our society and world;
- reflecting on the shared sense of responsibility required to build and maintain community;
- connecting knowledge and practice;
- fostering a stronger sense of our roles as historical agents.

Writing Intensive

Propose this course as Writing Intensive curriculum: No

Question 1 (see CWB Requirement 1): How do writing assignments and writing instruction further the learning objectives of this course and how is writing integrated into the course? Note that the syllabus must reflect the critical role that writing plays in the course.

<no text provided>

Question 2 (see CWB Requirement 2): What types of writing (e.g., research papers, problem sets, presentations, technical documents, lab reports, essays, journaling etc.) will be assigned? Explain how these assignments meet the requirement that writing be a significant part of the course work, including details about multi-authored assignments, if any. Include the required length for each writing assignment and demonstrate how
the 2,500 minimum word count (or its equivalent) for finished writing will be met.

<no text provided>

Question 3 (see CWB Requirement 3): How will students’ final course grade depend on their writing performance? What percentage of the course grade will depend on the quality and level of the student’s writing compared to the percentage of the grade that depends on the course content? Note that this information must also be on the syllabus.

<no text provided>

Question 4 (see CWB Requirement 4): Indicate which assignment(s) students will be required to revise and resubmit after feedback from the instructor. Indicate who will be providing the feedback. Include an example of the assignment instructions you are likely to use for this assignment or assignments.

<no text provided>

Question 5 (see CWB Requirement 5): What types of writing instruction will be experienced by students? How much class time will be devoted to explicit writing instruction and at what points in the semester? What types of writing support and resources will be provided to students?

<no text provided>

Question 6 (see CWB Requirement 6): If teaching assistants will participate in writing assessment and writing instruction, explain how will they be trained (e.g. in how to review, grade and respond to student writing) and how will they be supervised. If the course is taught in multiple sections with multiple faculty (e.g. a capstone directed studies course), explain how every faculty mentor will ensure that their students will receive a writing intensive experience.

<no text provided>

Statement of Certification: This course is certified as Writing Intensive effective as of

Course Syllabus

Course Syllabus:

For new courses and courses in which changes in content and/or description and/or credits are proposed, please provide a syllabus that includes the following information: course goals and description; format; structure of the course (proposed number of instructor contact hours per week, student workload effort per week, etc.); topics to be covered; scope and nature of assigned readings (text, authors, frequency, amount per week); required course assignments; nature of any student projects; and how students will be evaluated.

Please limit text to about 12 pages. Text copied and pasted from other sources will not retain formatting and special characters might not copy properly. The University "Syllabi Policy" can be found here

Any syllabus older than two years should be replaced with a current version when making ECAS updates.
5550/8.31.15
Syllabus
Technology Five
ARCH 5518: Environmental Technology - Fall 2017
Integrative Ecological Design for Responsive Architecture
3 credits; NAAB Criteria: B.6, B.8 (C.1, C.2, and C.3)
Instructors Richard Graves, AIA, Director CSBR and Associate Professor
School of Architecture
v. 612.626.8783
e. rmgraves@umn.edu
Office hours: by appointment
Jim Lutz, AIA, Director of the MS Sustainable Design
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Office hours: by appointment
Office hours can be used to discuss course work, review work in-
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interests.
“…The building is not a fixed object but part of the larger pattern that
flows with change – a
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Architecture is part of the
process of ‘re-membering’ – putting back together our collective
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– Sim Van der Ryn, Ecological Design Pioneer
Teaching Assistant/
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Elizabeth Kutschke (kutsc009@umn.edu)
Office hours: Friday 10:00-12:00 Rapson Courtyard or by appointment
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5550/8.31.15
Syllabus
Heavy Air, Blaine Brownell
Design in Duluth, Ozayr Saloojee and Vince Debritto
Minneapolis Expo, Karen Lu and Jim Moore
Introduction
COURSE DESCRIPTION
ARCH 5518 Integrative Ecological Design for Responsive
Architecture
Studios and Critics
Course Focus
& Objectives
Architects and designers are uniquely positioned to address the complex
ecological, technological,
and social challenges of our day. Arch 5518: Environmental Technology
requires
you to take an integrated approach to architectural thinking, processes,
and tools can
provide creative solutions to pressing design challenges.
Simultaneously, it will require students
to consider and balance global ecological consideration, with health and
well-being,
technological solutions, and aesthetic issues.
This course asks you to consider and apply an integrated approach to
design, exploring how
it can inspire visionary solutions for a sustainable and regenerative
architecture. Central to
the question of a regenerative future is the consideration of architecture

https://onestop2.umn.edu/ecas/viewCourseProposal.jsp?EcasId=59602&seq=1
as part of a larger
living ecological system. While there are many issues related to carbon
neutral and zero
energy design, this investigation will focus on the roles of daylighting,
thermal, and bioclimatic
considerations to meaningfully inform architectural design while also
reducing fossil
fuel consumption and carbon emissions.
Architect Bill Reed suggests that, "the concept of sustainability moves us
into a thoughtful
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opportunities of an
ecological approach to daylighting, thermal, and systems integration in
design. Environmental
factors and technology should enhance architectural design quality with
tectonic expression of place based design.
4. Integrating Appropriate Design and Technology Applications: Learn to
employ design
and technology appropriately to achieve optimal social and ecological
effectiveness.
5. Developing Methods of Design and Performance Assessment and
Testing: To introduce
and apply qualitative and quantitative methods and design tools for
ecological assessment
and performance analysis.
3 of 7
5550/8.31.15
Syllabus
Format The course will meet concurrently with the comprehensive
studio. The parallel and integration
of the course material with the comprehensive study provides a
platform to move students
from understanding to ability in a hybrid seminar format. Students will
gain firsthand experience of the phenomena of thermal and luminous design, and their ecological design opportunities through application of environmental technology in their developing studio projects. Rigorous investigation through parametric testing utilizing both qualitative and quantitative assessment will form a basis of decision making. Emphasis will be placed on conceptual and schematic level interventions to provide students with core understanding of environmental systems, system selection, and systems impact and integration in design. This cross pollination will enrich comprehensive studio and environmental technology curricula. Schedule The proposed schedule is 15 weeks with some cross over teaching with the Comprehensive Studio. The course will meet 2 days (M/W) a week for the semester. Monday/Wednesday - Rapson 54 11:15a - 12:30p All classes will start promptly. Attached tentative schedule is subject to change. Recomended Text Lechner, Norbert. Heating, Cooling, Lighting: Design Methods for Architects, 3rd or 4rd Edition, New York, Wiley, 2009. Brown, G.Z. and DeKay, Mark. Sun, Wind & Light, Architectural Design Strategies, 2nd Edition, New York, John Wiley & Sons, 2001. Kwok, Alison and Walter Grondzik. The Green Studio Handbook. London: Architectural Press, 2007. Palette 2030 (2030palette.org) Required Software Climate Consultant 6.0 (Windows or Mac OS X 10.8 or later), free online. Sefaira and Sefaira Plug-in for Sketch-up. 4 of 7 5550/8.31.15 Syllabus Course Work and Assignments Assignments build on each other throughout the semester as students gain understanding of the material. Each individual assignment is intended to serve as a lens to probe and examine a particular issue. Overall, the course will address building systems in an additive manner. Project 5: Case Study for ARCH 5518 will compliment the students’ concurrent studio project. This will allow for the integration of the course material to be explored through design and is intended to compliment the comprehensive studio experience leading to stronger demonstration of environmental issues in the students’ work. The course will include three design projects, which enable students to assess and apply concepts, strategies, and assessment methods through direct application to design. Projects are tentatively weighted accordingly: Project 1: Site and Bioclimatic Design 10% Project 2: Daylighting Design and Analysis 20% Phase 1: Building Form Analysis and Passive Studies Phase 2: Design with Daylighting (room) Project 3: Thermal Design and Analysis 20% Phase 1: Baseline Analysis and Passive Studies Phase 2: Conceptual Building System Design
Project 4: Integrated Design - Facade and Room 20%
Project 5: Case Study 30%
TOTAL 100%
All projects, assignments and in-class exercises are due at the beginning
of class on the
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etc.). Attendance is
required for all class periods unless there is a legitimate reason.
Completion of all assignments
is required for the course and must be completed to receive a passing
grade.
Grading Standard The UMN grading standards will be used for project
grading.
University of Minnesota Grading Standards:
A Achievement that is outstanding relative to the level necessary to
meet course
requirements
B Achievement that is significantly above the level necessary to meet
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D Achievement that is worthy of credit even though it fails to meet fully
the
course requirements
S Achievement that is satisfactory, which is equivalent to a C- or better
F (or N) Represents failure (or no credit) and signifies that the work was
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not completed and there was no agreement between the instructor and
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I (Incomplete) Assigned at the discretion of the instructor when, due to
extraordinary
circumstance, e.g., hospitalization, a student is prevented from
completing
the work of the course on time. Requires a written agreement between
instructor and student.
5 of 7
5550/8.31.15
Syllabus
Academic
Dishonesty
Academic dishonesty in any portion of the academic work for a course
shall be grounds for
awarding a grade of F or N for the entire course.
Credit/Workload
Expectations
This 3 credit course will run for 15 weeks. The expected workload for
this course
is approximately 10 hours per week based on University of Minnesota
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We will work with students to assess the workload and make
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Schedule and
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The courses meet on Monday and Wednesday (locations are listed in the
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activity or program. Such behavior is not acceptable in the University setting. For additional
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http://regents.umn.edu/sites/default/files/policies/SexHarassment.pdf
Sexual Harrassment
Policy
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Zero-Energy Carbon Neutral Design, and ARCH 8288 - Ecological Comprehensive Design
Studio: Architecture for the 22nd Century, including the following: Mary Guzowski,
Loren Abraham, Ian McLellan, Jim Lutz, and Jeff Niemesz.
6 of 7
5550/8.31.15
Syllabus
Reverence Texts in the College of Design Library, Rapson Hall
Listed below are reference books on daylighting, thermal, passive
design, systems integration, and zero-energy
design in the College of Design library for your reference.
Please note related case study and carbon-neutral websites at the end
of the list.
Daylighting Design
Deutsches Architektur Museum, editor. The Secret of the Shadow: Light and Shadow in Architecture. Germany:
DAM, 2002.
Herzog, Krippner, and Lang. Façade Construction Manual, Basel:
Birkhäuser Publishers, 2004
(please browse – excellent reference).
Illuminating Engineering Society of North America (IESNA). The IESNA Lighting Handbook, New
York: IESNA.
Publishers, DETAIL Practice, 2006 (daylighting and electric lighting).
Electric Lighting Design
EnvelopeDesign(Daylight and Thermal Issues)
Compagno, Andrea. Intelligente Glasfassaden : Material, Anwendung, Gestaltung : Intelligent Glass
Technology Five
ARCH 5550: Environmental Technology - Fall 2016
Integrative Ecological Design for Responsive Architecture
3 credits; NAAB Criteria: B.6, B.8 (C.1, C.2, and C.3)
7 of 7
5550/8.31.15
Syllabus
Thermal, PassiveSolar,Zero and LowEnergyDesign, and/or
IntegratedSystems
Strategic Objectives & Consultation

Name of Department Chair Approver:
Marc Swackhamer

Strategic Objectives - Curricular Objectives:

How does adding this course improve the overall curricular objectives of the unit?

This course is needed to fulfill the sequence of technology courses that M. Arch students need to complete. The course has been successfully taught 2 times under a topics designator, Arch 5550. 3rd year M. Arch students are served. The course is required.

Does the unit consider this course to be part of its core curriculum?

Yes

Before submitting a new course proposal in ECAS, circulate the proposed syllabus to department chairs in relevant units and copy affiliated associate dean(s). Consultation prevents course overlap and informs other departments of new course offerings. If you determine that consultation with units in external college(s) is unnecessary, include a description of the steps taken to reach that conclusion (e.g., catalog key word search, conversation with collegiate curriculum committee, knowledge of current curriculum in...
related units, etc.). Include documentation of all consultation here, to be referenced during CCC review. If email correspondence is too long to fit in the space provided, paraphrase it here and send the full transcript to the CCC staff person. Please also send a Word or PDF version of the proposed syllabus to the CCC staff person.

This course is unique to the M. Arch program and does not overlap with courses in other units. This conclusion was reached based on knowledge of curriculum in other units by the M. Arch program director and the instructor of this proposed course.