ARC 350R/386M - Solar Decathlon
Spring Semester 2015
(Multidisciplinary course open to all UT students who want to be involved in the U.S. Department of Energy Solar Decathlon 2015 Competition)

Unique No.: 00727 (ARC 350R) / 01053 (ARC 386M)
MW 12:00 to 1:30p WMB 6.146

INSTRUCTOR:
Adam Pyrek
Office: WMB 5.116
Office hours M+W 9:00 to 10:30 and by appointment
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ENROLLMENT:
The class is open to students of all disciplines at UT

DESCRIPTION:
ABOUT THE U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON 2015 COMPETITION:
The U.S. Department of Energy Solar Decathlon is an award-winning program that challenges collegiate teams to design, build, and operate solar-powered houses that are cost-effective, energy-efficient, and attractive. The winner of the competition is the team that best blends affordability, consumer appeal, and design excellence with optimal energy production and maximum efficiency. Since 2002, the Solar Decathlon has involved over 100 collegiate teams, which pursued a multidisciplinary approach to study the requirements for designing and building energy-efficient, solar-powered houses. It established a worldwide reputation as a successful educational program and workforce development opportunity for thousands of students.

http://www.solardecathlon.gov/index.html
https://www.youtube.com/watch?v=SW6UljKtFrs

OUR TEAM:
The University of Texas at Austin along with Technical University of Munich, Germany (TUM) have successfully secured a place as one of the 17 teams participating in the 2015 competition. We are jointly developing an innovative house and energy/water efficient design for entry into the competition. The project concept has been driven by the following overarching ideas: sustainable urban development, affordability, and energy and water efficiency. Our team is proposing an affordable solar Accessory Dwelling Unit as a prototype Alley Flat for Austin, an 850 square foot home that can be integrated into the existing neighborhood infrastructure at the rear of a homeowner’s property.

The design for the entry has been under development by various students at UT and TUM. In the spring, the project will be developed further and constructed by the students taking part in this course and by students taking the associated architectural design studio. Here is a link to our current website with additional information about our team and project objectives:

www.nexushaus.com
COURSE DESCRIPTION:
The Solar Decathlon competition, as described by the Department of Energy, is an enormous design, logistics, communication and performance challenge. In order to address this challenge, students from various university disciplines will form an integrated team that will focus on the following aspects:

- **Design:**
  - Development and Documentation of the current design
    - Dwelling Modules Envelope and Interiors
    - Landscaping, Decking and Canopy
  - Engineering and Performance Analysis for:
    - Integration of Mechanical, Electrical and Plumbing Systems with the project objectives.
    - Integration of Renewable Energy Technologies including: Photovoltaic Systems, Passive Solar Heating/Hybrid Water Heating
    - Auxiliary Water: Rainwater Harvesting, Graywater collection and reuse
    - Structural Engineering
    - Electrical, Lighting and Energy/Water use monitoring and feedback system

- **Business**
  - Business model development, Branding, Fundraising...

- **Communications:**
  - Communications strategy, Electronic communications, Public exhibit materials, and Audiovisual Presentation

- **Construction of the project in Austin**

PEDAGOGIC OBJECTIVES:
Build on our Universities’ previous experience with the U.S. DoE Solar Decathlon, the proposed approach will be to establish a multidisciplinary setting driven by collaboration. Within this established framework, the aim of the course is for the students to meet the following learning objectives:

- **To develop specific skills, relating to the student’s individual field of study/interest, such as:**
  - BIM (Building Information Modeling) – Revit will be used as the multidisciplinary platform that will integrate the student work.
  - Engineering, and Energy and Water efficient design and analysis
  - Deployment of electronic communications media, such as websites and social media
  - Logistics relating to team building, construction, unit transport and deployment, marketing…
- **To advance the above-mentioned skills within a multidisciplinary academic context that will:**
  - Enhance the student’s understanding of the various aspects and parties influencing the overall design process.
  - Develop teamwork and leadership skills.
- **Acquire an understanding of project management methods and tools.**

FORMAT
The course will meet twice a week for a joint session that will encompass the various “sub-teams.” Topics and tasks to be researched or performed will be assigned on weekly or bi-weekly basis. Although, individual students may have a specific area of focus, all students will be encouraged to participate in the joint work sessions that will ultimately shape the comprehensive result. Field trips with the class and the instructor may take place during the semester. Guest speakers will be invited in order to share their expert view and experience on specific topics. During construction of the building, we may meet at the job site (located just east of I-35 from campus).
The Canvas course management software and/or Box will be used to distribute course materials, to communicate and collaborate online, to post grades, to submit assignments, etc. **Do not email assignments as attachments!**
You can find support at the ITS Help Desk at 475-9400, Monday through Friday, 8 a.m. to 6 p.m.  
http://guides.instructure.com/

**PREREQUISITE**
Prerequisite (00823): For students in the School of Architecture, upper-division standing; for others, upper-division standing and consent of instructor; additional prerequisites may vary with the topic. Prerequisite (01207): Graduate standing and consent of the graduate adviser.

**EVALUATION CRITERIA**

**GRADING CRITERIA**
Due to the variety of subject and tasks to be performed within this course, scope and expectations of the work will be defined on individual (or per group) basis, and will be evaluated on the following criteria: Content, completeness, and Timely submission. Each student may hand in ONE assignment (7) calendar days late ONCE during the semester. Consequently, assignments will be reduced by 2% for each school day that they are late. Credit for work turned in late due to non-scholastic reasons should be discussed with the instructor before the due date. Agreed-upon proof of the reason needs to be provided by the student.

**Journal:**
Students will maintain a semester long journal with weekly entries. These entries will document the activities and tasks performed for the given week. The journal may be paper or electronic (use Canvas “Discussions” or other pre-approved method).

**ATTENDANCE AND PARTICIPATION**
Students are required to attend and participate in all lectures. Attendance may be taken at any time. Students need to notify the instructor in advance by email if they cannot attend a lecture. Absent students must complete the assigned reading and familiarize themselves with the content of the missed lecture. Three (3) unexcused absences (not due to illness, or to authorized University activities) will result in a deduction of a letter-grade from the student’s final grade. Students need to attend labs, many of which will contribute to a graded assignment, or will count toward a lab grade.

**ASKING FOR ASSISTANCE**
Each student is expected to ask for assistance when needed. This can take place right after class, or students may schedule additional time to meet with the instructor at a later date, preferably during office hours.

**TEXT**
There will be no required text to be purchased by the students. Reading may be assigned during the semester based on specific field of research for the individual students.

**UNIVERSITY POLICIES**

**UNIVERSITY OF TEXAS HONOR CODE**
The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the university is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community.

Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since such dishonesty harms the individual, all students, and the integrity of the University, policies on scholastic dishonesty will be strictly enforced. For further information, visit the Student Judicial Services web site:  
http://deanofstudents.utexas.edu/sjs/.
STUDENTS WITH DISABILITIES
Students with disabilities may request appropriate academic accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities at 471-6259 (voice) or 232-2937 (video phone) or http://www.utexas.edu/diversity/ddce/ssd

DOCUMENTED DISABILITY STATEMENT
Any student with a documented disability who requires academic accommodations should contact Services for Students with Disabilities (SSD) at (512) 471-6259 (voice) or 1-866-329-3986 (video phone). Faculty are not required to provide accommodations without an official accommodation letter from SSD. (Note to Faculty: Details of a student’s disability are confidential. Faculty should not ask questions related to a student’s condition or diagnosis when receiving an official accommodation letter.)

Please notify the instructor as quickly as possible if the material being presented in class is not accessible (e.g., instructional videos need captioning, course packets are not readable for proper alternative text conversion, etc.).

Please notify the instructor as early in the semester as possible if disability-related accommodations of any kind are required. For field trips, advanced notice will permit the arrangement of accommodations on the given day (e.g., transportation, site accessibility, etc.).

Contact Services for Students with Disabilities at 471-6259 (voice) or 1-866-329-3986 (video phone) or reference SSD’s website for more disability-related information: http://www.utexas.edu/diversity/ddce/ssd/

CLASS WEB SITES AND STUDENT PRIVACY
Web-based, password-protected class sites will be associated with all academic courses taught at the University. Syllabi, handouts, assignments and other resources are types of information that may be available within these sites. Site activities could include exchanging e-mail, engaging in class discussions and chats, and exchanging files.

In addition, electronic class rosters will be a component of the sites. Students who do not want their names included in these electronic class rosters must restrict their directory information in the Office of the Registrar, Main Building, Room 1. For information on restricting directory information, see the General Information Catalog or go to: http://www.utexas.edu/student/registrar/catalogs/gi06-07/app/appc09.html

RELIGIOUS HOLIDAYS
By UT Austin policy, the student must notify the instructor of pending absence at least fourteen days prior to the date of observance of a religious holy day. If the student must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, she/he will be given an opportunity to complete the missed work within a reasonable time after the absence.

EMERGENCY EVACUATION POLICY
Occupants of buildings on the UT Austin campus are required to evacuate and assemble outside when a fire alarm is activated or an announcement is made. Please be aware of the following policies regarding evacuation:

- Familiarize yourself with all exit doors of the classroom and the building. Remember that the nearest exit door may not be the one you used when you entered the building.
- If you require assistance to evacuate, inform me in writing during the first week of class.
- In the event of an evacuation, follow instructions of class instructors.

Do not re-enter a building unless you’re given instructions by the Austin Fire Department, the UT Austin Police Department, or the Fire Prevention Services office.

TENTATIVE SCHEDULE
Schedule for our course will directly relate to the collaborative work we will be doing with Advanced Design: Solar Decathlon ARC 560R: 785 / ARC 696: 1225. Reference the tentative schedule for that course: https://soa.utexas.edu/courses/spring-2015/advanced-design-solar-decathlon