

UNIVERSITY OF TENNESSEE | SCHOOL of LANDSCAPE ARCHITECTURE  
LAR 535 | ECOLOGICAL DESIGN APPLICATIONS

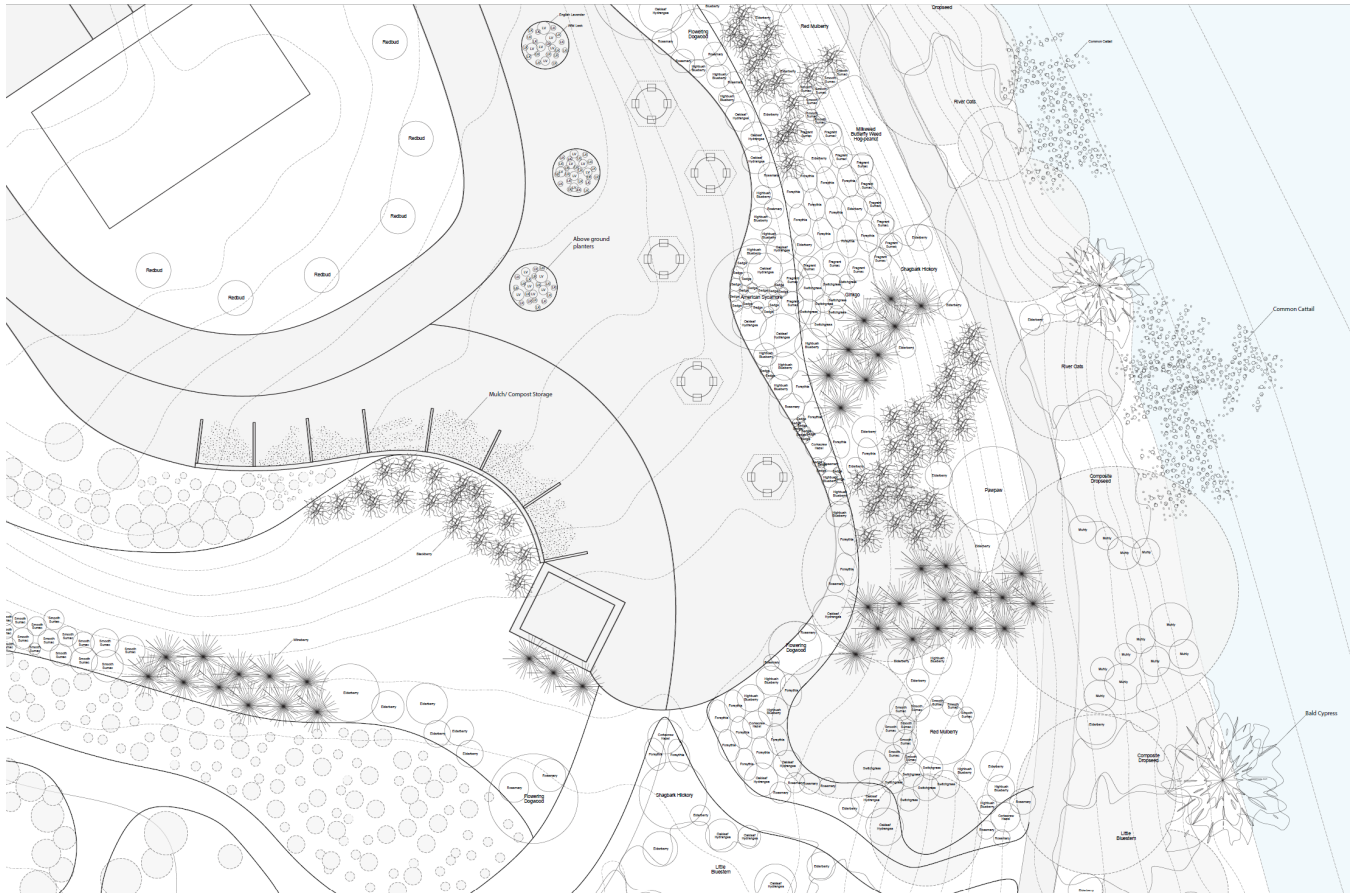


Image: Katherine Hill

## LAR 535: Ecological Design Applications

Fall 2023

### Meeting Time and Location

Tuesday and Thursday, 9:45 – 11:35 am

Environmental and Landscape Lab, Room 117

### Instructor

Michael Ross, SITES AP, ASLA

Assistant Professor, Dept. of Plant Sciences + School of Landscape Architecture

o: Environment and Landscape Lab 103

p: 865.974.1606 e: [mross28@utk.edu](mailto:mross28@utk.edu)

### Teaching Philosophy

I believe that education should be fully inclusive, accessible, flexible in modality, and responsive to global need. I believe that knowledge acquisition is an active pursuit. I believe that education is empowering and that those of us fortunate enough to be able to pursue education have an obligation to our global community to use our knowledge to make a difference.

### Prerequisites

LAR 534 – Ecological Design Theory

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**Course Description** This course provides instruction on the practical design, implementation, and management of living systems as fundamental elements of multifunctional infrastructures and performative landscapes at a range of scales and contexts. Planning, design, implementation, maintenance, and professional communication methods are exercised through a series of project scenarios.

Contemporary challenges posed by urbanization, climate dynamics, evolving economies and social paradigms have changed the demands we place on the designed landscape. Landscape architects in North America and around the world have risen to this challenge, revealing new possibilities for the economic, social and environmental performance of landscapes in public, private and infrastructural territories. Using theoretical, conceptual understandings, technical knowledge and case study underpinnings established in *LAR 534 – Ecological Design Theory*, this course focuses on the development of landscape proposals that activate the performative potentials of living landscape systems. An emphasis is placed on the deployment of plants and other biological media in a range of contexts, goal orientations, and scales, and the development of appropriate communication strategies to envision and explain their character, implementation, and management.

### **Intended Learning Outcomes**

- To understand fundamental ecological principles, soil science, plant communities and plant morphology as they relate to designed landscapes
- To translate an understanding of fundamental ecological principles, soil science, plant communities and plant morphology into successful planting and ecological design approaches that achieve a project's spatial, aesthetic and performative goals
- To prepare professional design documents for proposal implementation, including planting plans, planting details and specifications, and management protocols.
- To read, understand and critically evaluate various approaches to planting design and living systems relative to project goals and contexts.

### **Course Organization**

In order to achieve these learning outcomes, the course will include a range of distinct, yet complementary activities:

*Design Projects* – Students will build proficiency in operative landscape design and communication through in-class design charrettes and exercises that will require effort between class meetings.

*Required Readings* – Students will continue building theoretical, conceptual and technical knowledge through required readings that may include essays, book chapters, technical manuals/primers, and videos as determined appropriate.

*Lectures / Discussions* – Brief topical lectures will be delivered to reinforce or supplement reading content. When applicable, discussions will be curated amongst class participants.

*Guest Lectures* – Visiting scholars or professionals may periodically be invited to interact with students to share fundamental knowledge or discuss experiences deploying living systems in their professional project work.

*Site Visits* – Visits to local project sites or facilities may be arranged as determined appropriate to reinforce course concepts or collect information relative to course assignments. One Saturday visit or during another mutually-acceptable time during the week may also be scheduled as determined necessary.

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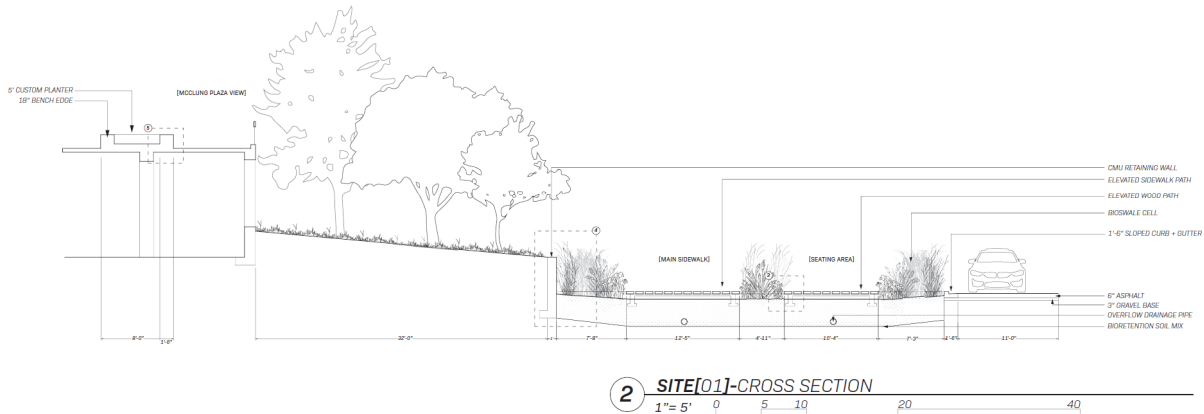


Image: Taylor Harrell

### Resources / Required Reading

Required readings will be assigned by the instructor as determined appropriate. Additional readings will be shared by way of CANVAS. The course reading list includes, but will not be limited to:

- Rainer, T., West, C., *Planting in a Post-wild World: Designing Plant Communities for Resilient Landscapes*, Timber Press, Portland, 2015 \*
- Beck, T., *Principles of Ecological Landscape Design*, Island Press, Washington DC, 2013\*
- Weaner, L., Christopher, T., *Garden Revolution: How our landscape can be a source of environmental change*, Timber Press, Portland, 2016
- Hopper, L., *Landscape Architectural Graphic Standards*, John Wiley and Sons, Hoboken NJ, 2007
- Del Tredici, P., *Urban Plants of the Northeast: A Field Guide*, Cornell University Press, New York, 2010
- Kays, B., *Landscape Architecture Technical Information Series: Planting Soils for Landscape Architectural Projects*, American Society of Landscape Architects, Washington DC, 2013
- Harker, D., et. al., *Landscape Restoration Handbook*, Lewis Publishers, Boca Raton, 1999
- Sustainable SITES Initiative SITES v2 Rating System (Free Resource) - <https://www.usgbc.org/resources/sites-rating-system-and-scorecard>

### UT Library Permalinks

Planting in a post-wild world:

[https://utk.primo.exlibrisgroup.com/permalink/01UTN\\_KNOXVILLE/1o769mb/alma9925944098102311](https://utk.primo.exlibrisgroup.com/permalink/01UTN_KNOXVILLE/1o769mb/alma9925944098102311)

Principles of ecological landscape design:

[https://utk.primo.exlibrisgroup.com/permalink/01UTN\\_KNOXVILLE/1o769mb/alma9924317360102311](https://utk.primo.exlibrisgroup.com/permalink/01UTN_KNOXVILLE/1o769mb/alma9924317360102311)

Design Workshop Landscape Architecture Documentation Standards:

[https://utk.primo.exlibrisgroup.com/permalink/01UTN\\_KNOXVILLE/i16cvl/pg\\_ebook\\_centralEBC4455256](https://utk.primo.exlibrisgroup.com/permalink/01UTN_KNOXVILLE/i16cvl/pg_ebook_centralEBC4455256)

Nature's Best Hope:

[https://utk.primo.exlibrisgroup.com/permalink/01UTN\\_KNOXVILLE/1o769mb/alma9925885557002311](https://utk.primo.exlibrisgroup.com/permalink/01UTN_KNOXVILLE/1o769mb/alma9925885557002311)

Sowing Beauty Designing Flowering Meadows from Seed:

[https://utk.primo.exlibrisgroup.com/permalink/01UTN\\_KNOXVILLE/1o769mb/alma9925944098002311](https://utk.primo.exlibrisgroup.com/permalink/01UTN_KNOXVILLE/1o769mb/alma9925944098002311)

<https://libguides.utk.edu/sustainablelandscapearchitecture>

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## Sustainable Landscape Architecture

Resources for PLSC350, PLSC311, and LAR535 Students

Home

Sustainability

Ecological Design

Sustainable  
Construction

Drafting Standards

Construction & Material  
Standards

Professional Practice

PLSC 280

### Sustainable Landscape Architecture Guide

This guide has been made for PLSC350, PLSC311, LAR535, and PLSC280 to help students find useful resources relevant to sustainable landscape architecture.

### Research tools

- [Libkey Nomad](#)  
Libkey Nomad is an extension for Google Chrome. It will make accessing article pdfs easier. Link opens in a new tab.
- [ZoteroBib](#)  
Quickly generates reference lists. Link opens in a new tab.
- [Endnote/Zotero Citation Managers](#)  
Citation managers help you organize your research and create citations and reference lists. Endnote and Zotero are two that the Libraries support. Link opens in a new tab.

### Material Storage

Multiple other classes utilize this class room. Do not leave materials taped to drafting tables in desk drawers, as they may be removed and/or lost. Storage solutions for materials between class meetings will be discussed.

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**SITE\_01 [PLANTING SCHEDULE]**

	Qty.	Common Name	Scientific Name	Spacing	Mature Height	Mature Spread	Remarks
<b>TREES</b>							
AR	2	Red Maple	<i>Acer rubrum</i>	20'-30'	40'-60'	25'-40'	
QP	2	Willow Oak	<i>Quercus phellos</i>	30'-40'	40'-75'	25'-50'	
<b>GRASSES</b>							
AG	23	Big Blue Stem	<i>Andropogon gerardii</i>	2.5'	4'-8'	2'-3'	
AT	18	Splitbeard Blue Stem	<i>Andropogon ternarius</i>	1.5'	1'-4'	1'	
CL	74	River Oats	<i>Chasmanthium l.</i>	1.5'	2'-5'	1'-2.5'	
PV	50	Switch Grass	<i>Panicum virgatum</i>	2'	3'-6'	2'-3'	
SN	21	Indian Grass	<i>Sorghastrum nutans</i>	2.5'	3'-8'	1'-2'	
SS	71	Little Blue Stem	<i>Schizachyrium s.</i>	2'	2'-4'	1.5'-2'	
<b>FLOWERS</b>							
EP	14	Purple Coneflower	<i>Echinacea pupurea</i>	1.5'	2'-5'	1.5'-2'	
GM	98	Wild Geranium	<i>Geranium maculatum</i>	1'	1.5'-2'	1'-1.5'	
MD	14	Bee Balm	<i>Monard didyma</i>	2'	2'-4'	2'-3'	
RF	64	Orange Coneflower	<i>Rudbeckia fulgida</i>	2.5'	2'-3'	2.5'-3'	
<b>GROUND</b>							
CP	126	Common Sedge	<i>Carex pensylvanica</i>	1'	.5'-1'	.5'-1'	

**PLANTING DETAILS**

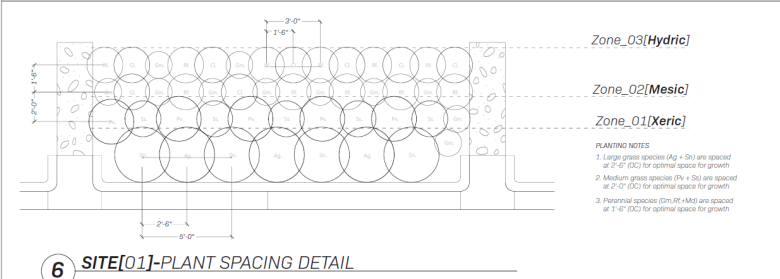


Image: Taylor Harrell

## Class Participation, Attitude, & Disposition

Design requires the development of new technical skills, ideas, vocabulary, and modes of communication. It also requires the development of a certain attitude towards one's discipline - its methods and values. This results in a disposition towards practice (professional or disciplinary) that informs the types of questions one asks, and the way one chooses to pursue these questions creatively and technically. These skills and stance emerge through deliberate practice, and this requires students to engage repeatedly in these processes over the course of a semester and degree program. For these reasons it is critical that students participate fully in all aspects of the studio. They must speculate about landscape ideas, critique good and bad projects, and incorporate critique into their own process. Included in this participatory aspect of the studio is the understanding that much of what students are faced with at this relatively early stage of their design career is about the development of habits that support diligent and disciplined practice. This type of practice requires hard work and mindfulness about the task(s) at hand, and this form of practice is one that must be learned and cultivated in itself.

## Sketchbook/Ideabook:

Each student is required to have a sketchbook with them at all times in studio (moleskin 6" x 9" suggested). This sketchbook/idea book may be periodically evaluated to confirm that students

are developing a habit of making notes, diagrams, sketches, collages, etc, about ideas related to studio, other coursework, and landscape issues more broadly.

## **Course Resources**

### **Readings**

Innovation leaders in any industry will confirm that a key to their process is immersion in their respective domain - its history, technology, evolution, etc - in order to help them better understand where the opportunities for innovation are. A major component of this studio will be a series of weekly readings and discussions that focus on the various studio topics and related/relevant theories and ideas. Students are expected to manage their time wisely and make sure that readings have been read (and, if necessary, reread) by the specified discussion time. While the instructor will provide 'key questions' for certain readings, students are still expected to bring notes for each reading so that they may participate fully in the discussion.

Readings for this course will be provided as digital files (pdf) on the course Canvas site to allow for easy access and quick reference throughout the studio. On occasion the instructor may email essays or weblinks that seem particularly suited to a topic or discussion that arises as the studio progresses.

### **Technology Requirements for this Course**

This course requires the use of a computer (laptop or desktop) that complies with the hardware specifications of the School of Landscape Architecture. This course will require use of the software applications in Microsoft Office, Adobe Creative Suite, AutoCAD, Rhino, Grasshopper. VRAY and 3D Studio MAX are also recommended. It is your responsibility to ensure you have a working computer with the required software installed and functional for this course at all times. Please ask the instructor or contact Jeff Wilkinson, Voltech or the OIT help desk with any other hardware or software questions you may have.

### **AI Policy: Permitted in this Course with Attribution**

In this course, students are encouraged to use Generative AI Tools like ChatGPT to support their work. To maintain academic integrity, students must disclose any AI-generated material they use and properly attribute it, including in-text citations, quotations, and references.

A student should include the following statement in assignments to indicate use of a Generative AI Tool: "The author(s) would like to acknowledge the use of [Generative AI Tool Name], a language model developed by [Generative AI Tool Provider], in the preparation of this assignment. The [Generative AI Tool Name] was used in the following way(s) in this assignment [e.g., brainstorming, grammatical correction, citation, which portion of the assignment]."

## Other equipment / materials requirements

In addition to the digital technologies listed above, basic hand drafting and model building tools/materials will likely be of use as students explore their assignments and projects. Students are also encouraged to continue to utilize the fablab & woodshop, laser cutter, CNC mill, 3d printers and any other relevant tools and machinery. Directions for how to access and use these resources will be provided as necessary if you have yet to use them. You will be required to purchase materials for models as necessary for your specific projects. Material requirements for each project will be specified on assignment sheets. Students are responsible for bringing appropriate materials and tools to each studio work session. Spray material is hazardous to our health and potentially damages the facility. Spray paint and spray glue will only be allowed in designated areas. The School of Art maintains a spray booth located in the A + A building and should be used if the materials being used require it, but this requires students to conform to Art's policies on its use.

## Assessment + Grading

Assessment of a student's individual performance will be based on evaluation of the following:

- **Attendance:** students are expected to attend every class period. Students are allowed one unexcused absence. Each subsequent unexcused absence will cost a 10pt deduction on a student's final grade. Students are encouraged to contact the instructor prior to or immediately after the missed class and are responsible for the missed lecture content. Individuals with an observed pattern of regular tardiness or absence will meet with the instructor to determine whether they should continue in the course.
- **Participation:** Active participation during in-class discussions, demonstrating completion and comprehension of assigned readings. If it is determined by the instructor that a pattern of not completing required readings persists, pop quizzes or exams may be incorporated into the course's evaluation approach. Students are expected to be productive and focused during in-class working periods.
- **Projects:** Graded projects will be assigned over the course of the semester, the evaluation parameters for each will be articulated on the respective exercise statement.

## Assignments and Grading Policy

Grading Policies & Evaluation Metrics:

Students will be evaluated first and foremost on the quality and timeliness of their assignments and project work. Additional attention will be given to in-class participation and work ethic. Grades will be based primarily on the student's demonstration of effort and progressively sophisticated design investigations and representations. Simply completing the assignments is insufficient to demonstrate a trajectory towards mastery - students are encouraged to go beyond their current abilities and the minimum requirements established by the instructor. Your instructor will encourage you to achieve work at the highest level possible but it is partly the student's responsibility to set high standards and continually challenge their abilities. For grade descriptions, see below: The percentages of each component of the course on your final grade are as follows:

Graphic Assignments: 80%

In-Class Participation: 20%

Submission Deadlines & Late Work

Late work will be accepted according to the following:  
up to 5 days late penalty of one letter grade (-10%)/day

submitted after 5 days automatic F, 50% of earned grade  
not submitted grade of zero

Note that weekends count as a 24-hour period. If you wish to request an extension (granted only in cases of extenuating circumstances), please talk with the instructor prior to the due date, if possible.

### **Attendance:**

Class attendance is required in order for a student to excel in the techniques and concepts being covered. Additionally, because of the large amount of subject matter covered in the course, instruction will start promptly at the scheduled time. At this time students are expected to have their computers booted up and the required software open. If for any reason the student cannot meet this schedule (such as arriving from a class on the other side of campus) they should meet with the instructor to discuss options on the first day of class. Attendance will be taken at the beginning of class. Students that are consistently late will receive a reduction of their overall grade.

You are allowed one unexcused absence without a penalty – additional unexcused absences will result in your course grade being lowered by 5%. Unusual mitigating circumstances will be considered in applying any penalty. If you are absent it is your responsibility to acquire lecture notes, handouts, and assignments from a classmate or via the course's Canvas site.

### **Dropping the Course:**

Students are responsible for understanding the university's policies and procedures regarding withdrawing from courses as well as the impact on their curricular path within in the School of Landscape Architecture and should be aware of the current deadlines and penalties for dropping classes.

### **Departmental Grading Scale and Description**

0	60.0	63.0	67.0	70.0	73.0	77.0	80.0	83.0	87.0	90.0	93.0	97.0
F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A	A+
0	0.67	1.00	1.33	1.67	2.00	2.33	2.67	3.00	3.33	3.67	4.00	4.00

#### **Grade of A (90-100)**

Excellent work not only fulfills the stated objectives of the course syllabi and project statements but also extends them through new discoveries, insights, and proposing issues beyond their stated scope. These students demonstrate a high degree of professional dedication, rigor, open-mindedness and resourcefulness. They have developed the ability to build upon a variety of feedback and excel independently. Their resultant work is rigorously thought through, well-crafted, and clearly communicates the breadth and depth of their investigations. Highest quality of representation skills.

#### **Grade of B/B+ (80-89)**

Good work that fulfills the stated objectives of the syllabi and project statements and expands the stated issues by allowing those issues to direct their investigations and developments in their work. These students demonstrate a degree of professional dedication, inquisitiveness, systematic rigor and resourcefulness. They are developing the ability to build upon a variety of feedback and their emerging independent voice.

Their resultant work is competent, well-crafted and clearly communicates the depth of their daily investigations of the issues presented in the projects. Good quality of representation skills.

**Grade of C /C+(70-79)**

Average work that fulfills and demonstrates the stated objectives of the course syllabi and project statements. These students demonstrate a low degree of professional dedication and require constant guidance. The average student's resultant work demonstrates an understanding of the problem while acknowledging some deficiencies in self-confidence or willingness to explore. Basic design or communication skills, time management, or lack of breadth and depth of their daily investigations.

**Grade of D (66-69)**

While possibly complete, deficient work does not demonstrate how the stated objectives of the course syllabi and project statements have been fulfilled. These students generally suffer from one of the following: lack of professional dedication, close-minded attitude, lack of time management skills. The deficient student's resultant work is fragmentary and incomplete.

**Grade of F (0-65)**

Inadequate work (Work fulfills few if any of the requirements.)

**Grade of I**

Incomplete work (Grade is only available due to health or other emergency situations. See university standards for time limit.)

**Intellectual Property Statement:**

All work performed under the direction of faculty in the College of Architecture and Design is subject to limitations of "fair use" and Intellectual Property Rights as outlined by the UTK General Counsel and the UTK Office of Research and Engagement. Unless otherwise noted, all rights are reserved by the college.

**Copyright as related to the Student Code of Conduct:**

Instructors own the copyright to syllabi, handouts, assignments, quizzes, and exams associated with their classes. All presentations developed by instructors, as well as instructors' lectures, are also protected by copyright, whether these presentations are delivered live in-class, shared through Zoom or other videoconference platforms, or uploaded to Canvas or similar sites. Sharing any of course material without the written permission of the instructor is a violation of copyright law, and is therefore also a violation of the university's policy on acceptable use of information technology resources (UT policy number IT0110). That policy states that students will not commit copyright infringement, "including file sharing of video, audio, or data without permission from the copyright owner" and that file sharing is a violation of the university's student code of conduct.

## **UNIVERSITY OF TENNESSEE CAMPUS SYLLABUS ACADEMIC INTEGRITY**

Each student is responsible for their personal integrity in academic life and for adhering to UT's Honor Statement. The Honor Statement reads: "An essential feature of the University of Tennessee, Knoxville is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the university, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity."

## **YOUR ROLE IN IMPROVING THE COURSE THROUGH ASSESSMENT**

At UT, it is our collective responsibility to improve the state of teaching and learning. During the semester you may be requested to assess aspects of this course, either during class or at the completion of the class, and through the TNVoice course evaluation. Please take the few moments needed to respond to these requests as they are used by instructors, department heads, deans and others to improve the quality of your UT learning experience.

## **STUDENTS WITH DISABILITIES – <http://sds.utk.edu>**

The University of Tennessee, Knoxville, is committed to providing an inclusive learning environment for all students. If you anticipate or experience a barrier in this course due to a chronic health condition, a learning, hearing, neurological, mental health, vision, physical, or other kind of disability, or a temporary injury, you are encouraged to contact Student Disability Services (SDS) at 865-974-6087 or [sds@utk.edu](mailto:sds@utk.edu). An SDS Coordinator will meet with you to develop a plan to ensure you have equitable access to this course. If you are already registered with SDS, please contact your instructor to discuss implementing accommodations included in your course access letter.

## **ACCESSIBILITY POLICY AND TRAINING – <http://accessibility.utk.edu>**

The University of Tennessee, Knoxville, provides reasonable accommodations for individual students with disabilities through its office of Student Disability Services. The university is also committed to making information and materials accessible, when possible. Resources and assistance to support these efforts can be found at <http://accessibility.utk.edu/>.

## **WELLNESS – <http://wellness.utk.edu/> and <http://counselingcenter.utk.edu/>**

The Center for Health Education and Wellness empowers all Volunteers to thrive by cultivating personal and community well-being. The Center can answer questions about general wellness, substance use, sexual health, healthy relationships, and sexual assault prevention. The Student Counseling Center is the university's primary facility for personal counseling, psychotherapy, and psychological outreach and consultation services.

Any student who has difficulty affording hygiene products, groceries, or accessing sufficient food to eat every day is urged to contact the Big Orange Pantry for support. The Big Orange Pantry, located in Greve Hall, is a free resource for all students, faculty, and staff, no matter how great or small their need is. Students who need emergency financial assistance can also request funding from the Student Emergency Fund.

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Students who are experiencing non-academic difficulty or distress and need assistance should call 974-HELP or submit an online referral. The 974-HELP team specializes in aligning resources and support to students experiencing mental health distress.

**EMERGENCY ALERT SYSTEM – <http://safety.utk.edu/>**

The University of Tennessee, Knoxville, is committed to providing a safe environment for learning and working. When you are alerted to an emergency, please take appropriate action. Learn more about what to do in an emergency and sign up for UT Alerts. Check the emergency posters near exits and elevators for building specific information. In the event of an emergency, course schedules and assignments may be subject to change. If changes to graded activities are required, reasonable adjustments will be made, and you will be responsible for meeting revised deadlines.

Unusual circumstances may result in a change of teaching modality.

The instructor reserves the right to revise, alter or amend this syllabus as necessary.