Course Logistics

Meeting Times:
- Tuesdays Period 7 (1:55pm to 2:45pm, 1 lecture, 50 minutes)
- Thursdays Period 7-8 (1:55pm to 3:50pm, 1 in-class lab, 115 minutes, with a 15-minute break)

Meeting Location:
- Norman Hall 0331 (NRN 0331)

Instructor Information

Instructor: Lisa Anthony, PhD
- E-mail address: lanthony@cise.ufl.edu (put ‘NUI’ in the subject)
- Office hours: Mondays and Tuesdays 3:00pm to 4:00pm, or by appointment
- Office location: CSE Building, E542
- Telephone: 352-505-1589 (not the best way to reach me)
- Class Web site: http://ufcisenui.wordpress.com/

Teaching Assistant: Andrew Cordar
- E-mail address: acordar@cise.ufl.edu
- TA office location: CSE Building, E351
- TA office hours: Tuesdays and Thursdays 12:30pm to 1:30pm

Course Information

Catalog Descriptions:
- CIS 4930 -- Special Topics in CISE -- Credits: 3.
- CIS 6930 -- Special Topics in CISE -- Credits: 3.

Course Overview:
This is a cross-listed undergraduate and graduate course that introduces students to the field of Natural User Interaction (NUI). NUI focuses on allowing users to interact with technology through the range of human abilities, such as touch, voice, vision and motion; some examples of NUI are touchscreen interactions with iPads and whole-body interactions with the Microsoft Kinect.

This class will serve as an introduction to the design, development, and evaluation of a range of current NUI technologies. In this course, students interact with the material
through reading relevant literature, participating in group discussions, creating relevant presentations, working on an individual or group project, and listening to guest speakers. Students will apply their knowledge in a research project where they design, implement, and evaluate a NUI prototype.

Comfortable experience with one or more of the following languages is recommended for this course: Java, C#, or Objective C. Students who have taken CIS 4930 or CAP 5100 (Human-Computer Interaction) will be more comfortable in this course, but it is not a prerequisite.

This course will be taught by Dr. Lisa Anthony, an assistant professor in the Department of Computer and Information Science and Engineering (CISE) at UF.

Pre-requisites and Co-requisites:
• None.

Course Components:
This course involves the following core components:
• Lectures – core NUI concepts will be presented and discussed.
• Research paper reading – recent HCI research conference and journal publications related to NUI will be read and discussed in class.
• Creation and evaluation of an interface – in groups, students will (1) create a NUI using one of the covered NUI platforms (e.g., touch/gesture, voice, motion), and (2) evaluate the NUI with their peers using HCI methods.

Course Objectives:
By the end of this course, students will be able to:
• Identify and characterize what is meant by the term “natural user interaction” as it is used in the field today.
• Compile and run “Hello World” level introductory applications in each of the covered NUI platforms (e.g., touch/gesture, voice, motion).
• Develop and evaluate a prototype application that uses a NUI paradigm.

Course Materials
Material and Supply Fees:
• None.

Textbooks and Software Required:
No textbook is required for this course. To provide students with access to the latest, most cutting-edge research developments in the field of NUI, weekly assigned readings will be posted to the course website one week prior to the due date. Students will be responsible for downloading the readings from the ACM Digital Library (http://dl.acm.org/).
Students will do in-class work on their projects during the Thursday meetings, and are therefore **required to bring a laptop to class**. The following free and open-source software packages may be necessary to be installed by students on their laptops over the course of the semester, depending on the project you choose:


**Recommended Reading:**


**Course Outline**

**Course Topics:**

- Natural User Interaction as a field and how it relates to Human-Centered Computing / Human-Computer Interaction.
- Touch and Gesture Interaction on smart surfaces (e.g., touchscreen smartphones, tablet computers, etc.).
- Whole-body Interaction using 3D scanners/sensors (e.g., Microsoft Kinect).
- Speech and Voice Interaction using natural language input.
- NUI applications and active research areas.
- Evaluating prototypes with end-users.

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1 Consistent with UF College of Engineering computer requirements: “The University of Florida requires students to have access to a computer. The College of Engineering further requires that students have access to and on-going use of a laptop/mobile computer.” For more information, see [http://www.eng.ufl.edu/students/career-resources/computer-requirements/](http://www.eng.ufl.edu/students/career-resources/computer-requirements/)
### Tentative Schedule: subject to change based on speaker availability

<table>
<thead>
<tr>
<th>Week</th>
<th>Day</th>
<th>Dates</th>
<th>Topics</th>
<th>Checklist</th>
<th>Assignments Due</th>
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<tbody>
<tr>
<td>1</td>
<td>R</td>
<td>08/22</td>
<td>Syllabus, HCI, and NUI Introduction</td>
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<tr>
<td>2</td>
<td>T</td>
<td>08/27</td>
<td>Designing NUI: Human Factors and Interaction Design Methods</td>
<td>□ Introduce yourself on Sakai discussion board</td>
<td>*DROP DATE</td>
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<tr>
<td></td>
<td>R</td>
<td>08/29</td>
<td>Developing NUI: Recognition-Based Interaction and Current NUI Frameworks</td>
<td>□ Reading(s) □ Discussion posts</td>
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<td></td>
<td></td>
<td></td>
<td>In-Class Activity: Form groups for course project + Project Discussion</td>
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<td>3</td>
<td>T</td>
<td>09/03</td>
<td>Tutorials + “Hello World” Demos of Current NUI Frameworks (Andrew Cordar)</td>
<td>□ Reading(s)</td>
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<td></td>
<td>R</td>
<td>09/05</td>
<td><strong>In-Class Activity: Group Project Outline Presentations (8-10 min per group)</strong></td>
<td>□ Discussion posts</td>
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<td>4</td>
<td>T</td>
<td>09/10</td>
<td>Evaluating NUI: Live User Studies and Offline Testing</td>
<td>□ Reading(s)</td>
<td><strong>Group Project Outlines due</strong></td>
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<td></td>
<td>R</td>
<td>09/12</td>
<td>In-Class Activity: Project Updates + Group Working / Meeting Time</td>
<td>□ Discussion posts</td>
<td><strong>Group Project Outlines approved by instructor</strong></td>
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<td>5</td>
<td>T</td>
<td>09/17</td>
<td>Touch and Gesture Interaction I</td>
<td>□ Reading(s)</td>
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<td></td>
<td>R</td>
<td>09/19</td>
<td>In-Class Activity: Project Updates + Group Working / Meeting Time</td>
<td>□ Discussion posts</td>
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<td>6</td>
<td>T</td>
<td>09/24</td>
<td>Touch and Gesture Interaction II</td>
<td>□ Reading(s)</td>
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<td>R</td>
<td>09/26</td>
<td>In-Class Activity: Project Updates + Group Working Time</td>
<td>□ Discussion posts</td>
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<td>7</td>
<td>T</td>
<td>10/01</td>
<td>Working with Users and the IRB</td>
<td>□ Reading(s)</td>
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<td></td>
<td>R</td>
<td>10/03</td>
<td>In-Class Activity: Project Updates + Group Working Time (Informed Consent Activity)</td>
<td>□ Discussion posts</td>
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<td>8</td>
<td>T</td>
<td>10/08</td>
<td>Motion and Whole-Body Interaction I</td>
<td>□ Reading(s)</td>
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<td>R</td>
<td>10/10</td>
<td><strong>In-Class Activity: Project Prototype Demos (8-10 min per group)</strong></td>
<td>□ Discussion posts</td>
<td><strong>Prototype Live Demos due</strong></td>
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<td>Activity Description</td>
<td>Reading(s)</td>
<td>Discussion posts</td>
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<td>9</td>
<td>T 10/15</td>
<td>Motion and Whole-Body Interaction II</td>
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<td></td>
<td>R 10/17</td>
<td>In-Class Activity: Project Updates + Group Working Time</td>
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<td>10</td>
<td>T 10/22</td>
<td>Speech and Voice Interaction I</td>
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<td></td>
<td>R 10/24</td>
<td>In-Class Activity: Project Updates + Group Working Time</td>
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<td>11</td>
<td>T 10/29</td>
<td>Speech and Voice Interaction II</td>
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<td>R 10/31</td>
<td><strong>In-Class Activity: User Study Report Presentations (8-10 min per group)</strong></td>
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<td>12</td>
<td>T 11/05</td>
<td>NUI for Feedback: Haptics, Auditory Interfaces, and more</td>
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<td>R 11/07</td>
<td>In-Class Activity: Project Updates + Group Working Time</td>
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<td>13</td>
<td>T 11/12</td>
<td><strong>Guest Lecture: Applications: Natural Interactions with Virtual Animated Agents (Dr. Benjamin Lok)</strong></td>
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<td>R 11/14</td>
<td>In-Class Activity: Project Updates + Group Working Time</td>
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<td>14</td>
<td>T 11/19</td>
<td><strong>Guest Lecture: Applications: Affective Computing (Dr. Andrea Kleinsmith)</strong></td>
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<td>R 11/21</td>
<td><strong>In-Class Activity: Project Presentations &amp; Final Demos (8-10 min per group)</strong></td>
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<td>15</td>
<td>T 11/26</td>
<td>Research Topic and Opportunities: NUIs and Children</td>
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<td>R 11/28</td>
<td><strong>NO CLASS – THANKSGIVING</strong></td>
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<td>16</td>
<td>T 12/03</td>
<td>Skeptical Views of NUIs</td>
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<td></td>
<td>R 12/05</td>
<td><strong>READING DAY – NO CLASS</strong></td>
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<td>17</td>
<td>W 12/11</td>
<td>3:00pm to 5:00pm Final Exam Period: NO EXAM</td>
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<td>18</td>
<td>W 12/18</td>
<td>Final grades available on ISIS – not before. Please do not email the instructor/TA asking for grades.</td>
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Grading

The following items will contribute to students’ grades in this course:

- Project Outline (presentation + paper) 10%
- Prototype Demo (presentation only) 15%
- User Study Report (presentation + paper) 20%
- Final Presentation + Demo 15%
- Final Paper 20%
- Online Discussion Posts (2 per week) 10%
- Class Participation, including Reading Quizzes 10%
- No mid-term or final exams

1 Note: discussion threads will be created by the instructor/TA in Sakai, and students should use these threads to post at least 2 new “substantive” discussion posts per week. Posts such as “I agree.” or “I disagree.” are not sufficiently substantive. Explain why you agree or disagree with the point being made. Discussion posts are due before the beginning of Thursday meetings.

2 Note: unannounced reading quizzes will be given periodically throughout the semester at the beginning of the Tuesday meetings. These quizzes will cover only that week’s reading(s). Make-up quizzes will have different questions than the original quiz.

Grading Scale:
- 100-92 A, 91-90 A-
- 89-88 B+, 87-82 B, 81-80 B-
- 79-78 C+, 78-72 C, 71-70 C-
- 69-68 D+, 68-62 D, 61-60 D-
- 59-0 E

This course will use the Sakai e-Learning course management system to post grades and to communicate with class members. If you have a question about the course that other students could benefit from hearing the answer, please post to the appropriate discussion thread on Sakai rather than sending individual emails to the instructor/TA.

Expectations for Graduates vs. Undergraduates in this Course:
Graduate-level sections of this course require more work than the undergraduate sections. Graduate students enrolled in this course must:
- Design and develop a more complex NUI prototype, and evaluate it with more users in the user study assignment.
- Complete one additional reading per week (most weeks, this will be 2 papers instead of 1 paper).

Undergraduate students who are interested may do the additional work as extra credit. See the instructor beforehand to arrange this.
Undergraduate Grading Scale Note:
A C- will not be a qualifying grade for critical tracking courses. In order to graduate, students must have an overall GPA and an upper-division GPA of 2.0 or better (C or better). Note: a C- average is equivalent to a GPA of 1.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please visit: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Graduate Grading Scale Note:
Graduate students need an overall GPA of 3.00 truncated and a 3.00 truncated GPA in their major (and in the minor, if a minor is declared) at graduation. For more information on grades and grading policies, please visit: http://gradcatalog.ufl.edu/content.php?catoid=4&navoid=907#grades

Honor Code & Collaboration:
High level questions, syntax topics, and algorithms can be discussed amongst each other and amongst the groups. Not allowed in this course include the following:

1) plagiarism (misrepresenting others’ ideas as your own, can be fixed with simple citation),
2) copying code,
3) social loafing (e.g., for group work), and
4) work offensive to others.

As for other courses in CISE in the past, offenders will be held to the UF Honesty Policy (see below) including reporting incidents to the Dean of Students. The results of this have included failing grades, ethic lectures, and a permanent mark in records (which can lead to expulsion).

Course Policies

Late Assignments:
All assignments will be assessed a late penalty of -10% for each day late. After 3 days, students will receive a 0. The only exception to this rule is if students contact the instructor in writing before the assignment due date.

Attendance:
Attendance will not be graded. Engagement in class discussions is graded, however, so if students must miss class, the instructor recommends increasing participation on the other days. If a student is sick or will be absent for a significant period of time, please contact the instructor to work out a way to catch up.

Make-ups:
Students who contact the professor before the due date with appropriate requests for extension and/or makeup assignments will be given an additional amount of time to make up late assignments equal to the time lost due to the unforeseen circumstance.
**Incompletes:**
Incompletes will be granted for only the most extreme circumstances, e.g. medical or family reasons. To be considered for an incomplete, the student must 1) let the professor know at in advance that they are seeking an incomplete, and 2) provide documentation to support the request.

Requirements for class attendance and make-up exams, assignments, and other work are consistent with university policies that can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

**Classroom Expectations:**
To be courteous to your fellow students, please:
- Turn all cell phone ringers to silent and step outside to take calls.
- Turn off all audible notifications on laptops and phones.
- Refrain from texting during class.
- Use laptops only for taking notes or looking up relevant information (no Facebook, YouTube, Twitter, etc.).

**Guest Lectures:**
In this course, guest lecturers are invited to present material related to their research and how it relates to the course material. These are experts in their fields and are taking time out of their busy schedules to share their knowledge with you. Please respect their time and attend the guest lectures as you would any other meeting of the course.

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**University Policies and Resources**

**Honesty Policy**
UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Note that failure to comply with this commitment will result in disciplinary action compliant with the UF Student Honor Code Procedures. See http://www.dso.ufl.edu/sccr/procedures/honorcode.php

**Accommodation for Students with Disabilities**
Students requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.
**UF Counseling Services**
Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:

- UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, [http://www.counseling.ufl.edu/cwc/Default.aspx](http://www.counseling.ufl.edu/cwc/Default.aspx), counseling services and mental health services.
- Career Resource Center, Reitz Union, 392-1601, career and job search services.
- University Police Department 392-1111

**Software Use**
All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

**Course Evaluations**
Students are expected to provide feedback on the quality of instruction in this course based on 10 criteria. These evaluations are conducted online at [https://evaluations.ufl.edu](https://evaluations.ufl.edu). Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at [https://evaluations.ufl.edu/results](https://evaluations.ufl.edu/results).