IML 543
TRANSDISCIPLINARY MEDIA DESIGN PRACTICUM

- Discover how humans learn and 'forget' how to walk using sensors.
- Design full body interactive experiences in virtual reality.
- Create playful interactions for infants and older adults.
- Invent mindfulness applications for pain and anxiety.

Step. Stop. Breathe. Be. Now. Play.

Research/Clinical Applications: Parkinson's Disease for Adults & Pain Management for Children and Adults

THURSDAYS 1-4:50PM
Open to all graduate students

Supported by the **Art and Science Alliance** of The Bridge@USC

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Prof. Marientina Gotsis, MFA
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USC Cinematic Arts

USC School of Cinematic Arts
Creative Media & Behavioral Health Center

IML 543

Transdisciplinary Media Design Practicum

Fall 2016 | 4 Units

Instructor:
Marientina Gotsis, MFA
gotsis@usc.edu

Day/Time: Thu 1-4.50pm
Classroom: SCI 308
Class Number: 37458R

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Office Hours: TBD/By appointment

A Themed Exploration.

This course will never be the same twice. Each time it is taught, we set one or more unique challenges inspired by something that we want to explore because it is urgent and timely, rare and unusual, or difficult and obscure. The class takes advantage of emerging interest in topics in neuroscience, public health and medicine that merit further exploration from a design perspective. Unexplored themes give the students an opportunity to learn about the process of generating research questions, as well as interventions in real-time through collaboration and experiential design. Each participating student and faculty will bring their expertise and an open mind to contribute what they know how to do and learn something new from others.

"Step. Stop. Breathe. Be. Now. Play."

This theme will be first explored by reviewing research and interventions of different formats, experiences, and devices for virtual reality (VR) (Google Cardboard, GearVR, Oculus, HTV Vive, etc.). We will try embodied experiences for laying down, sitting, standing, and walking in order to gain insight toward solutions that can be developed for two separate areas: a) Parkinson's Disease (adults); b) Pain Management (children and adults).

In this semester, students will:

- Discover how humans learn and “forget” how to walk using sensors.
- Design full body interactive experiences in VR.
- Create playful interactions for infants and older adults.
- Invent mindfulness applications for pain and anxiety.

Proposed Deliverables

The main proposed output activities for this semester will be to a) prototype walking VR interventions that will be useful in Parkinson’s Disease for gait rehabilitation and investigating questions related to context dependent learning; b) review the pain management literature and existing prior art and develop an ontology of VR-based pain management experiences and identify gaps and opportunities in the field. This research will likely also overlap with mindfulness interventions, as well as walking meditations. The class has been provided a small fund by the Art and Science Alliance of The Bridge@USC to assist with project prototyping-related needs that go beyond the resources and expertise of people in the class.

Partners

- Neuroplasticity and Repair in Degenerative Disorders USC Collaborative (Giselle Petzinger)
- Locomotor Control Laboratory @ USC Division of Biokinesiology and Physical Therapy (James Finley)
- Neuroplasticity and Imaging @ USC Division of Biokinesiology and Physical Therapy (Beth Fisher)
- Biobehavioral Pain Laboratory, Pediatric Pain Management Clinic, Children’s Outcomes, Research, and Evaluation (C.O.R.E.) Program @ Children’s Hospital Los Angeles (Jeff Gold).

Project funding provided by The Bridge@USC

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Syllabus

Course Rationale

What are the “necessary ingredients” for design of interactive entertainment-based products that aspire to have a positive impact on human health and happiness? Perhaps more importantly, is there an interactive entertainment-based product that does not have impact in some area of the human experience, even if through unintended consequences? The challenge of answering these questions becomes very real in the case of designers collaborating with scientists and health professionals. These collaborations face challenging barriers for transdisciplinary communication due to differences in mutual understanding of even the most basic of vocabulary between artist, designers, engineers, scientists and health professionals. Moreover, there is confusion on whether one is designing a “process”, making a “product” or improving “outcomes”. Generally, most everyone agrees on wanting to generate positive impact even if they disagree on how to measure it, or even on what is “positive”.

You can’t wipe the slate clean and we won’t ask you to forget everything you know from your previous training, but you will have to stay open and find ways to integrate new ways of thinking, seeing, making, and being with your prior identity as an artist, designer, engineer, scientist, health professional, or any other identity you have worked hard to construct. In this course, you may design and evaluate experiences that lead you outside of your comfort zone. We will cross the lines between experience design, experiential design and participatory design. You will have to learn to balance your prior training alongside your senses and emotions. In this class, you will need to tolerate “subjective” and “objective” truths. You will appreciate what Epicurus advocated: “all sense-perceptions are true” (Vogt, 2011). You will have to find satisfaction in designing experiences as a catalyst for the emergence of “self-structures, deeply affective”, which can in turn empower an individual towards successful steering of “a satisfying, cognitive course through future emotional jungles of lived lives” (Panksepp, 2009, p. 6-7).

Consider replacing “interactivity” with “intersubjectivity”. Stern (2010, p.243) defines the “intersubjective field”, “intersubjective orientation” and “lived story” as follows:

> **Intersubjective field** is the domain of feelings, thoughts, and knowledge that two (or more) people share about the nature of their current relationship. Not only is this intersubjective domain shared, but the sharing is also validated between them, implicitly or explicitly. This field can be reshaped. It can be entered or exited, enlarged or diminished, made clearer or less clear.
>
> **Intersubjective orientation** is both the need to test and the act of testing the intersubjective field, knowing "where it stands" between two people, sensing "where the relationship is at" at this moment, knowing "where the two people are going with each other." It functions to orient one in the intersubjective field and to evaluate the nature of the field at the moment. It is an almost continuous process and at times has an imperative feel (when lost and intersubjective anxiety arises). It is akin to spatial orientation, but in an intersubjective space.
>
> **Lived story** (or micro-lived story) refers to the structure of the experience that unfolds during a present moment. It consists of a narrativelike plot and a line of dramatic tension that rises and falls during the present moment. It is a lived, felt, or experienced story that is not verbalized or narrated. Later, real narratives can be forged out of these stories.

In this course, our focus is on the “intersubjective field” and “lived story” regardless of whether we can observe and/or measure these “objectively”. Rest assured that someone will always find a way to argue with your evaluation methodologies, but one can never question one’s own “felt

experience". As a designer and interpreter of "lived story", you will traverse the vast universe of methodologies in the arts, design, engineering, humanities and sciences to collect what you need and use as appropriate. Comfort is to be found in the "virtuous" pleasure experienced by the individuals who inhabit a domain of your creation, and in the blurred boundaries between observing that experience and becoming part of that experience. Comfort is to be found when you observe a change in affect, when you hear reflective language as a result of your intervention, when two people agree that something changed. You will always be aware that even the placebo effect is a result of something profoundly human and real: the imagination. Within the proper time and place of intersubjective orientation, you will be able to ask the right question about who, what, why, where, and how, and you will find the right instrument and method to measure them. And even then, you will have to remember that even statistical methods are designed to estimate uncertainty not measure truth.

References:

Panksepp, J. (2009). Brain Emotional Systems and Qualities of Mental Life: From Animal Models of Affect to Implications for Psychotherapeutics. In D. Fosha, D. J. Siegel, & M. Solomon (Eds.), *The Healing Power of Emotion: Affective Neuroscience, Development & Clinical Practice* (p. 368). New York, New York, USA: W. W. Norton.

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Recommended Preparation:
CTIN 541 Design for Interactive Media and CTIN 503 Interactive Entertainment Intersections. At least one of the following skills: design, prototyping, programming, interviewing, data collection, data analysis; instructor permission. Open only to graduate students.

Course Overview:
This course will give students a unique transdisciplinary perspective in a group design practice format focused on pre-selected topics in neuroscience, public health and medicine. Students will design, develop and evaluate interventions using interactive entertainment and transmedia. This course will also introduce emerging technologies, techniques and methods for transdisciplinary innovation. Students will develop skills for collaboration with scientists, health professionals, and industry experts through hands-on design inquiry and practice.

Course Objective:
The purpose of this course is to immerse students in transdisciplinary collaboration with teams of artists, designers, scientists, health professionals, and engineers, whose joint mission is to develop and evaluate interventions focused on improving human health and the experience of living. Students will practice creative design skills though a series of focused challenges meant to diversify their analysis and synthesis capabilities. As appropriate for each challenge and team, students may use idea brainstorming, storyboarding, wireframing, rapid prototyping, observation, interviews, focus groups and surveys to design, deploy and evaluate experiences. Depending on the challenge will be opportunities to work on informal and informal evaluations in clinical and community settings. Students will learn when and how and to apply experience,

experiential and participatory design practice methods. Students will be exposed to new problems, populations and settings each time the course is repeated; they will understand the basic mechanics of planning evaluations, data collection and data analysis.

Course Requirements:

Readings and Resources – Assigned readings and a resource bibliography will be available via the instructor's website and ARES. In addition to readings, resources such as websites, videos, and interactive works will be available. Such works are not considered optional or supplemental, but are extremely critical for experiential design processes.

Grading Criteria: Letter grade or Credit/No Credit (B- level work required for credit).

The following will count toward your grade:

- 90% group projects (Challenge I (Parkinson's) & II (Pain), 45 points each)
- 10% in-class active participation

Each project is worth 45 points, which will be rated on a combination of factors related to innovation and potential impact, experience design, use of resources, presentation, evaluation strategy, documentation, and collaboration. The instructor, external advisors, stakeholders and students will fill out anonymous surveys with fixed criteria to rate the aforementioned factors. The instructor will analyze and return a summary of the evaluation to the students. Students will receive the list of criteria ahead of project assignment.

Group Practicum Format
The students will tackle three design challenges organized though broad thematic areas, with a focus on a specific population, setting, and group of outcomes for each challenge. Experts and stakeholders will visit classes to present research findings, specific issues, and/or case studies, and to participate in critique and presentations. Short workshop on preferred technologies and toolkits may also be offered. Although the course welcomes the design and development of new interactive experiences, adapting existing technologies and experiences for the purpose of meeting the challenge is acceptable for this class. Off-site visits to clinical and community settings may be required during the working group meetings for prototype evaluation and data collection. The class may split into multiple groups if there is adequate skill duplication, at the discretion of the instructor. The final class will be dedicated to an open house at the lab, with students expected to demo and present findings to an invited guest panel.

Class participation (10 points) – Although your physical presence may not always be possible in the class, absenteeism will naturally result in your inability to meet course objectives. "Mental absenteeism" through excessive email and social media use will influence reviews by your peers and will deprive you of valuable hands-on time with your project. The instructor may issue a warning to you if your team contribution begins to suffer. Unexcused absences or regular tardiness will affect this portion of your grade and bring down your overall grade. If you have an unavoidable conflict, please contact me via email or phone as far in advance as possible. Two unexcused absences will reduce the final grade by a half-grade.

Diversity of Human Experience
The definition of health and happiness varies greatly from individual to individual, family to family, community to community. While considering the design and evaluation of interventions, you must consider factors of diversity of the human condition and human experience. This may

mean by age, gender, sexual orientation, ethnicity, religion, race, socioeconomic status, location, literacy, ability/disability, health status, access to services, and other variables. While designing your intervention and evaluation, consider how these variables may affect the experience and impact.

Statement on Academic Conduct and Support Systems

Academic Conduct

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Section 11, *Behavior Violating University Standards*https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct/.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* http://equity.usc.edu/ or to the *Department of Public Safety* http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men* http://www.usc.edu/student-affairs/cwm/ provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.

Support Systems

A number of USC's schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* http://dornsife.usc.edu/ali, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.htmlprovides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information http://emergency.usc.edu/*will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.

Disruptive Student Behavior:

Behavior that persistently or grossly interferes with classroom activities is considered disruptive behavior and may be subject to disciplinary action. Such behavior inhibits other students' ability to learn and an instructor's ability to teach. A student responsible for disruptive behavior may be required to leave class pending discussion and resolution of the problem and may be reported to the Office of Student Judicial Affairs for disciplinary action.

Syllabus Updates/Groupware:

This syllabus is liable to change up to the beginning of class and possibly over the semester. Please check the posted syllabus regularly, and note all changes that are shared by the instructor in class. We will be using Slack for managing week by week updates. Major updates will also be posted on the instructor's website (www.marientina.com).

Incomplete Grade (IN):

Grades of incomplete are given when a student cannot complete the course requirements as a result of a documented illness or an emergency occurring after the twelfth week of the semester. The instructor, the school, the department owning the course, or the student can initiate an Assignment of Final Grade for Completion of IN when the coursework has been completed. No more than one year is allowed for completion of an IN. The end of the twelfth week is the withdrawal deadline from the course.

About the Instructor

Marientina Gotsis, MFA is a Research Assistant Professor of Interactive Media & Games at the USC School of Cinematic Arts, and director and co-founder of the Creative Media & Behavioral Health Center. Gotsis has a broad background in arts, design and engineering with special interest in medicine, public health and health behavior. She and her team have developed several innovative applications using games for health behavior change in topics such as child development, wellness, obesity, nutrition, exercise, autism, PTSD, rehabilitation, and eye disease. Gotsis has developed partnerships and projects with funding by the Robert Wood Johnson Foundation, Norlien Foundation, National Institutes of Health (NIH), US Department of Defense, US Department of Education-NIDRR and the Shafallah Center for Children with Special Needs. Formerly the Media Lab Manager for the Interactive Media Division, Gotsis managed technology infrastructure and contributed to several research projects funded by Electronic Arts, Intel, Microsoft and Nokia. She has taught at USC (School of Cinematic Arts, School of Social Work, Roski School of Fine Arts), Northeastern Illinois University, Columbia College Chicago and Harold Washington College, and she has consulted for small businesses and not-for-profits. Gotsis has 21 years of experience as a designer and technologist. She received a BFA in photography/film/electronic media and an MFA in electronic visualization from the Electronic Visualization Laboratory at the University of Illinois at Chicago.

About the Creative Media & Behavioral Health Center

Founded in 2010 following the success of the USC Games for Health Initiative, the Creative Media & Behavioral Health Center (CM&BHC) is a unique incubator for innovation in the use of entertainment applications at the intersection of behavioral science, medicine and public health. As an organized research unit between the USC School of Cinematic Arts and the Keck School of Medicine of USC, its mission is to increase public awareness of critical issues in mental health and behavioral science, and to provide hands-on creativity-based educational opportunities for health researchers and practitioners. CM&BHC relies on sponsorship from individual, foundation, federal and international organizations to support infrastructure, research and production. As of 2013, CM&BHC members have completed several research milestones, published and disseminated ideas and findings, trained and mentored a remarkably diverse cohort of alumni, and provided consulting to partners locally, nationally and internationally. Our lab space (SCI 308) is affectionately known as *The Garden,* is named to honor the Ancient Greek philosopher Epicurus (341–270 B.C.E.), whose school and community garden were dedicated to the social and emotional welfare of its students and friends. Epicurus' letters include some of the earliest inquiries into the role of homeostatic balance of pleasure (akin to contemporary concepts of affect regulation), the definition of happiness as the absence of mental and physical suffering (tranquility), and examples of practicing mindfulness in daily living.

Course Schedule & Readings List subject to change.

COURSE SCHEDULE BY WEEK

1 Aug 25 **Introduction**
Course objectives, concepts of experience design, experiential design, participatory design through case studies

2 Sep 1 **Challenge I: "Parkinson's Disease"**
Guest speakers: Giselle Petzinger
- Parkinson's crash course

3 Sept 8 **Challenge I: "Parkinson's Disease"**
Guest speaker: James Finley, Beth Fisher
- Motor dysfunction in PD with a focus on walking impairments (Beth)
- Neural contributions to locomotor control (James)
- Neuroplasticity and motor learning (Beth)
- Use of VR and game-based approaches to neuromotor rehab (James)

4 Sept 15 **Challenge II: "Pain Management"**
Guest speaker: David McKemy (tentative)
- The neurobiological basis of pain
- Molecular, cellular, genetic, electrophysiological, and biochemical approaches of understanding pain

Guest speaker: TBD
- Pain management in adults

5 Sept 22 **Challenge II: "Pain Management"**
Guest speaker: Jeff Gold (tentative)
- Pain management needs for Children vs. Adults
- Use of VR in pain management

6 Sept 29 **Working groups**

7 Oct 6 **Working groups**

8 Oct 13 **Preparation for Futures in Motion Conference demos**

9 Oct 20 **Working groups**

10 Oct 27 **Working groups**

11 Nov 3 **Working groups**

12 Nov 10 **Working groups**

13 Nov 17 **In-Class prototype evaluation, findings presentation & critique**

14 Nov 24 **Thanksgiving – NO CLASS**

15 Dec 1 **Project reviews**

Final Exam Date: Thursday December 13, 11-1pm
All deliverables due by this date.

Base Bibliography

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Theme-specific Bibliography

Parkinson's Disease

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