

## Independent Study

### Designing Virtual and Augmented Reality Brain Stimulating Game for Neurological Disabilities

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#### Course Description

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Study for advanced students with a major concentration in art.

Primary Software Used: **Unity, Adobe Aero**

Levels: Undergraduate

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#### Overview

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Student will explore the VR/AR game mechanics (such as jigsaw, block, and color puzzles) in relation to their effectiveness on the brain stimuli. Hence, reading will be an essential part of this project before determining a concrete game concept. After fixing the game concept, narratives, 2D & 3D images, text, sequencing, and interactivity will be the key ingredients in the creative process of game development. Students should be able to write a storyboard, present a visual concept, and prototype the game interaction.

The primary VR/AR software is Unity and being able to use the VR/AR headset Oculus (Meta) Quest fluently is required. The final outcome of the project is a storyboard, visual concept board & VR/AR game prototype that operates in the headset.

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#### Objectives

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- ❑ Reinstatement and intensification of the knowledge of VR/AR design from the student's senior project.
  - ❑ Understanding the role of this new media and its application in special needs of training cognitive skills such as memory, motor control, attention, and spatial orientation.
  - ❑ Creatively and cohesively integrating the visual elements and game mechanics.
  - ❑ Applying creative thinking to conceptualizing and designing applications.

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## Recommended Reading

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Garner, R. L. (2019). p. In Exploring Digital Technologies for art-based special education: Models and methods for the inclusive K-12 classroom. Routledge.

Spiegel, B. (2020). Vrx: How virtual therapeutics will revolutionize medicine. Basic Books.

Ouyang, Helen. "Metaverse Medicine." The New York times Magazine (2022): 40-4. Web.

Sharkey, Paul M., and Joav Merrick. Virtual Reality : People with Special Needs. New York: Nova, 2014. Disability Studies (Nova Science Publishers). Web.

Rohrbach, Nina, Philipp Gulde, Alan Robert Armstrong, Linda Hartig, Anas Abdelrazeq, Stefan Schröder, Johanne Neuse, Timo Grimmer, Janine Diehl-Schmid, and Joachim Hermsdörfer. "An Augmented Reality Approach for ADL Support in Alzheimer's Disease: A Crossover Trial." Journal of Neuroengineering and Rehabilitation 16.1 (2019): 66. Web.  
<https://virtuleap.com/>

Buttfield-Addison, P., Manning, J., & Nugent, T. (2019). Unity Game Development Cookbook: Essentials for every game. O'Reilly Media.

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## Revisions To Syllabus

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The information contained in this syllabus is subject to revision at the discretion of the instructor. Students will be notified of any changes that will be made.

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## Grading

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**Your grade is based on 40%-Assignments, 50%-Project Outcome(Design Process Document+video presentation), and 10% -Class participation** Readings(if there are) are due before the beginning of class for the date assigned so that you are familiar with the topics and prepared for discussion. Assignments are due at the beginning of class unless otherwise notified by the instructor. **Late submissions will be dropped up to 5 points out of 100 per day.**

In professional practice, graphic designers solve client problems that often have tight time requirements. You will be given as much time as possible to work during the studio, but discussion and critiques will consume a significant amount of the time. One-thirds of the work for this class is expected to be accomplished outside of class. **Use the Webb 410 General Computer Lab and FAIC 330/327 Open Lab, 313 Digital Resource Room** (available with instructor permission for classwork only), online help, and textbooks(if applicable)—including associated websites—as reference tools to complete work and to practice techniques.

The primary objective of the course is to provide creative solutions to design problems, not to learn design software from the beginning. You should have basic skills in design software and use it as a design tool with certain proficiency. Evaluation of Individual works is based on a **creative problem-solving approach, use of elements/principles, craftsmanship/professionalism, and improvement/growth.**

A 100–95 90% | B 89 85 80% | C 79 75 70% | D 69 65 60% | F 59% or below (A grade of C, 75% is the minimum grade which counts toward your major.)

**A.** Superior execution; maximum originality; excellent concentration and initiative; cooperative with peers; excellent judgment; superior attitude and dedication; highly imaginative, original, and experimental; very consistent in work ethic; a significant improvement

**B.** Strong execution and originality; adequate concentration and initiative; cooperative with peers; good attitude, dedication, and judgment; imaginative and experimental; consistent in work ethic; noticeable improvement.

**C.** Average execution, concentration, organization, and attitude; some imagination and originality; lacks some consistency in work ethic; some improvement.

**D.** Poor execution and improvement; limited originality; little concentration and organization; poor judgment; evades responsibility and cooperation; lacks work ethic, concentration, organization

F. Fails to execute to minimum standards, insignificant improvement; no originality; minimum concentration and organization; evades responsibility and cooperation; no work ethic.

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## Attendance Policy

You are required to attend each class in its entirety. More than 2 absences, 2 late arrivals or early departures will affect your grade negatively unless you have a doctor's note. Attendance will be taken at any moment in class. It is your responsibility to see me during class if you arrive after attendance is taken. Email me ahead of time if you cannot attend class, if you will be late for class, and if you need to leave early for class. This does not constitute an excused absence, it is a professional best practice.

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## Department of Art & Art History Policy on Returning Artwork and Other Assignments

Assignments will be returned during scheduled class time, instructor's office hours, or by special arrangement with the instructor. The instructor will hold assignments for six weeks following the end of class. Assignments not picked up during this period will become the property of the university and may be discarded.

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## Assistance at the Writing Center

The Eastern Writing Center, located in the ASC and staffed by trained peer tutors, is available to help all students with their writing. The Writing Center supports the liberal-arts mission of Eastern by helping students with their writing from any class, at any stage, from brainstorming and drafting to revision to proofreading and editing. We help students do their own work and do it more comfortably and confidently. Any student can and should use the Writing Center. The process of talking with readers about writing and getting feedback on student writing is something all writers do and can benefit from. Students can either drop into the Center or make an appointment by going to the "Useful Links" column on the Current Students webpage and selecting

"GradesFirst" <http://www.easternct.edu/index/current-students/>.

Students are asked to bring copies of any assignment sheets to the Writing Center, so tutors know what is expected of the assignment.

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## Assistance with Academic Advising and Subject Tutoring at the Academic Service Center

Students are encouraged to use the support offered by the Academic Services Center (ASC) located on the ground floor of the Library. Advising Services and tutoring in math, writing, and other subjects, including supplementary instruction, are available. The ASC also offers Peer Academic Coaching (PAC) assistance with study techniques, time management, "Eastern in 4" planning and understanding learning styles. For further information about our services, please call 465-4625 or check the ASC

website at

<https://www.easternct.edu/academic-services/index.html>

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## **Office of Access Ability Services (OAS)**

Eastern Connecticut State University is committed to following the requirements of the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. If you are a student with a disability (or think you may have a disability) and require adaptations or accommodations, or assistance evacuating a building in the case of an emergency, please contact the Office of AccessAbility Services (OAS) at 860-465-0189 to discuss your request further. Any student registered with the OAS should contact the instructor as soon as possible for assistance with classroom accommodations. Please note that accommodations are not retroactive, and must be communicated through a Letter of Accommodation which is drafted by the OAS. The link to the OAS website is:

<http://www1.easternct.edu/accessability/>

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## **Cheating, Plagiarism, and Personal Misconduct**

Students are responsible for familiarizing themselves with the University's numerous policies and procedures contained in the University Catalog and Student Handbook. The Code of Conduct policies and the Policy on Academic Misconduct are of special significance, since cheating, plagiarism, and personal misconduct are strictly prohibited and carry severe penalties. Students should read and understand Eastern's Academic Misconduct Policy, which can be found in the student handbook.

<https://www.easternct.edu/student-affairs/studenthandbook.html>

All violations will be handled under the procedures established in this policy.

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## **Student Sexual Misconduct Policy**

Title IX of the Education Amendment of 1972, as well as the Board of Regents Policy on Sexual Misconduct Reporting, Support Services, and Processes, prohibit acts of sexual misconduct – sexual harassment, sexual assault, sex-based discrimination, dating violence, domestic violence, stalking, and inappropriate relationships between employees and students. If you or someone you know has been or experiences harassment or assault, resources are available with the Sexual Assault & Interpersonal Violence Response Team (SAIV-RT). Alleged violations can be reported to the Title IX Coordinator in the Office of Equity and Diversity at 860-465-5791. Reports to law enforcement can be made to Eastern Connecticut State University Police Department at 860-465-5310. To receive support and advocacy, please contact the Coordinator of the Sexual Assault & Interpersonal Violence Response Team (SAIV-RT) at 860-465-4314. You may also visit the SAIV-RT website at

<https://www.easternct.edu/.../sexualassaultpolicyandprocedures.html> for more information including a list of confidential resources.

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## **Student Crisis Statement**

Any student who is facing challenges (i.e. mental health, securing food/housing) and believes this may affect their performance in the course is urged to contact the Dean of Students at 860-465-5244 for support. Students experiencing an immediate threat to their safety or wellbeing should contact 24-hour emergency services by dialing 911 or the Eastern's University Police Department: 860-465-5310.

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**Final Examination  
Statement**

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University policy states that “No examination shall be given during the final week of scheduled classes of a full semester course.” Faculty must receive prior approval from the Vice-President of Academic Affairs in order to schedule an examination during the final week of classes. Faculty may, with approval from the Vice-President of Academic Affairs in consultation with the Academic Dean and Registrar, hold a single exam session for all sections of the same course. Students will be notified of the exam date, time, and place on the course syllabus.

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**COVID 19  
Statement**

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Maintaining a safe and healthy campus is only possible if every member of the campus community follows the rules. Therefore, Eastern is requiring that all students and faculty wear a face mask that fully covers the nose and mouth but should not have a valve or vent to expel respiration, whenever they are on campus. This includes whenever an individual is in a classroom or classroom building. Face shields can only be worn with an appropriate face mask. Students who refuse to wear a mask in class can be referred to the Office of Student Conduct. This protocol complies with the safety standards established by the CDC and the Connecticut Department of Public Health and is included in the Student Code of Conduct.

## Course Outline

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<b>WEEK 1</b>	Assignment 1	<b>COURSE INTRODUCTION - SYLLABUS REVIEW</b> <b>ASSIGNMENT 1 - Create a Design Process Document</b> 1. Document setup: Letter 11x8.5 in.) horizontal format and design cover and master pages. 2. Use this brief to document ALL your research, planning and to communicate your design process. 3. Draft a project overview statement and objectives.  <b>Reading :</b> Sharkey, Paul M., and Joav Merrick. Virtual Reality : People with Special Needs. New York: Nova, 2014. Disability Studies (Nova Science Publishers). Web. <b>Chapter 9</b>
<b>WEEK 2</b>	Assignment 2	<b>ASSIGNMENT 2 - Research and Analysis</b> 1. Study published educational game applications for special needs. Download and play if possible. 2. Document your research. Include URLs (as active links) and cite other sources. 3. Write a cons and pros survey of applications of 1.
<b>WEEK 5</b>	Assignment 3	<b>ASSIGNMENT 3 - Design Concept</b> 1. Define objectives 2. Define game concept & element 3. Prototype game structure 4. Define visual concept
<b>WEEK 8</b>	Assignment 4	<b>ASSIGNMENT4 - Design Development</b>
<b>WEEK 12</b>	Assignment 5	<b>ASSIGNMENT5 - Design Completion</b>
<b>FINAL EXAM</b>	Final Project	<b>PROJECT SUBMISSION DUE</b>

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