

## DIGH 402 - Introduction to Digital Humanities Design and Programming

2.5 hours weekly taught class

Required of all students in the MA programme in Digital Humanities

(Pre-requisites include DIGH 400 and DIGH 401)

Taught by Dr Nicholas J Hayward

Course website is available at the following URL,

<http://students.ctsdh.luc.edu/classes/402/>

Course GitHub repository is available at the following URL,

<https://github.com/ancientlives/digh402>

### Description and Goals

This course introduces students of the MA in Digital Humanities degree programme to project design and computer programming. It focuses upon core programming skills, built upon PHP foundations introduced in DIGH 401, development patterns and methods, and practical skills for the development and management of a digital humanities framework and project.

Students gain practical experience with coding, design, and version management with the final goal of publishing a working framework for student project publication and development.

Students are given the opportunity to present and demonstrate their framework and project as part of the final course assessment.

The above practical experience is complemented by associated learning in instructional design and e-learning theory and practice offered through extensive reading. The goal of this weekly reading, and accompanying online group discussion, is to address the following:

- best practices in educational software
- explore existing platforms for e-learning
- learn to effectively communicate content with words and visuals, in particular within an online environment
- multimedia usage for learning purposes and effective balance of media
- design examples and practice exercises for online learning
- test collaborative learning and networked skills
- evaluate simulations and games for instructional usage

### Learning Outcomes

Upon completion of this course, students should be able to:

- Demonstrate an understanding of procedural and Object Oriented programming, design, and implementation in PHP.
- Be able to design, code, test, and demonstrate a working example of a framework for publication of student produced digital humanities material.
- Be able to publish supporting documentation for their coded framework.
- Demonstrate a theoretical and practical understanding of MVC design for their framework.
- Demonstrate a clear understanding of the application of e-learning theory and practice for the publication of educational material online.

### Classwork

Work and assessment for the course is based upon the following:

1. design project (50% of final grade)
  - design, develop, and publish a working framework for a DH educational resource
  - online education resource for a given target age and educational audience
  - student selected choice of content and material for publication within the developed framework
  - organisation and logic of content suitable to the selected educational material and audience
  - documentation of code and framework usage
  - repository publication and versioning
  - testing
2. ongoing weekly assessment and reading (25% of final grade)
  - class questions and tasks
  - occasional weekly exercises
  - class contributions
  - weekly reading material
  - ongoing development of final project code and modules
3. class discussions (15% of final grade)
  - weekly online discussion topic
  - assessment and analysis of an online learning environment, framework or current debate relevant to e-learning and instructional design
4. class presentation and demonstration (10% of final grade)
  - practical demonstration of design project
  - discuss and analyse development of design project
  - respond to questions and feedback from class on design project

### Academic Integrity

A basic mission of the university as a research and learning community is to search for and communicate truth as it is honestly perceived. Loyola University students are expected to know and practice standards of academic integrity in all their work. Violations can take various forms, and students are directed to the university's detailed policy. See the subsection on "Academic Integrity" in Loyola University Chicago's General Academic Standards and Regulations. [Further Information](#)

### Calendar of Topics and Readings

The following is a summary of material and reading covered within this course.

#### Part 1

- Database basics
- Intro to MySQL and PHP
- Initial database design for course project framework
- Version control and software including GitHub setup and usage
- Intro to MVC design
- Redundancy, abstraction in PHP procedural design
- Error handling in PHP

#### Part 2

- Go over current MVC outline for framework
- What is object oriented programming?
- Outline and use of 'object' in OOP
- Declaring classes and instantiating objects
- Inheritance, interfaces, and exception handling

#### Part 3

- Outline new MVC for OOP
- Go over how code will be updated for OOP
- Update code for current framework outline to OOP
- Security considerations for our framework
- Testing

#### Part 4

- Start going over interface design for framework
- CSS and JavaScript considerations and designs
  - JavaScript libraries etc
- Update framework design to consider theme implementation
  - JQuery UI
  - What is bootstrapping? & go over Twitter bootstrap

- abstract CSS & JavaScript for framework design and implementation

## Part 5

- Implement base framework modules
  - content publication (generic pages, texts, images, audio, video...)
  - user management (registration, login, user home, user admin, user roles, user content...)
  - content management (create, edit, delete...concept of minimal markup etc)
  - content organisation (semantic categorisation, move content within categories, create, edit, and delete categories...)
  - content re-use (export in multiple formats, import such as txt, XML etc, image import...)

## Part 6

- Pull framework together to start adding students' content
- Documentation of framework, code...
  - online on GitHub for code
  - how to develop for the framework
  - how to use the framework/site for a user

Course reading includes the following material, outlined on a weekly basis.

### Week 1

- Clark, R.C., and Kwinn, A. 2007. "The new virtual classroom: Evidence-based guidelines for synchronous e-learning". Pfeiffer.

### Week 2

- Clark, R.C. and Lyons, C. 2004. "Graphics for learning". Pfeiffer.
- Fletcher, J.D. and Tobias, S. 2005. "The multimedia principle" in "The Cambridge handbook of multimedia learning". PP. 117-134. Cambridge University Press.
- Mayer, R.E. 2005. "The Cambridge handbook of multimedia learning". Cambridge University Press.
- Mayer, R.E. 2001. "Multimedia Learning". Cambridge University Press.
- Forta, Ben, 2005. "MySQL Crash Course". Sams Publishing.
- W3C Schools. [SQL Tutorial](#).

### Week 3

- Ayres, P. and Sweller, J. 2005. "The split attention principle in multimedia learning." In "The Cambridge handbook of multimedia learning". Cambridge University Press, PP. 135-146.
- Mayer, R.E., Moreno, R., Boire, M., and Vagge, S. 1999. "Maximising constructivist learning from multimedia communications by minimizing cognitive load." Journal of Educational Psychology 91. PP.638-643.
- Moreno, R. and Mayer, R.E. 1999. "Cognitive principles of multimedia learning: The role of modality and contiguity." Journal of Educational Psychology 91. PP.358-368.

#### Week 4

- Mayer, R.E., Heiser, J., and Lonn, S. 2001. "Cognitive constraints on multimedia learning: When presenting more material results in less understanding." *Journal of Education Psychology* 93. PP.187-198.
- Moreno, R., and Mayer, R.E. 2000. "A coherence effect in multimedia learning: The case for minimizing irrelevant sounds in the design of multimedia instructional messages." *Journal of Educational Psychology* 92. PP.117-125.

#### Week 5 and 6

- Mayer, R.E., Sobko, K., and Mautone, P.D. 2003. "Social cues in multimedia learning: Role of speaker's voice." *Journal of Educational Psychology* 93. PP.724-733.
- Moreno, R., and Mayer, R.E. 2004. "Personalized messages that promote science learning in virtual environment." *Journal of Educational Psychology* 96. PP.165-173.
- Moreno, R., and Mayer, R.E. 2000. "Engaging students in active learning: The case for personalized multimedia messages." *Journal of Educational Psychology* 93. PP.724-733.
- Nass, C., and Brave, S. 2005. "Wired for speech: How voice activates and advances the human-computer relationship." MIT Press.

#### Week 7

- Mayer, R.E., Mathias, A., Wetzell, K. 2002. 'Fostering understanding of multimedia messages through pretraining: Evidence for a two-stage theory of mental model construction.' *Journal of Experimental Psychology: Applied* 8. PP.147-154.
- Reeves, B., and Nass, C. 1996. "The media equation: How people treat computers, television, and new media like real people and places." Cambridge University Press.

#### Week 9

- Atkinson, R.K., Renkl, A., & Merrill, M.M. 2003. "Transitioning from studying examples to solving problems: Effects of self-explanation prompts and fading worked out steps." *Journal of Educational Psychology* 95. PP. 774-783
- LeFevre, J.A., & Dixon, P. 1986. "Do written instructions need examples?" *Cognition and Instruction* 3. PP. 1-30.

#### Week 10

- Moreno, R. 2004. "Decreasing cognitive load for novice students: Effects of explanatory versus corrective feedback in discovery-based multimedia." *Instructional Science* 32. PP.99-113.
- Slobada, J.A., Davidson, J.W., Howe, M.J.A., and Moore, D.G. 1996 "The role of practice in the development of performing musicians." *British Journal of Psychology* 87. PP.287-309.

#### Week 11

- Stone, N.J. 2000. "Exploring the relationship between calibration and self-regulated learning." *Educational Psychology Review* 4. PP.437-475

- Walczyk, J.J., and Hall, V.C. 1989. "Effects of examples and embedded questions on the accuracy of comprehension self-assessments." *Journal of Educational Psychology* 81. PP.435-437.
- Young, J.D. 1996. "The effect of self-regulated learning strategies on performance in learner controlled computer-based instruction." *Educational Technology Research and Development* 44. PP.17-27.

#### Week 12

- Bell, B.S., and Kozlowski, S.W.J. 2002. "Adaptive guidance: Enhancing self-regulation, knowledge, and performance in technology-based training." *Personnel Psychology* 55. PP.267-306.
- Corbalan, G., Kester, L., and Van Merriënboer, J.J.G. 2006. "Towards a personalized task selection model with shared instructional control." *Instructional Science* 34. PP.399-422.
- Lee, S., Lee, Y.H.K. 1991. "Effects of learner-control versus program control strategies on computer-aided learning of chemistry problems: For acquisition or review?" *Journal of Educational Psychology* 83. PP.491-498.