



EDIS 7070: Instructional Materials Development  
Curriculum, Instruction, and Special Education

3 Credit Hours  
Summer, 2017

June 12 – July 30  
Asynchronous online (Collab)

**Instructor**

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**Description**

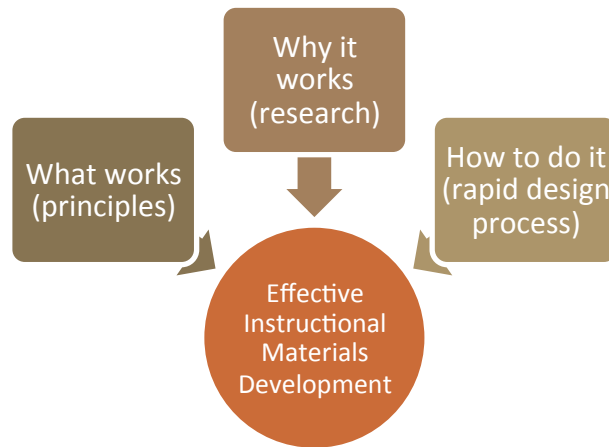
Learn how to evaluate existing materials and design effective instructional materials for use in any environment based on an understanding of how people learn and how learners process audio and visual information. We will cover multimedia learning principles such as Mayer's as well as the underlying theories and research on information processing and cognitive load. In addition, we will explore how design principles such as gestalt, figure/ground, and hierarchy help structure and organize instructional materials. These principles can be applied to online and multimedia materials as well as print materials used in a classroom setting. The course features a "rapid prototyping" process through which students will create instructional materials or products for outside of class.

**Detailed Course Description:**

Ever wonder how a designer made a handout or a PowerPoint or an instructional web page look so appealing and easy to use? Have you or your learners had the feeling of being totally overwhelmed by a complex graphic where you don't know where to look first? Are you curious about how research on learning can inform the design of effective materials?

In this course, we will explore how to present visual and auditory information to learners in a way that is consistent with research on how people process information and how it sticks in memory. No background in graphic design or visual arts is necessary. In many instances, applying effective materials design principles focuses more on how you organize information than on slick graphics. Upon completion of the class you should be able to evaluate existing materials and select those that are more effective, modify existing materials, and create more effective materials for your instructional needs.

We will have weekly activities during which you will evaluate some popular materials available online in light of the principles and research we are reading. We will also follow a “rapid design” process that includes a prototyping process during which you will provide and receive peer feedback as well all work together to workshop our materials in a virtual studio. Your readings for the course will include multimedia and visual design principles, underlying research and theory for those principles, and readings on the rapid design process. Thus, in the end not only will you learn techniques for designing instructional materials, but you will also learn why certain techniques are more effective and you will learn a process for quickly generating and iterating on instructional products.



For our weekly discussions, we will discuss the readings and principles in context of existing materials we will evaluate (e.g. Khan Academy, Lynda.com, Kurzgesagt, etc.). For your project, in Week 1, you will select a project that you will work on throughout the rest of the class. Project options include: stand-alone online module that is part of a classroom lesson; online learning / training module on a topic of your choice; develop your professional portfolio. See the handout on Instructional Materials Development Project for more details and guidelines.

## Learning Objectives

Understanding and application of visual literacy and multimedia design principles

- Compare and contrast images to identify application of multimedia learning and visual literacy principles
- Evaluate existing visuals and multimedia content to identify strengths and weaknesses based on visual literacy, multimedia learning and related research
- Apply multimedia learning principles to design and revision of learning materials
- Apply visual design principles such as hierarchy, gestalt and figure/ground to support organization and selection to individual materials and to an interface for an instructional module or unit
- Apply contrast, alignment, repetition and proximity in the design of instructional materials and instructional interfaces

Understanding and application of research and theory

- Identify three types of cognitive load
- Increase the clarity of instructional messages by identifying where cognitive load may or may not be optimal; make modifications to decrease cognitive load
- Categorize types of memory with associated design principles
- Apply cognitive load theory to the design (or re-design) of instructional content with moderate to high intrinsic load and explain why the design should work

Application of principles and research: bringing it all together

- Produce an instructional product (see options below) in which you demonstrate your ability to apply the principles and research to individual instances (e.g. specific visuals or multimedia content) as well as to an overall product (e.g. interface, organization, etc.)
- Develop a basic understanding of rapid instructional design and be able to follow a rapid design process to generate an instructional material quickly but that is designed and developed based on an understanding of how people process visual and/or auditory information.
- Describe your design and/or redesign decisions for your product using the principles and research from this class to articulate specific decisions or changes and how they enhance learning (e.g. organization, selection, etc.) and reduce cognitive load

## Instructional Methods

Class sessions will be online via Collab with weekly readings, videos, and other materials as appropriate. There will be weekly discussions throughout the course that feature both discussion of the readings and application of principles as we evaluate and discuss examples in the weekly discussions. Please read the section on Participation for further details. A large portion of the class will be project-based application and peer review and feedback, so you will be expected to spend time working on your project and time reviewing your classmates' work and providing them feedback that is grounded in the course readings.

## Course Texts & Resources

### Required

Mayer, R. (2009). *Multimedia learning*, 2<sup>nd</sup> ed. New York, NY: Cambridge UP.

Williams, R. (2015). *The non-designers design book*, 4<sup>th</sup> ed. New York, NY: Peachpit Press, Pearson.

Piskurich, R. (2015). *Rapid instructional design: Learning ID fast and right*, 3<sup>rd</sup> ed. Hoboken, NJ: Wiley & Sons.

We will not read every single chapter of all three texts in this class, but you will read other chapters in other Instructional Technology classes, and these books are full of great examples, ideas, and job aids and thus are good reference texts to collect and use across classes and in your work. (You may have already bought these for other classes – if so, great. If you purchased a different edition, you can use that edition and just translate the differences in page numbers as necessary.)

### Optional

Lohr, L. (2007). *Creating graphics for learning and performance: Lessons in visual literacy*, 2<sup>nd</sup> ed. New York, NY: Pearson.

The first edition is also fine if you opt to purchase this text and have difficulty finding the second edition. I will be providing excerpts from the second edition in class, so consider purchasing this if you would like to have a copy for your own on-going reference.

### Instructor-provided

Several readings (chapters, articles, etc.) will be provided by the instructor throughout the course along with periodic videos. **These are required readings for the course.** Consult the schedule below and on Collab for all required reading each week.

*Related Conferences and Associations:*

If you are interested in conferences or readings beyond the course, the following may be of interest:

**Organizations / Associations:**

International Visual Literacy Association – [www.ivla.org](http://www.ivla.org)

Association of Educational Communications and Technology – Multimedia Production Division – [www.aect.org](http://www.aect.org)

**Course Outline**

| Week                        | Topic                       | Reading / Resources   | Discussions and Assignments   |
|-----------------------------|-----------------------------|---|---|
| 1<br>June<br>12-18          |                             | Mayer, Ch. 1-3<br><br>Piskurich, pp.4-6, Ch. 4<br><br>Baddeley  | Discussion: Applying the readings - Kurzgesagt<br><br>Project: Action Plan due  |
| 2<br>June<br>19-25          |                             | Mayer, Ch. 6, 11, 12<br><br>Lohr, Hierarchy principle (reading provided in Collab)<br><br>Chandler & Sweller; types of cognitive load<br><br>Piskurich, Ch. 7 (scan this chapter and wrap your evaluation plan into your design document) | Discussion: Applying the readings - SciShow<br><br>Project: Design document / lesson plan   |
| 3<br>June<br>26 –<br>July 2 |                             | Mayer, Ch. 7-8<br><br>Lohr, Gestalt principle (reading provided in Collab)<br><br>Williams, Ch. 7<br><br>Piskurich, Ch. 5   | Discussion: Applying the readings - Khan Academy<br><br>Project: Initial storyboard / drafts; peer feedback (by groups: Option 1, 2 or 3) |
| 4<br>July 3-9               | <i>Fourth of July Break</i> | <i>Fourth of July Break</i>   | <i>Enjoy Break and work on your project!</i>  |
| 5<br>July<br>10-16          |                             | Mayer, Ch. 9-10<br><br>Lohr, Figure/Ground principle  | Discussion: Applying the readings - Lynda.com   |

|                    |  |   |  |
|--------------------|--|---|--|
|                    |  | (reading provided in Collab)<br><br>Williams, Ch. 1-3<br><br>Piskurich, Ch. 6   | Project: Final storyboards; peer feedback (by groups: Option 1, 2 or 3)  |
| 6<br>July<br>17-23 |  | Williams, Ch. 4-6<br><br>Mayer, 13  | Discussion: Applying the readings – your projects<br><br>Project: Initial prototype; peer feedback (by groups: Option 1, 2 or 3)                                     |
| 7<br>July<br>24-30 |  | Williams, Ch. 9-10 (if you're curious, enjoy Ch. 11 as well just for fun)<br><br><a href="#">Instructional Uses of Typography website</a> | Discussion: Applying the readings – your projects<br><br>Wrap up peer feedback (by groups: Option 1, 2 or 3)<br><br>Project: Final prototype due; Design Debrief due |

## Grading

| Grade Ranges for Final Grades |
|-------------------------------|
| A+ 99-100                     |
| A 93-98                       |
| A- 90-92                      |
| B+ 87-89                      |
| B 83-86                       |
| B- 80-82                      |

## Assessments & Weighting

Students are expected to complete all assignments on time and will be graded according to the following scale:

|  |            |
|--|------------|
| Instructional Material Production Project..... | 450 points |
| 1. Action Plan.....                            | 20 points  |
| 2. Design Document .....                       | 30 points  |
| 3. Storyboard – draft .....                    | 50 points  |
| 4. Storyboard – final .....                    | 100 points |
| 5. Prototype – draft .....                     | 50 points  |
| 6. Prototype – final .....                     | 100 points |

|  |                   |
|--|-------------------|
| 7. Design Debrief (4-6 pages) .....  | 100 points        |
| Participation (weekly) .....   | 100 points        |
| (10 points for Weeks 1-2; 20 points for Weeks 3-6 – 10 points for whole class discussion,<br>10 points for small group peer feedback groups) |                   |
| <b>Total .....</b>   | <b>650 points</b> |

### Due Dates & Times

Unless noted differently, all weekly activities are due at the end of that week by midnight (EST) on the last date for the week. Where specific due dates are noted for an assignment, the assignment is due by midnight on that day (EST). (Please note that participation is expected to occur *throughout* the week, not on the last day or two of the week. Consult the Participation Rubric and Handout.)

### Late Assignments

Given the summer schedule, this class moves too fast to get behind on the work. Make every effort to stay on top of the work and submit your work on time. In rare cases, I will accept late assignments. However, this is only done if a student has communicated with me first, PRIOR to a deadline. This will be handled on a case-by-case basis only. In the event of a late assignment, a specific alternative due date will be established after which the assignment will no longer be accepted.

If a student has a major life event arise that will cause him or her to turn in an assignment late or unable to participate in group work, please email me immediately to work with me on a solution.

In some cases, I may elect to return graded work and allow a student to revise and resubmit the work. This is also done only on a case-by-case basis as I determine. In such cases, the student has one week to revise and resubmit the work, and the maximum grade allowable is an A-. No revised work will be accepted after one week has passed once the initial graded assignment is returned. Email errors, communication delays, etc., will not be cause for exceptions (again, we move at too fast a clip – stay on top of your work and your emails).

### Major Assignments Details

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Work in this class will primarily be time spent on the readings, on participation in discussions (which are structured as activities and peer feedback), and on your project.

### Instructional Material Production Project

At the end of Week 1, the first part of this project is due – the Action Plan. In that plan, you will let me know which of the following options you have selected:

1. revision or development of a suite of instructional materials for an existing course (you will need to specify your scope to ensure it is neither too small nor too large);
2. online learning / training module on a topic of your choice that can be used either as a stand-alone module for a class or stand-alone training; or
3. develop your professional portfolio (online or print format)

If you would like to propose an alternative, you must email me and explain what you would like to do as an alternative *before* you submit your Action Plan. Any project that is different from these three options must be approved by me first.

Based on what option you select, you will then work with a group of peers in class who have selected the same option so that we can tailor each group's discussion and feedback to the specific type of project you are working on.

The following are the six major components for the course Project that you will submit on a weekly basis (except for the break during Fourth of July).

1. **Action Plan (due end of Week 1).** Summarize what you have selected for your project, why you have selected this (what is the instructional or organizational need), and what are the major steps and actions you need to plan for (what do you need to do, whom do you need to contact or work with, what are your intermediate deadlines, etc.). This is your project plan that should go beyond just "this is what I plan to do" to "here is my plan for how I will do this in the next six weeks." An example is provided in Collab along with a template you can use (and I encourage you to go beyond the template – it's a starting point, not a finishing point.) The example provided in Collab is for development of an online module. If you select one of the other options, you will need to adapt your Action Plan accordingly.
2. **Design Document (due end of Week 2).** A design document articulates the instructional need and the instructional design and plan (including objectives, materials, method of delivery, strategies, evaluation plan, etc.). Your design document should be so detailed that I could hand it off to a developer or another instructor or designer and they would fully understand what to do and could take over your project. It should be explicit and detailed. I have provided you some examples and a template for this as well. Be forewarned that I may return it to you with comments and ask you to revise and resubmit if it is under-developed. Our goal is for you to end up with a well-constructed design document, even if you have to iterate on it a time or two. Part of learning design is learning how to iterate based on feedback (from me and from your peers). I would much rather you practice good design and keep iterating than get a bad grade after just one iteration.

See the handout and rubric for variations according to which project path you select.

3. **Initial Storyboard / Drafts (due end of Week 3).** Once you have a plan for your instructional product, you will start storyboarding it out or start drafting your work depending on which option you select.
  - a. **For option 1:** You should be diving into revisions of materials this week. If you are creating or revising a video or animation for your class, use the storyboarding and prototyping process for options 2 and 3. If you are modifying print materials or handouts, you should start revising the first set of materials per your Action Plan.
  - b. **For options 2 or 3:** You have seen storyboards if you have ever watched a video or documentary on how movie makers or animators created their movies. They don't start with video or animations – they start with storyboards: a frame-by-frame step from beginning to end. Storyboarding allows you to re-sequence and catch areas where you may want to add more (more information, more examples, more activities) or eliminate redundancy or fix any other number of issues a storyboard will highlight – all before you

invest a lot of time in development. By the end of Week 3, you just need to have your Storyboard started. This is designed to be an early opportunity for you to get started and for me to check in and see how you're doing and for you to get feedback from me and your peers *early* in the process. Examples and templates for storyboards are provided in Collab.

4. **Final Storyboard / Drafts (due end of Week 5).** Your submission at the end of Week 5 should be your storyboard for your entire project. I should be able to see how you are organizing your product, what content and multimedia graphics you have planned, what your activities will be (how are your learners going to be engaged, not just consume content), and how you will assess their learning. The readings and principles should really start coming together at this stage as we see principles like hierarchy and gestalt showing up in how you organize your instruction and create an interface that facilitates understanding and meaning. A storyboard is something that you should be able to hand over to a development team (e.g. a graphic artist, an animator, a programmer, etc.) and they can develop exactly what you want with a high degree of fidelity. Storyboards include not just the actual instruction and placeholders for videos, graphics, etc., but they also include extensive notes and directions for layout, organization, navigation, etc. As with the other stages of our project, be prepared for a lot of feedback and the possibility that you will need to revise and resubmit. Think of this less as an "assignment" and more of a stage in honing your design process and skills!

See the handout and rubric for variations according to which project path you select.

5. **Draft Prototype (due end of Week 6).** Now we are starting to make your instructional product actually *function*. You're now moving from "this is what it should be" to making it do that. You may have found you are already prototyping some as you storyboarded depending on the process and tool you use for storyboarding. This means a user can start to click on menu options and navigate the content as he or she would in the final product. Think of this as a website (not a PowerPoint – your instruction should be organized or chunked into topics and sections, not one long line of information). At this stage, the main menu on the main screen or page becomes active and a user can click on a menu item and go to that section. And once users are there, they can access actual content. You don't have to have all your functionality built in for the draft prototype, I just want to see that you are getting started and have a chance to give you early feedback on major or minor issues to be addressed.

*Multimedia content:* during this stage, you should continue developing some of the visual or multimedia aspects of your project in which you apply the principles we have been learning. This may be by way of the layout of each screen, creation of an instructional video, creation of instructional visuals, etc. You do not have to create a visual or video for each and every place in your instruction where your storyboard calls for it, but you should start developing a few.

6. **Final Prototype (due end of Week 7).** The plane is landing. At this point, you are looking back across the summer realizing you just pulled off something you never thought you would. The Final Prototype is a prototype of your instructional product that is developed enough that a user can navigate through each section successfully. You have applied the design principles we covered in class both to the interface and organization of your product as well as to individual instances of visuals or screen layouts or select instances of videos.



7. **Design Debrief (due end of Week 7).** Along with your final prototype, you will submit a 4-6 page paper in which you put into your own words what design decisions and modifications you made in your project based on the readings and activities from class. While I may be able to look at a project and assume you did x or thought about y, I would like you to tell me in your own words what you did, what you applied, why, and how you believe it will improve learning through improving organization / selection; recognition, retention, or transfer; or decreased cognitive load. At this stage, you should be very well versed in pointing out features of a project to say, “here is where I applied \_\_\_\_\_” and “here is where I used \_\_\_\_\_’s idea of \_\_\_\_\_” to create/improve/explain/organize, etc. You should cite works referenced and follow APA formatting for the formatting and citations, but place the focus primarily on explaining your design through a research and theory lens (not proving to me how many citations you can push into 4-6 pages).

## **Participation**

### *Discussions*

We will have weekly discussions in the Forums in the course Collab site. Do plan to spend your time each week reading, checking the Forums frequently, and responding frequently with thoughtful and informed posts. Many of our discussion forums will be activities you are expected to complete and discuss through which apply our readings, such as evaluating and revising examples or critiquing existing online materials. Starting in Week 3, we will also have studio-style discussions. To ensure everyone gives and receives feedback, these will be organized as small groups in which you are expected to participate as part of that week’s participation in addition to the main class discussion. All groups will be open, however, so that you can all tour everyone’s work to see what is going on. Things will get more interesting as storyboards / drafts and prototypes start to appear!

Your participation grade will be based on your participation in these Discussions. Refer to the rubric on participation for further evaluation details; refer to the section on assessment for points for Weeks 1-2 and 3-6 when we have small group peer feedback discussions.

## **Additional Policies**

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### **University Email Policy**

Students are expected to activate and then check their official U.Va. email addresses on a frequent and consistent basis to remain informed of University communications, as certain communications may be time sensitive. Students who fail to check their email on a regular basis are responsible for any resulting consequences.

### **University of Virginia Honor System**

All work should be pledged in the spirit of the Honor System of the University of Virginia. The instructor will indicate which assignments and activities are to be done individually and which permit collaboration. The following pledge should be written out at the end of all quizzes, examinations, individual assignments and papers: “I pledge that I have neither given nor received help on this examination (quiz, assignment, etc.)”. The pledge must be signed by the student. For more information please visit <http://www.virginia.edu/honor/>.

### **Special Needs**

It is the policy of the University of Virginia to accommodate students with disabilities in accordance with federal and state laws. Any student with a disability who needs accommodation (e.g., in arrangements for seating, extended time for examinations, or note-taking, etc.), should contact the Student Disability Access Center (SDAC) and provide them with appropriate medical or psychological documentation of his/her condition. Once accommodations are approved, it is the student's responsibility to follow up with the instructor about logistics and implementation of accommodations.

If students have difficulty accessing any part of the course materials or activities for this class, they should contact the instructor immediately. Accommodations for test taking should be arranged at least 14 business days in advance of the date of the test(s). Students with disabilities are encouraged to contact the SDAC: 434-243-5180/Voice, 434-465-6579/Video Phone, 434-243-5188/Fax. For more information, visit their site at <http://www.virginia.edu/studenthealth/sdac/sdac.html>.