

## LEARNING SCIENCES: COURSE DESIGN WORKSHEET 1

### NEW COURSE, NEW WORKSHOP, OR NEW MODULE

---

The *Learning Sciences: Course Design Worksheet* was designed to stimulate your thinking about how to integrate and support metacognition, practice, cognitive principles for learning, and transfer of learning within the course/workshop/module that you have selected to work with for your final assignment.

Complete the information provided below regarding your **NEW course/workshop/module** that you are in the process of creating or helping to create.

**(Important Note:** If you have selected an **existing** course/workshop/module to work with, please stop and fill out [Worksheet 2](#) instead.)

**Your Name:** Mark Kavanaugh

**Your Role:** Instructor, Department Chair, Designer  
(e.g., instructor, instructional designer, administrator-professional development, other)

**Project Type:** New course  
(e.g., a course, workshop, module)

**Title of Course, Workshop, or Module:** Sensation and Perception

**Students/Learners:** Undergraduate  
(e.g., undergraduate, graduate, certificate, open-access, employees)

**Modality:** Primarily online but adaptable to face-to-face  
(e.g., online, blended, face-to-face)

**Length:** Semester, but it could vary from 16 to 12 to 6 week duration  
(e.g., semester, quarter, compressed winter/summer, one week, one month)

Any additional information about your course/workshop/module that you would like to share:

This is one in a series of courses I am developing to support a brand new program at Kennebec Valley  
Community College...the program is an Associates of Science in Psychology. What I have included here are the first 7 chapters  
of the "coursebook" for this class....this coursebook corresponds with a textbook and is the format that I use to deliver my  
lessons in all the courses in the Department. Ultimately the students get the full coursebook in epub format.

**Directions:** Review the *Learning Sciences: Course Design Worksheet*. Each of the two sections builds upon content covered in Applying the Neuro, Cognitive, and Learning Sciences to Instructional Design course and related research from the literature.

Please then fill out the different sections of the worksheet keeping in mind the course, workshop, or module (to be referred to as Course) that you plan to review.

Note: The content of this worksheet is explicitly designed to align with the OLC workshop that you are enrolled in. Additional resources are at the end of the document.

**SECTION I. INSTRUCTIONAL DESIGN**☐ **Metacognition**

Describe how your course/workshop/module will engage students in metacognitive practice.

Examples include:

- Engages students in critical thinking
- Provides students opportunities for reflection
- Informs students about important principles of learning and the mind and brain
- Empowers students to become aware of strengths and areas to develop
- Encourages students to view themselves as thinkers and learners

In the text of each chapter there are numerous examples of each of these, but I will focus primarily on the expectations I have in the assessments. CH01 - critical thinking about perception and changing bias, CH02 - opportunity to reflect on the perceptual limits of others, understanding diversity. CH04 - question 5 in the quiz allows for some introspection as to the automatic thinking that happens in our brains. They become more aware they are thinkers. CH06 - discussions focus on self exploration and skill development. This focuses on developing strengths and skills and sharing these with the class.

☐ **Universal Design for Learning**

Describe how your course/workshop/module will integrate UDL principles.

Examples include:

- Multiple means of representation
- Multiple means of engagement
- Multiple means of action and expression

There are a wide variety of presentation in the coursebook itself, but I also have students demonstrating learning by writing answers to essay questions, creating images, creating documents, discussions with classmates, and even a nice constructionist activity for extra credit in CH07.

☐ **Cognitive Load**

Describe how your course/workshop/module will integrate cognitive load management into instructional design.

For example, how will your course minimize extraneous load while considering intrinsic and germane load?

This is an important quality of the class to me...going through the textbook the learning outcomes that could be explored is huge. The course content is very dense and complex, as is the human mind. The CourseBook itself is the way in which I focus on attainable outcomes in the duration of the course. Each chapter has specific outcomes, rarely more than three, and each aligns with a specific assessment. In addition the class will have multiple choice questions on the book that students will be able to take over and over in order to cover the breadth of the material. The CourseBook chapters represent the DEPTH of the course design while the Chapter Quizzes represent the BREADTH of the course content.

**☐ Learning Sciences: Evidence-Based Practices**

Describe how your course/workshop/module will align with cognitive principles for teaching and learning.

Examples include:

- Provide worked examples (e.g., sample text, worked problems, sample projects)
- Use multiple modalities to convey an idea
- Explain the purpose of a learning activity to engage students in that activity
- Provide choice when there is an opportunity such as a topic, representation (paper, video, Prezi, VoiceThread), etc.
- Encourage students to vary how they study using multiple modalities (e.g., reading, flashcards, explaining concepts to others, quizzing, videos, etc.)

I actually cover a lot of the teaching how to learn material in the standard template in our LMS rather than in the coursebook. I will include some screen shots of that. In the design of the "assignments" in the class I utilize a model called "Transparent Assignments" My application format of this is to first explain the purpose of the assignment, then the skills they are going to gain, then specific steps as to what I want them to do, and then a grading rubric. My plan is to include example completed assignments but at this point I need to get the class ready for this coming Fall. All of these courses are works in progress! I'm designing four of them this summer - Sensation and Perception, Abnormal Psychology, Statistics for Psychology and Biopsychology progress has been slow!!

**☐ Transfer of Learning**

Describe how your course/workshop/module will support the transfer of learning.

Examples include:

- Transfer from one assignment to another
- Transfer from this course/workshop/module to a following course/workshop/module
- Transfer across a program
- Relevance to current career/education and/or future career/education
- Real-world connections/transfer across real-world contexts
- Course features that promote transfer including quizzing and practice with varied examples

I actually found myself featuring content in Chapters from earlier chapters but from the CourseBook I already have from Introduction to Psychology! Some of the images I used to introduce Sensation and Perception in Intro are again being seen in this course. This saves me some time in looking up images as well (I use Adobe Stock for nearly all of them.) I keep the real-world examples going throughout the class taking advantage of things I know about my audience...lots of sports fans so I use New England examples of the New England Patriots...and of course, Shaquille O'Neal. Several times I expand upon the textbook examples of real world illustrations of the content. These Chapters guide my lectures (should I decide to teach this class face to face so I include examples that I would use in class.

Those are the main elements that appear in this course...some of the other elements above are included and more the focus of other courses in the program. I actually have a special Introduction to Psychology class for Psychology majors only that includes a lot about the alignment of program and course outcomes with the expectations for different national standards including the American Psychological Association's standards for Psychology majors, the Association of American Colleges and Universities (AAC&U) VALUE Rubrics, and my own application of the expectations of 21st Century work skills that I'm aligning to specific assignments in the classes. Much of this, I admit is still under construction...but this is my daily work.

## SECTION II. INSTRUCTION, ASSESSMENT, FEEDBACK & EVALUATION

### ☐ Cognitive Principles for Learning: Attention

Describe how your course will integrate strategies to capture and direct student attention.

Examples include:

- Clear cues to what is important or most critical during learning activities
- Minimal off-topic or potentially distracting features such as extraneous graphics that do not add to the learning activity
- Frequent opportunities for students to respond
- Encourages students to avoid distraction and stay focused
- Breaks are built into longer sections of lecture, text, or other content presentation

---

I keep the assignments very focused. I participate in the discussions actively and keep them on target, though I do like when some additional material is introduced by students as analogy or relating other courses to what we are discussing. This happens a lot with my Allied Health and Early Childhood Education students who relate content between courses. The course is designed to be Online, and sort of asynchronous...the work can be done at any time, but the course focuses on week to week expectations.

---

### ☐ Cognitive Principles for Learning: Memory

Describe how your course will integrate strategies to help students build knowledge quickly and efficiently.

Examples include:

- Frequent opportunities for retrieval practice such as low-stakes quizzes
- Spaced practice: encourages students to engage frequently with material
- Encourages students to personalize material and apply it to themselves
- Encourages students to avoid distraction and stay focused
- Interleaving IF relevant (i.e., if you are teaching students to discriminate between categories or to choose among different ways of solving problems)

---

Not found in this document, but the course also includes low stakes chapter quizzes that can be done over and over. I'm also examining the potential to have redos on the assignments in the course. Some of the material is essential to meeting the requirements of the APA and I want to be sure there is evidence. Progamatically I am also utilizing a web-based tool that will allow studnets to post artefacts that align with all these outcomes. I'm also working with the entire system to create badges for specific outcomes that will be system wide - such as APA writing and citation style, and others that will be specfic to the APA learning outcomes . A bit of gamification if you will.

---

**☐ Cognitive Principles for Learning: Thinking Skills**

Describe how your course will integrate strategies to help students build thinking skills.

- Multi-step procedures that encourage students to identify and label steps/sub-steps that support problem-solving and applying these steps to other problems
- Focus on underlying principles or “why” when solving problems or answering questions
- Frequent opportunities to practice key thinking skills for the course/discipline, with feedback

---

I believe the transparent assignment structure addresses this issue. I think there is more I can do about metacognition and getting students to reflect on how they are approaching their own learning.

---



---

**☐ Differentiated Instruction**

Describe how your course will integrate Differentiated Instruction into instruction and assessment.

Examples include:

- Assignments provide different approaches to meeting the same outcomes
- Choice in assignments
- Choice in application or technology selected for an assignment
- Students working in groups/teams have a collective choice with assignments
- Types of formative assessment
- Types of summative assessment

---

I believe that much of this is represented in the diversity of assignments that I provide, however, I do not usually offer these choices within a single assignment. In order to judge fairly, I have all the students do the same thing for specific learning outcomes. Truth is I don't believe that offering one person the ability to demonstrate learning with oral communication to express their learning and the other student will write it out for the same learning outcomes is beneficial. Students need to work on the skill sets they are NOT good at while they are in school. So, I approach this by offering different kinds of assessments for different parts of the course.

---

**☐ Mind, Brain & Education Principles**

Describe how your course will align with MBE principles.

Key MBE principles to consider:

1. Human brains are as unique as human faces.
2. Each individual's brain is differently prepared to learn different tasks.
3. New learning is influenced by prior experiences.
4. The brain changes constantly with experience.
5. Neuroplasticity exists throughout the lifespan.
6. There is no new learning without some form of attention and some form of memory.

---

There is something very innate about the actual content of a Sensation and Perception class that deals with these issues. That said, I do not explicitly include this as a reflection on the learning process itself. I think some of this will eventually come out as I start to finish all the different CourseBooks and I can go back and begin to connect them together conceptually and in the form of their digital portfolio and the reflection components in that aspect of the program.

---

**❑ Feedback**

Describe how your course will offer feedback in ways that support learning and reflection.

Examples include:

- Large assignments are scaffolded, providing students the opportunity to fail forward
- There is feedback from varying sources: instructor, peer, self, expert, automated/technology
- Differentiated feedback: written text, text with tracking feedback within documents, recorded voice feedback, recorded video feedback
- Feedback is timely, specific, clear, focused on the task/problem/assignment
- Feedback is focused on identifying strengths and areas for improvement
- Response time for students receiving feedback
- Rubrics are used for assessment and are shared with students
- Rubrics have sections that provide points for integration of feedback
- Opportunities exist to provide positive feedback individually to students and collectively to groups
- Feedback is constructed to provide positive comments followed by identifying areas that need to be modified/enhanced/expanded with feed-forward comments providing constructive comments for upcoming assignments

---

All of this is embedded in the Online course expectations for our teachers. I do focus a bit on being an active participant in the online discussion. This is a sort of "formative assessment" process. However, I'm considering adding an expectation that if the instructor specifically responds to your post, you need to post a reply. I have asked questions and have never received an answer. That would also do double duty to get students involved in the discussions over the course of the week rather than on just one day.

---

**Resources:**

Science of Learning Study

[https://deansforimpact.org/wp-content/uploads/2016/12/The\\_Science\\_of\\_Learning.pdf](https://deansforimpact.org/wp-content/uploads/2016/12/The_Science_of_Learning.pdf)

Minimizing Cognitive Load

<http://www.sage-research.com/wp-content/uploads/2015/11/Checklist-for-Minimizing-Cognitive-Load-Through-Design.pdf>

Universal Design for Learning

[http://udlguidelines.cast.org/?utm\\_medium=web&utm\\_campaign=none&utm\\_source=cast-about-udl](http://udlguidelines.cast.org/?utm_medium=web&utm_campaign=none&utm_source=cast-about-udl)

Metacognitive Awareness Inventory

<https://ciel.viu.ca/teaching-learning-pedagogy/designing-your-course/how-learning-works/ten-metacognitive-teaching-strategies>

Transfer of Learning

<https://www.learningsolutionsmag.com/articles/288/can-they-do-it-in-the-real-world-designing-for-transfer-of-learning>

Cognitive Principles for Teaching with Technology

<http://www.hup.harvard.edu/catalog.php?isbn=9780674660021>