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### Course Development

The class originated at the University of Florida from the desire to help engineering students understand why humanities and sociology classes are relevant by showing how they are connected to engineering and to help expose non engineers to what engineering is all about. It started in 2010 when Dr. Kevin Jones approached Dr. Sophia Acord about offering a class that combined materials science and humanities. Using Stephen Sass' book *The Substance of Civilization* as a guide Dr. Jones and Dr. Acord developed a set of lectures that they initially taught face-to-face to 15 students. Eventually, as more professors were invited to add content and lectures the course evolved to focus on a different material and a different social principle each week of the semester. The face-to-face class has since grown to 9 instructors and approximately 175 students per class. The content from the face-to-face course was adapted for the online environment at the University of Florida in 2015.

### Course Contributors

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### Course Description

This course explores the connections between the discovery of new materials such as ceramics, glass, concrete, metals, plastics, semiconductors etc. and the development of technologies and social structures worldwide. To see these connections, the course will fuse basic concepts in materials science and engineering with perspectives and methods from anthropology, history, English, classics, literature, and sociology. From ancient cities and Roman baths to steel foundries and Tupperware parties, to virtual communities and nanomedicine, students will learn how the physical properties of different materials intersect with cultural variables like gender, race, power/authority, religious beliefs, values, and financial and political systems to shape human civilization. By connecting lessons from the past to the inventions of cutting-edge materials, we will also explore the future social impacts of new materials in medicine, construction, transportation, clean energy, sports, and other areas. Engineers play important

roles in changing or maintaining the structure and fabric of society. This course will explore how their materials-based technologies shape our society, as well as how society shapes engineering innovations.

### **Course Objectives**

This course will introduce students to how the discovery and manipulation of new materials impacted social structure both historically and in the present day, and how social and cultural forces that shape the development and use of materials and technologies from the past to future continue to affect our lives. This course will require students to:

- examine the interrelated nature of society and materials engineering
- demonstrate how materials can be manipulated to solve technical and sociocultural problems
- explore how social and cultural systems shape how humans perceive the intrinsic physical properties of materials
- discuss how the impact of materials on society varies with cultural and historical context
- compare a variety of approaches from the humanities, social sciences, and sciences to examine and shape the impact of materials and degradation of materials on society.
- apply basic skills in cross-disciplinary communication and argumentative writing.
- evaluate how disciplinary approaches and personal beliefs shape our understanding of materials.
- apply new course concepts through applied projects discussing future materials innovations and sustainability.

### **Course Format**

The course materials for Impact of Materials on Society are delivered in 13 learning modules via a combination of video lectures, e-texts, and high-quality application videos. Each module of this course will focus on a particular class of materials. It is important that students follow the modules in the sequence they are presented in order to best prepare for the assignment at the end of each module. Modules begin with a lecture exploring the physical properties of a particular material delivered by University of Florida Professor of Materials Science and Engineering, Dr. Kevin Jones and a selection of readings outlining historical case studies of that material's major social impacts. Building upon that new knowledge, students will explore innovative applications of various materials by completing an assignment based on a short video that synthesizes the impact of modern materials being developed by scientists from around the U.S.

Throughout the course students are encouraged to stretch their framework of understanding by adding to an Impact Paradigm introduced in Module 1, and then writing an essay comparing two materials using that paradigm as a mid-course assessment and as part of a final project. To culminate each module, students will evaluate their personal, as well as society's, interconnectedness with each material by creating a tanglegram, a graphic tool used

to illustrate the relationships between the material and living world, and then writing a short critical essay that elaborates on the impact of that material on humanity.

**Module Descriptions**

	Module	Description	Learning Objectives	BWE Video
1	<b>Introduction to Material Science and Sociology</b>	This module introduces the structure of the course, the basic properties of materials, and the dynamic relationship between materials and society (Materials shape society, but society shapes how we perceive and use materials).	<ul style="list-style-type: none"> <li>• understand the course materials and objectives</li> <li>• consider why materials matter to society</li> <li>• identify the physical and social properties of matter</li> <li>• describe the properties of an easily accessible object</li> <li>• personalize a preliminary Materials Impact Paradigm for use throughout the course</li> </ul>	<a href="#">Corrosion PSA</a>
2	<b>The Entanglement of Earth</b>	This module focuses on the most primal material—earth itself (in the form of clay)—as used in the deep past and contrasts it with materials very much of the present and future: rare earth elements. As different as they may seem, they are similar not only as “earthy materials” but in terms of how humans have become inexorably dependent on them, even as these things are dependent on humans.	<ul style="list-style-type: none"> <li>• identify the properties of clay</li> <li>• identify the properties of rare earth materials</li> <li>• discover the uses and applications of clay both historically and in modern times</li> <li>• examine the many relationships between humans and materials</li> <li>• recognize the existence of critical materials.</li> </ul>	<a href="#">Rare Earths</a>

3	<b>Glass and Ceramics</b>	<p>The manipulation of glass-like rocks and ceramics represent humans' earliest materials innovations. This module examines the process and social impacts of shaping rock and clay, and uses these lessons to explore the possibilities for manipulating tomorrow's functional ceramics. The creation of new processing approaches allows us to take advantage of different properties of a material, giving us insights into how we might rethink traditional approaches to dealing with materials corrosion.</p>	<ul style="list-style-type: none"> <li>• identify the properties of ceramics</li> <li>• describe the work of materials processing</li> <li>• discover the uses and applications of ceramics both historically and in modern times</li> <li>• examine how the physical processing of a material involves social acts</li> <li>• discover the hidden costs of increasing materials manufacturing.</li> </ul>	<a href="#">Ceramics</a>
4	<b>Copper and Bronze</b>	<p>The discovery of the metals and the invention of metallurgy was both a technical and a social revolution. This module examines the economic and social dimensions of smelting and casting copper in the Bronze Age, and uses these lessons to predict the intensive sourcing and production needs of new photovoltaics. Understanding the relationships of trade, social class, and expertise is crucial to creating enduring materials for tomorrow's world.</p>	<ul style="list-style-type: none"> <li>• identify the properties of copper and its alloys</li> <li>• identify the properties of photovoltaics</li> <li>• discover the uses and applications of copper both historically and in modern times</li> <li>• examine the relationship of trade routes to materials innovation</li> <li>• discover the importance of codifying expertise in materials engineering</li> </ul>	<a href="#">Photovoltaics</a>

5	<b>Gold and Silver</b>	<p>Humans give value to materials in many different socially-informed ways. This module examines the creation of currency systems based on gold and silver, and uses these lessons to explore how we perceive the use of gold nanoparticles in medicine today. Finding new uses for non-corrosive materials may depend upon the value that we give to them in other circumstances.</p>	<ul style="list-style-type: none"> <li>• identify the properties of gold and silver</li> <li>• identify why precious metals formed the basis of modern currency systems</li> <li>• discover the uses and applications of previous metals both historically and in modern times</li> <li>• recognize the difference between the intrinsic and extrinsic value of a material</li> <li>• sketch how the past uses of a material might affect its use in new applications</li> </ul>	<a href="#">Gold</a>
6	<b>Concrete</b>	<p>First developed by the Romans millennia ago, to create unprecedented monumental public spaces and artificial ports—moldable, pourable, waterproof, durable and quick-setting—concrete is the most common building material in use today. This module explores the ancient Roman use of concrete and uses lessons learned to suggest how we can use new smart building materials in purposeful ways to address social needs. The use of a material for a particular application is shaped by what a culture needs and values; recognizing these influences is vital to using new materials in ways that combat materials degradation.</p>	<ul style="list-style-type: none"> <li>• identify the properties of concrete</li> <li>• identify examples of smart building materials</li> <li>• discover the uses and applications of concrete both historically and in modern times</li> <li>• examine how cultural values shape the use of materials in a society</li> <li>• discover the sustainability concerns with concrete as a building material</li> </ul>	<a href="#">Building Materials</a>
7	<b>Mid-Course Exam and Essay</b>			

8	<b>Iron and Steel</b>	<p>The mass industrial manipulation of iron ushered in the modern Industrial Revolution. This module looks at the entrepreneur Andrew Carnegie, the creation of the steel industry, and industrial innovation, and uses lessons learned to predict how the growing use of new magnesium alloys will shape business and industry. The process of innovating with a new material on a mass market level has winners and losers; understanding how making new materials may require re-ordering social, political, and economic systems enables us to anticipate important consequences of combating materials degradation with new materials.</p>	<ul style="list-style-type: none"> <li>• identify the properties of iron and steel</li> <li>• identify the properties of magnesium alloys</li> <li>• discover the uses and applications of iron both historically and in modern times</li> <li>• examine the role of workers and organized labor in materials manufacturing</li> <li>• discover the business economics of materials production</li> </ul>	<p><a href="#">Magnesium Alloys</a></p>
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9	<b>Aluminum</b>	<p>Aluminum first emerged as a metal in search of an application. This module examines the growth of the aluminum consumer market, and uses these lessons to anticipate the future of today's new amorphous metals. When an individual company or small set of companies has a dominant market hold on a new material, governments may step in to encourage competition and innovation. Understanding the business and legal dimensions of materials manufacturing is key to preparing new materials and techniques to address corrosion problems.</p>	<ul style="list-style-type: none"> <li>• identify the properties of aluminum</li> <li>• identify the properties of amorphous metals</li> <li>• discover the uses and applications of aluminum both historically and in modern times</li> <li>• examine the history and rationale of anti-trust legislation in the U.S.</li> <li>• relate the ways that entrepreneurs and firms locate uses for new materials</li> </ul>	<p><a href="#">Bulk Metallic Glass</a></p>
10	<b>Writing Materials</b>	<p>The ways that we store and distribute information are not neutral, but have social and political implications for the societies in which these materials function. This module examines the wide variety of materials that have been used for information storage, and uses lessons learned to predict the potentials and pitfalls of new magnetic storage materials. The degradation of different materials for information storage can have a profound impact upon democracy in a society, who has access to information, and whose stories are recorded and accessible.</p>	<ul style="list-style-type: none"> <li>• identify the properties of different writing materials, including stone, papyrus, parchment, and paper</li> <li>• identify the properties of magnetic materials</li> <li>• discover the uses and applications of writing materials both historically and in modern times</li> <li>• examine the political dimensions of information storage</li> <li>• discover how different technologies for information storage shape how we use and access information, as well as how we manipulate new writing materials</li> </ul>	<p><a href="#">2D Materials</a></p>

11	<b>Plastics</b>	<p>As an invented class of materials created in a modern laboratory, polymers have very unique properties and also widely debated uses. While some consider polymers to be the 'material of the future', others blame plastics for causing major pollution problems. This module looks at the invention and innovative marketing of Poly-T, more commonly known as Tupperware, and gathers lessons learned to inform the creation of more sustainable bio-polymers. Ultimately, social perceptions of a material are powerful determinants of its use, and we must think strategically about how to market new materials to address the needs and values of consumers.</p>	<ul style="list-style-type: none"> <li>• identify the properties of polymers</li> <li>• identify the properties of biopolymers</li> <li>• discover the uses and applications of polymers both historically and in the future</li> <li>• examine the way that individual and social perceptions shape the use of a material</li> <li>• discover how the properties of a material rely on the interests of their users</li> </ul>	<a href="#">Polymers</a>
12	<b>Semiconductors</b>	<p>Semiconductors have forever changed human-human and human-material interactions because they are the foundation of the computing revolution and form the basis of increasingly ubiquitous digital devices. This module looks at how our use of semiconductor-based devices impacts individual human relationships, and draws lessons learned for designing needs-based applications for new 2D materials. As semiconducting materials become more invisibly embedded in our everyday lives, and even in our own persons, only intentional design will ensure that they serve us, versus us serving them.</p>	<ul style="list-style-type: none"> <li>• identify the properties of semiconductors</li> <li>• identify the properties of graphene and 2D materials</li> <li>• discover the uses and applications of semiconductors</li> <li>• examine how materials mediate human relationships</li> <li>• relate the relationship of industrial to information revolutions</li> </ul>	<a href="#">Information Storage Systems</a>
13	<b>Final Course Exam and Project</b>			

### Module Format

Module Teaching Elements	Description
Lectures	Modules begin with a lecture exploring the physical properties of a particular material delivered by University of Florida Professor of Materials Science and Engineering, Dr. Kevin Jones.
Readings	<p><b>Required Reading</b> The Impact of Materials on Society: Discovering Human-Material Relationships from Yesterday to Tomorrow. Edited by: Sophia K. Acord and Kevin S. Jones. University Press of Florida: Gainesville, FL. 2016</p>
Application Video	Short videos created especially for this course by Bruno White Entertainment that synthesize the impact of modern materials being developed by scientists from around the U.S.
Module Practice Elements	Description
Lecture and Readings Quizzes	10 question comprehension checks given mid-module to prepare students for synthesizing content.
Application Video Analysis and 1 Page Essay	Building upon new knowledge, students explore innovative applications of various materials and respond to critical thinking questions related to specifically to each material by writing a one page essay.
Material Entanglement and Impact Paradigm Reflections	Throughout the course, students construct their relationship to each module's material and the material's societal impact by keeping a journal or blog with entries that include a tanglegram of that material (introduced in Module 2) and an addition to their personally created Impact Paradigm (introduced in Module 1).
Course Objectives Synthesis	Description

Impact Paradigm Material Comparison Essay (mid-course)	Students synthesize new content knowledge and personal understanding by applying the Impact Paradigm introduced in Module 1 to a material of choice by writing a critical, synthesis essay and their developing Impact Paradigm.
Mid-course and Final Exams	25 multiple choice, true/false, matching, fill-in-the blank, short response questions to test both scientific and sociological comprehension.
Final Project: Materials Presentation	This final project is an opportunity for students to reflect upon their learning about the physical and social role of materials science and engineering. Students synthesize their new knowledge of material science and societal entanglement by evaluating their personal Material Entanglement and Impact Paradigm Reflections and creating a visual and written presentation.

### Grade Scale

Assignment Type	Points Each	Total	Grading Scale	
Lecture and Reading Quizzes (10)	20	200	A:	940-1000
Introductory Assignments (2)	10	20	A-	900- 939
Video Application Assignments (10)	20	200	B+	870-899
Material Entanglement Reflection Essay (10)	20	200	B	830-869
Mid-course Exam	100	100	B-	800-829
Mid-course Impact Paradigm Materials Comparison Essay	80	80	C+	770-799
Final Exam	100	100	C	730-769
Final Project	100	100	C-	700- 729
Total		1000	D+	670- 699
			D	630- 669
			D-	600-629 less than 600
			F	

### Grading Rubrics

#### Module 1: Describing Materials Grading Rubric

Criterion	5 points	3-4 points	0-2 points
Response Content	5 or more properties per column that reflect understanding and thoughtful	3-4 properties per column that reflect understanding and thoughtful	Less than 3 properties per column. Attention to detail is not apparent.

	consideration.	consideration.	
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**Module 1: Personalized Impact Paradigm Rubric**

Criterion	5 points	3-4 points	0-2 points
Response Content	Instructions for naming conventions are followed. A question is added to all 4 categories of the Impact Paradigm.	Instructions for naming conventions are followed. A question is added to two categories of the Impact Paradigm.	Instructions are not followed. Assignment is incomplete.

**Modules 2-6 and 8-12 Application Video Analysis Rubric**

Criterion	9-10 points	6-8 points	3-5 points	0-2 points
Response Content (10 Points)	Responses are appropriate, thoughtful, and indicate engagement with the video.	Responses have minor inconsistencies with the video or are not supported by content.	Responses have major inconsistencies with the video or are not supported by content.	Responses are inaccurate, careless, and/or opinions not supported by content.
Mechanics (10 Points)	Grammar, sentence structure and punctuation are correct and properly cited.	Minor issues with grammar, punctuation and or sentence structure and citations.	Significant issues with grammar, punctuation and or sentence structure and citations.	Major issues with grammar, punctuation and or sentences and citations
Total				

**Modules 2-6 and 8-12 Impact Paradigm Reflection Essay Rubric**

Criterion	9-10 points	6-8 points	3-5 points	0-2 points
Response Content (10 Points)	Responses are appropriate, comprehensive, and indicate thoughtful engagement with the information and concepts from the lecture, readings, and videos. Novel ideas,	Good effort. Responses and arguments are not as clearly presented, or as comprehensive and thoughtful as in a full credit answer. Tanglegram is fully supported by	Responses are less appropriate to the assignment, less thoughtful and engaged, with less complete information. Tanglegram is partially incomplete	Responses are inaccurate, careless, and/or opinions not supported by content. Tanglegram is incomplete.

	creativity, and attention to complexity are a plus. Tanglegram is fully supported by responses and image.	responses and images.	or unrelated to images and responses.	
Mechanics (10 Points)	Grammar, sentence structure and punctuation are correct. Works are cited properly when appropriate.	Occasional grammar or mechanics issue or works are cited incorrectly.	Some issues with grammar, punctuation and or sentence structure or chosen image or other works are not cited when appropriate.	Major issues with grammar, punctuation and or sentences. Chosen image or other works are not cited when appropriate.

Mid-Course Impact Paradigm Comparison Essay

Criterion	A=17-20 points	B=13-16 points	C=8-12 points	D=4-7 points	E=0-3 points
<b>Application of Impact Paradigm (20 points)</b>	All of the evidence and examples are specific, relevant and explanations are given that show thoughtful application of the impact paradigm to both materials chosen.	Most of the evidence and examples are specific, relevant and explanations are given that show thoughtful application of the impact paradigm to both materials chosen/one material analysis is more complete than the other.	Some of the evidence and examples are specific, relevant and explanations are given that show thoughtful application of the impact paradigm.	Evidence and examples are weak and application of the impact paradigm is incomplete.	Evidence and examples are NOT relevant AND/OR thoughtful application of the impact paradigm is not evident
<b>Content of Essay (20 points)</b>	Fully compares/contrasts both materials using of the Impact Paradigm Clearly articulates and compares the societal impact of both materials.	Partially compares/contrasts materials using of the Impact Paradigm. Attempts to articulate and compare the societal impact of both materials.	Weakly compares/contrasts materials. Articulation of societal impact is incomplete.	Compares/contrasts materials inconsistently. Articulation of societal impact is unclear.	Writes about only one material. Doesn’t compare societal impact.
<b>Accuracy (20 points)</b>	All supportive facts and	Almost all supportive facts	Most supportive facts and	Most supportive facts and	Supportive facts and

	statistics are reported accurately and cited when appropriate.	and statistics are reported accurately and cited when appropriate.	statistics are reported accurately and cited when appropriate.	statistics were inaccurately reported and/or improperly cited when appropriate.	statistics were inaccurately reported and/or improperly cited when appropriate.
<b>Mechanics (20 points)</b>	Author makes no errors in grammar or spelling that distract the reader from the content. Work is cited properly when appropriate.	Author makes 1-2 errors in grammar or spelling that distract the reader from the content. Most work is cited.	Author makes 3-4 errors in grammar or spelling that distract the reader from the content. Work is not cited properly most of the time.	Author makes more than 4-6 minor errors in grammar or spelling that distract the reader from the content. Citations are missing.	Author makes more than 6 errors in grammar or spelling that distract the reader from the content. Citations are missing.
<b>Total-80</b>					

**Final Project: Materials Presentation**

<b>Criterion</b>	<b>A=20-25 points</b>	<b>B=15-19 points</b>	<b>C=10-14 points</b>	<b>D=5-9 points</b>	<b>E=0-4 points</b>
<b>Application of Impact Paradigm (25 points)</b>	All of the evidence and examples are specific, relevant and explanations are given that show thoughtful application of the impact paradigm..	Most of the evidence and examples are specific, relevant and explanations are given that show thoughtful application of the impact paradigm.	Some of the evidence and examples are specific, relevant and explanations are given that show thoughtful application of the impact paradigm.	Evidence and examples are weak and application of the impact paradigm is incomplete.	Evidence and examples are NOT relevant AND/OR thoughtful application of the impact paradigm is not evident
<b>Content (25 points)</b>	Content is comprehensive, and indicate thoughtful engagement with the information and concepts	Content is not as comprehensive and thoughtful as in a full credit answer. Most project requirements are addressed.	Responses are somewhat appropriate to the assignment; occasionally thoughtful and engaged, information is	Responses are inaccurate, careless, and/or opinions not supported by content.	Content does not address the project requirements or does not show thoughtful consideration

	from the lecture, readings, and videos while fully addressing project requirements. Novel ideas, creativity, and attention to complexity are a plus.		incompletely explained. Some project requirements are missing	Most project requirements are not addressed.	of the course materials.
<b>Accuracy (25 points)</b>	All supportive facts and statistics are reported accurately and cited when appropriate.	Almost all supportive facts and statistics are reported accurately and cited when appropriate.	Most supportive facts and statistics are reported accurately and cited when appropriate.	Most supportive facts and statistics were inaccurately reported and/or improperly cited when appropriate.	Supportive facts and statistics were inaccurately reported and/or improperly cited when appropriate..
<b>Mechanics (25 points)</b>	Author makes no errors in grammar or spelling that distract the reader from the content. Work is cited properly when appropriate.	Author makes 1-2 errors in grammar or spelling that distract the reader from the content. Most work is cited.	Author makes 3-4 errors in grammar or spelling that distract the reader from the content. Work is not cited properly most of the time.	Author makes more than 4-6 minor errors in grammar or spelling that distract the reader from the content. Citations are missing.	Author makes more than 6 errors in grammar or spelling that distract the reader from the content. Citations are missing.
<b>Total-100</b>					

### Peer Review

Learning is enriched when students have the opportunity to analyze the perspective of other learners and engage collaboratively with new information. If your course allows time for more interaction and engagement, consider building in a requirement for peer review of larger projects like the Mid-Course Essay or Final Project. The simplest way to do this is to assign partners or groups (often your Learning Management System has a tool for creating groups) and distribute the Peer Review Tool found in the *For Instructors and IDs* folder in the *Course Materials* folder by

linking it in a the correlating module and adding related submission requirements to the assignment and Due Date Document. You will want to make full credit for the assignment dependent on the submission of the Peer Review Tool. *Note that the instructions below require editing for group size and the particular LMS or course delivery method you are using.*

- **Example Peer Review Instructions**

- Post your finished project as a file attachment or link to the correlating discussion thread.
- Open and review the project posted by at least 3 of your peers using the Peer Review Tool linked to the discussion post.
- Comment on your peer's post and attach the Peer Review Tool you used to evaluate her or his project.
- Note that your project **will not be graded** until you have submitted your peer reviews.

### **Adding interaction and collaboration between peers**

This course was designed as a template to be adjusted depending on LMS, audience, and time. It is suggested that collaboration and interaction between peers be encouraged by adding discussion requirements to the Video Application Assignments and the Materials Entanglement Reflection Assignments.

The easiest way to add this interaction between peers is to ask students to read and evaluate each other's work. See below for language you may add to assignments if you are using an LMS with a discussion tool, wiki, or blog.

If you decide to use discussions as one of your learning elements, you will need to adjust the syllabus, grade scale, and due dates accordingly.

### **Example Discussion Instructions:**

Read two essays submitted by your classmates. Using the evaluation rubric consider how your classmate has approached this module's material and the impact paradigm. Add a comment to their discussion thread that constructively addresses something you found interesting about their work or perspective. Be sure debatable topics are supported with content from the module readings, lectures, or videos.

### **Folder Organization**

As described above, this course is organized into 13 modules of instruction which include two modules for review and assessment. Progress through the modules can be self-paced or adjusted to reflect the length of time the course is in session. The pdf copies of the course are organized by modules with one folder designated for each module. Each module folder includes: the module outline, readings, assignments, and assessments for that module.

Alternatively, folders organized by course element (module outlines, videos, assignments, assessments course materials) are also included.

## Preparing for a New Semester

Each new semester, the instructor, TA, or instructional designer will need to make edits to course documents in order to reflect the policies of their institution and the specific time and date parameters of that particular semester.

### Due Date Document and Module Timeline Adjustments

One tool to provide structure for online students is offering a Due Date Document that can be linked throughout the course as is modeled in the Canvas Common Cartridge files offered with this course. Templates for typical semester lengths are provided in the course materials folder.

*Each semester the following edits will be required:*

- Add submission instructions to the second column of the due date document
- Edit submission deadlines
- Be sure to keep submission instructions consistent. For example, make quizzes due on the same day every week. For your convenience, this is reflected in the Due Date Document template.
- If you are delivering the course through a learning management system, link or update the links to the Due Date Document throughout the course each semester.

### Suggested Module Sequences

Number of Semester Weeks	Module Sequence	Delivery Week
15	None	Follow module sequence. Build in one week of review/study time before Module 7 and 13.
8	1,2 3 4 5 6,7 8,9 10,11 12,13	1 2 3 4 5 6 7 8
6	1, 2, 3 4, 5 6,7 8, 9 10, 11 12, 13	1 2 3 4 5 6

If you have decided to add discussions to the course, add those assignments to the Due Date

Document as pass/fail participation assignments.

### Submission Considerations

The instructions for assignment submission are intentionally written to be generalizable to any LMS or delivery method. Before the course begins, instructors will need to specify submission requirements for assignments in the module outlines, assignments, and Due Dates Document. For example, the nonspecific instructions for submitting the Impact Paradigm Reflection Essay say, “Submit BOTH your Material Entanglement Reflection Document AND your Impact Paradigm Document”. When delivering to a course in an LMS or other format, instructors may want to make those instructions more specific to the tool they are using.

**Assign the quiz for each module mid-module** The module objectives are designed to become more complex as the module progresses. The beginning of each module introduces the concepts with a lecture and reading. To encourage students to watch and read those introductory assignments carefully and to prepare students to synthesize information in later assignments, it is suggested that the quiz be given mid-module or before students begin reflections and essays for that module. *Edits to the Due Date Document should reflect that sequence.*

**Set time limits on quiz submissions** Students should be directly encouraged to take notes during lectures and to study prior to the quiz. In order to minimize students looking up answers during the quiz, it is suggested that instructors set time restrictions for each question. The quiz tests basic comprehension so 90 seconds should be plenty of time per question if students are well-prepared.

### Syllabus Edits

The syllabus included in these materials is not specific to any institution or organization. Edit this syllabus to reflect the policies, grade scale, and online expectations at your institution.