

FORT HAYS STATE UNIVERSITY
AEP 824, LEARNING AND THE BRAIN
3 Graduate Credit Hours

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COURSE DESCRIPTION COURSE DESCRIPTION:

The Learning and the Brain course describes the roles, functions, processes, and physical makeup of the brain and how it can be leveraged for optimal learning. This course defines the structure of the brain, how it functions, and how to enhance student cognition and development of academic skills. The course will also provide the classroom instructor with tools to help the student understand short and long term memory, identify factors that influence students' ability to remember, and understand higher level thinking and effective problem solving. Finally, this course will also help explain how multiple intelligences and learning styles can affect curriculum development and learning.

FORT HAYS STATE UNIVERSITY MISSION STATEMENT:

Fort Hays State University provides accessible quality education to Kansas, the nation, and the world through an innovative community of teacher-scholars and professionals to develop engaged global citizen-leaders.

COLLEGE OF EDUCATION AND TECHNOLOGY MISSION STATEMENT:

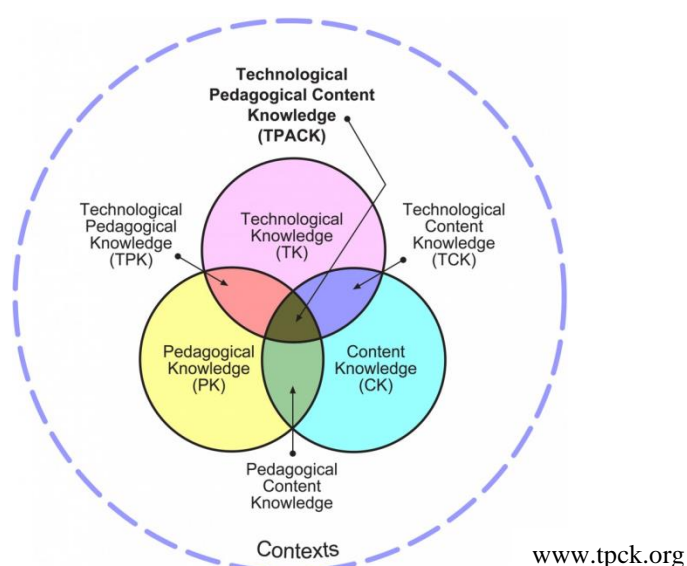
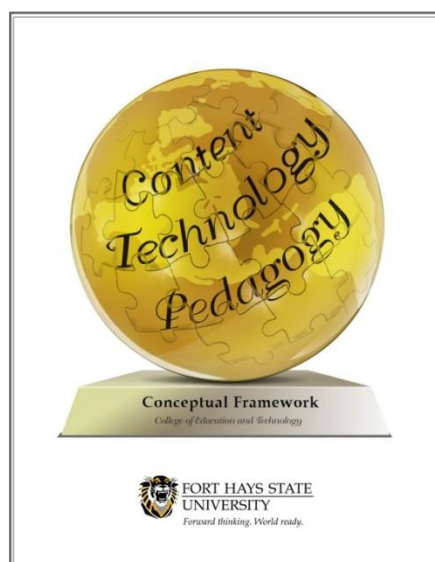
Education professionals prepared in the College of Education and Technology at Fort Hays State University will have the technological, pedagogical and content knowledge, skills, and dispositions to lead, model, teach and collaborate in diverse settings.

CURRENT MISSION:

Professional educators prepared at Fort Hays State University will have the knowledge, skills, and disposition to ensure excellence in teaching while actively investing in their own professional development.

DEPARTMENT MISSION STATEMENT:

The mission of the Advanced Education Department is to prepare 21st century global leaders who serve in educational and community settings. Degree programs focus on the interaction among innovative technologies, relevant content, diversity and best practices.



The Conceptual Framework for Professional Educators at FHSU

Technological Pedagogical and Content Knowledge (TPACK)
<i>TPACK 1</i> – Candidates integrate current and emerging digital tools to collect, analyze, and present information.
<i>TPACK 2</i> – Candidates demonstrate proficiency in oral and written communication skills.
<i>TPACK 3</i> – Candidates select, design, administer, and interpret a variety of appropriate assessments.
<i>TPACK 4</i> – Candidates incorporate theories and research to design and implement effective learning environments for all students.
Technological Knowledge (TK)
<i>TK 1</i> – Candidates model and teach safe, legal, and ethical use of digital information and technology.
Technological Content Knowledge (TCK)
<i>TCK 1</i> – Candidates design/facilitate diverse learning activities that incorporate digital tools and resources.
Content Knowledge (CK)
<i>CK 1</i> – Candidates design/facilitate lessons/opportunities that reflect subject content and academic knowledge.
<i>CK 2</i> – Candidates design/facilitate and implement interdisciplinary units of study.
Pedagogical Content Knowledge (PCK)
<i>PCK 1</i> – Candidates make/facilitate curricular decisions based on data.
<i>PCK 2</i> – Candidates collaborate with other professionals to identify and design strategies and interventions to ensure student/teacher learning.
<i>PCK 3</i> – Candidates design/facilitate and adapt lessons/opportunities to meet the diverse needs of all students.
<i>PCK 4</i> – Candidates reflect on their practice and make necessary adjustments based on data to develop effective learning opportunities for all students and teachers.
Pedagogical Knowledge (PK)
<i>PK 1</i> – Candidates model the dispositions expected of professional educators as identified in state and institutional standards.
<i>PK 2</i> – Candidates engage in and reflect on professional learning opportunities.
Technological Pedagogical Knowledge (TPK)

TPK 1 – Candidates communicate and collaborate using digital tools.

Disposition Statement: Professional attitudes, values, and beliefs demonstrated through both verbal and non-verbal behaviors as candidates interact with students, families, colleagues and communities. These behaviors support student learning and development. Candidates are expected to demonstrate observable behaviors that are consistent with the ideas of fairness and the belief that all students can learn. (NCATE definition, 2001)

Definition for **DIVERSITY**: Differences among groups of people and individuals based on culture, ethnicity, race, socioeconomic status, gender, exceptionalities, language, migrant status, religion, sexual orientation, and geographical area.

DIVERSITY FIELD PLACEMENT definition: The FHSU COET definition of a diverse placement for students includes practicums, clinicals, internships, student teaching experiences, and course assignments. These experiences provide the candidate with the opportunity to interact with P-12 students in environments where the following indicators of diversity are present: 20% of the student population is economically disadvantaged (on free or reduced lunch), 5% of the student population has identified disabilities (are on IEPs), or 5% of the student population is non-white (self-reporting of student or parent).

DIVERSITY PROFICIENCIES:

1. Recognizes and explains the nature of diversity in the community to inform instruction.
2. Understands and can articulate characteristics and attributes of student populations which contribute to commonality and differences.
3. Recognizes and applies appropriate educational options for all students.
4. Understands and applies results of assessment data for educational placement and accommodations.
5. Utilizes appropriate technology to gather and disseminate information.
6. Reflects on diversity experiences from a variety of perspectives (emotional, informational, and developmental) for diagnostic purposes and self-growth.

SOCIAL MEDIA GUIDELINES FOR STUDENTS:

All social media sites created for instruction and communication purposes by Advanced Education Programs faculty will be set up as *secret* or private.

Site purpose

The purpose of the site will be stated by your instructor. It is in line with Advanced Education Program's mission to help prepare 21st Century learners and provide them content and pedagogical knowledge online via innovative technology. A general guideline will be: *This site is to be used exclusively for the purpose of responding to class discussions, assignment submission, uploading videos, and asking questions regarding course work. Your instructor has the right to remove any comments, discussions, questions, etc. that are not consistent with the stated purpose of this site.*

Know copyright laws

Always use a URL link when posting videos, full articles, etc. In other words, if you embed them on the site, be sure to provide sources and/or permissions.

Be accurate

Always provide clear and consistent information based on research and fact.

Be respectful

It's okay to disagree, but be polite and constructive in your manner.

No defamatory or harmful information about any individual—including students, colleagues, faculty, or administrators will be tolerated. All such content will not be tolerated and may result in removal of the violator from the social media site at the discretion of the instructor.

Remember--Anything that's not appropriate for the classroom or the evening news is not appropriate online.

Students Who Do Not Want to Participate

Students who may not want to participate for various reasons are encouraged to discuss concerns with your instructor.

Be transparent

Note that any opinions expressed are your own, and communicate in a professional and appropriate manner. Your instructor will likewise follow these guidelines: *Anything that the instructor says is strictly his/her opinion and is not speaking on behalf of FHSU.*

Safeguard others' privacy

When telling stories about real students and classroom, school, and district challenges, *don't* identify the location, names, job titles or any other personal information protected by state and federal privacy laws.

Adhere to the Golden Rule of Social Media: *Post about others as you would have them post about you.*

GOALS/OBJECTIVES/COMPETENCIES/OUTCOMES

Students will . . .

1. Identify the parts of the brain and determine how they function as a system and apply an understanding of the relationship between executive functions and self-regulation to learning and memory
2. Summarize critical periods of brain development and learning and integrate the educational implications of brain development into classroom instructional strategies and procedures
3. Maximize the impact of positive stressors and minimize the influence of negative stressors on the brain in the classroom environment to enhance student learning
4. Assess the components of long-term and working memory and utilize the factors that influence students' ability to remember (retrieve) information over the long run
5. Build classroom practices that are cognizant of the factors that influence attention, positively and negatively in the classroom
6. Implement goal setting, differentiating between mastery and performance goals, and provide concrete practices for helping students focus on goals

COURSE OUTLINE/CONTENT

COURSE FORMAT

COURSE REQUIREMENTS:

Product One:

As you proceed through each lesson in this course, you will be required to access the appropriate course named online dual component lesson package. Each course's two-part package is currently identified by its title. Internal to each package there are related **Lesson Numbers**, and the single most important component in the EXAM Section is the **Tutorial**. Certainly focus on the TUTORIALS at a minimum prior to taking your subject matter EXAM. You can access your course at this web page:

<https://www.leadershipcredit.info/dod-jrotc-certification/>.

Go to **paragraph 3** on the web page. PRINT and READ THE TWO-PAGE INSTRUCTION DOC. The only web browsers that will work are *Internet Explorer* or *Microsoft Edge*. You may ignore the Preparation, Discussion Questions, and Assignment sections at the course on-line link, but not the **Tutorial** or **Exam** sections. All additional course imperatives are contained in this document. No course textbook is required.

On the left sidebar of the web page are pedagogy support material enhancing your understanding of the critical subjects. Lesson Topics (*again, located on the left sidebar link with the course title*). This is pedagogy support material each student can work/process according to their own individual need and prior to completing their PRODUCT ONE Exam requirement.

Welcome - This section provides instructions on how to use this course, materials needed for this course, and references used in developing this course.

Directions for content sources:

Each lesson includes content sources, and in lieu of a textbook, material composed of narrative plus either links to articles, youtube presentations, or graphics. You will find yourself being more of a researcher than simply referring to a depository of content as is sometimes common when reading a traditional textbook as a way to gain content knowledge. You will find some of the content redundant, but in education we like to call this repetition which can be an instructional strategy. You also will find that sometimes the sources are not in agreement. This is okay too. Some sources will require careful and thoughtful reading while others will invite you to a less formal perusal. You will probably find the youtube presentations and the graphics particularly helpful for providing summaries of the content concepts. Feel free as a researcher to explore other websites to gather further information.

Explanation of Points

Product One: Evidence of completing the lessons is the submission of either a screenshot print of your online EXAM Score or the certificate of completion. This score is strictly a pass option with scores of

70% or more required. Exam must be retaken for any score below 70%. This is a must pass requirement. Exams with a score below 70% can be retaken until 70% or greater is achieved.

Product Two: Up to 150 Points will be awarded based on the quality and pithiness of the responses to discussion prompts.

Product Three: Up to 1500 points are available for your major student writing assignment. Final grade will be determined as a percentage of points earned calculated on total possible points.

Student Assignment Products to be submitted to instructor:

1. **Product 1 Screenshot Print of your percentage score or a Certificate of Completion from the online course**
2. **Product 2 Table showing postings to the Discussion Page**
3. **Product 3 Culminating Activity—Writing Assignment**

Product 2:

Go to the AEP 824 discussion page at <http://www.leadershipcredit.info/discussion/viewforum.php?f=5> and post a discussion question from each chapter from the online course. (10 points) Respond to at least one other student's entry. (5 points) (*Remember: First-time users will need to establish their own userid and password upon receipt of email instructions from their instructor.*) While completing the online course you responded to discussion questions at the end of each lesson. Select your answer to one discussion question from each chapter, copy it and post it. The discussion question should be one that reflects on application of content in the classroom. Then look through the posting by other students and comment by responding to at least one of their posting. Choose a posting where you can reflect on the other student's posting in a way that can be constructive and relevant. For your convenience the discussion questions from the lessons are listed in the table below. Indicate which question you posted by highlighting the selected question and then record the date of posting. By posting the date it will be easier to verify your posting and facilitate rewarding points. Copy this table and submit it as product number 2.

Lesson	Discussion Questions	Date DQ Posted	Date Response Posted
1	<p>L1Q1 Understanding how the brain works, what is one implication for teaching? What role do neuron's play in how information is processed in the brain and how does that apply to learning strategies? How important are prior experiences to learning? Explain.</p> <p>L1Q2 Discuss the implications of hemisphericity for learning and teaching.</p> <p>L1Q3 Executive functions and self regulation are shaped by many educational influences and comprise a set of skills and</p>		

	<p>knowledge. Choose one to discuss in detail: How would you teach skills such as setting goals and managing time (executive functions), developing reflective capabilities (self regulation), and motivating learners to evaluate their performance (metacognition)?</p>		
2	<p>L2Q1 Given what you have learned about the emotional component of all thought and the layered structure of the brain, how might you adjust the emotional climate of your classroom to help students learn better? How will you adapt your teaching to address all three layers of the brain?</p> <p>L2Q2 Based on links within the following sites, what are the characteristics of "brain-compatible" teaching and learning, and what general guidelines do you see for your own teaching? Explore at least three of these sites and report your findings in your portfolio.</p> <ul style="list-style-type: none"> • http://www.newhorizons.org/neuro/front_neuro.html • http://users.stargate.net/~cokids/teacher10.html • http://www.funderstanding.com/whole_brain_teaching.cfm • http://www.aasa.org/publications/saissuedetail.cfm • http://www.dana.org • http://www.brainconnection.com 		
3	<p>L3Q1 Discuss the impact of the developmental stages of the brain on learning. What effect does the late development of the frontal lobes have on teaching high school children? How can you use at least one classroom strategy to aid you in working with adolescents?</p> <p>L3Q2 Brain research does not answer all questions. What does brain research tell us about effective educational practice? What does it not tell us about effective educational practice?</p>		
4	<p>L4Q1 Now that you know how threats can cause distress which shuts down learning, what are at least three ways you can manage your classroom environment so that it is free of negative stress?</p> <p>L4Q2 List three ways in which you currently help students develop a sense of hardiness, and indicate what you plan to do in the future to help students cope successfully with school. How do you encourage hardiness in your students?</p> <p>L4Q3 Environmental factors such as lighting, sound, hydration, etc. can have a profound impact on student learning. Describe at least one way you will change your classroom environment to improve student learning. What</p>		

	results to you expect?		
5	<p>L5Q1 What are at least two strategies to facilitate moving information from working (or short term) memory to long term memory? How can you help your students to use these processes to store something new?</p> <p>L5Q2 Analyze the key factors in retrieving information over time. Please discuss any experiences you have encountered with these factors. Giving students time to process information can help them to retain it. What are some other strategies to help students retain information?</p>		
6	<p>L6Q1 Some of the mistakes teachers make is to provide too much information for students to absorb and process. What can you do to ensure the amount of information is appropriate to the time allotted? Evaluate the suggested strategies such as brain breaks for their effectiveness in keeping students' attention.</p> <p>L6Q2 How can you help your students achieve 'flow' when they are learning? Reflecting on this, relate an experience you have had when you felt the 'flow'. How can developing a "nonconscious" learning climate contribute to the 'flow'. Describe the changes you intend to make to facilitate student learning as it relates to these factors.</p>		
7	<p>L7Q1 Many students have become accustomed to answering knowledge level questions in high schools today. They work to remember dates, places and events often without thought to the purpose of learning the material or what it means to them. Choose one of the higher order thinking levels according to Bloom's taxonomy and explain how asking questions at this level will add to student learning. Explain what is meant by metacognition and provide an example of how it can be useful.</p> <p>L7Q2 The SQ4R technique (survey, question, read, recite, relate, and review) can improve both comprehension and achievement. Analyze the theory behind this method and describe how it can be helpful in your classroom. What can you do to increase the intrinsic motivation of your students to use this model.</p>		
8	<p>L8Q1 Students are prepared at different levels to attend school and for that matter to learn new material. Asking students questions about their readiness and exploring their prior knowledge are ways to prepare students to learn. Discuss strategies that facilitate this process and discuss why it is important to take the time to use them. Relate an</p>		

	<p>experience you have had that illustrates the value of this practice.</p> <p>L8Q2 Analyze the information provided in the text and two internet sites regarding the impact of nutrition on the brain. What are the implications for teaching and what can teachers do to improve the nutrition of their students?</p>		
9	<p>L9Q1 Brain compatible lesson plans are designed to present material in a way that students can absorb it, retain it, and use it in a variety of circumstances. What are two differences between a brain compatible lesson plan and a traditional lesson plan and why or why not it is important to use strategies that are brain compatible?</p> <p>L9Q2 Download the Learning Relating Styles Map and complete the short self-assessment. Review the 'Mapping Yourself' section in your textbook to help you respond thoughtfully to each of the 7 'road signs' in the Learning-Relating Styles Map. What did you learn about yourself? How do you think your learning relating styles influence your teaching and curriculum design?</p>		
10	<p>L10Q1 What is authentic assessment? Discuss at least three types of authentic assessments and how you could use them in your classroom.</p> <p>L10Q2 What are the advantages and disadvantages of portfolio assessment? Think about how you might use this form of assessment in your own teaching.</p>		

Product 3:

Culminating Activity – Writing assignment to provide a comprehensive summary of the course.

Objectives:

- Reflect knowledge from course lessons
- Demonstrate implementation and application to classroom and program
- Demonstrate writing skills and use of APA format

Submit Paper: To Dr. Elden Daniel, Instructor of Record

Student Writing Assignment:

Please respond to the following questions/statements in one paper. Please be thorough in your discussion. Each part should contain an introduction, main body and a conclusion/summary. Be sure to include a title page, number pages and include course title. Writing tip: Be sure to use spell check and grammar check, and have someone proofread your paper before you submit it. (Your paper's combined responses should be between a minimum of ten to twelve pages in length.) *Many students find that they need to write more pages to thoroughly cover the content of the writing assignment. That is okay!*

The content source links for the information required to answer the assignments is listed in each part. Feel free to research for additional sources on the topics.

Part 1. Write a description of the physiology and function of the brain as if you were presenting the information to a class of high school students. (2-3 pages) (300 points)

<https://www.humanbrainfacts.org/human-brain-functions.php>

<https://www.mayfieldclinic.com/PE-AnatBrain.htm>

<https://www.youtube.com/watch?v=esPRsT-lmw8>

<https://www.youtube.com/watch?v=0-8PvNOdByc>

Part 2. Discuss one of the following: (1-2 pages) (150 points) a. The distressed brain b. Elements in ergonomics c. Diet and brain function

a. (distressed brain) <https://www.youtube.com/watch?v=WuyPuH9ojCE&vl=en>

b. (ergonomics) <https://www.lehigh.edu/~inehs/science.html>

<https://www.thoughtco.com/what-is-ergonomics-1206379>

<https://www.youtube.com/watch?v=oVt1BJnBxwk>

c. (diet and brain) <https://www.psychologytoday.com/us/blog/your-brain-food/201010/how-does-food-affect-our-brain>

<https://www.quora.com/What-is-the-ideal-diet-for-optimal-brain-function>

<https://www.youtube.com/watch?v=OAB0jU0KiEE>

<https://www.youtube.com/watch?v=xyQY8a-ng6g>

Part 3. Discuss the relationship between (1) sensory register, (2) short-term/working memory, and (3) long-term memory as it applies to learning. Describe the implications of this information for instruction processes and student learning. Notice the role of attention. (2-3 pages) (300 points)

<https://courses.lumenlearning.com/boundless-psychology/chapter/introduction-to-memory/>

<https://www.youtube.com/watch?v=WnasLfm36mM>

Part 4. Discuss one of the following (1-2 pages) (150 points) d. Keeping the brain's attention e. Non-conscious learning f. Higher level thinking g. Factors to enhance learning

d. (keeping brain's attention) <https://www.edutopia.org/blog/strategies-getting-keeping-brains-attention-donna-wilson-marcus-conyers>

<https://www.wikihow.com/Pay-Attention-in-Class>

<https://www.youtube.com/watch?v=ZJdlirakW3M>

<https://www.youtube.com/watch?v=qKJv4S5peJQ>

e. (Non-conscious learning) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3612179/>

<https://www.youtube.com/watch?v=ghPX9NhPqpg&t=0s&index=5&list=PLoznzH0AhPAZbjCS7RrIy6RU3WdoQVxON>

f. (Higher level thinking) <http://www.cdl.org/articles/how-to-increase-high-order-thinking/>

<https://www.youtube.com/watch?v=XZ4LFXGi0mI>

g. (Factors to enhance learning) http://www.crlt.umich.edu/gsis/p4_6

<https://www.youtube.com/watch?v=TA4xR9sB1Mo>

Part 5. Describe the theory of multiple intelligences and explore the implications for instructing your students. (2-3 pages) (300 points)

<http://infed.org/mobi/howard-gardner-multiple-intelligences-and-education/>

<https://www.verywellmind.com/gardners-theory-of-multiple-intelligences-2795161>

<https://www.youtube.com/watch?v=cf6lqfNTmaM>

Part 6. Research: Find two journal articles written by two different authors that are related to the topics in this course. Then: (300 points) (3-4 pages)

- (a) compare and contrast the theories (positions) presented in the articles, or
- (b) interpret each article and discuss implications for your practice or
- (c) write a constructive critique of each author's conclusion

Return your student assignment and a copy of your online completion certificate by email to:

Email submission:

drdaniel@gojade.org

Dr. Elden Daniel

Telephone: 719-480-2089

Students have one full semester to complete the written assignment. All papers should be in APA format. You may learn more about APA style online at apastyle.org or in any grammar handbook, such as: Diana Hacker's "Rules for Writers." A helpful guide to the APA 6th Edition manual can be found at <http://utsa.edu/trcss/docs/APA%206th%20Edition.pdf>.

EVALUATION PROCEDURES AND CRITERIA

Grading Scale

Grade	Percentage	Points
A	100-93	1650-1535
B	92-85	1534-1403
C	84-76	1402-1254
D	75-67	1253-1106
U	66 or below	1105 or below
I		

Explanation of Points

Product One: Evidence of completing the lessons is submission of a scanned copy of the screenshot print of your online EXAM percentage score, or a scanned copy of your certificate of completion if available. This score is strictly a pass option with scores of 70% or more required. Exam must be retaken for any score below 70%. This is a must pass requirement. Exams with a score below 70% can be retaken until 70% or greater is achieved.

Product Two: Up to 150 Points will be awarded based on the quality and pithiness of the responses to discussion prompts.

Product Three: Up to 1500 points are available for your major student writing assignment. Final grade will be determined as a percentage of points earned calculated on total possible points.

EVALUATION CRITERIA:

A 100 - 93 = Demonstrates a thorough understanding of course concepts and principles and provides insight into the inter-relatedness of the information. There is clear, convincing, and consistent evidence that the candidate demonstrates achievement. The evidence is comprehensive, thoughtful, and integrated.

B 85 – 92 = Displays a complete and accurate understanding of course concepts and principles. There is clear evidence that the candidate knows what to do, and does it. The evidence is specific and reasonable. However, at times the evidence may be somewhat uneven, with specific features addressed more effectively than others.

C 76 – 84 = Displays an incomplete understanding of course concepts and principles and have some notable misconceptions. There is limited evidence that the candidate knows what to do, how to do it, or when to do it.

D 67 – 75 = Demonstrates severe misconceptions about course concepts and principles. Candidate does not have a grasp of information; student cannot answer questions about the subject matter presented. There is little or no evidence that the candidate has demonstrated achievement.

Possible points: 1650

Assignment	Points
Part 2	
Lesson 1 Post Discussion Question	10
Lesson 1 Post Response to Another Students Discussion Question	5
Lesson 2 Post Discussion Question	10
Lesson 2 Post Response to Another Students Discussion Question	5
Lesson 3 Post Discussion Question	10
Lesson 3 Post Response to Another Students Discussion Question	5
Lesson 4 Post Discussion Question	10
Lesson 4 Post Response to Another Students Discussion Question	5
Lesson 5 Post Discussion Question	10
Lesson 5 Post Response to Another Students Discussion Question	5
Lesson 6 Post Discussion Question	10
Lesson 6 Post Response to Another Students Discussion Question	5
Lesson 7 Post Discussion Question	10
Lesson 7 Post Response to Another Students Discussion Question	5
Lesson 8 Post Discussion Question	10

Lesson 8 Post Response to Another Students Discussion Question	5
Lesson 9 Post Discussion Question	10
Lesson 9 Post Response to Another Students Discussion Question	5
Lesson 10 Post Discussion Question	10
Lesson 10 Post Response to Another Students Discussion Question	5
Part 3	
Culminating Assignment Part 1	300
Culminating Assignment Part 2	150
Culminating Assignment Part 3	300
Culminating Assignment Part 4	150
Culminating Assignment Part 5	300
Culminating Assignment Part 4-Journal Articles	300
Total	1650

WRITTEN ASSIGNMENT CRITERIA

All written assignments must be typed and should conform to the basic principles of effective writing along with appropriate APA style guidelines, which is widely used in education. Also remember good writing involves an important balance of content and form.

FHSU Student Handbook

<http://www.fhsu.edu/studenthandbook/>