

**Quality Enhancement Plan (QEP)
Applied Critical Thinking for Lifelong Learning and Adaptability**



CINF 3321 Information Systems Theory & Practice Fall 2015

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Applied Critical Thinking Statement:

This course has been authorized by UHCL as an Applied Critical Thinking (ACT) Course which means that in addition to learning about the specified course content, students will be engaged with some or all of the Elements of Thought and Universal Intellectual Standards of critical thinking. The objective of an ACT course is to develop the student's ability to become skilled at analysis and evaluation by applying a set of intellectual tools that may be effectively used across all disciplines (as well as to the student's personal life). Based on the Foundation for Critical Thinking model (<http://www.criticalthinking.org/>), critical thinking involves thinking for a *purpose*, asking *questions*, using *information*, applying *concepts*, drawing *inferences and conclusions*, identifying *assumptions*, anticipating *implications and consequences*, and recognizing *points of view*. The Universal Intellectual Standards that are applied to these Elements of Thought of critical thinking in order to develop Intellectual Traits include *clarity*, *accuracy*, *precision*, *relevance*, *depth*, *breadth*, *logic*, *significance*, and *fairness*.

Course Description

With technologies advancing at an astonishing speed, computing becomes ubiquitous. Usage of information systems has permeated the world we live in. In this global economy, businesses, organizations, and government agencies implemented information systems for the purpose of improving the effectiveness and efficiency. The extent to which that purpose is achieved is determined by various factors: (1) The capabilities of the information system; (2) The characteristics of the organization; and (3) The work systems and the people of the organization. All factors need to be taken into consideration when designing and implanting an information systems solution with the focus on: how information systems will help obtain and sustain competitive advantages.

The course is designed to provide Computer Information Systems students an introduction to information systems and its use in an increasingly competitive business world. This course will help students explore major concepts, models, and issues in the Information Systems discipline. The students will be engaged to explore and investigate the use of information systems to solve real business problems, hence, develop a deep appreciation of the impact of information systems on organizations and businesses. Sufficient technical background knowledge will also be provided to enhance students' understanding. Real business cases illustrating the success/failure stories of information systems will be studied. Students will also have opportunities to get hands-on experience with certain application software. Specific topics to be covered in this course contain information systems as a promising career path and its significant position in global economy; information systems' capability to achieve competitive advantage; information technology infrastructure; telecommunication and wireless technology; the Internet, the Web, and E-commerce; information systems security, ethical and social issues of computing; database management, business intelligence, knowledge management and their roles in supporting business decision making; and fundamentals of information system analysis, design, and implementation.

Critical Thinking in Information Systems

Information systems, as a discipline, lies at the intersection of people, organizations, and technology. To become a qualified IS practitioner, one's body of knowledge should be multi-faceted: (1) The underlying *models, theories, and frameworks* of Information Systems discipline; (2) The *availability and capability (facts)* of cutting-edge technologies; (3) The *best practice (experience)* in industry. All of above require systems thinking which promotes some core ideas highly relevant to the IS discipline: (1) The *concept* of emergent properties, i.e., whole is more than sum of its parts. This would help students understand the various factors that impact information systems and see the importance of finding synergy between all factors to achieve optimal results; (2) Communication and control, which emphasize an entity's capability to know and respond to its environment. This applies to IS discipline because no business exist in vacuum, its survival and thriving relies heavily on its strategy to cope with and take advantage of volatile economic, social, and technical changes. And information technology and systems are tools to implement the strategy. Systems thinking is complex and hard-to-acquire skill. Being able to think critically is the first step toward systems thinking.

To briefly explain how critical thinking can greatly facilitate teaching and learning in this course, we use a typical process of devising an Information Systems *solution* as an example: (1) Information systems are usually costly investment that can only be justified if the *goal* is to solve real *business problems*; (2) The analysis of information systems (as-is and to-be) involves *requirements (information)* collection and the approach has to cover various *perspectives*; (3) The design of information systems utilize various *modeling* techniques heavily; (4) The *implementation and consequences* of bringing in the new information systems needs to be well thought through. Therefore, this course is a perfect candidate to promote and teach critical thinking.

Fundamental and Powerful Concept(s) of the Course

In ACT vocabulary, fundamental and powerful concepts form the foundation that permeates and unites a course. In this particular course, such concepts are:

1. Businesses/Organizations need to have alignment between their IS strategy, business strategy, and organizational strategy to achieve maximum competitive advantages.
2. Information systems, if successfully implanted, have paramount position in helping businesses/organizations to obtain and sustain competitive advantages.
3. Taking technologies out of their context is meaningless and sometime dangerous.

Student Learning Objectives (SLOs)

After completing the course, the students are expected to be able to:

- Explain why information systems are so important today for business and management
- Evaluate the role of information systems in today's competitive business environment
- Explain the role of information systems in helping individuals and groups make decisions more efficiently
- Identify the major management challenges to building and using information systems
- Analyze the relationship between organizations, information systems, and business processes
- Explain how enterprise applications promote business process integration and improve organizational performance
- Analyze the relationship among ethical, social and political issues that are raised by information systems
- Explain why information systems need protection from destruction, error and abuse

The same set of SLOs using the vocabularies of Applied Critical Thinking (ACT SLO) include:

SLO1: Have **deep** understanding of the *concepts and models* of business, organization, and IS strategies and the **significance** of have IS strategy aligned with business and organizational strategies.

SLO2: Identify and apply, with **clarity, relevant** information systems *theories and models (concepts)* to help business achieve competitive advantage.

SLO3: Demonstrate, in **depth**, the capability to discuss information systems' role in promoting collaboration and partnership in global economy, from various stakeholder's *point of view*.

SLO4: Describe a **breath** of security, ethical, and social issues in information systems, as well as the corresponding *implications, consequences, and possible solutions*.

SLO5: **Precisely** describe *concepts* of Information Systems architecture and infrastructure.

SLO6: Explain **accurately** the underlying *mechanisms and technologies (facts)* of the Internet and the Web.

SLO7: **Precisely** describe major components in business intelligence infrastructure with the *purpose* to support efficient decision making.

SLO8: Explain **logically** how Enterprise Resource Planning systems help streamline business processes and *consequently* enhance competitive advantage.

SLO9: **Clearly** describe the lifecycle of IT projects and the *solution* to technical, managerial, political *issues* during the lifecycle.

SLO2, SLO6, and SLO7 will be assessed formally.

Vocabulary of Critical Thinking

In this course, students will learn and use the vocabulary of critical thinking which will include an understanding and use of both the **Elements of Thought** and the **Universal Intellectual Standards**.

Elements of Thought*:

In this course, we will consider and use eight (8) elements of thought:

1. **Purpose:** Goals and objectives
2. **Question at Issue:** Problem, issue, and misconception
3. **Information:** Facts, data, evidence, observations, reasons, and experiences
4. **Interpretation and Inference:** Solutions and conclusions
5. **Concepts:** Definitions, models, laws, theories and principles
6. **Assumptions:** Axioms, presuppositions, and a-priori facts or knowledge

7. Implications and Consequences: Inferences, effects, and outcomes

8. Point of View: Perspectives, frames of reference, and orientations

Universal Intellectual Standards*:

In this course, we will consider and use nine (9) universal intellectual standards including **clarity, accuracy, precision, relevance, depth, breadth, logic, significance, and fairness.**

*Paul, R., and Elder, L. (2009). *Critical Thinking: Concepts and Tools* (6th ed.). Tomales, CA: Foundation for Critical Thinking Press

Critical Thinking Process

There are four major aspects of the Applied Critical Thinking Process, termed as the 4 C's: **curiosity, connections, creativity, and communication.** In this course, the predominant C in the student learning objectives is **connections.**

Methodology

Lecture, case study, and hands-on project. This includes class discussions, group and independent case studies, and hands-on experience with application software. The interaction and dynamics in the classroom is the major driving force to effective learning and this requires student to preview designated topics/material before class. **It is your responsibility to read them before class and attend all classes to participate in the discussion.**

Course Materials

1. Required Textbook

Kenneth C. Laudon, Jane P. Laudon, "Essentials of Management Information Systems", 11th edition. Pearson Prentice Hall. ISBN-13: 978-0133576849, ISBN-10: 0133576841.

2. Supplementary materials:

- 1) Lecture Notes: will be posted on Blackboard
- 2) Tutorials for hands-on projects will be made available on Blackboard
- 3) Supplementary readings, useful links and other types of sources will be announced or distributed to the class through Blackboard

Learning Assessment Policy

1. Grading Structure

The assessment of students' learning in this course will be evaluated using following activities: (1) two close-book exams; (2) Individual assignments; (3) Hands-on project(s); (4) Group case study. The weight of each category is summarized in the table as follows:

Assessment Activity	Grade Weight
Midterm	25%
Final Exam	25%
Individual Assignments	20%
Case Study	10%
Hands-on Projects	20%

After the completion of all course work, letter grades will be assigned approximately as follows:

A	93-100	C	73.0-76.9
A-	90.0-92.9	C-	70.0-72.9
B+	87.0-89.9	D+	67.0-69.9
B	83.0-86.9	D	63.0-66.9
B-	80.0-82.9	D-	60.0-62.9
C+	77.0-79.9	F	<60.0

2. Grading Policy

- No collaboration is allowed for individual assignments. Any violation will result in 0 grade in the assignment and incur academic dishonesty investigation.
- It is your responsibility to turn in your finished work before deadline. The submission window will be closed on Blackboard at the due date/time. **Penalties will be applied to late assignments with the rate of 25% deduction per day. All late submission have to be emailed to your TA.**

Critical Thinking Assessment

The major graded work in this course include Assignments (20% of overall grade), Exams (50% of overall grade), Hands-on projects (20% of overall grade), and Case Studies (10% of overall grade). Following is a summary of how three of the Student Learning Outcomes (SLO2, SLO6, and SLO7) will be assessed with critical thinking in mind.

1. **Midterm and final Exam:** Both exams will be individual, in-class, closed-book, closed-notes. Exams are non-cumulative. Modules will be built into the exams to assess student's learning on the technical background of Information Systems. The details are as follows.

Artifacts	Artifacts detail	Targeted SLO
Midterm Questions in format of: Multiple choice, short answers.	Students will be assessed on their capability to: <ol style="list-style-type: none"> (1) Accurately <i>define</i> common Internet and Web acronyms. (2) Accurately <i>sketch (facts)</i> the TCP/IP reference model. (3) Precisely <i>identify (facts)</i> common Internet services and their business application. (4) Explain clearly the <i>notion (concept)</i> of social web and its <i>implication</i> on business. 	SLO6: Explain accurately the underlying <i>mechanisms and technologies (facts)</i> of the Internet and the Web.
Final Exam Questions in format of: Multiple choice, short answers.	Students will be assessed on their capability to: <ol style="list-style-type: none"> (1) Demonstrate basic yet accurate understanding of relational database <i>technologies (facts)</i>. (2) Describe a general business intelligence infrastructure with precision on each of the major <i>elements (facts)</i>. (3) Clearly define the <i>concepts</i> of and connections between operational systems (OLTP) and information systems (OLAP). (4) With clarity, identify the different <i>purposes</i> OLTP and OLAP intend to serve. (5) Clearly define the <i>notion (concept)</i> of big data. 	SLO7: Precisely describe major components in business intelligence infrastructure with the <i>purpose</i> to support efficient decision making.

The artifacts will be graded and an aggregate score for evaluation how well a student is doing on both learning outcomes. The following assessment levels will be considered:

Excellent: 90% and above

Acceptable: 70% to 89%

Unacceptable: 69% and below

2. **Hands-on Project:** one hand-on project (20% of overall grade) will be given to the students in phases. The nature of the project is constructing concept maps based on given focus questions using certain

software. The performance on the given tasks will be evaluated using well-established metrics. This project is also designed with SLO2 in mind, i.e., to assess students' capabilities to "identify and apply, with **clarity, relevant** information systems *theories and models (concepts)* to help business achieve competitive advantage." The obtained scores are indirect measures of the following:

- 1) Students' *knowledge (information)* of a **broad** range of relevant *concepts*.
- 2) Student's capability of connecting the *concepts* in meaningful ways with **logic** and structure.
- 3) Student's capability of constructing **precise statements (conclusions)** based on their learning and **deep** understanding of the course material.
- 4) Student's capability of constructing **relevant** concept map to address the given focus *question*.

The deliverables (Reports and Presentations) of the case study will be graded/evaluated and following assessment levels will be considered:

Excellent: 90% and above

Acceptable: 70% to 89%

Unacceptable: 69% and below

Use of Class Products in Assessment

The University of Houston–Clear Lake may use your work in this class to generate assessment data. Any works used will be used only for educational purposes.

General Course Policy

1. Academic Honesty Policy

University of Houston-Clear Lake Honesty Code:

Students assume full responsibility for the content and integrity of the academic work they submit. The guiding principle of academic integrity shall be that a student's submitted work, examinations, reports, or projects must be that student's own work, unless clearly following the rules for allowable group work. Students shall be guilty of violating the Code and be subject to proceedings under it if they cheat, fabricate, plagiarize, and represent others work as their own. You are responsible for reading and understanding the University's policy as described in the above Web Site. If you violate the honesty code, you may subject yourself to loss of credit for the affected assignment or even a failing grade for the entire course.

Please note the guidelines for academic integrity and penalties imposed for violation of these rules. There is **ZERO** tolerance to academic dishonesty. The instructor will investigate any indication or report of potential academic dishonesty in accordance to the UHCL policies. If a student will be found guilty of academic dishonesty then the penalties will include:

- a. The student will fail the course.
- b. The instructor will recommend to the Academic Honesty Council to expel the student from the academic program and from UHCL

2. Student Academic Adjustment Policy

The University of Houston System complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, pertaining to the provision of reasonable academic adjustments/auxiliary aids for students with a disability. In accordance with Section 504 and ADA guidelines, each University within the System strives to provide reasonable academic adjustments/auxiliary aids to students who request and require them. If you believe that you have a disability requiring an academic adjustments/auxiliary aid, please contact your University's student disability services center.

For more details, please visit <http://prtl.uhcl.edu/portal/page/portal/UAO>.

3. Class Attendance Policy

The classroom activities include a substantial amount of topic-based discussion, case presentation. Therefore, class attendance is **mandatory**. Your absence may be excused for medical or other reasons if sufficient official documents can be provided such as doctor's notes, police report etc. Each unexcused absence will result in **2 points deduction** from your final grade.

4. Incompletes

A grade of "I" (incomplete) will not be administered for this course. UHCL policy allows for the awarding of grades of "I" at the discretion of the instructor, in extreme cases which prevent a student from completing the course requirements. I will work with any student encountering such a situation to make alternative arrangements for completion of the course requirements by semester's end.

5. Classroom Conduct

Do NOT use cell phones in classes. NO talking or texting on cell phones. All ringers must be turned off. All earphones, headphones, headset or any other accessories of similar nature must be out of sight during class. Do NOT use any electronic devices such as mp3 player and tablet during class. Laptop usage is restricted to class related tasks only.

6. Drop Policy

The last day to drop this course **without receiving a grade** is Sep 9th, 2015. The last day to withdraw the class is Nov 9th, 2015 (Per the Academic Calendar-please verify [here](#)). It is the student's responsibility to sign and submit a course withdrawal form in the office of enrollment services in order to be formally withdrawn from the course.

Students who entered college for the first time in Fall 2007 or later should be aware of the course drop limitation imposed by the Texas 6 drop rule and the census date information for the Fall 2015 semester/session. Dropping this or any other course between the first day of class and the census date for the semester/session does not affect your 6 drop rule count. Dropping a course between the census date and the last day to drop a class for the semester/session will count as one of your 6 permitted drops. You should

take this into consideration before dropping this or any other course. Visit www.uhcl.edu/records for more information.

7. Communication Policy

E-mail and phone are the preferred ways to communicate with the instructor outside of the classroom. Send all messages to the instructor's email address at wei@uhcl.edu or call at (281) 283-3732. Note on email communication: Same code of conduct and respect as in face-to-face communication should be used for e-mail communication. Do not use chat-type or text messaging style of communication (don't use "r" for "are", "u" for "you", "2" for "to", etc.). Pay attention to spelling and grammar as I expect the body of all email messages received to contain only complete and correct English sentences. Poorly written email messages will not be replied to. All anonymous email messages will be discarded immediately.

Remember to use your UHCL email to communication with your instructor for other mail services may be considered as spam and your instructor will not see them in time.

Tentative Schedule

Date	Topics*	Work Assigned	What's Due
Aug 24	Course Introduction Chapter 1. Business Information Systems in Your Career Chapter 2. Global E-Business and Collaboration		
Aug 31	Chapter 3. Achieving Competitive Advantage with Information Systems Hands-on Demo 1	Assignment 1 Hands-on Phase 1	
Sep 7	Labor Day		
Sep 14	Chapter 4. Ethical and Social Issues in Information Systems		
Sep 21	Chapter 5. IT Infrastructure: Hardware and Software	Assignment 2	Assignment 1
Sep 28	Chapter 6. Foundations of Business Intelligence: Databases and Information Management		
Oct 5	Chapter 7. Telecommunications, the Internet, and Wireless Technology		Assignment 2
Oct 12	Midterm		
Oct 19	Hands-on Demo 2	Hands-on Phase 2	Hands-on Phase 1
Oct 26	Chapter 8. Securing Information Systems	Assignment 3 Case Study	
Nov 2	Chapter 9. Achieving Operational Excellence and Customer Intimacy: Enterprise Applications		
Nov 9	Chapter 10. E-commerce: Digital Market, Digital Goods		
Nov 16	Chapter 11. Improving Decision Making and Managing Knowledge	Assignment 4	Assignment 3
Nov 23	Chapter 12. Building Information Systems and Managing Projects		
Nov 30	Case Study Presentation		Assignment 4 Hands-on Phase 2
Dec 7	Final Exam		

*Make sure you read the chapter opening case of the upcoming chapters identified above before the class.