TECH 60078 – Research in Technology – Fall 2010

Course: TECH 60078   *Web-Based Course via Blackboard Vista*   *CRN: 12459*

Instructor/Office: *Dr. John C. Duncan*
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Office Hours: By appointment only

*This course will be conducted during the 2010 Fall semester, running from August 30, 2010 to December 12, 2010.*

Catalog Course Description: Research techniques for the technologist. Methods for designing, conducting, analyzing and interpreting results of technological research.

Course materials include the following web-published components, provided via Blackboard Vista:
- *A course calendar (Week-to-Week Assignment Schedule)*
- *A Weekly Assignment summary*
- *Lecture notes and supplemental information*
- *Online quizzes/exams*
- *Homework Assignments*
- *Research Proposal Assignments*
- *A Blackboard Vista discussion forum*

Resources/Texts:
1. *Title: How to Design and Evaluate Research in Education, 7th Edition*
   Authors: Jack R Fraenkel, Norman E. Wallen
   Publisher: Mc Graw-Hill Publishing Company; Mc Graw-Hill Higher Education (MHEE)
   ID Numbers: ISBN-13 9780073525969 or MHID 0073525960
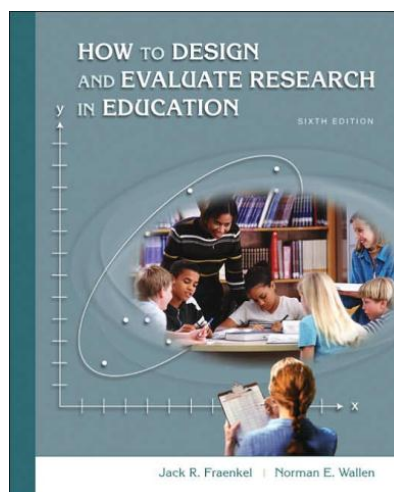
2. APA Style Manual:

Publication Manual of the American Psychological Association: Sixth Edition
ISBN: 1-4338-0561-8   or   ISBN 13: 978-1-4338-0561-5

3. Instructor's Chapter Highlight Supplemental Notes – provided on Blackboard Vista

Evaluation/Grading:

Students will be evaluated based on the following course activities:
·   15 weekly-assigned homework assignments
·   7 bi-weekly exams
·   A formal written Research Proposal

Weighting:
Exams ………... 50%

Homework 25%

Research Proposal 25%*
▪   Problem Sheets (2)
▪   Library literature research assignment
▪   Research Proposal chapter/section drafts
▪   Final Research Proposal

*Successful completion of the Research Proposal is mandatory for passing the course.

Grading will be based upon the following scale:

90 - 100% → A
80 - 89% → B
70 - 79% → C
65 - 69% → D
< 65% → F

Course Goals and Objectives

TECH 60078 - Research in Technology - is an introductory research methodology and design course. The intent of the course is to acquaint you with a variety of research methods, designs, and procedures typically used in science, engineering, and technology - with an emphasis on empirical/experimental research. The course will provide a firm foundation for designing your own research, and for understanding the research done by others. Although a variety of statistical measures, procedures, and methods will be discussed, no prior knowledge of statics is necessary.

Upon successful completion of the course, you will be able to:

- Understand the scientific method as it applies to experimental/empirical research
- Identify and analyze the principal methods of research
- Describe the essential characteristics of research problems
- Distinguish between independent and dependent variables, continuous and categorical variables, directional and non-directional hypotheses
- Describe sampling and instrumentation techniques used in collecting data
- Explain the measurement concepts of validity, reliability, and standard error of measurement
- Describe and recognize the major types of research
- Explain descriptive statistical concepts and techniques
- Understand inferential statistical concepts and techniques used with quantitative data
- Understand Hypothesis development and testing
- Recognize the research designs used in experimental research. Understand the internal and external threats to validity associated with them.
- Describe the fundamental characteristics of qualitative research
- Evaluate research reports
- Use various research and literature databases and sources to review published research
- Properly apply research methods and processes
- Understand how to appropriately use statistics to analyze research data
- Determine whether or not a research study is well constructed, and whether the findings of the research are reliable and credible
- Apply the concepts of research design and methods to produce a well-designed research proposal

Homework Assignments

Homework assignments are listed on the Weekly Schedule posted on the course *Blackboard Vista* site. Homework assignments must be submitted to me by e-mail, usually no later than 11:59 p.m. Sunday night of the week in which the assignment is due. Late homework submissions will be penalized by 10% for each day past the due date that they are late. **The title of the e-mail for all homework submissions must be your last name, followed by the homework number, according to the following format: LastnameHW#.** For example, the e-mail title for Homework #1, submitted by Marty McFly must be: McFlyHW1. You are welcome to work together with others on the homework, but **your homework submission to me must be your own, original work, and all of your answers must be in your own words**.

Exams

All exams are on-line, timed, multiple-choice, open-book tests. Each test will be activated for a specific amount of time, within a specified time block. For instance, Exam #1 is a 2-hour, open-book, multiple-choice, timed exam that will be available to be taken anytime starting from Sunday, September 12, 2010 at 12:01 a.m. until Monday, September 13, 2010 at 11:59 p.m.. Detailed information on the format and procedures for taking the on-line exams will be provided later.

Research Proposal

A formal written Research Proposal is due at the end of the semester. The proposal will be developed incrementally, by major section, over several weeks, with the final proposal due at the end of the course. The due dates for each component of the Research Proposal will be listed in the Weekly Assignments descriptions. A detailed description of the format and content of the research proposal, and guidelines for the associated literature search, will be provided during the semester. **Please note that you must successfully complete the Research Proposal in order to pass the course. If you do not submit an acceptable proposal you will receive an "F" as your final grade for the course.**

Academic Honesty

Cheating means to misrepresent the source, nature, or other conditions of your academic work (e.g., tests, papers, projects, assignments) so as to get underserved credit. The use of the intellectual property of others without giving them appropriate credit is a serious academic offense. It is the University's policy that cheating or plagiarism result in receiving a failing grade (0 points) for the work or the course. Repeat offenses may result in dismissal from the University. The University's administrative policy and procedures regarding student cheating and plagiarism can be found in the University Policy Register, Chapter 3, Topic 7. By submitting any material in this (or any other class) you are certifying that it is free of plagiarism. If you would like more information on plagiarism, what it is, and how to avoid it, please visit the following sites:

> http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml
> http://sja.ucdavis.edu/files/plagiarism.pdf

Withdrawal Deadline

For Fall and Spring semesters, the course withdrawal deadline is always the Sunday following the 10th week of the semester. For Intersession, the course withdrawal deadline is always the Sunday following the second week (of three total). For Summer I and III, the course withdrawal deadline is usually the Sunday following the second week (of five total). For Summer II, the course withdrawal deadline is usually the Sunday following the fourth week (of eight total).

Students with Disabilities

University policy 3342-3-01.3 requires that students with disabilities be provided reasonable accommodations to ensure their equal access to course content. If you have a documented disability and require accommodations, please contact the instructor at the beginning of the semester to make arrangements for necessary classroom adjustments. Please note, you must first verify your eligibility for these through Student Accessibility Services (contact 330-672-3391 or visit www.kent.edu/sas for more information on registration procedures).

Proper Enrollment

Students have responsibility to ensure they are properly enrolled in classes. You are advised to review your official class schedule (using Student Tools in FlashLine) during the first two weeks of the semester to ensure you are properly enrolled in this class and section. Should you find an error in your class schedule, you have until (date will be provided by the Undergraduate Office in advance) to correct the error with your advising office. If registration errors are not corrected by this date and you continue to attend and participate in classes for which you are not officially enrolled, you are advised now that your will not receive a grade at the conclusion of the semester for any class in which you are not properly registered.