HER—V 531 Methods for Design Synthesis

Secondary title **Design Methods: Tools and Techniques for Design Synthesis**

1.5 credit hours

Course meets for 8 weeks at beginning of spring semester only.
Course meets weekly on Thursday from 3:30pm to 6:00pm with the instructor.
Course requires significant additional time on project work outside of official class hours.
Allocate a minimum of 7 hours a week to complete studio and/or fieldwork experiences (in and out of scheduled class time).

Instructor tbd

Course description

see expanded description and rationale on page 4

Application and integration of theory, methods and skills for design synthesis in the context of a cross-disciplinary collaborative process for innovation. Emphasizing divergent thinking, active deferral of judgment and ideation. Surveying, performing and evaluating design synthesis methods for exploring ideas and conceiving plans. Techniques include lateral thinking, brainstorming and synectics.

Course in context of MFA curriculum

Course is required for all majors in the M.F.A. degree program in Visual Communication. Course requires co-requisite enrollment in courses HER—V 530 / one graduate level elective or consent of instructor.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	WEEK
Focus on DESIGN RESEARCH for innovation								***Focus on DESIGN ANALYSIS for innovation***								
510 STUDIO: Collab Action Research in Design 1								520 STUDIO: Collab Action Research in Design 2								FALL YEAR 1
511 METHODS: People-Centered Design Research								521 METHODS: Design Analysis								
501 SEMINAR: Intro to Design Thinking + Process Skills								(KELLEY) Intro to Business Principles								
502 SEMINAR: Intro to Human Factors in Design																

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	WEEK
Focus on DESIGN SYNTHESIS for innovation								***Focus on DESIGN OPTIMIZATION for innovation***								
530 STUDIO: Collab Action Research in Design 3								540 STUDIO: Collab Action Research in Design 4								SPRING YEAR 1
531 METHODS: Design Synthesis								541 METHODS: Design Evaluation								
ELECTIVE: Social Science or Human Computer Interaction																

Mission of IUPUI

Indiana University-Purdue University Indianapolis (IUPUI), a partnership between Indiana and Purdue Universities, is Indiana's urban research and academic health sciences campus. IUPUI's mission is to advance the State of Indiana and the intellectual growth of its citizens to the highest levels nationally and internationally through

- research and creative activity,
- teaching and learning,
- and civic engagement.

By offering a distinctive range of bachelor's, master's, professional, and Ph.D. degrees, IUPUI promotes the educational, cultural, and economic development of central Indiana and beyond through innovative collaborations, external partnerships, and a strong commitment to diversity.

Statement of Values

IUPUI values the commitment of students to learning; of faculty to the highest standards of teaching, scholarship, and service; and of staff to the highest standards of service. IUPUI recognizes students as partners in learning. We value the opportunities afforded by our location in Indiana's capital city and are committed to serving the needs of our community. Our students, faculty, and staff are involved in the community, providing educational programs, working with a wide array of community partners who serve Indianapolis and Central Indiana, offering expert care and assistance to patients and clients, and engaging in field research spanning virtually every academic discipline.

As a leader in fostering collaborative relationships, IUPUI values collegiality, cooperation, creativity, innovation, and entrepreneurship as well as honesty, integrity, and support for open inquiry and dissemination of findings. IUPUI is committed to the personal and professional development of a diverse campus community of students, faculty, and staff; to continuous improvement of its programs and services; and to building a strong, welcoming campus community for all.

Mission of Department of Visual Communication

Herron's visual communication design programs are focused on preparing leaders who can proactively manage processes for change and innovation to improve the experiences of businesses, institutions, organizations, communities and individuals.

We advocate designing as a collaborative process for identifying root problems and facilitating meaningful complex issues.

We seek to harness the power of design to clarify, humanize and energize the issues that are central to life in a pluralistic society.

Principles of Excellence

We find obvious and interesting intersections between a recent report on the aims and outcomes of a twenty-first-century education and the current discourse on the future of professional design practice. Consider the similarities in our departmental mission and this statement of values by the National Leadership Council for Liberal Education: "The council believes that higher education can and should play a crucial role in fulfilling America's promise in this new global century: tapping potential, creating opportunity, fueling an innovative economy, reducing inequities, solving problems, and inspiring citizens to create a more just, humane, and sustainable world. Toward these ends, the LEAP National Leadership Council calls for a new compact—between educators and American society—to adopt and enact the following seven Principles of Excellence."

These principles represent a compact between all individuals in *our* graduate learning community.

Aim High—and Make Excellence Inclusive

Make the Essential Learning Outcomes a Framework for the Entire Educational Experience, Connecting School, College, Work, and Life

Give Students a Compass

Focus Each Student's Plan of Study on Achieving the Essential Learning Outcomes—and Assess Progress

Teach the Arts of Inquiry and Innovation

Immerse All Students in Analysis, Discovery, Problem Solving, and Communication, Beginning in School and Advancing in College

Engage the Big Questions

Teach through the Curriculum to Far-Reaching Issues—Contemporary and Enduring—in Science and Society, Cultures and Values, Global Interdependence, the Changing Economy, and Human Dignity and Freedom

Connect Knowledge with Choices and Action

Prepare Students for Citizenship and Work through Engaged and Guided Learning on "Real-World" Problems

Foster Civic, Intercultural, and Ethical Learning

Emphasize Personal and Social Responsibility, in Every Field of Study

Assess Students' Ability to Apply Learning to Complex Problems

Use Assessment to Deepen Learning and to Establish a Culture of Shared Purpose and Continuous Improvement

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College Learning for the New Global Century:

A Report from the National Leadership Council for Liberal Education America's Promise

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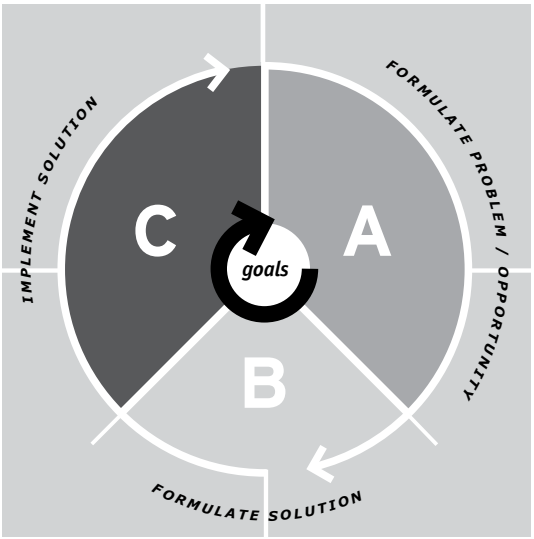
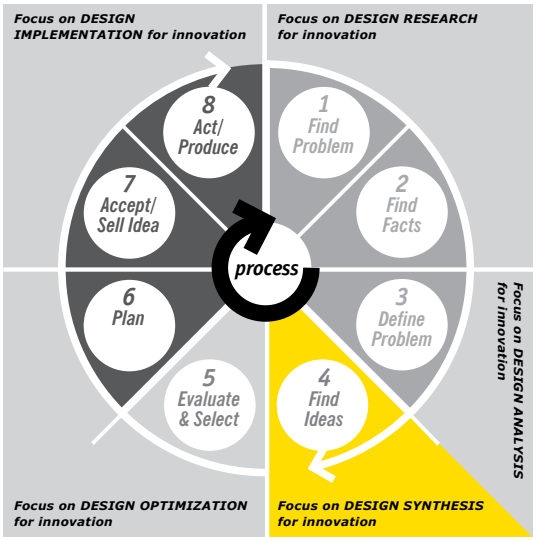
ISBN 978-0-9779210-4-1
The complete text of the LEAP report is available online at www.aacu.org.

Concerns of this course in the context of a comprehensive design process for innovation

The yellow–shaded area on the diagram below represents our focus on design synthesis to support the ideation phase of a methodology for formulating problems / opportunities, formulating solutions and implementing solutions.





Expanded course description and rationale

This design synthesis methods course supports activities in the studio course HER V530 (titled Cross-Disciplinary Collaborative Action Research in Design 3). Design methods explored in this course will be applied throughout the MFA curriculum as strategies to engage designing as an explicit collaborative and cross-disciplinary process for formulating problems / opportunities, formulating solutions and implementing solutions.

The cross-disciplinary research activities are directed to leverage knowledge, resources and perspectives across the entire university and public communities. All investigations occur within a territory that advances the role of design thinking in business innovation, organizational leadership, public policy, social advocacy and direct democracy.

Educational objectives: *outcomes of learning*

Within the context of the interconnected experiences of the graduate curriculum, students successfully completing this course should be able to:

Describe and deploy appropriate design synthesis methods for exploring ideas and conceiving plans, applying attitudes and perspectives that transcend assignments.

Evaluate the relevance of varied design synthesis methods within the contexts of specific design investigations. Compare and contrast the kinds of understanding they might produce.

Communicate effectively in visual, written and oral presentations and demonstrate the ability to analyze and evaluate visual, written and oral presentations of others.

Course content

Design synthesis approaches

- Individual approaches to ideation
- Group approaches to ideation

Design synthesis tools and techniques for ideation

- lateral thinking
- blitzing
- forcing relationships
- building radical ideas
- hitchiking ideas
- free wheeling ideas
- brainstorming

Strategies for generative thinking with co-creators

- MakeTools

Strategies for visualizing ideas

- Rapid prototyping

Creative Problem Solving Process KNOWLEDGE about

- finding ideas

Creative Problem Solving Process SKILLS for

- conducting divergent thinking
- deferring judgement
- conducting convergent thinking
- meeting in teams
- working in teams

Creative Problem Solving Process ROLES for

- conceptualizing ideas

Required and recommended texts and equipment

All MFA majors in Visual Communication are required to utilize their own desktop and/or portable computer during regular class meetings. A technology specification sheet is available on request. B+W and color laser printers are provided in the studio workroom for everyday use.

All required text books must be acquired before the start of the semester or semester module.

REQUIRED TEXTS TO BE PURCHASED (*these texts will be used for multiple courses)*

Basadur, Dr. Min. *The Power of Innovation: How to Make Innovation a Way of Life & How to Put Creative Solutions to Work* (London: Financial Times / Prentice Hall, 1995).

Jones, John Chris. *Design Methods* (New York: Wiley, 1992).

Sanders, Elizabeth. *"Design Research in 2006," Design Research Quarterly* (Design Research Society, Volume 1:1 September 2006). ISSN 1752–8445.

Sanders, Elizabeth and Gerry VanPatter. *"Science in the Making: Understanding Generative Research Now!" NextDesign Journal*, Issue 5:1, 2004.

Mingus, Nancy. *Alpha Teach Yourself Project Management in 24 Hours* (Madison: CWL Publishing, 2002).

REQUIRED TEXTS AVAILABLE ON RESERVE FROM PROFESSOR

Laurel, Brenda. *Design Research: Methods and Perspectives* (Cambridge: MIT Press, 2003).

Kelley, Tom. *The Art of Innovation* (New York: Currency Doubleday, 2001).

Kelley, Tom. *The Ten Faces of Innovation* (New York: Currency Doubleday, 2005).

Barry Nalebluff and Ian Ayers. *Why Not? How to Use Everyday Ingenuity to Solve Problems Big and Small* (Boston: Harvard Business School Press, 2003).

Keith Yamashita and Sandra Spataro. *Unstuck: A Tool for Yourself, Your Team, and Your World* (New York: Portfolio Penguin, 2004).

Verzuh, Eric. *The Fast Forward MBA in Project Management* (Hoboken: John Wiley & Sons, 2005).

ADDITIONAL REFERENCE RESOURCES *for this course*

NextDesign Journal: ReReThinking Design
http://www.nextd.org/02/index.html

BusinessWeek magazine in print and online
http://www.businessweek.com/innovate/
http://www.businessweek.com/innovate/NussbaumOnDesign/index.html

Harvard Business Review

Course activities and timeline

WEEK ONE

Session 1 survey individual and group approaches to ideation

WEEK TWO

Session 1 apply advanced brainstorming techniques / 1

WEEK THREE

Session 1 apply advanced brainstorming techniques / 2

WEEK FOUR

Session 1 apply generative techniques for co-creation / 1

WEEK FIVE

Session 1 apply generative techniques for co-creation / 2

WEEK SIX

Session 1 apply rapid prototyping techniques / 1

WEEK SEVEN

Session 1 apply rapid prototyping techniques / 2

WEEK EIGHT

Session 1 conduct critical reflection on experience and learning

Evaluation in this course

The learning objectives in this collaborative studio course are extremely complex and interconnected. This course requires:

- application, integration and evaluation of a body of theory,
- application, integration and evaluation of a body of methods and processes, and
- application of multiple sets of skills including communication & participation skills, research skills, strategic thinking skills, visual concepting skills, form-making skills, and information technology skills.

The instructor will seek to **balance** evaluation of all factors when calculating grades for each individual.

CRITERIA FOR GRADING ASSIGNMENTS

At the beginning of each assignment during the semester, you will receive an evaluation rubric to inform your understanding of the learning objectives of the assignment.

PERFORMANCE FEEDBACK

The instructor will present each student with a verbal grade assessment during regularly scheduled advising meeting at the quarter and mid-points of the semester or course module. The instructor will present each student with a written evaluation at the end of each semester or course module. Students can and should request individual advising meetings with the instructor at any time that they desire additional performance feedback.

COURSE GRADE BREAKDOWN FOR METHODS COURSE

Your final grade will be calculated based on the following evaluations:

Written Assignments	**40% overall**
Graded written assignment (textual analysis of ideation surveyed)	10%
Graded written assignment (textual analysis of generative methods)	10%
Graded written assignment (textual analysis of prototyping methods)	10%
Graded written assignment (textual synthesis/evaluation of all methods)	10%
Project-based Method Assignments	**45% overall**
Graded project assignment (ideation method assignment)	15%
Graded project assignment (generative method assignment)	15%
Graded project assignment (prototyping method assignment)	15%
Course Participation + Teamwork in field	**15% overall**
Instructor evaluation of your participation in learning community	15%

Consistent attendance is expected except in case of emergency or illness. More than two unexcused absences will result in a reduction of the course grade (1/2 a letter grade per absence).

Class participation is more than just attendance. It includes consistent preparation, active listening, and contributing to discussions and projects.

Your grade for participation will be based on the following criteria:

Participating in discussions

PREPARATION Did you read the required material thoughtfully and critically? Did you come to class with questions to ask and issues to consider? Graduate students will be called upon to start discussion with thought-provoking questions from the readings. Write these down in advance.

ENGAGEMENT Do you ask questions of all members of the learning community? Do your questions close the conversation, or stimulate it? Are they deliberate and relevant to the discussion? Do you try to apply the material you have learned, relating and synthesizing information with previous discussions, readings, and experiences, as well as other classes and intellectual interests.

COURTESY Do you listen to others as they speak? Are you considerate of opposing viewpoints? Do you contribute to an atmosphere of mutual respect? Do you actively practice the skill of "deferral of judgement."

Participating in activities

PREPARATION Did you approach activities thoughtfully and critically? Did you come to class with questions to ask and issues to consider? Graduate students will be called upon to initiate activities with thought-provoking questions from the readings. Write these down in advance.

ENGAGEMENT Do you collaborate with all members of the learning community? Do your actions close the activity, or stimulate it? Are they deliberate and relevant to the discussion? Do you try to apply the theories and methods you have learned, relating and synthesizing information with previous discussions, readings, and experiences, as well as other classes and intellectual interests. Do you actively practice divergent thinking, deferral of judgement, and convergent thinking?

COURTESY Do you listen to others as they speak? Are you considerate of opposing viewpoints? Do you contribute to an atmosphere of mutual respect? Do you actively practice the skill of "deferral of judgement." Do you avoid using "killer phrases"? Do you avoid using jargon or "coded language"?

Grading policies for graduate courses at Indiana University

Several distinct grading policies are in effect in graduate and professional programs at Indiana University. Since you will take graduate classes in several different schools, you must be aware of standards and policies for at least three different systems.

GRADING SCALE AT INDIANA UNIVERSITY

LETTER	*NUMBER*	*GPA VALUES*	
A+	100 – 97	4.0	
A	96.99 – 93	4.0	
A-	92.99 – 90	3.7	
B+	89.99 – 87	3.3	
B	86.99 – 83	3.0	
B-	82.99 – 80	2.7	
C+	79.99 – 77	2.3	
C	76.99 – 73	2.0	
C-	72.99 – 70	1.7	lowest passing grade in MFA VC degree program
D+	69.99 – 68	1.3	
D	67.99 – 64	1.0	
D-	63.99 – 60	0.7	
F	59.99 –	0	

GRADING POLICIES FOR COURSES ADMINISTERED BY THE INDIANA UNIVERSITY GRADUATE SCHOOL

When you take a graduate level course in an academic department **other** than the Department of Visual Communication, you will be evaluated according to the standards and policies of the course department. The IU Graduate School policy is stated on page 184 of the *IUPUI All-Campus Bulletin 2006-08*, "Courses completed with grades below C (2.0) are not counted toward degree requirements, but such grades will be counted in calculating a student's grade point average. Some departments may require an average grade in graduate courses higher than B (3.0), while others may count no courses completed with grades below B (3.0) toward degree requirements."

ATTENDANCE POLICY FOR MFA COURSES IN

Regular attendance, class preparation, and participation are expected of all students. An Attendance sheet will be passed out in class for each student to sign their name. If you do not sign your name while in class you will be marked absent.

Consistent attendance is expected except in case of emergency or illness. More than two unexcused absences will result in a reduction of the course grade (1/2 a letter grade per absence).

The MFA in Visual Communication attendance policy provides that a student who is absent from more than 10 percent of classes in any course may be dropped from the course at the discretion of the instructor. A student who is dropped for non-attendance in one of the required courses will receive a grade of F unless a grade of W is authorized upon petition to the school's Student Affairs Committee.

All graduate courses in the Department of Visual Communication utilize the standard Indiana University Grading Scale. However, grading policies applied to MFA majors in the Department of Visual Communication differ from grading policies utilized by the Indiana University Graduate School (*see IU Graduate School policies on previous page*). Grading scales and grade policies for a graduate courses of the Department of Visual Communication are designed to match grade policies utilized in the MBA degree program of the Indiana University Kelley School of Business at IUPUI.

Only courses with grades of "C–" or better will count toward the necessary hours for graduation, although ALL grades (except ineligible course work and transfer credit) are used in computing the GPA. Based on the above values, a candidate must compile a minimum cumulative grade point average of 2.75 in all graduate courses of the Department of Visual Communication course work to remain in good standing and to complete graduation requirements. Courses not approved as a part of the student's MFA curriculum will not be included in calculation of the MFA GPA (Grade Point Average).

If a "D+"/ "D"/"D-" is earned, the hours will NOT count toward graduation, but the grade will be used in calculating the GPA. The course cannot be repeated; additional course work to replace the hours and review work will be recommended.

If an "F" is received in a course, the hours will NOT count toward graduation and the grade will be used to calculate the GPA. If the course is an elective, it may not be repeated. Required courses must be repeated, however. (Sequencing rules will apply.)

No points are assigned for the following grade symbols: I (incomplete), NC (no credit), NR (no report filed by the instructor), S/F (satisfactory/failure), or W (withdrawn).

INCOMPLETE. An incomplete grade in this course will only be permitted in exceptional circumstances, such as a documented serious illness or injury. No one may have an incomplete simply to gain more time to complete course requirements.

MFA students may not enroll in graduate course work for credit toward the MFA degree under the pass/fail option.

Americans with disabilities act

If you need any special accommodations due to a disability, please contact Adaptive Educational Services at (317)-274-3241. The office is located in CA 001E.

Counseling and Psychological Services

http://life.iupui.edu/caps

If you find that life stressors are interfering with your academic or personal success, consider contacting Counseling and Psychological Services (CAPS). All IUPUI students are eligible for counseling services at minimal fees. CAPS also performs evaluations for learning disorders and ADHD; fees are charged for testing. CAPS is located in UN418. For more information, see the CAPS web-site or call them at 274-2548.

Valuing diversity

In our classroom we will accept and respect individual differences, seeking to foster an appreciation of diversity. Students are expected to respect other students and their opinions regardless of race, ethnicity, gender, age, religion, or sexuality.

Code of academic conduct

http://www.iupui.edu/code/

Preamble

"The purposes of Indiana University include the advancement of knowledge, the pursuit of truth, the development of students, and the promotion of the general well-being of society.
As a community, we share a dedication to maintaining an environment that supports trust, respect, honesty, civility, free inquiry, creativity, and an open exchange of ideas.

Individual rights are best protected by a collective commitment to mutual respect. A student who accepts admission to Indiana University agrees to:

- be ethical in his or her participation in the academic community,
- take responsibility for what he or she says and does,
- behave in a manner that is respectful of the dignity of others, treating others with civility and understanding,
- use university resources and facilities in appropriate ways consistent with their purpose and in accordance with applicable polices.

Every Indiana University student is responsible for reading and understanding this Statement, as well as other expectations identified by individual schools or organizations relevant to an academic major, professional field, or on-campus residence. This Code of Student Rights, Responsibilities, and Conduct is intended to identify the basic rights, responsibilities, and expectations of all students and student groups to serve as a guide for the overall student experience at Indiana University."

http://www.iupui.edu/code/#P2_G

Academic misconduct includes, but is not limited to, the following:

1. Cheating

Cheating is considered to be an attempt to use or provide unauthorized assistance, materials, information, or study aids in any form and in any academic exercise or environment.

a. A student must not use external assistance on any "in-class" or "take-home" examination, unless the instructor specifically has authorized external assistance. This prohibition includes, but is not limited to, the use of tutors, books, notes, calculators, computers, and wireless communication devices.

b. A student must not use another person as a substitute in the taking of an examination or quiz, nor allow other persons to conduct research or to prepare work, without advance authorization from the instructor to whom the work is being submitted.

c. A student must not use materials from a commercial term paper company; files of papers prepared by other persons, or submit documents found on the Internet. A student must not collaborate with other persons on a particular project and submit a copy of a written report that is represented explicitly or implicitly as the student's individual work.

d. A student must not use any unauthorized assistance in a laboratory, at a computer terminal, or on fieldwork.

e. A student must not steal examinations or other course materials, including but not limited to, physical copies and photographic or electronic images.

f. A student must not submit substantial portions of the same academic work for credit or honors more than once without permission of the instructor or program to whom he work is being submitted.

g. A student must not, without authorization, alter a grade or score in any way, nor alter answers on a returned exam or assignment for credit.

2. Fabrication

A student must not falsify or invent any information or data in an academic exercise including, but not limited to, records or reports, laboratory results, and citation to the sources of information.

3. Plagiarism

Plagiarism is defined as presenting someone else's work, including the work of other students, as one's own. Any ideas or materials taken from another source for either written or oral use must be fully acknowledged, unless the information is common knowledge. What is considered "common knowledge" may differ from course to course.

a. A student must not adopt or reproduce ideas, opinions, theories, formulas, graphics, or pictures of another person without acknowledgment.

b. A student must give credit to the originality of others and acknowledge indebtedness whenever:

c. Directly quoting another person's actual words, whether oral or written;

d. Using another person's ideas, opinions, or theories;

e. Paraphrasing the words, ideas, opinions, or theories of others, whether oral or written;

f. Borrowing facts, statistics, or illustrative material; or

g. Offering materials assembled or collected by others in the form of projects or collections without acknowledgment.

4. Interference

a. A student must not steal, change, destroy, or impede another student's work. Impeding another student's work includes, but is not limited to, the theft, defacement, or mutilation of resources so as to deprive others of the information they contain.

b. A student must not give or offer a bribe, promise favors, or make threats with the intention of affecting a grade or the evaluation of academic performance.

FACULTY ACTION

http://www.life.iupui.edu/Who/Dean/Code/

If a faculty member has information that one of his/her students committed an act of academic misconduct, the faculty member is required to hold an informal conference with the student. The conference should be prompt and private. If the faculty member concludes that the student is responsible for the misconduct, then the faculty member is authorized to impose an appropriate academic sanction (i.e., lower or failing grade on the assignment, assessing a lower or failing grade for the course).

After reporting the information to the Dean of Students, he/she will review the information to determine if additional sanctions should be applied.

Sanctions are outlined in the Code of Student Rights, Responsibilities, and Conduct.

RESOURCES TO SUPPORT WRITING

http://writing.iupui.edu/

The University Writing Center is dedicated to assisting both experienced and inexperienced writers with all types of composition, fostering productive discourse between students and their classroom instructors, and helping IUPUI maintain its tradition of serious academic instruction in a positive, open, and intellectually- stimulating environment.

The University Writing Center is a free service available to all IUPUI students, faculty, and staff, at both the graduate and undergraduate level.

If you are a student, staff, or faculty member, the Writing Center is a place where you can sit down with an experienced reader who will provide assistance with your writing. UWC tutors aid both experienced and inexperienced writers at all stages of the writing process, and in any discipline. Additionally, tutors can assist you with other writing-related projects such as resumes, scholarship letters, etc.

Please utilize handouts available at the Writing Center.

http://www.iupui.edu/~writectr/handouts.html

Many of these handouts are relevant to writing needs of the course. The following guides may be most useful:

"Analyzing a Text, Advertisement, or Other Source in W131"

"MLA Documentation Style: A Brief Overview"

"MLA Documentation Style: Formatting In-Text Citations"

"MLA Format: How to Cite Electronic Sources"

"Thesis Statements, Revising"

COURSE POLICY ON DOCUMENTATION STYLES

You are asked to use MLA documentation style for all writing assignments.

(You may use APA Style or ASA Style if you are already expert with other conventions...

Just be consistent.)

USE OF ONLINE PLAGIARISM DETECTION SERVICES

http://www.turnitin.com/

As part of my evaluation of your writing assignments, I will use Turnitin, an online plagiarism detection service that can be used to detect copied material.

You may also use Turnitin as a tool to help you correct poor citing or paraphrasing prior to finishing the assignment.

In class you will receive instructions for using Turnitin to review any writing assignment online.

Basically, you will go to Turnitin.com, select the 'New User' button, and, when prompted, type in the username and password that I provided for your class. The attachment 'turnitin student directions.pdf' is a set of instructions to walk you through how to do this.

YOUR Turnitin.com class ID: _____

YOUR Turnitin.com enrollment password: _____

"In the years to come, designers can either attempt to own the design development process (and keep non-designers out of it), or they can open it up and work collectively with others in redefining designing.
The second option seems to me to be the most exciting challenge. How can designers use their expertise and intuition to spark, harness and guide the collective creativity of others?
The second option is, in my opinion, inevitable and imminent. "

Sanders, Elizabeth and Gerry VanPatter.
"Science in the Making: Understanding Generative Research Now!" NextDesign Journal, Issue 5:1, 2004.