



IUPUI

SCHOOL OF INFORMATICS AND COMPUTING

DEPARTMENT OF HUMAN-CENTERED COMPUTING
Indiana University–Purdue University
Indianapolis

INFO I305 Introduction to Research in Informatics

Department of Human-Centered Computing
Indiana University School of Informatics and Computing, Indianapolis

Credit Hours: 3

Time: Assignments due Monday by 11:59 pm (Online)

Location: Online

First Class: See weekly schedule

Website: <https://iu.instructure.com/courses/1870597>

Instructor: Harry Tunnell, PhD, PMP, ITIL

TA: Shivam Gupta

Office Hours: Online by Appointment

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Prerequisites: Sophomore standing

COURSE DESCRIPTION

This course presents a broad overview of research philosophy, designs and methods. Its focus is on social science research methods, and the content is specifically tailored to reflect the rapidly emerging field of informatics. The course will include major methods that are at the core of contemporary approaches to research in informatics.

Required Text(s):

Title: Introducing Research Methodology: A Beginner's Guide to Doing a Research Project

Author(s): Flick, UWE

Edition: Second Edition

Publisher: SAGE

Book site: [Publisher's site](#)

ISBN: 978-1446294246

Available at: [Amazon Link](#)

Additional Readings: (optional)

Strunk, W. & White, E.B. (2019). *The elements of style* (4th Edition). Essex, UK: Pearson. ([Amazon Link](#))

Instructor note: This book is a general style guide for formal writing. It is useful for any university level course. Specific style guides, such as the APA reference that you will use for this course, deal with the organization and technical details of papers. *The Elements of Style*, in contrast, is a timeless style guide about how to write well. I encourage all of you to add this book to your personal library.

Supplementary readings will be provided by the instructor on the course Canvas site.

Software used:

Various software for qualitative and quantitative data analysis will be introduced in the class.

Course Learning Outcomes:

This is a project-based course where students will learn core research competencies by designing, conducting, and writing up the results of their research. At the conclusion of the course, each student will be able to:

1. Design a research study based upon a provided technology scenario.
2. Translate a research topic into research questions that reflect different epistemologies
3. Articulate the strengths and weaknesses of different research methods in a given context
4. Conduct a robust literature review on a given research topic and identify knowledge gaps
5. Design a cohesive research study to address a research gap
6. Address the ethical considerations that accompany research

Program-Level Learning Outcomes:

Please visit <https://soic.iupui.edu/undergraduate/degrees/informatics/learning-outcomes/> to view the complete list of the program-level learning outcomes for B.S. in Informatics. This course is designed to mainly demonstrate the following PLOs:

E. Social Dynamics of Informatics and Information Technology

1. Analyze the social, cultural, and organizational settings in which IT solutions will be deployed to achieve successful implementations.
2. Interpret major societal trends affecting the development and deployment of technology, such as access, privacy, intellectual property, security, and equity.
3. Analyze the impact of IT on individuals, groups, and organizations at local and global levels.

F. Professional Skills and Ethics

1. Evaluate social, legal, and ethical issues in informatics by applying ethical principles to resolve conflicts.
2. Support the ethical and appropriate design and use of technology.
3. Interpret constructive feedback.

Program-Level Learning Outcomes	Course Learning Outcomes	Profiles of Learning for Undergraduate Success	Assessment
E1. Analyze the social, cultural, and organizational settings in which IT solutions will be deployed to achieve successful implementations.	C1	Innovator: Creates/Designs	Research topics Scientific method & theories
E2. Interpret major societal trends affecting the development and deployment of technology, such as access, privacy, intellectual property, security, and equity.	C1, C4	Innovator: Investigates	Research idea to research question Literature Review Peer-Reviewed Publications
E3. Analyze the impact of IT on individuals, groups, and organizations at local and global levels.	C2, C5	Problem Solver: Thinks Critically	Annotated Bibliography
F1. Evaluate social, legal, and ethical issues in informatics by applying ethical principles to resolve conflicts.	C6	Community Contributor: Behaves Ethically	IRB certification (CITI training)
F2. Support the ethical and appropriate design and use of technology.	C6	Community Contributor: Behaves Ethically	IRB certification (CITI training)
F3. Interpret constructive feedback.	C3	Communicator: Evaluates Information	Survey Questionnaire Interview Guide Midpoint Presentation Research Proposal

EXPECTATIONS, GUIDELINES, AND POLICIES

Attendance:

A basic requirement of this course is that you will participate in all class activities and conscientiously complete all required course activities and assignments. Class attendance is required for classroom-based courses and the timely completion of activities and assignments will count as class attendance for online courses. It entails being present and attentive for any online meetings and the satisfactory completion of assignments. Attendance shall be taken in every class. The instructor is required to submit to the Registrar a record of student attendance, and action shall be taken if the record conveys a trend of absenteeism.

Only the following are acceptable excuses for absences: death in the immediate family (e.g. mother, father, spouse, child, or sibling), hospitalization or serious illness; jury duty; court ordered summons; religious holiday; university/school coordinated athletic or scholastic activities; an unanticipated event that would cause attendance to result in substantial hardship to one's self or immediate family. Absences must be explained with the submission of appropriate documentation to the satisfaction of the instructor, who will decide whether missed work may be made up. Absences that do not satisfy the above criteria are considered unexcused. To protect your privacy, doctor's excuses should exclude the nature of the condition and focus instead on how the condition impacts your attendance and academic performance.

Missing class reduces your grade through the following grade reduction policy: You are allowed two excused or unexcused absences. Each additional absence, unless excused, results in a reduction in your class participation grade (late assignments indicate a missed class). More than six absences result in an F in the course. Missing class may also reduce your grade by eliminating opportunities for team participation and a lower grade from teammates for the peer review assignment. For all absences, the student is responsible for all covered materials and assignments.

Incomplete:

The instructor may assign an Incomplete (I) grade only if at least 75% of the required coursework has been completed at passing quality and holding you to previously established time limits would result in unjust hardship to you. All unfinished work must be completed by the date set by the instructor. Left unchanged, an Incomplete automatically becomes an F after one year. <http://registrar.iupui.edu/incomp.html>

Deliverables:

You are responsible for completing each deliverable (e.g., assignment, quiz) by its deadline and submitting it by the specified method. Deadlines are outlined in the syllabus or in supplementary documents accessible through Canvas. Should you miss a class, you are still responsible for completing the deliverable and for finding out what was covered in class, including any new or modified deliverable. In fairness to the instructor and students who completed their work on time, a grade on a deliverable shall be reduced 10%, if it is submitted late and a further 10% for each 24-hour period it is submitted after the deadline.

Participation: Participation will be based on either your contribution to team projects, online discussions, and timely submission of quizzes and assignments. Discussion board items should complement that week's topic, and can include links to interesting videos, news articles, tutorials, etc.

Reading Quizzes: Prior to the beginning of most class sessions, you will be given a reading assignment. You will be held accountable for your readings through the reading quizzes. This will ensure that you understand the core concepts and are ready to work on applying these concepts. These quizzes are open book but must be done independently (i.e., without assistance from classmates or anyone else). Each quiz times out after 20 minutes and there is only one attempt. Make sure that you allocate time to take the quiz in one sitting.

IRB Certification: Ethics training is expected of anyone conducting research with human subjects. As part of your learning, you will complete training required for researchers at IU. Students will complete courses for Social/Behavioral/Educational Researchers, Stage 1: <https://research.iu.edu/training/required/human-subjects.html>

Project Deliverables: In this course, you will conduct research in informatics. To facilitate our ability to complete a research project in one semester, you will be provided with a general research scenario. Appropriate artifacts that support the scenario will also be provided to you. The class will collectively examine a research topic from multiple epistemological and methodological vantage points. Students will work in small teams. There will be numerous research deliverables due throughout the course. More details about each deliverable will be provided as the course progresses.

Grading:

Individual activities

Reading quizzes	10 pts (each)
Participation	20 pts
Peer review	10 pts
IRB certification (CITI training)	5 pts
Identify peer-review research	4 pts

Group research deliverables

Research proposal (outline)	5 pts
Annotated bibliography	5 pts
Survey questionnaire (data collected)	5 pts
Survey questionnaire (data analysis)	5 pts
Interview guide (final version)	5 pts
Interview guide (data collected)	5 pts
Interview guide (data analysis)	10 pts
Midpoint presentation (online)	10 pts
Research proposal (draft)	10 pts
Research proposal (final)	25 pts

Extra credit

Poster presentation	5 pts
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Grading scale (No credits are granted for a grade below C)

A+	97–100%	Professional level work, showing highest level of achievement
A	93–96.99%	Extraordinarily high achievement, quality of work; shows command of the subject matter
A–	90–92.99%	Excellent and thorough knowledge of the subject matter
B+	87–89.99%	Above average understanding of material and quality of work
B	83–86.99%	Mastery and fulfillment of all course requirements; good, acceptable work
B–	80–82.99%	Satisfactory quality of work
C+	77–79.99%	Modestly acceptable performance and quality of work
C	73–76.99%	Minimally acceptable performance and quality of work
C–	70–72.99%	Unacceptable work (Core course must be repeated for credit)
D+	67–69.99%	Unacceptable work (Course must be repeated for credit)
D	63–66.99%	Unacceptable work
D–	60–62.99%	Unacceptable work
F	Below 60	Unacceptable work

CODE OF CONDUCT

All students should aspire to the highest standards of academic integrity. Using another student's work on an assignment, cheating on a test, not quoting or citing references correctly, or any other form of dishonesty or plagiarism shall result in a grade of zero on the item and possibly an F in the course. Incidences of academic misconduct shall be referred to the Department Chair and repeated violations shall result in dismissal from the program.

All students are responsible for reading, understanding, and applying the *Code of Student Rights, Responsibilities and Conduct* and, in particular, the section on academic misconduct. Refer to *The Code > Responsibilities > Academic Misconduct* at <http://www.indiana.edu/~code/>. All students must also successfully complete the Indiana University Department of Education "How to Recognize Plagiarism" Tutorial and Test. <https://www.indiana.edu/~istd> You must document the difference between your writing and that of others. Use quotation marks in addition to a citation, page number, and reference whenever writing someone else's words (e.g., following the *Publication Manual of the American Psychological Association*). To detect plagiarism, instructors apply a range of methods, including Turnitin.com. <http://www.ulib.iupui.edu/libinfo/turnitin>

Academic Misconduct:

1. **Cheating:** Cheating is 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 advanced 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.

- d. A student must not collaborate with other persons on a project and submit a copy of a written report that is represented explicitly or implicitly as the student's individual work.
 - e. A student must not use any unauthorized assistance in a laboratory, at a computer terminal, or on fieldwork.
 - f. A student must not steal examinations or other course materials, including but not limited to, physical copies and photographic or electronic images.
 - g. 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 the work is being submitted.
 - h. 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:
 1. directly quoting another person's actual words, whether oral or written;
 2. using another person's ideas, opinions, or theories;
 3. paraphrasing the words, ideas, opinions, or theories of others, whether oral or written;
 4. borrowing facts, statistics, or illustrative material; or
 5. offering materials assembled or collected by others in the form of projects or collections without acknowledgment
 4. **Interference:** A student must not steal, change, destroy, or impede another student's work, nor should the student unjustly attempt, through a bribe, a promise of favors or threats, to affect any student's grade or the evaluation of academic performance. Impeding another student's work includes, but is not limited to, the theft, defacement, or mutilation of resources to deprive others of the information they contain.
 5. **Violation of Course Rules:** A student must not violate course rules established by a department, the course syllabus, verbal or written instructions, or the course materials that are rationally related to the content of the course or to the enhancement of the learning process in the course.
 6. **Facilitating Academic Dishonesty:** A student must not intentionally or knowingly help or attempt to help another student to commit an act of academic misconduct, nor allow another student to use his or her work or resources to commit an act of misconduct.

OTHER POLICIES

1. **Administrative withdrawal:** A basic requirement of this course is that students

participate in all class discussions and conscientiously complete all required course activities and/or assignments. If a student is unable to attend, participate in, or complete an assignment on time, it is the student's responsibility to inform the instructor. If a student misses more than half of the required activities within the first 25% of the course without contacting the instructor, the student may be administratively withdrawn from this course. Administrative withdrawal may have academic, financial, and financial aid implications. Administrative withdrawal will take place after the full refund period, and a student who has been administratively withdrawn from a course is ineligible for a tuition refund. Contact the instructor with questions concerning administrative withdrawal.

2. **Civility:** The rules of civility apply regardless of if one is in class or working with classmates on a group assignment. To maintain an effective and inclusive learning environment, it is important to be an attentive and respectful participant in lectures, discussions, group work, and other classroom exercises. Thus, unnecessary disruptions should be avoided, such as ringing cell phones, engagement in private conversations, and other unrelated activities. Cell phones, media players, or any noisy devices should be turned off during a class. Texting, surfing the Internet, and posting to Facebook or Twitter during class are generally not permitted. Laptop use may be permitted if it is used for taking notes or conducting class activities. Students should check with the instructor about permissible devices in class. IUPUI nurtures and promotes “a campus climate that seeks, values, and cultivates diversity in all of its forms and that provides conditions necessary for all campus community members to feel welcomed, supported, included, and valued” (IUPUI Strategic Initiative 9). IUPUI prohibits “discrimination against anyone for reasons of race, color, religion, national origin, sex, sexual orientation, marital status, age, disability, or veteran status” (Office of Equal Opportunity). Profanity or derogatory comments about the instructor, fellow students, invited speakers or other classroom visitors, or any members of the campus community shall not be tolerated. A violation of this rule shall result in a warning and, if the offense continues, possible disciplinary action.
3. **Communication:** For classroom-based courses, the instructor or teaching assistant should respond to emails by the end of the next class or, for online courses, within two Indiana University working days, which excludes weekends and holidays. The instructor should provide weekly office hours or accept appointments for face-to-face, telephone, or teleconferenced meetings, and announce periods of extended absence in advance.
4. **Counseling and Psychological Services (CAPS):** Students seeking counseling or other psychological services should contact the CAPS office by phone at 274-2548 or email at capsindy@iupui.edu. For more information visit <http://life.iupui.edu/caps/>.
5. **Course evaluations:** Course evaluations provide vital information for improving the quality of courses and programs. Students are urged to complete one course and instructor evaluation for each section in which they are enrolled at the School of Informatics and Computing with the following three exceptions: (a) The student has withdrawn from the course; (b) fewer than five students are enrolled in the section (in which case maintaining anonymity is difficult); and (c) the section is a laboratory that must be taken with a course having a different section number. Course evaluations are completed at <https://soic.iupui.edu/app/course-eval/>. Course evaluations are typically

open from the eleventh week. Course evaluations are anonymous, which means that no one can view the name of the student completing the evaluation. In addition, no one can view the evaluation itself until after the instructor has submitted the final grades for the course. In small sections, demographic information should be left blank, if it could be used to identify the student.

6. **Disabilities policy:** In compliance with the Americans with Disabilities Act (ADA), all qualified students enrolled in this course are entitled to reasonable accommodations. Please notify the instructor during the first week of class of accommodations needed for the course. Students requiring accommodations because of a disability must register with Adaptive Educational Services (AES) and complete the appropriate AES-issued before receiving accommodations. The AES office is located at UC 100, Taylor Hall (Email: aes@iupui.edu, Tel. 317 274-3241). Visit <http://aes.iupui.edu> for more information.
7. **Email:** Indiana University uses your IU email account as an official means of communication, and students should check it daily for pertinent information. Although you may have your IU email forwarded to an outside email account, please email faculty and staff from your IU email account.
8. **Emergency preparedness:** Safety on campus is everyone's responsibility. Know what to do in an emergency so that you can protect yourself and others. For specific information, visit the emergency management website. <http://protect.iu.edu/emergency>
9. **IUPUI course policies:** A number of campus policies governing IUPUI courses may be found at the following link: http://registrar.iupui.edu/course_policies.html
10. **No class attendance without official enrollment.** Only those who are officially enrolled in this course may attend class unless they are enrolled as an auditor or making up an Incomplete by prior arrangement with the instructor. This policy does not apply to those assisting a student with a documented disability, serving in an instructional role, or administrative personnel. <http://registrar.iupui.edu/official-enrollment-class-attendance.html> Children may *not* attend class with their parents, guardians, or childcare providers.
11. **Right to revise:** The instructor reserves the right to make changes to this syllabus as necessary and, in such an event, will notify students of the changes immediately.
12. **Student advocate:** The Student Advocate aids students with personal, financial, and academic issues. The Student Advocate Office is in the Campus Center, Suite 350. The Student Advocate may also be contacted by phone at (317) 274-4431 or by email at studvoc@iupui.edu. For more information visit <http://studentaffairs.iupui.edu/advocate>.

MISSION STATEMENT

The Mission of IUPUI is to provide for its constituent's excellence in

- Teaching and Learning;
- Research, Scholarship, and Creative Activity; and
- Civic Engagement.

With each of these core activities characterized by

- Collaboration within and across disciplines and with the community;
- A commitment to ensuring diversity; and

- Pursuit of best practices.

IUPUI's mission is derived from and aligned with the principal components—Communities of Learning, Responsibilities of Excellence, Accountability and Best Practices—of Indiana University's Strategic Directions Charter.

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. IUPUI values the opportunities afforded by its location in Indiana's capital city and is committed to serving the needs of its community. Thus, IUPUI students, faculty, and staff are involved in the community, both to provide educational programs and patient care and to apply learning to community needs through service. 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 its students, faculty, and staff and to continuous improvement of its programs and services.

Spring 2020 Weekly Schedule (subject to change)

Date	Topic	Readings	Reading Quiz	Assignments Due
1/13	<ul style="list-style-type: none"> • Course introduction • Research topics • Scientific method & theories 	Scientific method and theories		<ul style="list-style-type: none"> • Organize into project teams • Group leader acknowledge status • Read research scenario
1/20	Martin Luther King Jr. Day			
1/27	<ul style="list-style-type: none"> • Research idea to research question • Reading & reviewing the literature • Sources: peer-reviewed journals and conference papers 	Flick Chapters 4 & 5	Reading Quiz #1 (due 11:59 pm)	<ul style="list-style-type: none"> • Identify two peer-reviewed journal article examples • Identify two peer-reviewed conference paper examples
2/3	<ul style="list-style-type: none"> • Proposal writing • Annotated bibliography 			<ul style="list-style-type: none"> • Research proposal (outline) • CITI Training
2/10	<ul style="list-style-type: none"> • Ethical issues in social research 	Flick Chapter 3 Other assigned readings	Reading Quiz #2 (due 11:59 pm)	
2/17	<ul style="list-style-type: none"> • Qualitative data collection methods • Creating an interview guide 	Flick pp. 79-83; 97-100; 104-106; 140-155	Reading Quiz #3 (due 11:59 pm)	<ul style="list-style-type: none"> • Interview guide (draft)
2/24	<ul style="list-style-type: none"> • Quantitative data collection methods • Descriptive statistics 	Flick pp. 74-79; 95-97; 101-104; 131-139	Reading Quiz #4 (due 11:59 pm)	<ul style="list-style-type: none"> • Annotated Bibliography • Questionnaire (TAM) data collection
3/2	<ul style="list-style-type: none"> • Quantitative vs. Qualitative overview • Mixed methods & other informatics methods 	Flick pp. 84-86; Flick Chapter 12	Reading Quiz #5 (due 11:59 pm)	<ul style="list-style-type: none"> • Interview guide (final version) • Questionnaire (TAM) data analysis
3/9	Mid-point presentations (online)			<ul style="list-style-type: none"> • Interview guide (data collected) • Mid-point presentations to review proposal (online)
3/16	Spring Break (End 3/22)			

3/23	Data analysis (content)	Flick pp. 163-170; 194-195		
3/30	Data analysis (qualitative)	Flick pp. 178-194	Reading Quiz #6 (due 11:59 pm)	
4/6	Data analysis (quantitative)	Flick pp. 156-159 and pp. 170-178	Reading Quiz #7 (due 11:59 pm)	<ul style="list-style-type: none"> • Submit the analysis of the data collected using the interview guide
4/13	Writing up research	Flick Chapter 14	Reading Quiz #8 (due 11:59 pm)	<ul style="list-style-type: none"> • Research proposal (draft)
4/20	Revise proposal	Research in Industry		
4/27	Final papers due (Last day of classes)			<ul style="list-style-type: none"> • Research proposal (final) • Peer review of team members due
5/4	Extra credit work due (Friday)			<ul style="list-style-type: none"> • Poster
5/9	Final exams end			<ul style="list-style-type: none"> • Submit grades