

****Disclaimer****

This syllabus is to be used as a guideline only. The information provided is a summary of topics to be covered in the class. Information contained in this document such as assignments, grading scales, due dates, office hours, required books and materials may be from a previous semester and are subject to change. Please refer to your instructor for the most recent version of the syllabus.

BMI 602: Introduction to health informatics

(NOTE: Syllabus may change before beginning of the course.)

Course Credit Hours: 3

Course Modality: online only. I will offer synchronous student hours via zoom—see below

Prerequisites: degree or non-degree seeking student

Faculty Information

Name: Katie Pine, PhD

Office: ASU Downtown Health South and ASU Los Angeles Herald Examiner building

Email address: khpine@asu.edu

Student hours: Wednesdays 12:30-1:30PM on zoom: <https://asu.zoom.us/j/4262848169>

Academic Associate

TBD

Catalog Description: Offers an overview of the field of health informatics, designed specifically for health science students, health services students, and current and future interdisciplinary clinicians. Combines perspectives from medicine, computer science, information science, organization science, Science and Technology Studies and human-centered computing for use of computers and information in health care and the health sciences. Covers applications and general methodology in health informatics using current topics in the field.

Course overview: Combines perspectives from medicine, computer science, information science, organization science, Science & Technology Studies (STS), and human-centered computing to explore select topics related to the design and use of information and communication technologies (ICTs) and information systems in health care practice. We will cover applications and general methodology in health information and computing using current topics in the field as exemplars. This course is designed with health science students, health services students, and current and future interdisciplinary clinicians in mind but it may also be of value to students in social sciences, humanities, and other fields of study.

Course outline:

- Overview of health information and history of medical record keeping
- Key informatics skills for health care, health science, and health services professionals
- Overview of health care information systems and Electronic Health Record Systems
- Decision Making, Protocol-Based Systems, and Clinical Decision Support Systems
- Communication systems in healthcare
- Design, implementation, and economics of information systems in healthcare organizations
- Safety and Ethics of information systems in healthcare

Course objectives

During this course, the instructor will cover these topics:

1. The impact of standardized medical records on current healthcare practices
2. Information theory and principles of communication
3. Evaluation, design, and selection process for computerized patient record systems
4. Evaluation and design of healthcare information systems using the use cases, barriers to implementation, and potential harm as parameters

Learning outcomes

Upon completion of this course, the students will be able to:

Health informatics. Describe the scope of the field of health informatics and correctly use key terms such as health informatics information, data, and information system.

Communication. Indicate the connection between fundamental principles of communication and health information technology.

Application. Apply key skills in health informatics (communicating, structuring, questioning, searching, making decisions) to successfully solve specific problems.

Evaluation. Evaluate and design health information systems using appropriate models and tools.

Course Topics, Schedule & Grading

Activities used for instruction and assessment of learning include: discussion/presentations; textbook and supplemental readings; individual and group activities/assignments; and case scenarios.

Navigate to the Course Schedule menu item on the left for course schedule (topics covered in each week), expectations of in-class time each week, and assignment due dates.

Course Materials:

Required:

All required readings will be provided at no cost to students via Perusall.

Optional:

Coiera, E. (2015). *Guide to health informatics Third Edition*. CRC press.

ISBN-13: 978-1444170498

ISBN-10: 144417049X

Course Schedule:

Week 1: Overview of health information and history of medical record keeping

** Indicates if students are required to engage in Perusall discussion about a reading (readings are required even if a Perusall discussion is not required unless they are marked "optional")

Reading:

- "Basic concepts in informatics: models." Chapter 1 of Coiera, E. (2015). *Guide to health informatics***
- "Basic concepts in informatics: information." Chapter 2 of Coiera, E. (2015). *Guide to health informatics***
- "Standardization in medicine in the Twentieth Century: the emergence of the paper-based patient record." Chapter 1 of Timmermans, S., & Berg, M. (2010). *The gold standard: The challenge of evidence-based medicine and standardization in health care*. Temple University Press.
- Kulikowski, C. A., Shortliffe, E. H., Currie, L. M., Elkin, P. L., Hunter, L. E., Johnson, T. R., ... & Williamson, J. J. (2012). AMIA Board white paper: definition of biomedical informatics and specification of core competencies for graduate education in the discipline. *Journal of the American Medical Informatics Association*, 19(6), 931-938.**

Required Videos:

- Lecture on health informatics definition and sub fields (Pine)
- Lecture on Models & Information (Pine)
- Lecture on Standardization in medicine in the twentieth century (Pine)

Due at end of week (Sunday at midnight Arizona local time):

- Perusall reading assignments
- Team project: deconstructing a lab report

Week 2: overview of health care information systems with a focus on Electronic Health Record (EHR) Systems

Reading:

- "Basic concepts in informatics: information systems" Chapter 3 of Coiera, E. (2015). *Guide to health informatics***
- Evans, R. S. (2016). Electronic health records: then, now, and in the future. *Yearbook of medical informatics*, 25(S 01), S48-S61.**
- "Electronic Health Record Systems" Ch. 12 in Cimino, J. J., & Shortliffe, E. H. (2006). *Biomedical Informatics: Computer Applications in Health Care and Biomedicine (Health Informatics)*. Springer-Verlag.**

Videos:

- Intro to EHR lecture (Pine)
- OPTIONAL: Stanford Webinar - Using Electronic Health Records for Better Care (<https://www.youtube.com/watch?v=cnRwuf16dDE>)

Due at end of week (Sunday at midnight Arizona local time):

- Perusall reading assignments
- check in assignment for selecting an EHR vendor team project

Week 3: Decision Making, Protocol-Based Systems, and Clinical Decision Support Systems

Reading:

- Ch. 11 Clinical Decision Support in Ong, K. R., & Kelly, W. N. (2015). *Medical informatics: An executive primer*. CRC Press.**
- "Guideline and protocol based systems: Computer-Based Protocol Systems" Chapter 16 of Coiera, E. (2015). *Guide to health informatics***
- "Informatics skills: decision making" Chapter 8 of Coiera, E. (2015). *Guide to health informatics***
- Madeleine Clare Elish and Elizabeth Anne Watkins, *Repairing Innovation: A Study of Integrating AI in Clinical Care* (New York: Data & Society Research Institute, 2020)**

Videos:

- Intro to CDSS lecture (Pine)
- Ethical concerns of CDSS (Pine)

Due at end of week:

- Perusall reading assignments
- Selecting an EHR vendor final report
- Quiz 1

Week 4: Communication skills and communication systems in healthcare

Reading:

- Theoretical Foundations of Health Communication--Ch. 3 in Patel, V. L., & Kannampallil, T. G. (2015). *Cognitive informatics for biomedicine*.**
- "Informatics skills: communicating" Chapter 4 Coiera, E. (2015). *Guide to health informatics*
- "Communication systems in healthcare: Communication systems basics" Chapter 18 of Coiera, E. (2015). *Guide to health informatics***

Videos:

- Communication systems in healthcare (Pine)
- Principles of effective messaging (Pine)

Due at end of week:

- Perusall reading assignments
- Evaluating prostate cancer website check-in report

Week 5: Human-Centered Approaches to Design and Evaluation of Health Informatics Tools

Reading:

- Dabbs, A. D. V., Myers, B. A., Mc Curry, K. R., Dunbar-Jacob, J., Hawkins, R. P., Begey, A., & Dew, M. A. (2009). User-centered design and interactive health technologies for patients. *Computers, informatics, nursing: CIN*, 27(3), 175.**
- Evaluation of Health Information Technology Ch 5 in in Patel, V. L., & Kannampallil, T. G. (2015). *Cognitive informatics for biomedicine*.**
- Sittig, D. F., Wright, A., Coiera, E., Magrabi, F., Ratwani, R., Bates, D. W., & Singh, H. (2020). Current challenges in health information technology–related patient safety. *Health informatics journal*, 26(1), 181-189.**

Videos:

- Human centered design in health informatics (Pine)
- Usability and human factors: electronic health records and usability (Health Informatics Forum lecture https://www.youtube.com/watch?v=QtXV1L_LupY)
- Human Centered Design in Healthcare (optional): Why we should care (Tanya Rinderknecht) <https://www.youtube.com/watch?v=MV90cwhsud4>

Due at end of week:

- Perusall reading assignments
- Evaluating Prostate cancer website final report
- Quiz 2

Week 6: Implementation & change management of information systems in healthcare organizations

Reading:

- “Information Systems in healthcare: Implementation” Chapter 12 of Coiera, E. (2015). *Guide to health informatics***
- Change Management in EHR Implementation. HealthIT.gov National Learning Consortium**
- Yen, P. Y., McAlearney, A. S., Sieck, C. J., Hefner, J. L., & Huerta, T. R. (2017). Health information technology (HIT) adaptation: refocusing on the journey to successful HIT implementation. *JMIR medical informatics*, 5(3), e28.

- Ketikidis, P., Dimitrovski, T., Lazuras, L., & Bath, P. A. (2012). Acceptance of health information technology in health professionals: An application of the revised technology acceptance model. *Health informatics journal*, 18(2), 124-134.

Videos:

- An overview of eHealth implementation (Enrico Coiera) https://www.youtube.com/watch?v=E_4J6N0IfvU
- Change Management in Healthcare (Ann-Marie Wennberg, Sahlgrenska University Hospital) https://www.youtube.com/watch?v=Fzc3j8QG_Mw

Due at end of week:

- Perusall reading assignments
- Consumer informatics (Panion) stakeholder analysis group project check in report

Week 7: Consumer informatics and public health informatics

Reading:

- Demiris, G. (2016). Consumer health informatics: past, present, and future of a rapidly evolving domain. *Yearbook of medical informatics*, 25(S 01), S42-S47.**
- Hogan, K., Macedo, B., Macha, V., Barman, A., & Jiang, X. (2021). Contact Tracing Apps: Lessons Learned on Privacy, Autonomy, and the Need for Detailed and Thoughtful Implementation. *JMIR Medical Informatics*, 9(7), e27449.**
- Gui, X., Chen, Y., Kou, Y., Pine, K., & Chen, Y. (2017). Investigating support seeking from peers for pregnancy in online health communities. *Proceedings of the ACM on Human-Computer Interaction*, 1(CSCW), 1-19.**
- Public Health Informatics Institute (PHII) website <https://www.phii.org/defining-public-health-informatics>

Videos:

- Consumer health informatics (Pine)
- Introduction to Public Health Informatics (Centers for Disease Control) https://www.youtube.com/watch?v=Fzc3j8QG_Mw

Due at end of week:

- Perusall reading assignments
- Consumer informatics (Panion) stakeholder analysis group project final report
- Quiz 3

Methods of Instruction:

This course uses Canvas for the facilitation of communications between faculty and students, submission of assignments, and posting of grades. The course site can be accessed at <http://my.asu.edu> or <http://myasucourses.asu.edu>.

Activities in this course include discussion/presentations; textbook and supplemental readings; individual and group activities; and case scenarios.

Grading Procedure:

Graded paper assignments will be available within 7 days maximum of the due date via the My Grades tab in Canvas. Quiz and exam grades will be available within 48 hours of due date.

Discussion board grades will be available during the last week of the session.

All assignments are due by 11:59pm local (Phoenix) time on the date of the deadline.

We will use the following criteria to grade discussions: English grammar, quality of writing, completeness of the answers, relevance to the discussion topic, level of interaction with peers, provided rationale to support each answer or response to peer posting (for instance, the student cited credible references related to the topic, like text, website, or scholarly reference).

The grade will reflect the student's willingness to engage in critical examination and analysis of the source material, rather than summarizing the material or expressing personal opinions.

We encourage the use of APA style for bibliographic references.

Methods of Evaluation:

Assessment Type	Number	Total Course Value
Quizzes	3	25%
Group projects (grade includes check in assignments, final reports, and engagement on Enightful)	4	50%
Perusall	1	25%
TOTAL		100%

Description of Assessments:

- Group projects
 - Students will be assigned to groups. Each group will be responsible for strategizing an approach for each of four group projects. Group project grades will include graded final reports, check in assignments, and team project management (assessed through engagement with the Enightful tool and through feedback project sponsors for projects carried out through Riipen). These will be group grades, not individual grades. Groups can elect to revise their projects and turn them in to improve their grades. Groups are encouraged to seek feedback from the teaching team as they work on group projects.
- Quizzes

- Quizzes will be short and contain multiple choice, true/false, matching, or multiple answer questions. Quizzes are to be taken by individual students, will be open book/open note, and can be taken as many times as the student wishes before the quiz due date. The highest score will be kept.
- Perusall reading assignments
 - Students will receive individual grades for Perusall reading assignments. Students are responsible for completing all reading assignments in Perusall and meeting all parameters for Perusall assignments (e.g. reading all text, making comments of sufficient length and quality).

Grading

Grades reflect your performance on assignments and adherence to deadlines. Graded project assignments will be available within 7 days maximum of the due date via the My Grades tab in Canvas. Quiz grades will be available within 48 hours of due date. Final Perusall grades will be available during the last week of the session students should check their Perusall grades throughout the session to ensure they are receiving full points on Perusall assignments).

All assignments are due by 11:59pm local (Phoenix) time on the date of the deadline.

Project grades will reflect the students' willingness to engage in critical examination and analysis of the source material, rather than summarizing the material or expressing personal opinions.

We encourage the use of APA style for bibliographic references. <https://owl.purdue.edu/> is an excellent resource for APA reference style. Another reference style may be used, but students should use in-text citations --e.g. (Martinez, 1990) --rather than endnotes, foot notes, or numbered citations. A full list of references should be provided at the end of the project, and a format should be used that provides COMPLETE information for each source.

The grading scale will be the standard scale used for the HCD master's program.

CLASS EXPECTATIONS

Communicating with the Instructor

This course uses a discussion board called "Hallway Conversations" for general questions about the course. Prior to posting a question, please check the syllabus, announcements, and existing posts. If you do not find an answer, post your question. You are encouraged to respond to the questions of your classmates.

Email questions of a personal nature to your instructor or the AA. You can expect a response within 48 hours during normal business weekdays; potentially longer on weekends/holidays.

Email and Internet

ASU email is an official means of communication among students, faculty, and staff. Students are expected to read and act upon email in a timely fashion. Students bear the responsibility of missed messages and should check their ASU-assigned email regularly. All instructor correspondence will be sent to your ASU email account.

Late or Missed Assignments

Notify the instructor BEFORE an assignment is due if an urgent situation arises and the assignment will not be submitted on time. Published assignment due dates (Arizona Mountain Standard time) are firm. Please follow the appropriate University policies to request an accommodation for religious practices or to accommodate a missed assignment due to University-sanctioned activities.

Quizzes may not be submitted late except for in cases of documented emergencies (e.g. self or family health emergency with doctor's note).

Group project assignments may be submitted late, but will lose one full letter grade for each day late.

Submitting Assignments

All assignments, unless otherwise announced, MUST be submitted to the designated area of Canvas. Do not submit an assignment via email.

Drop and Add Dates/Withdrawals

This course adheres to a compressed schedule and may be part of a sequenced program, therefore, there is a limited timeline to drop or add the course. Consult with your advisor and notify your instructor to add or drop this course. If you are considering a withdrawal, review the following ASU policies: Withdrawal from Classes, Medical/Compassionate Withdrawal, and a Grade of Incomplete.

Grade Appeals

Grade disputes must first be addressed by discussing the situation with the instructor. If the dispute is not resolved with the instructor, the student may appeal to the department chair per the University Policy for Student Appeal Procedures on Grades.

Student Conduct and Academic Integrity

Academic honesty is expected of all students in all examinations, papers, laboratory work, academic transactions and records. The possible sanctions include, but are not limited to, appropriate grade penalties, course failure (indicated on the transcript as a grade of E), course failure due to academic dishonesty (indicated on the transcript as a grade of XE), loss of registration privileges, disqualification and dismissal. For more information, see <http://provost.asu.edu/academicintegrity>. Additionally, required behavior standards are listed in the Student Code of Conduct and Student Disciplinary Procedures, Computer, Internet, and Electronic Communications policy, and outlined by the Office of Student Rights & Responsibilities. Anyone in violation of these policies is subject to sanctions.

Students are entitled to receive instruction free from interference by other members of the class. An instructor may withdraw a student from the course when the student's behavior disrupts the educational process per Instructor Withdrawal of a Student for Disruptive Classroom Behavior.

Appropriate online behavior (also known as netiquette) is defined by the instructor and includes keeping course discussion posts focused on the assigned topics. Students must maintain a cordial atmosphere and use tact in expressing differences of opinion. Inappropriate discussion board posts may be deleted by the instructor.

The Office of Student Rights and Responsibilities accepts incident reports from students, faculty, staff, or other persons who believe that a student or a student organization may have violated the Student Code of Conduct.

Prohibition of Commercial Note Taking Services

In accordance with ACD 304-06 Commercial Note Taking Services, written permission must be secured from the official instructor of the class in order to sell the instructor's oral communication in the form of notes. Notes must have the notetaker's name as well as the instructor's name, the course number, and the date.

Course Evaluation

Students are expected to complete the course evaluation. The feedback provides valuable information to the instructor and the college and is used to improve student learning. Students are notified when the online evaluation form is available.

Syllabus Disclaimer

The syllabus is a statement of intent and serves as an implicit agreement between the instructor and the student. Every effort will be made to avoid changing the course schedule but the possibility exists that unforeseen events will make syllabus changes necessary. Please remember to check your ASU email and the course site often.

Title IX:

Title IX is a federal law that provides that no person be excluded on the basis of sex from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity. Both Title IX and university policy make clear that sexual violence and harassment based on sex is prohibited. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can seek support, including counseling and academic support, from the university. If you or someone you know has been harassed on the basis of sex or sexually assaulted, you can find information and resources at <https://sexualviolenceprevention.asu.edu/fags>.

As a mandated reporter, I am obligated to report any information I become aware of regarding alleged acts of sexual discrimination, including sexual violence and dating violence. ASU Counseling Services, <https://eoss.asu.edu/counseling>, is available if you wish discuss any concerns confidentially and privately.

Accessibility Statement

In compliance with the Rehabilitation Act of 1973, Section 504, and the Americans with Disabilities Act as amended (ADAAA) of 2008, professional disability specialists and support staff at the Disability Resource Center (DRC) facilitate a comprehensive range of academic support services and accommodations for qualified students with disabilities.

Qualified students with disabilities may be eligible to receive academic support services and accommodations. Eligibility is based on qualifying disability documentation and assessment of individual need. Students who believe they have a current and essential need for disability accommodations are responsible for requesting accommodations and providing qualifying documentation to the DRC. Every effort is made to provide reasonable accommodations for qualified students with disabilities.

Qualified students who wish to request an accommodation for a disability should contact the DRC by going to <https://eoss.asu.edu/drc>, calling (480) 965-1234 or emailing DRC@asu.edu. To speak with a specific office, please use the following information:

ASU Online and Downtown Phoenix Campus
University Center Building, Suite 160
602-496-4321 (Voice)

Polytechnic Campus
480-727-1165 (Voice)

West Campus
University Center Building (UCB), Room 130
602-543-8145 (Voice)

Tempe Campus
480-965-1234 (Voice)

Computer Requirements

This course requires a computer with Internet access and the following:

Web browsers (Chrome, Internet Explorer, Mozilla Firefox, or Safari)
Adobe Acrobat Reader (free)
Adobe Flash Player (free)
Microphone and speaker
Web camera
Technical Support

This course uses Canvas to deliver content. It can be accessed through MyASU at <http://my.asu.edu> or the Blackboard home page at <https://myasucourses.asu.edu>

To monitor the status of campus networks and services, visit the System Health Portal at <http://syshealth.asu.edu/>.

To contact the help desk call toll-free at 1-855-278-5080.

Student Success

To be successful:

check the course daily

read announcements

read and respond to course email messages as needed

complete assignments by the due dates specified

communicate regularly with your instructor and peers

create a study and/or assignment schedule to stay on track

COVID-19 Documentation and Reporting

Instructors cannot require students to provide COVID-19 test results. **If you test positive for COVID-19, inform the ASU Dean of Students at deanofstudents@asu.edu immediately.** Staff in the Dean of Students office will serve as your point of contact for the duration of the isolation period and will help coordinate campus services (e.g. housing, counseling, class absence notifications). **If you disclose a positive test for COVID-19 to your instructor, they are obligated to report your status to the Dean of Students for support (this is true even for online students).**

Counseling Services

Confidential, personal counseling and crisis services are available to all students through ASU Counseling Services. For more information, see <http://eoss.asu.edu/counseling>.

Statement on Diversity

I would like to create a learning environment for my students that supports a diversity of thoughts, perspectives and experiences, and honors your identities (including race, gender, class, sexuality, religion, ability, etc.) To help accomplish this:

- If you have a name and/or set of pronouns that differ from those that appear in your official ASU records, please let me know!
- If you feel like your performance in the class is being impacted by your experiences outside of class, please don't hesitate to come and talk with me. I want to be a resource for you. Remember that you can also submit anonymous feedback (which will lead to me making a general announcement to the class, if necessary to address your concerns). [Stavros Kavouras](#), [Links to an external site.](#) Assistant Dean of Graduate Education, is also an excellent resource (Stavros.Kavouras@asu.edu; 602-827-2265)

- I (like many people) am still in the process of learning about diverse perspectives and identities. If something was said in class (by anyone) that made you feel uncomfortable, please talk to me about it. (Again, anonymous feedback is always an option).