OHSU – Biomedical Informatics Graduate Program - Core Competencies Mapped to Student Learning Outcome Measures for MS in Health and Clinical Informatics

Rubric

Intended Use: This rubric is a guide for students and their advisors and mentors to help track their progress through the HCIN MS degree program. Measurements are a suggestion – feel free to add as you see fit!

Professional Knowledge and Skills	**Meets expectations**	**Does not meet expectations**	**Possible Measurements**
SLO: • Apply knowledge of health and clinical informatics, and related disciplines, to solve problems in research, clinical and/or educational settings.			
Knowledge base	Good understanding of the knowledge base related to biomedical informatics	Poor knowledge base related to biomedical informatics	• Completed Thesis Project • Student initial presentation of thesis (proposal) • TAC (Thesis Advisory Committee) meetings – reports • BMI 510—prepare 10-15 page paper that defines an informatics problem, summarizes relevant literature, proposes a solution • BMI 512-- complete group project designed around clinical informatics case scenarios • BMI 517—present a group Health Information Technology project that applies concepts in conflict resolution, organizational behavior, and team dynamics • BMI 518-- create project plan applying concepts of Working collaboratively and productively within multidisciplinary project teams • BMI 530—complete *Disease and Clinician* project that demonstrates understanding of the
Advancements	A clear understanding of the advancements in biomedical informatics	Lack of understanding of the advancements in biomedical informatics	
Specialization	Good knowledge of one or more specializations in biomedical informatics	Poor knowledge of one or more specializations in biomedical informatics	
Application of knowledge	Accurate and systematic application of existing knowledge to analyze the research problem	Inaccurate and inconsistent application of existing knowledge to analyze the research problem	

			context, the vocabulary, and some of the challenges with supporting clinical work in real settings with informatics tools • BMI 540—create a Jupyter notebook that trains and evaluates simple machine learning models • BMI 544—perform basic programming in Java or Python to access a MySQL database • BMI 560—develop a research proposal including research question, lit review, aims, methods, and lay language summary that might be submitted to an institutional IRB • BMI 561-- write field notes based on observations that would be useful to a team; analyze qualitative data to produce credible results • Course Midterms • Course Finals • Passing other larger course projects
Professional Identity and Ethical Behavior	**Meets expectations**	**Does not meet expectations**	**Possible Measurements**
SLO: • Apply fundamental knowledge of ethics in research and implement solutions that assure confidentiality, security and integrity while maximizing the availability of data, information, and knowledge.			
Academic integrity/Research ethics	Awareness of academic integrity and research ethics	Lack of awareness of academic integrity and research ethics	• Completed Thesis Project • Student initial presentation of thesis (proposal)
Manage data	Record data in prescribed format in timely, accurate and complete manner	Record experimental results with flaws in timeliness, accuracy and organizations	

			• TAC (Thesis Advisory Committee) meetings – reports • Possible course alignment: Andrea to fill in course #s: • Course Midterms • Course Finals • Passing other larger course projects • BMI 535-- reproduce, implement, debug, and document an established biomedical data analysis workflow • BMI 546-- give slide presentation of hypothetical software system overview • BMI 561-- write field notes based on observations that would be useful to a team; analyze qualitative data to produce credible results • BMI 576-- Watch the video created by an African-American woman about healthcare issues for Black Americans and potential trust issues. • BMI 576--Select one culture/area of diversity you have limited knowledge in. Locate a research article to discuss how information on bias applies; cite the article.
Information Literacy	**Meets expectations**	**Does not meet expectations**	**Possible Measurements**
SLO:			

• Engage in lifelong learning through: finding, interpreting and critically appraising professional literature in order to stay informed of advances in their chosen field; and connecting with the larger professional community through participating in conferences and societies.			
Conference participation	Presenting at research conference	Attending Thursday research conference	• Includes Thursday conference, OHSU research week, BioData Club, etc. • BMI 560-- develop a research proposal including research question, lit review, aims, methods, and lay language summary that might be submitted to an institutional IRB • BMI 570-- prepare and revise a term paper on a chosen biomedical informatics topic and prepare a presentation on the same topic using inclusive language.
Communication	**Meets expectations**	**Does not meet expectations**	**Possible Measurements**
SLOs: • Effectively communicate in written and verbal form to both peers and non-experts. • Communicate professionally, including during interactions with others, and while giving and receiving feedback.			
Writing skills	Well written thesis and organization supports the objectives. Content is clear and coherent.	Poorly written and poorly organized, content unclear, lapses in coherence	• Completed Thesis Project • Student initial presentation of thesis (proposal) • TAC (Thesis Advisory Committee) meetings – reports • Course Midterms • Course Finals • Passing other larger course projects • Pre-defense presentation • Glossary of terms might be present at final presentation defense for non-experts • BMI 570--prepare and revise a term
Speaking skills	Spoken explanations are clear and concise	Spoken explanations are not clear and concise	
Audience awareness	Audience knowledge was considered in presentation of topic	Audience knowledge was not considered in presentation of topic	
Response to feedback	Actively listen and respond appropriately to feedback	Respond inappropriately to feedback	
Integrating feedback	Documents and addresses feedback; seek out opportunities for feedback Example: Integrated feedback from pre-defense meeting to public defense.	Does not document or address feedback; does not seek out opportunities for feedback	

			paper on a chosen biomedical informatics topic, prepare a presentation on the same topic using inclusive language.
Teamwork	**Meets expectations**	**Does not meet expectations**	**Possible Measurements**
SLO: • Function as a productive member of a multidisciplinary collaborative team of biological or other scientists, informatics, information technology, clinical, administrative, and other experts.			
Teamwork	Works collegially and effectively as team member/collaborator	Does not work collegially and effectively as team member/collaborator	• Team evaluations, feedback from sponsors, mentor/advisor, other peer, etc. • TAC (Thesis Advisory Committee) meetings and summary progress reports • BMI 512—complete a group project designed around a clinical informatics case scenario • BMI 517—present a group Health Information Technology project that applies concepts in conflict resolution, organizational behavior, and team dynamics • BMI 518—create project plan applying concepts of working collaboratively and productively within multidisciplinary project teams • BMI 519-- Prepare a 6-11 page paper that discusses a subject in Business in Health that is of particular interest to you. You may choose an issue in

			your organization to study. Page 1 should be a one-page executive summary, as you would present to your organization's CEO or CMIO. • BMI 536-- critically appraisal an article on Summarizing Evidence—Systematic Reviews and Meta-analysis. Choose an article published in the literature of the appropriate study type that was not mentioned in the lecture or textbook. Choose a study on a clinical topic. • BMI 538-- Submit 1-page journal article critique of a medical decision-making analysis paper, pose 2 questions to students, respond to classmates' comments and questions, post a summary of the group discussion. • BMI 561-- write field notes based on observations that would be useful to a team; analyze qualitative data to produce credible results • Course Midterms • Course Finals • Passing other larger course projects
Community Engagement, Social Justice and Equity	**Meets expectations**	**Does not meet expectations**	**Possible Measurements**

SLO: • Integrate the culture and diversity of a population when carrying out research and/or professional practice in informatics.			
Empathy toward others	Demonstrates empathy toward the culture and diversity of all stakeholders	Treats others with respect; follows standard practices	• Completed Thesis Project • TAC (Thesis Advisory Committee) reports • BMI 570--prepare and revise a term paper on a chosen biomedical informatics topic and prepare a presentation on the same topic using inclusive language. • BMI 576--Watch video created by an African-American woman about healthcare issues for Black Americans and potential trust issues. • BMI 576--Select one culture/area of diversity you have limited knowledge in. Locate a research article to discuss how information on bias applies; cite the article. • Course Midterms • Course Finals • Passing other larger course projects • Participation in two OHSU cultural diversity activities per year • Includes Thursday conferences, OHSU research week, etc. (attend or present)
Patient Centered Care	**Meets expectations**	**Does not meet expectations**	**Possible Measurements**
SLO:			

• Demonstrate and promote informatics solutions that help to ensure patient safety within relevant clinical settings.			
Safety Standards	Complies with safety and regulatory standards	Does not comply with safety and regulatory standards	• BMI 512-- complete group project designed around clinical informatics case scenarios • BMI 537—prepare 10-page team paper that critiques a problem in healthcare quality management from the beginning of the problem to the development of a solution • BMI 576-- prepare a 6-page, single-spaced paper on an ethics topic in informatics • Passing other larger course projects

Adapted from: Western University, Ontario, Canada: Learning Outcomes: Evolution of Assessment and Van Andel Institute