

## DMICE Alignment Report – An example of faculty engaged in the programmatic assessment process in the Department of Medical Informatics and Clinical Epidemiology (DMICE).

In Winter of 2019, administration in the Department of Medical Informatics and Clinical Epidemiology (DMICE) reached out to the OHSU Teaching and Learning Center (TLC) for help revising a degree advising rubric, which faculty advisors in the program were supposed to use to coach students toward completion of program student learning outcomes, theses, capstone, internship, or dissertation, and graduation. The rubric, intended for use with all six of DMICE's programs of study, was not being well-utilized, and both students and faculty advisors reported it was confusing. Additionally, all stakeholders were worried the advising that was happening wasn't consistent for all students.

The Assistant Director of the TLC and DMICE administrator met and went over the rubric documents, as well as documents for student learning outcomes for the six degrees. Not only were the program's various student learning outcomes not aligned to the OHSU core competencies, they weren't internally aligned within their degrees, nor was there proper progression from Master's to PhD programs.

The Assistant Director attended a DMICE curriculum committee meeting in March 2019 and presented the conundrum – the advising rubric couldn't be revised until it was clear what their students should be able to do upon completion of each of the programs of study. The background and purpose of the OHSU Assessment Council and programmatic assessment at OHSU was also presented so the DMICE faculty could see the TLC as allies who would help with the work to be done, as well as what was required of the DMICE faculty. The faculty immediately recognized the degree program SLOs were not only incorrect (e.g. there were higher level SLOs in the MS than in the PhD program within the same subject) but the SLOs didn't map in a meaningful way to the OHSU core competencies. Requesting the assistant director's help, they decided to completely rewrite their SLOs, starting with the OHSU Core Competencies as a framework.

Over the course of the next 9 months, the Assistant Director facilitated the revision of the student learning outcomes by faculty, administrative staff, and students in DMICE, by providing structure, training (as needed), and research to support the revision process. Once the student learning outcomes were finished, and aligned with OHSU core competencies, as well as other degrees within the same subject (see Table 1), the Assistant Director and DMICE administration revised the advising rubric based on the new SLOs and presented the draft to the faculty in their monthly curriculum meeting. The new rubric was met with positivity and excitement and the faculty and students engaged in the process of refining and giving better examples of exemplary work within each dimension.

The rubric is now being introduced to new students when they start the program and when they first meet with their advisor. In this meeting, they go over the rubric, focusing on the Communication and Professionalism competencies (these were competencies found to be lacking in the curriculum previously). Together, the advisor and student complete the Mentorship Agreement using the rubric, and set the parameters for their relationship going forward. This Agreement remains in place until they name a capstone, internship, thesis or dissertation mentor. This process has been working out very well for the students and for the advisors. In addition, the rubrics were sent to all teaching faculty for reference, and are now included in the digital information available to all students in the program.



The Department of Medical Informatics & Clinical Epidemiology (DMICE) is one of 27 academic departments in the School of Medicine at Oregon Health & Science University (OHSU). The mission of DMICE is to provide leadership, discovery and dissemination of knowledge in clinical informatics, clinical epidemiology, and bioinformatics / computational biology. This mission is fulfilled through programs of research, education, and service.

Table 1 – Alignment of OHSU Core Competencies, Masters, PhD program student learning outcomes in the Bioinformatics and Computational Biomedicine programs.

OHSU core competencies	BCB MS Student Learning Outcomes	BCB PhD Student Learning Outcomes
1. PROFESSIONAL KNOWLEDGE AND SKILLS: Demonstrate competence in the core knowledge, skills, and practices as defined by degree programs and relevant professional licensing and credentialing boards.	<ul style="list-style-type: none"> <li>Apply knowledge of bioinformatics and computational biomedicine, and related disciplines, to solve problems in research, clinical and/or educational settings.</li> </ul>	<ul style="list-style-type: none"> <li>Apply a broad knowledge of bioinformatics and computational medicine, and related disciplines, to solve problems in research, clinical and educational settings.</li> </ul>
2. REASONING AND JUDGMENT: Demonstrate the ability to identify and define problems, critically compare options, make timely decisions or recommendations, identify uncertainties, and use findings to improve outcomes in light of evolving evidence.	<ul style="list-style-type: none"> <li>Identify and apply appropriate research and methods to analyze, contextualize, interpret results, and evaluate their internal and external validity.</li> </ul>	<ul style="list-style-type: none"> <li>Identify gaps in scientific knowledge; formulate a research question; design a research study; employ and apply appropriate methods or develop new methods as necessary; analyze, contextualize, and interpret results; and evaluate the internal and external validity of the research findings.</li> </ul>
3. EVIDENCE-BASED PRACTICE AND RESEARCH: Demonstrate the ability to access, evaluate, and apply relevant science knowledge to support evidence-based health care, disease prevention, health promotion, and discovery.	<ul style="list-style-type: none"> <li>Given a problem, formulate a plan, critically compare options, make timely decisions or recommendations, identify, and improve outcomes in light of evolving evidence.</li> </ul>	<ul style="list-style-type: none"> <li>Identify and define problems, critically compare options, make timely decisions or recommendations, identify uncertainties, and use findings to improve outcomes in light of evolving evidence.</li> </ul>
4. LIFELONG LEARNING: Demonstrate the ability to recognize gaps in knowledge and experience through informed self-assessment and reflective practices, and take actions to address those gaps.	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Engage in lifelong learning through: finding, interpreting and critically appraising scientific literature in order to fill knowledge gaps and stay informed of scientific advances; synthesizing and applying new knowledge to their own research; and connecting with the larger scientific community through participating in scientific conferences and societies.</li> </ul>
5. COMMUNICATION: Demonstrate active listening and oral and written communication skills with diverse individuals, communities, and colleagues to ensure effective, culturally appropriate exchange of information.	<ul style="list-style-type: none"> <li>Effectively communicate in written and verbal form to both peers and non-experts.</li> <li>Communicate professionally, including during interactions with others, and while giving and receiving feedback.</li> </ul>	<ul style="list-style-type: none"> <li>Effectively communicate and disseminate scientific research in written and verbal form to both peers and non-experts.</li> <li>Communicate professionally, including during interactions with others, and while giving and receiving feedback.</li> </ul>

OHSU core competencies	BCB MS Student Learning Outcomes	BCB PhD Student Learning Outcomes
6. PROFESSIONALISM AND ETHICS: Demonstrate integrity, honesty, knowledge of ethical principles and the standards of professional conduct, and the ability to apply ethical principles in clinical care, research, education, or community service.	<ul style="list-style-type: none"> <li>Apply fundamental knowledge of ethics and implement solutions that assure confidentiality, security and integrity while maximizing the availability of data, information, and knowledge.</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> </ul>
7. INTERPROFESSIONAL TEAMWORK: Demonstrate knowledge of team-based professional skills, roles, and responsibilities in order to ensure an environment for safe, efficient, effective, and equitable care and innovative research.	<ul style="list-style-type: none"> <li>Function as a productive member of a multidisciplinary collaborative team of biological or other scientists, informatics, information technology, clinical, administrative, and other experts.</li> </ul>	<ul style="list-style-type: none"> <li>Function as a productive member of a multidisciplinary collaborative team of biological and related scientists, informatics, information technology, clinical, administrative, and other experts.</li> </ul>
8. SAFETY AND QUALITY IMPROVEMENT: Demonstrate the ability to identify situations that compromise safety, and participate in risk reduction and continuous quality improvement.	<ul style="list-style-type: none"> <li>Demonstrate and promote informatics solutions that help to ensure patient safety within relevant clinical settings.</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate and promote informatics solutions that help to ensure patient safety within relevant clinical settings</li> </ul>
9. SYSTEMS: Demonstrate an appropriate understanding of evolving health care systems, health and science policy, and resource allocation in order to optimize human health and scientific discovery.	<ul style="list-style-type: none"> <li>Apply the principles of team science to solve complex information problems.</li> <li>Appraise applicable bioinformatics concepts, methods, and tools to solve challenging problems in their focus area.</li> </ul>	<ul style="list-style-type: none"> <li>Appraise applicable bioinformatics concepts, methods, and tools to solve challenging problems in their focus area.</li> <li>Apply the principles of team science to solve complex information problems.</li> <li>Have experience and training utilizing modern frameworks for rapid prototyping, and how to extract information from a wide variety of databases.</li> </ul>
	<ul style="list-style-type: none"> <li>Integrate the culture and diversity of a population when carrying out research and/or professional practice in informatics.</li> </ul>	<ul style="list-style-type: none"> <li>Integrate the culture and diversity of a population when developing research ideas, conducting research, evaluating implementation, and/or interpreting research findings.</li> </ul>