Clinical Informatics Guidelines for Review of Master's Degree Curricula

ABPM policies provide for the possible acceptance of a Clinical Informatics focused master's degree in lieu of the required thirty-six (36) months of practice experience for Applicants seeking eligibility to sit for the Initial Certification Exam in Clinical Informatics. The master's degree will require the following coursework focusing on the following core content and should include a minimum of thirty-two (32) credits of graduate level coursework.

ABPM will also consider granting partial practice credit for Applicants seeking eligibility to sit for the Initial Certification Exam in Clinical Informatics in instances where the Clinical Informatics master's degree has not been completed but is, at the time of application, in progress.

These guidelines are established as a framework for consideration of master's programs. Each master's program shall be considered individually, and no prior approval or denial will be precedential to any future approval/denial.

1. ABPM requires a transcript for coursework and recommends the inclusion of the syllabus for the submission of coursework.
2. Undergraduate coursework and coursework in medical school will not be considered to meet these requirements.
3. ABPM will consider master's programs prior and/or separate from Medical School and/or Residency training.
4. All coursework must be submitted via an Academic Transcript requested by the Applicant and submitted directly to ABPM from the master's program via US Postal mail, Fax or Email.
5. Master's programs should be specific to Health/Clinical Informatics.
6. Applicants that have completed a master's program that includes a capstone or project component should include a description of the capstone or project, in addition to the syllabus.
7. Course content should be consistent with the ABPM five core content areas included in the Clinical Informatics Initial Certification examination. https://www.theabpm.org/become-certified/exam-content/clinical-informatics-content-outline/. The five core content areas are:
   a. Fundamental Knowledge and Skills: Fundamental knowledge and skills which provide clinical informaticians with a common vocabulary, basic knowledge across all Clinical Informatics domains, and understanding of the environment in which they function.
   b. Improving Care Delivery and Outcomes: Knowledge and skills that enable a clinical informatician to develop, implement, evaluate, monitor, and maintain clinical decision support; analyze existing health processes and identify ways that health data and Health Information Systems (HIS) can enable improved outcomes; support innovation in the health system through informatics tools and processes.
   c. Enterprise Information Systems: Knowledge and skills that enable a clinical informatician to develop and deploy health information systems that are integrated with existing information technology systems across the continuum of care, including clinical, consumer, and public health domains. Develop, curate, and maintain institutional knowledge repositories while addressing security, privacy, and safety considerations.
   d. Data Governance and Data Analytics: Knowledge and skills that enable a clinical informatician to establish and maintain data governance structures, policies, and processes. Incorporate information from emerging data sources; acquire, manage, and

analyze health-related data; ensure data quality and meaning across settings; and derive insights to optimize clinical and business decision making.

    e. <u>Leadership and Professionalism:</u> Knowledge and skills that enable a clinical informatician to build support and create alignment for informatics best practices; lead health informatics initiatives and innovation through collaboration and stakeholder engagement across organizations and systems.

8. *The American Informatics Association (AMIA) identified the following core objectives for graduate students completing a Health Informatics Graduate program in an AMIA white paper published in 2017,* [*AMIA Board White Paper: AMIA 2017 core competencies for applied health informatics education at the master's degree level | Journal of the American Medical Informatics Association | Oxford Academic (oup.com)*](#)*.*

- *<u>Health</u> - Describe the history, goals, methods (including data and information used and produced), and current challenges of the major health science fields. These include biology, genomics, clinical and translational science, healthcare delivery, personal health, and population health.*

- *<u>Information Science and Technology</u> - Identify the applicable information science and technology concepts, methods, and tools, which may be dependent upon the application area of the training program, to solve health informatics problems. These include the concepts, methods, and tools related to managing data, information, and knowledge, the basic information and computer science terms and concepts, the principles of information security, as well as the methods of assessing users' information needs.*

- *<u>Social and Behavioral Science</u> – Attain the background knowledge of the effects of social, behavioral, legal, psychological, management, cognitive, and economic theories, methods, and models applicable to health informatics from multiple levels including individual, social group, and society.*

- *<u>Health, Information and Science Technology</u> – Apply the knowledge, skills, and attitudes to use concepts and tools for managing and analyzing biomedical and health data, information, and knowledge. Key foci include systems design and development, standards, integration, interoperability, and protection of biomedical and health information.*

- *<u>Human Factors and Socio-technical Systems</u> -Apply the knowledge, skills, and attitudes to use concepts and tools for managing and analyzing biomedical and health data, information, and knowledge. Key foci include systems design and development, standards, integration, interoperability, and protection of biomedical and health information.*

- *<u>Social and Behavioral Aspects of Health</u> – Attain the knowledge, skills, and attitudes to use social determinants of health and patient-generated data to analyze problems arising from health or disease, to recognize the implications of these problems on daily activities, and to recognize and/or develop practical solutions to managing these problems.*

- *<u>Social, Behavioral, and Information Science and Technology Applied to Health</u> – Attain the knowledge, skills, and attitudes to apply the diverse foundational concepts and facets in order to develop integrative approaches to the design, implementation, and evaluation of health informatics solutions.*

- *Professionalism – Master* the conduct that reflects the aims or qualities that characterize a professional person, encompassing especially a defined body of knowledge and skills and their lifelong maintenance as well as adherence to an ethical code.
- *Interprofessional Collaborative Practice – Master* the behavior that reflects the foundations of values/ethics, roles/responsibilities, interprofessional communication practices, and interprofessional teamwork for team-based practice.
- *Leadership – Master* the behavior that demonstrates the following characteristics: credibility, honesty, competence, ability to inspire, and ability to formulate and communicate a vision.

9. The following course titles for Clinical Informatics represent coursework offered by National Library of Medicine (NLM) funded programs. The following courses are included as representative of coursework that may be specific to a Health Informatics degree. The coursework should represent the ABPM core content requirements, AMIA's health informatics objectives and ACGME learning objectives.
   - Introduction to Biomedical/Clinical Informatics
   - Computer Science Fundamentals
   - Statistical Foundations of Biomedical Informatics
   - Clinical Information Systems and Applications
   - Clinical Database Design
   - Foundations of Health Information Technology/Health Care Informatics
   - Population & Public Health Informatics
   - Biostatistics
   - Clinical Research Informatics
   - Standards in Biomedical Informatics
   - Systems Modeling and Process Improvements
   - Clinical Decision Support
   - Implementation of Systems
   - Clinical Information Systems Architecture
   - Workflow
   - User-Centered Design and Implementation
   - Clinical Data Standards
   - Ethics
   - Organizational Behavior and Management
   - Research Methods

The following resources have been used to develop the guidelines for the acceptance of Clinical Informatics coursework.

ABPM: https://www.theabpm.org/become-certified/exam-content/clinical-informatics-content-outline/.
AMIA - https://academic.oup.com/jamia/article/25/12/1657/5145365.

ACGME - https://www.acgme.org/globalassets/pfassets/programrequirements/381_clinicalinformatics_2021.pdf.

ACGME - https://www.acgme.org/globalassets/pfassets/programrequirements/381_clinicalinformatics_2021.pdf.

CAHIIM - https://www.cahiim.org/programs.