Biomedical diagnostics is at the center of health care innovation today and is involved in more than 70 percent of all clinical decision making. Diagnostics is essential to the practice of medicine, including personalized medicine — the process of identifying the treatments most likely to benefit an individual patient based on their genetic and physiological characteristics. The industry employs more than 3.5 million people worldwide.

The new ASU International School of Biomedical Diagnostics (ISBD) is the result of a unique and innovative initiative in the exciting and fast-growing field of diagnostics. ISBD at Arizona State University, along with our academic partner Dublin City University and other industry partners, is creating a critical incubator and producer of biomedical knowledge and innovation, committed to stimulating economic growth and improving the quality and longevity of life globally.

Higher education is being transformed globally through new collaborations between public and private sectors. At the intersection of the business and healthcare communities, our School’s mission is to:

• Educate the next generation of health care executives to understand, appreciate and better utilize diagnostics in clinical medicine and scientific research
• Train students to be active, impactful and senior members of the health care and life science communities through course work and exposure to industry experts
• Positively impact the advancement of preventative healthcare and personalized medicine while lowering health care costs

The Student Experience

The International School of Biomedical Diagnostics draws expertise from faculty across Arizona State University, Dublin City University and other industry partners to offer a world-class international Master of Science in Biomedical Diagnostics degree.

This program is formatted to meet the needs of working professionals. It is offered entirely online and can be taken full-time or part-time. Courses are primarily offered in condensed 7.5 week sessions.

The Masters of Science in Biomedical Diagnostics has four core curricular areas that provide the foundation for the degree program:

• Technology of Diagnostics - explores instrument and assay development, biomedical engineering and diagnostic product development
• Science of Diagnostics - focuses on underlying bioinformatics and bio-statistical analysis, clinical trial design, regulatory systems and the technology behind imaging, pathology, molecular and sequencing technology
• Business of Diagnostics - encompasses public and private health care finance and reimbursement, along with personalized health care, and includes the companion diagnostics
• Application of Diagnostics - taught through case studies on critical diagnostics-related issues including intellectual property, bioethics, clinical utility, intellectual property, smart systems, as well as modality integration and systems analysis

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The Future of Health Innovation

The Future of Health Innovation
About Arizona State University

ASU offers a vibrant community for student discovery and business endeavors. U.S. News & World Report ranked ASU as the #1 University for Innovation in 2015. As one of the top-ranked U.S. colleges for aspiring entrepreneurs, ASU values innovation and entrepreneurial spirit.

ASU achieved this top ranking for innovation by establishing multidisciplinary centers of excellence which bring together world experts who can address immediate health care challenges using the latest technological advances:

- **Biodesign Institute**, addressing global challenges by creating “biinspired” solutions, including: new vaccine discovery and delivery; early detection and treatment of cancer and infectious diseases; techniques for detecting and removing contaminants from air and water; and the application of nanotechnology for biomedicine and electronics, including the Virginia G. Piper Center for Personalized Diagnostics
- **Institute for Interdisciplinary Salivary Bioscience**
- **National Biomarker Development Alliance (NBDA)**
  
Furthermore, the School is interdisciplinary, drawing assets across ASU:

- **Ira A. Fulton Schools of Engineering**
- **School of Life Sciences in the College of Arts and Sciences**
- **W. P. Carey School of Business**
- **Consortium for Science, Policy & Outcomes**
- **Sandra Day O’Connor College of Law**

As the largest public university in the United States, ASU has the faculty, reach and resources to make a positive impact on the global economy through deep knowledge, research and expertise in diagnostics and bioscience. The International School of Biomedical Diagnostics will be the global center for teaching, research, and service.

Benefits to Stakeholders

The International School of Biomedical Diagnostics offers tremendous benefits to stakeholders including students, faculty/researchers, and employers.

**Students** have the opportunity to learn from top industry experts from around the world in a place and format that sparks and supports innovation.

**The Master of Science in Biomedical Diagnostics** is a unique value proposition for students. The degree can be completed in one year with classes offered through ASU’s unique online framework, enabling students around the world to participate and learn in their own environment.

Students will complete an Applied Project in which they will work with ASU professors or industry partners on a topic relevant to the diagnostics field.

At ASU, entrepreneurship is not confined to a single college or school, or is it housed in one center or institute. Students are equipped to think critically and holistically about the greatest health challenges locally, nationally and globally, and are directly involved in the research and discovery of solutions.

**Working professionals** interested in building a stronger foundation in biomedical diagnostics will benefit from a flexible, online program designed to give a broad perspective of the field with a focus on applied research, technology development, reimbursement and regulation, and best practices in biomedical informatics.

As the diagnostics industry grows in importance, it is critical that we create a strong cadre of executives that are educated in how to use diagnostics to maximize positive impact on your business and patients’ lives. Courses will be taught by expert faculty across ASU and DCCU with multiple guest lecturers from industry. Faculty have a passion for their field and for student success.

Graduates will be prepared to deliver more impactful results in their current roles and/or take on new senior roles within the organization including C-suite executives, general managers, product heads, laboratory directors, regulatory and policy leads, national sales directors and more.

**Featured courses**

**BMD 502 | Foundations of Biomedical Informatics Methods**

- Surveys the methods and theories underlying the field of biomedical informatics. Explores techniques in mathematics, logic, decision science, computer science, engineering, cognitive science, management science and epidemiology, and demonstrates the application to health care and biomedicine.

**BMD 510 | Current Perspectives in Biomedical Diagnostics**

- Provides an overview of the biomedia diagnostics industry covering research, policy and legal aspects of the field. Visiting speakers from Arizona State University, Dublin City University, biomedical diagnostics companies, and regulatory agencies will provide an overview of their specific experience and case studies. Plans are for students to work in teams to research and develop a case study report related to biomedical diagnostics.

**BMD 511 | Health Economics, Policy and Payment Models**

- Provides a thorough grounding in selected microeconomic concepts and models that are relevant for the economic aspects of health care but also have more general applications. The concepts and methods are applied to a selected set of topics that include the public provision of health insurance, benefit-cost and cost effectiveness analysis, human capital models of investments in health, incentives, and the legal approach to medical malpractice. Application of current approaches to methods of payment for health care services.

**BMD 513 | Principles of Diagnostic Technology: Immunoassays**

- Provides a detailed understanding of the theory and applications of advanced diagnostic assay systems and devices. Students will gain knowledge in immunoassay design and validation with particular attention to the manipulation of the immune system for disease recognition. This module assumes no former knowledge of immunoassay, but some knowledge would be advantageous.

**BMD 517 | Principles of Diagnostic Technology: Molecular Diagnostics**

- This is a survey course covering topics such as multiple types of analytes including DNA, RNA and protein, a multitude of disease application areas, major molecular diagnostic platforms, development of molecular diagnostics tests, sample preparation, and future prospects for molecular diagnostics.

**BMD 592 | Research**

- Biomedical diagnostics independent study (applied project) in which a student, under the supervision of a faculty member or industry mentor, conducts research that is expected to lead to a specific project such as a thesis or dissertation, report, or publication. This course is focused on developing a project charter and plan to serve as a guide towards successfully completing the Applied Project research component in the following BMD 593 Applied Projects course.

**BMD 593 | Applied Project**

- Students will complete an experiential learning experience as part of their applied project on a topic of relevance to the diagnostics field and their career interests. Applied projects will demonstrate students’ ability to apply skills and knowledge learned in coursework, use research methods appropriate to the field, and report and present results.

**BMD 598 | Biomedical Device Design**

- Medical Device Design is a hybrid class/lab where a mixture of lecture, hands on, demos and lab experiments are used to convey the breadth of medical devices in the medical diagnostic device industry. Classification of devices and function are explained and covered. Students will learn reverse engineering and build simple devices, as well as, learn about the FDA, market, business and design side of these products.

**BMD 667 | Regulation of Medical Diagnostics**

- This course explores the regulatory environment for the development, marketing, access and interpretation of modern biomedical diagnostics. Students will explore the business environment of diagnostic firms, interactions with state and federal regulatory authorities, and how new types of diagnostics and business models challenge established approaches for safeguarding the validity and safety of new products and service.

**Executive Education**

Executive Education programming is also available based on industry need. We offer opportunities for custom workshops at a company’s location on site or on the ASU campus, as well as web-based training.