ASU International School of Biomedical Diagnostics
Arizona State University

GRADUATE HANDBOOK

Master of Science (MS) in Biomedical Diagnostics

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Biomedical Diagnostics Student Handbook

This handbook is a guide for graduate students admitted to the International School of Biomedical Diagnostics (BMD). Each student should consult the handbook for information about the M.S. degree in BMD.

The handbook is provided as an initial resource for answers to questions about the program, but students are also encouraged to consult with the Graduate Coordinator, to answer any additional questions.

The primary reference for graduate students on rules and regulations is the Arizona State University Graduate Education website: https://graduate.asu.edu/key-policies.

Once admitted to the BMD graduate program, students have access to the BMD Graduate Student Blackboard site, where they will be able to find many of the materials in this handbook. Admitted students can access the site through MyASU at https://my.asu.edu/.

Graduate Education requirements define the basic policies for obtaining a degree from ASU, these policies can be found on the ASU Graduate Education Website located here: https://graduate.asu.edu/sites/default/files/asu-graduate-policies-and-procedures.pdf. BMD has several additional requirements, beyond the standard ASU policies, which are identified in this handbook.

Biomedical Diagnostics
Diagnostics is at the center of health care innovation and is critical to personalized medicine. More than 60 percent of clinical decision-making uses biomedical diagnostics, and the industry employs more than 3.5 million people worldwide. Arizona State University (ASU) and Dublin City University (DCU) have launched a Master of Science in Biomedical Diagnostics.

The Masters of Science in Biomedical Diagnostics has four core curricular areas that provide the foundation for the degree program:
*Technology of Diagnostics: will explore instrument and assay development, biomedical engineering and diagnostic product development.
*Science of Diagnostics: will focus on underlying bioinformatics and bio-statistical analysis, clinical trial design, regulatory systems and the technology behind imaging, pathology, molecular and immunological testing platforms.
*Business of Diagnostics: will encompass public and private health care finance and reimbursement, along with personalized health care, and include the companion diagnostics.
*Application of Diagnostics: will be taught through case studies on critical diagnostics-related issues including bioethics, clinical utility, intellectual property, smart systems, as well as modality integration and systems analysis.

Students will:
*Benefit from innovative, cross-disciplinary curriculum taught by expert faculty who are leaders in the fields of engineering, technology, medicine, law, and business.
*Develop a comprehensive approach to health care.

*Garner experience through involvement in research or industry immersion programs
*Gain a competitive advantage in the job market

Student Responsibility
It is our expectation that all students enrolled in Biomedical Diagnostics will observe the policies expressed in this handbook as well as the academic policies of Arizona State University. Above all, we expect each student to maintain a high level of academic integrity. Each student must act with honesty and integrity, and must respect the rights of others in carrying out all academic assignments. The policies that our program abides by include the student academic integrity policy, the student code of conduct and the misconduct in research policy of ASU. We require students to review and observe these policies described in the Board of Regents Policy Manual available online at: https://www.azregents.edu/board-committees/policy-manual.

Other information concerning administrative procedures and university policies can be viewed online at: http://www.asu.edu/aad/manuals/sta/.

We expect our students to be accountable for any and all of the policies defined above. Violations of a Graduate Education, Biomedical Diagnostics or Arizona State University policy will result in academic review and may consequently result in student disciplinary procedures.

Academic Integrity
Graduate students are expected to be ethical in their multiple roles as students, researchers, and representatives of the Department and University. When in doubt about appropriate conduct, students should consult a faculty mentor to seek clarification. Breaches of academic integrity include, but are not limited to, the following:

- Engaging in any form of academic deceit, e.g., referring to materials, sources, or devices (camera phones, text messages, crib sheets, solution manuals, materials from previous classes, or commercial research services) not authorized by the instructor for use during an evaluation or assignment;
- Providing inappropriate aid to another student in connection with any evaluation or assignment;
- Engaging in plagiarism by using the ideas, words, or data of another person or persons without full and appropriate attribution;
- Engaging in plagiarism by claiming credit for the ideas, words, or data of another person or persons, or submitting work done by another as one's own;
- Failing to follow ethical procedures for research involving human subjects, such as violating participants' confidentiality, or failing to maintain confidential or sensitive research data in a secure location;
- Knowingly using data that do not meet appropriate standards for reliability and validity;
- Failing to meet responsibilities to undergraduate students, such as failing to provide assistance during designated office hours;
- Engaging in a romantic relationship with an undergraduate student whom you supervise or evaluate in a classroom or research setting;
- Falsifying or misrepresenting hours or activities in relationship to an internship, externship, research assistantship, field experience, workshop, or service learning experience;

- Repeatedly failing to meet commitments and responsibilities, such as chronically missing deadlines, or failing to provide work promised to colleagues; and
- Behaving in a way that reflects poorly on the School, Institute, and University while conducting research or participating in community activities as a representative of the School.

The International School of Biomedical Diagnostics has a zero-tolerance policy for any form of academic malfeasance. Penalties for unethical Additional information about academic integrity policies of the University is available on the Student Rights and Responsibilities web site at http://provost.asu.edu/academicintegrity. Graduate Education information regarding academic integrity is available on the Academic Integrity web site at https://graduate.asu.edu/beintheknow.

Additionally, all new students are required to complete the Academic Integrity Module, which is available for students on Blackboard (*ASU Academic Integrity Module Training*). Students must register for this course in Blackboard, review the presentation, and complete the Quiz **by September 1st**, with a passing score of 80% or higher. An additional reminder should be listed in MyASU under the priority task list. The Graduate Coordinator will be reviewing the course records to ensure all graduate students have completed the academic integrity modules successfully.

Sexual Harassment
The University prohibits sexual harassment by employees and students and will not tolerate sexual harassment that interferes with an individual's work or educational performance or creates an intimidating, hostile, or offensive working, learning, or residential environment. Additional information can be found at https://www.asu.edu/aad/manuals/acd/acd401.html.

Tuition and Fees
Students can find up to date information on tuition and fees at: http://students.asu.edu/tuitionandfees.

Financial Support
Students should visit the Graduate Education web site and other links for student funding resources:

- The ASU Financial Aid Office: http://students.asu.edu/financialaid
- Finance Your Education: ASU Resources: http://graduate.asu.edu/financing
- National Science Foundation Graduate Research Fellowship Program: http://www.nsf.gov/grfp
- National Institutes of Health Grants: http://grants1.nih.gov/grants/index.cfm
- Federal Student Aid (Student Loans): http://www.fafsa.ed.gov/
- Working at ASU: http://students.asu.edu/employment

Additional University Resources – ASU Online
ASU Online Orientation:
http://online-student-welcome.asu.edu/
Online Tutoring:
https://asuonline.asu.edu/tutoring
ASU Online Clubs:
http://asuonline.asu.edu/clubs

ASU top 5 Resources:
    http://succeedonline.asu.edu/library-resources/
Access Your Classes:
    http://online-student-welcome.asu.edu/getting-started/access-your-classes
Succeed Online:
    http://online-student-
    welcome.asu.edu/sites/default/files/Succeed%20Online_0.pdf
Online support for graduate students:
    http://succeedonline.asu.edu/2014/09/05/online-support-online-graduate-
    students/
Sun Card:
    http://online-student-
    welcome.asu.edu/sites/default/files/ASU%20Online%20Sun%20Card_0.pdf
MyApps:
    http://online-student-welcome.asu.edu/sites/default/files/My%20Apps_0.pdf
ASU Academic Integrity:
    http://provost.asu.edu/academicintegrity

Advising
To ensure that academic programs run as smoothly as possible, students should consult with their Graduate Coordinator (see *title page* for name and contact information), if there are additional questions regarding the policies outlined in this handbook, or the ASU Graduate Education requirements.

Additionally, ASU Online has staff that help connect students with the ASU Online and online resources, however any academic questions or concerns need to be addressed through your Graduate Coordinator, located in the International School of Biomedical Diagnostics.

Degree Requirements

Listed below are the ASU Graduate Education and International School of Biomedical Diagnostics policies for obtaining a degree in Biomedical Diagnostics from ASU.

Satisfactory Academic Progress
GPA (Grade Point Average) Graduate students must maintain a minimum 3.00 grade point average (GPA) to maintain satisfactory academic progress and to graduate. The minimum 3.00 GPA must be maintained on all GPA's (Plan of Study (iPOS) GPA, Overall Graduate GPA and Cumulative GPA)

- The iPOS GPA is calculated on all courses that appear on the student's approved iPOS (with the exception of LAW and Transfer credits)
- Cumulative ASU GPA represents all courses completed at ASU.
- The Overall Graduate GPA is based on all courses numbered 500 or higher that appear on the transcript after admission to a graduate program or graduate non-degree. This includes shared coursework if in an approved accelerated bachelor's/master's program.

Courses with grades of "D" (1.00) and "E" (0.00) cannot appear on the iPOS but will be included when calculating the Graduate GPA. Courses with an "I" grade cannot appear on the iPOS.

All graduate students are expected to make systematic progress toward completion of their degree. This progress includes satisfying the conditions listed below, and achieving the benchmarks and requirements set by the individual degree programs as well as Graduate Education. If a student fails to satisfy the requirements of their degree program and/or the benchmarks outlined below, the student may be dismissed from their program based on the academic unit's recommendation to Graduate Education at which time the Vice Provost for Graduate Education makes the final determination.

These as well as all other Graduate Education policies can be found in the ASU Graduate Policies and Procedures:

1. Maintain a minimum 3.0 for all GPA's.
2. Satisfy all requirements of the graduate degree program.
3. Satisfy the maximum time limit for graduation from the student's graduate degree program (six years for masters, ten years or five years from comprehensive exams (whichever comes first); for doctoral, see "Time to Degree" section.
4. Successfully pass comprehensive exams, qualifying exams, foreign language exams, and the oral defense of the proposal/prospectus for the thesis or dissertation.
5. Successfully complete the culminating experience.
6. Graduate students must remain continuously enrolled in their degree program. Failing to do so without a Graduate Education approved request to Maintain Continuous Enrollment is considered to be lack of academic progress.

Continuous Enrollment
Once admitted to a graduate degree program or graduate certificate program, students must be registered for a minimum of one graduate credit hour during all phases of their graduate education (fall and spring, summer if utilizing university resources in any way as listed below), including the term in which they graduate.

Students are:
- engaged in research
- conducting a doctoral prospectus
- working on or defending theses or dissertations
- taking comprehensive examinations
- taking Graduate Foreign Language Examinations
- Grades of "W" and/or "X" are not considered valid registration for continuous enrollment purposes.

Receiving a grade of "I," you must maintain continuous enrollment. To maintain continuous enrollment, the credit hour(s) must appear on the student's iPOS OR be a graduate-level course. Graduate students planning to discontinue registration for a semester or more must submit the Maintain Continuous Enrollment request. This request must be submitted and approved before the anticipated semester of non-

registration. Students may request to maintain continuous enrollment without course registration for a maximum of two semesters during their entire program.

Pre-Admission Credits
Credit hours completed at ASU or from another regionally accredited US institution or international institution officially recognized by that country, before the semester and year of admission to an ASU graduate degree program, are considered pre-admission credits. With the approval of the degree program and the Graduate Education office, students may include a maximum of 12 graduate-level credit hours with grades of "B" or better that were not used towards a previous degree. Preadmission credits must have been taken within three years of admission to the ASU degree program to be accepted.

Accelerated Bachelor's/Master's programs may use a maximum of 12 pre-admission credits which may include up to a maximum of 12 hours shared between the Bachelor's and Master's program. Students in accelerated programs should contact their Graduate Coordinator to ensure proper sharing of credit hours. Official transcripts must be sent to Graduate Admission Services from the records office of the institution where the credits were earned.

Time to Degree Limit
Master's students: All work toward a master's degree must be completed within six consecutive years.

Note: ASU Graduate Education requirement for Time to Degree Limit, does not meet the minimum BMD departmental requirements. Master's Students are expected to complete the Master's degree program within 1 year. Exceptions must be reviewed and approved by the Graduate Coordinator and Academic Program Director.

Plan of Study
The Plan of Study (iPOS) is a formal plan to meet degree requirements. The iPOS is an agreement that the work specified on the iPOS will be sufficient for the desired degree.

Students should strive to submit the iPOS online by the end of their first semester (MS students) and are required to submit it when 50% of the minimum credit hours for the degree being pursued have been completed. For steps on how to submit your Plan of Study, please visit this website:
https://graduate.asu.edu/sites/default/files/cdpm/how-to-ipos.pdf.

A Plan of Study (iPOS) must be filed online via MyASU with Graduate Education. It includes all courses to be taken, and a Faculty Advisor/Chair (please list Dr. George Runger as Chair). An approved Plan of Study must be on file before a student can register for their final culminating experience (BMD 592 Research and 593 Applied Project).

Faculty Advisor
In the iPOS system, students are required to submit a faculty advisor/chair. This person is automatically assigned for all BMD students, please use the Academic Program Director, Dr. George Runger as the Advisor/Chair in the iPOS system.

Change of Coursework
This process is required if you projected a course you did not take, or if you need to change courses listed. Students should review the iPOS at the end of each semester, to ensure the courses listed on the iPOS match the student's transcript and that the courses meet the BMD plan of study course requirements (see page 10, for plan of study).

If a student needs to change the coursework listed on the Plan of Study, the student will need to update the courses listed in the iPOS system and re-submit the iPOS for review. The iPOS will be routed electronically to the Graduate Coordinator for review and approval, then subsequent routing for auditing by the Graduate Education.

Grading and Grade Policies
Graduate Education assigns a general grading policy for all students attempting a graduate degree. Grades are assigned as follows:

Grade	Graduate Definition	Value
A+		4.33
A	Excellent	4.00
A–		3.67
B+		3.33
B	Good	3.00
B–		2.67
C+		2.33
C	Passing	2.00
D	No Graduate Credit	
E	Failure	0.00*

Grade	Graduate Definition
W	Withdrawal**
I	Incomplete
X	Audit
Y	Satisfactory
Z	Course in progress***

*This grade cannot be applied to a graduate degree but is included in the calculation of a grade point average.
**This grade is given whenever a student officially withdraws from a class.
***This grade is usually given pending completion of courses such as research, thesis, dissertation or practicum. All grades of "Z" must be changed to "Y" before graduation.

A grade of "P" (pass) in a 400 or higher level course may not appear on a Plan of Study. Grades of "D" or "E" cannot be used to meet the requirements for a degree although they are used to compute the grade point averages. A student receiving a grade of "D" or "E" must repeat the course in a regularly scheduled (not an independent study) class if it is to be included in the Plan of Study. However, both the "D" or "E" and the new grade are used to compute the grade point averages. Grades on transfer work will not be used in computing grade point averages.

All students must maintain a 3.0 GPA and comply with the ASU Graduate Education requirements for maintaining satisfactory progress (see page 5, *Satisfactory Academic Progress*). Students will not be able to register for their final culminating experience (BMI 593 Applied Project), until all GPA requirements have been met.

Incomplete Grades
Students have up to 1 calendar year in which to complete a course that was designated as incomplete (I). Ultimately the timeframe for completion is determined

by the instructor, in conjunction with the student. Once coursework has been fulfilled, a grade will be assigned. If the student does not complete coursework within one calendar year, the incomplete will become permanent and the student will have to re-take the course if it is a required course.

Course and Graduation Requirements
The BMD Plan of Study is provided below. Core BMD courses are offered on a once-a-year basis. Thus, failure to complete a required graduate course during the appropriate semester of enrollment may delay graduation.

Additionally, course offerings may change for upcoming years, therefore the BMD program cannot guarantee the courses will be offered the same term/session. Students should review the ASU class schedule for the course schedule of course offerings (https://webapp4.asu.edu/catalog/).

BMD Plan of Study Fall Start

Schedule	Term (Session)	Course	Credits	Title	Type
1st Semester	Fall (B)	BMD 502	3	Foundations of Biomedical Informatics Methods I	Core Course
	Fall (A)	BMD 667	3	Regulation of Medical Diagnostics	Core Course
	Fall (C)	BMD 513	4	Principles of Diagnostic Technology Immunoassays (DCU course)	Core Course - **Must be taken in the 1st semester**
	*	*	3	Elective 1: Elective Options Below	**OR** students can take both Electives in the Spring Term
2nd Semester	Spring (A)	BMD 511	3	Health Economics, Policy and Payment Models	Core Course
	Spring (A)	BMD 598	3	Molecular Diagnostics	Core Course
	Spring (B)	BMD 592	2	Research	Core Course - Must be taken the semester prior to BMD 593
	*	*	3	Elective 2: Elective Options Below	**OR** students can take both Electives in the Spring Term
Final Semester	Summer	BMD 510	3	Current Perspectives in Biomedical Diagnostics (DCU course)	Core Course - Must be taken after (BMD: 513, 502, 511, 598–Molecular Diagnostics, 667)
	Summer	BMD 593	3	Applied Project (AP)	Culminating Course - Offered in Summer Sessions ONLY
			30 Credits		

*Elective Options			
Students Pick 2 Courses Listed Below (6 elective credits)			
Fall (B)	BMI 598	3	Biomedical Commercialization
Spring (A)	BMI 598	3	Entrepreneurship in Biomedicine
Spring (B)	BMI 598	3	Imaging in Diagnostics
Spring (B)	BMD 550	3	Translational Bioinformatics
Spring (B)	BMD 598	3	Biomedical Device Design Principles: Hands-on Work

Course offerings are subject to change. Students should review the ASU class schedule for the course offerings each semester. Link provided here: https://webapp4.asu.edu/catalog/.
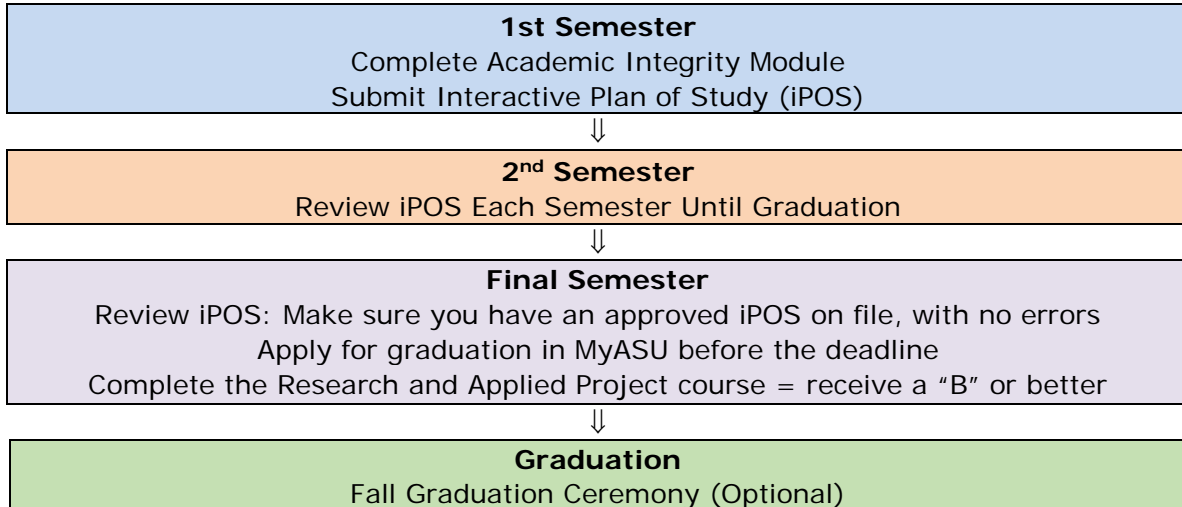
BMD Plan of Study Spring Start

Schedule	Term (Session)	Course	Credits	Title	Type
1st Semester	Spring (C)	BMD 513	4	Principles of Diagnostic Technology Immunoassays (DCU course)	Core Course - **Must be taken in the 1st semester**
	Spring (A)	BMD 598	3	Molecular Diagnostics	Core Course
2nd Semester	Fall (A)	BMD 667	3	Regulation of Medical Diagnostics	Core Course
	Fall (B)	BMD 502	3	Foundations of Biomedical Informatics Methods I	Core Course
	*	*	3	Elective 1: Elective Options Below	**OR** students can take both Electives in the Spring Term
3rd Semester	Spring (A)	BMD 511	3	Health Economics, Policy and Payment Models	Core Course
	Spring (B)	BMD 592	2	Research	Core Course - Must be taken the semester prior to BMD 593
	*	*	3	Elective 2: Elective Options Below	**OR** students can take both Electives in the Spring Term
Final Semester	Summer	BMD 510	3	Current Perspectives in Biomedical Diagnostics (DCU course)	Core Course - Must be taken after (BMD: 513, 502, 511, 598–Molecular Diagnostics, 667)
	Summer	BMD 593	3	Applied Project (AP)	Culminating Course - Offered in Summer Sessions ONLY
			30 Credits		

*Elective Options			
Students Pick 2 Courses Listed Below (6 elective credits)			
Fall (B)	BMI 598	3	Biomedical Commercialization
Spring (A)	BMI 598	3	Entrepreneurship in Biomedicine
Spring (B)	BMI 598	3	Imaging in Diagnostics
Spring (B)	BMD 550	3	Translational Bioinformatics
Spring (B)	BMD 598	3	Biomedical Device Design Principles: Hands-on Work

Course offerings are subject to change. Students should review the ASU class schedule for the course offerings each semester. Link provided here: https://webapp4.asu.edu/catalog/.

Advising Steps - BMD Master's Degree
In addition to the required coursework, the steps to achieve a MS in Biomedical Diagnostics are listed below. The program is designed to be completed in 1 year. For Spring admission, the program will take 1 ½ years to complete.

1st Semester
Complete Academic Integrity Module
Submit Interactive Plan of Study (iPOS)

⇓

2nd Semester
Review iPOS Each Semester Until Graduation

⇓

Final Semester
Review iPOS: Make sure you have an approved iPOS on file, with no errors
Apply for graduation in MyASU before the deadline
Complete the Research and Applied Project course = receive a "B" or better

⇓

Graduation
Fall Graduation Ceremony (Optional)

Application for Graduation
Students should apply for graduation during the semester of planned graduation (Summer session) and no later than the date specified at the Graduate Education website: http://graduate.asu.edu/graddeadlines.html. Students can apply for graduation online through MyASU or in-person through the ASU Graduation Office, located in the Student Services Building.

Graduation Ceremonies
Students that graduate in the Summer session have the option to participate and walk in the Fall ASU graduation ceremonies. There are no graduation ceremonies held during the Summer sessions. Information on Graduation Ceremonies can be found here: https://chs.asu.edu/convocation-information.