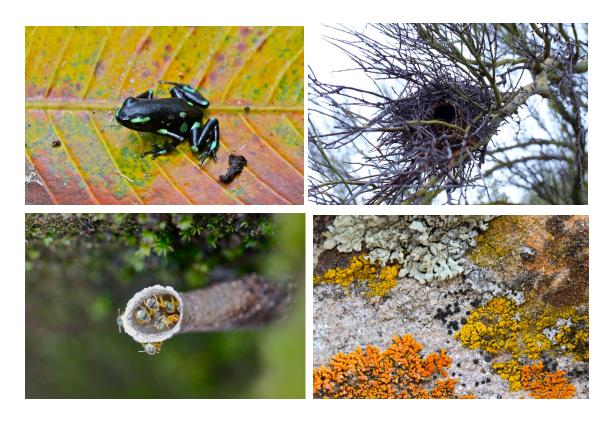






# **Biomimicry Graduate Student Handbook**

Master's of Science | Graduate Certificate 2019-2020



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## Welcome!

#### Hello Future Biomimic!

My name is Dayna Baumeister and on behalf of all of us at ASU through the School of Life Sciences and The Biomimicry Center, I would like to welcome you to the graduate biomimicry program. You are joining a unique group of individuals from around the world committed to bringing biomimicry into their disciplines. We hope your journey will be exciting and rewarding.

This unique biomimicry program is designed for working professionals who want to make the practice of biomimicry central to their career. Our coursework is designed to help you learn the tools of biomimicry and find ways to apply your existing disciplinary knowledge to the practice and advancement of biomimicry.

There is a rapidly growing demand for biomimicry practitioners. We have designed our programs with the goal of graduating world-class professional practitioners.

Graduates of the Biomimicry Certificate can expect to be able to:

- Integrate biomimicry thinking into a sphere-specific opportunity resulting in biomimetic outcomes
- Apply Life's Principles to specific needs within your sphere
- Facilitate the integration of biology into design within your sphere using biomimicry thinking
- Guide processes in your sphere towards sustainability
- Interpret observations in nature with a functional lens for design applications
- Abstract design principles from biological observations for application to your sphere
- Communicate effectively through verbal and visual means how the process of biomimicry works in your sphere
- Initiate or transform one's practice to specialize in biomimicry
- Engage and lead others within your current company/organization to begin practicing biomimicry

Graduates of the MS program will additionally be qualified to do all of the above, independent of application, as well as:

- Lead in-house implementation of biomimicry across a variety of applications;
- Initiate or transform a consulting practice in the field of biomimicry;
- Incorporate biomimicry into education for the next generation of biomimics;
- Develop innovative and sustainable solutions to the most pressing global challenges.

We expect graduates from the program to transform the ways in which we conduct business, design buildings and products, run governments, provide healthcare, manufacture goods, grow food and educate future generations. We are thrilled this is a path you've chosen.

# **Purpose of the Handbook**

This Handbook is a very important guide for graduate students admitted to the Master of Science (MS) in Biomimicry and the Graduate Certificate in Biomimicry programs.

This handbook serves as an initial resource for answers to common questions; however, students are also encouraged to consult with the graduate program coordinator in the School of Life Sciences or the program contact from the Biomimicry Center. The primary reference for graduate students on rules and regulations is the Arizona State University (ASU) Academic Catalog. Each student should become familiar with the Academic Catalog and the ASU Graduate College website and policies.

Current BMY graduate students are added to an email list to receive important information about deadlines, scholarships, jobs, workshops, and events. Students who are not receiving emails should contact biomimicry@asu.edu to be added to the list.

The policies listed in this handbook are from ASU Graduate College, the School of Life Sciences, and the Biomimicry Center. The handbook is updated annually.

# What you need to know before your first day:

## **Overarching University Policies**

The policies outlined below are those consistent across ASU, ASU Online, the Graduate College, The Biomimicry Center, and the School of Life Sciences.

#### **Graduate College Handbook**

The Graduate College oversees all graduate programs and upholds university rules and policies. All graduate students are responsible for familiarizing themselves with these policies in addition to specific academic unit policies. The <u>ASU Graduate Policies and Procedures</u> guide cover all university-level requirements.

#### **Professional Ethics**

As a graduate student, you have joined a larger community that is engaged in the scientific quest for truth, thus committing yourself to an honest, ethical, and cooperative style of learning and inquiry. You represent the university in this community in many ways. Please consider that responsibility in your conduct. All your work, including research and courses, must be original, accurate, and documented, and must reflect individual effort and integrity.

#### **Culture of Respect**

ASU is a community and a professional work environment. Graduate students are expected to treat their peers, teachers, students, staff, and members of the ASU community with respect and work with them in a professional manner. Biomimicry graduate students are representatives of the School of Life Sciences, the Biomimicry Center, and the University; The Biomimicry Center expects its students will be good representatives who recognize that poor behavior on the part of one student impacts all by creating a negative perception of the School, the Center, and the University.

#### **Academic Integrity**

Integrity is a character-driven commitment to honesty, doing what is right, and guiding others to do what is right. Arizona State University students and faculty are expected to act with integrity in their educational pursuits.

The Biomimicry Graduate Programs, SOLS, and ASU maintain a zero tolerance policy regarding academic dishonesty and academic integrity violations. Students caught in acts of academic dishonesty as described below will face immediate dismissal from the program.

The ASU student <u>academic integrity policy</u> lists violations in detail. These violations fall into five broad areas that include but are not limited to:

- Plagiarism using another's words, ideas, materials or work without properly acknowledging and documenting the source.
- Cheating on academic evaluation or assignment.
- Academic deceit, such as fabricating data or information.
- Falsifying academic work, research or records.
- Aiding academic integrity policy violations and inappropriately collaborating.

#### Other consequences of non-compliance can be significant, including:

- Reduced or failing grade for an assignment or course
- An "XE" grade which is usually permanent on the student's official transcript with the notation "failure due to academic dishonesty."
- Federal granting agencies have barred grant applicants who violated academic integrity standards from receiving grants or sitting on panels for up to three years.

 Expulsion or temporary removal from a major or program of study within an ASU school or college.

Serious violations can result in the revocation of a degree several years after it was granted. The pressure to finish a degree may be intense but it can't be as hard as picking up the pieces of your life when you are stripped of a degree that you worked hard and long to earn.

Additional information can be found in the ASU <u>"Student Academic Integrity Policy"</u> manual. Students are responsible for knowing the rules governing academic and research dishonesty.

#### Following the Academic Integrity Policy and Avoiding Violations

Academic integrity is a fundamental value because violations of it cause real harm to real people. Protecting the ASU community from this harm is everyone's responsibility.

- Students who suspect a policy violation are encouraged to discuss their concerns with their course instructor or academic advisor.
- Faculty, Teaching Assistants, and instructors are expected to address all violations of the ASU Academic Integrity Policy. Student Rights and Responsibilities

Guided by ASU's commitment to excellence, access, and impact, the Office of Student Rights and Responsibilities (SRR) supports a safe and inclusive environment that fosters the intellectual, personal, social, ethical development of all students. In partnership with university departments and programs, we help students see themselves as responsible members of a diverse community. SRR provides students with the opportunity to consider the ways in which their conduct may define and impact their college experience-personally and in relationship with others.

SRR investigates allegations of student misconduct and determines whether a violation of the <u>Student Code of Conduct</u> has occurred. Students who are found responsible for violations of the Student Code of Conduct are encouraged to reflect on their behavior through the use of educationally based sanctioning that assists the students in making informed choices and developing in a holistic manner.

For more information about SRR and FAQs for students and parents, please visit: <a href="https://eoss.asu.edu/dos/srr">https://eoss.asu.edu/dos/srr</a>

#### **Student Responsibility**

It is the responsibility of each student to understand and observe all procedures and requirements specified by the ASU Graduate College, the School of Life Sciences, and the Biomimicry Center. It is a requirement for all students to read and understand the Graduate Handbook and the ASU Academic Catalog as well as adhere to the Student

<u>Code of Conduct.</u> Faculty and staff provide academic advice and assistance; however, the ultimate responsibility for meeting degree and other requirements remains with the student. Students should frequently check their MyASU account. All ASU students are required to have an active ASU email.

#### **ASU Email**

Students may forward their ASU email to another preferred account. It is important that students check the ASU email account at least once per week, so they do not miss important notices. Arizona State University, SOLS, and the Biomimicry Center conduct their business via ASU email only.

#### **Student Code of Conduct**

The aim of education is the intellectual, personal, social, and ethical development of the individual. The educational process is ideally conducted in an environment that encourages reasoned discourse, intellectual honesty, openness to constructive change, and respect for the rights of all individuals. Self-discipline and respect for the rights of others in the university community are necessary for the fulfillment of such goals. The Student Code of Conduct is designed to promote this environment at Arizona State University.

The Student Code of Conduct sets forth the standards of conduct expected of students who choose to join the university community. Students who violate these standards will be subject to disciplinary sanctions in order to promote their own personal development, to protect the university community, and to maintain order and stability on campus.

All Students are expected to adhere to the <u>Student Code of Conduct</u>.

#### **Sexual Harassment**

Sexual Harassment is defined as unwelcome behavior of a sexual nature that reasonably interferes with the working/learning environment and creates a hostile, intimidating, or offensive environment or takes the form of seeking sexual favors in exchange for a promise of a benefit or a threat of a penalty. Sexual harassment is a violation of ASU policy as well as a state and federal law. More information about this policy is available at https://sexualviolenceprevention.asu.edu/.

#### **Title IX Compliance**

<u>Title IX of the Education Amendments of 1972</u> protects individuals from discrimination based on sex in any educational program or activity operated by recipients of federal financial assistance. Sexual harassment, which includes acts of sexual violence, is a form of sex discrimination prohibited by Title IX. ASU does not discriminate on the basis of sex in the employment, education programs or activities it operates. ASU is committed to providing an environment free from discrimination based on sex and provides a number of resources and

services to assist students, faculty, and staff in addressing issues involving sex discrimination, including sexual violence. For more details regarding Title IX, visit: <a href="https://cfo.asu.edu/titleIX">https://cfo.asu.edu/titleIX</a>

#### **Religious Beliefs and Practices**

No employee, agent, or institution under the jurisdiction of the Arizona Board of Regents shall discriminate or retaliate against any student, employee, or other individuals because of an individual's religious belief or practice or an absence thereof. Furthermore, administrators and faculty members must reasonably accommodate individual religious practices. A refusal to accommodate is justified only when undue hardship would result from each available alternative of reasonable accommodation. No administrator or faculty member shall retaliate or otherwise discriminate against any student, employee, or prospective employee because that individual sought a religious accommodation pursuant to this policy. More information is available at <a href="https://cfo.asu.edu/equity-and-inclusion">https://cfo.asu.edu/equity-and-inclusion</a>.

#### **ASU Social Media Training & Guidelines for Students**

ASU is an innovative, technologically advanced University and its students are encouraged to use all forms of communication — including social media — to better themselves and their communities. The messages we share on social media can have a powerful impact on our lives and the lives of others.

In the use of social media and all types of communication, we follow the Code of Conduct and the Sun Devil Way

- The ASU Code of Conduct encourages "self-discipline and a respect for the rights of others in the university community."
- The Sun Devil Way encourages achievement, engagement, and responsibility in our educational endeavors.

Our university is part of a diverse, global community that includes people of varying backgrounds and belief systems; varying ethnicities and national origin; and varying sexual orientation. Part of your educational experience is to seek to understand people different than yourself and to have respect and empathy for them as fellow human beings. This need for respect and empathy extends to the way we communicate, especially on social media.

The university is also where you will begin to build your public and professional reputation and persona. The way you communicate and conduct yourself on social media can have a lasting impact — positive or negative — on your social, academic, and professional life. You should always think through the consequences of the messages you post. At this point you will be looked upon as an adult, making adult decisions with adult consequences.

You will hear much more about this subject in orientation, classes, and job/career training. But here are a few simple guidelines to consider right now:

• Take your time. Think things through. Impulsively posting messages is never a good idea. Pause to reflect on the possible impact of what you are going to post.

- Think about the effect on others. How would you feel if the things you posted were said about you? In everything we do, including our communication, we should consider how our actions will impact others, including ourselves, our family members, our colleagues, and members of our community. Social media has a tremendous capacity to build up or to tear down. Think about how you will use it.
- Remember privacy is elusive. People have often posted regrettable material on social media platforms because they thought they were only posting to a small group of friends or even to one person, only to learn that "privacy" in electronic media is never guaranteed. Consider the consequences if your "private" messages were revealed to the public.
- Be careful when you are not at your best. If your capacity to make good decisions is impaired in any way — by drugs or alcohol, stress, or emotional strain, be very careful with social media. Seek help and support from trusted sources before posting something you might regret. On the other hand, do not feel bad about asking for help and support through social media.
- Don't feel pressured to post. At times you might feel like you are missing out or not accepted by your peers if you don't engage with them on social media. But it is OK to take a break or opt out of certain conversations or activities if you feel they might impact you negatively. True friends will support that kind of decision.
- Get connected. Social media is a great way to learn about and connect with new people and communities. Search out those people and groups that you want to learn more about and connect with them. You can use social media to better understand a subject you're interested in or to explore your interests, creative endeavors, and career goals.
- Move ahead. Social media can be both a help and a hindrance to advancing your career. Many potential employers will look you up online and review your social media accounts before making a hiring decision. Think about the impression your digital footprint will make on them.
- When things go wrong. Inevitably you will post something you regret. The consequences can range from mild to very serious. There are people here at ASU that can help you deal with these issues. Reach out to a trusted teacher, adviser or to one of ASU's student advocates or counselors for help and advice.

## **Biomimicry at ASU**

Biomimicry is a discipline that seeks to emulate nature's strategies and principles to create sustainable solutions to human challenges. By asking the question: "How would nature do this?", biomimics around the world are creating products, processes, companies, and policies that are well adapted to life on earth over the long haul. Examples include turbine blades designed like whale fins to reduce drag and stronger fiber optics produced like sea sponges. (See seven more examples explained on Mother Nature Network.)

Humans have turned to nature for inspiration and solutions for a long time. But a formal methodology—drawing on peer-reviewed biological research—has only evolved over the last several decades. Following the publication of her seminal 1997 book *Biomimicry: Innovation Inspired by Nature*, Janine Benyus and Dr. Dayna Baumeister created the Biomimicry Guild, which formalized the practice of biomimicry as a methodical tool for innovating sustainability solutions.

As demand grew for biomimicry education and consulting, Benyus and Baumeister founded the nonprofit Biomimicry Institute and the innovation firm Biomimicry 3.8, which has worked with notable clients like Interface, HOK, Nike and Coca-Cola.

ASU's involvement with biomimicry started taking shape in Fall 2008 when InnovationSpace Co-Director Adelheid Fischer began incorporating principles and methodologies of biomimicry into the program's curriculum.

InnovationSpace is an entrepreneurial joint venture among the Herberger Institute for Design and the Arts, Ira A. Fulton School of Engineering, W. P. Carey School of Business and School of Sustainability at ASU. The goal of InnovationSpace's transdisciplinary education and research lab is to teach students how to develop product-service systems that create market value while serving real societal needs and minimizing impacts on the environment. InnovationSpace has collaborated on product concepts with corporations including Herman Miller, Intel, P&G, and Dow Corning, and with other ASU research centers like the Center for Cognitive Ubiquitous Computing, the Center for Nanotechnology in Society and the Flexible Display Center.

Fischer, along with InnovationSpace Director Prasad Boradkar and Ph.D. students from ASU's School of Life Sciences worked closely with the biomimicry institute in developing educational materials to teach biomimicry to undergraduate students in design, business, and engineering. In 2010, ASU became the first U.S. affiliate institution of The Biomimicry Institute, an agreement that laid the groundwork for the joint development of biomimicry-based courses

and other educational opportunities. At this time, Fischer was named Biomimicry Fellow by the institute.

In 2013, a team including Boradkar and Baumeister proposed the creation of the Biomimicry Center at ASU, which would naturally align with the eight design aspirations of the New American University as outlined by university president Dr. Michael Crow. The Biomimicry Center is a joint initiative of ASU and Biomimicry 3.8. Former ASU Provost, Dr. Robert Page, provided support for this initiative and led a university-wide effort to raise funds for the new center.

The proposal was approved in spring 2014 with funding from several units across campus including the Herberger Institute for Design and the Arts, College of Liberal Arts and Sciences, School of Sustainability, W.P. Carey School of Business, and the Ira A. Fulton Schools of Engineering, as well as the Provost's Office and the Office of Knowledge and Enterprise Development.

#### Biomimicry and the School of Life Sciences

The Biomimicry Center has partnered with the School of Life Sciences (SoLS) to offer the Biomimicry graduate certificate and the Master of Science degree. These programs are offered through SoLS because of the critical role that biology plays in biomimicry. While it is an emerging discipline in its own right, while simultaneously thriving in the inter- and transdisciplinary space, without the field of biology and the knowledge about the life sciences, biomimicry could not be practiced. Additionally, the integrity of the science behind the biology from which biomimics draw inspiration is fundamental to the successful implementation of bio-inspired ideas. Through our partnership with SoLS, we strengthen our commitment to the science and the faculty and researchers in the biological sciences.

For more information about the School of Life Sciences, visit: https://sols.asu.edu/

## **Overview of the Biomimicry Programs**

The online Master of Science (MS) in Biomimicry Degree at ASU and the Graduate Certificate are the first of their kind in biomimicry, an emerging discipline that seeks to apply life's strategies to human design. Both are offered through ASU's School of Life Sciences, ASUOnline, the Biomimicry Center at ASU and by the leadership of Biomimicry 3.8 – a globally-recognized social enterprise in the field of biomimicry. The MS also complements the Certified Biomimicry Professional program and the certificate in Biomimicry Specialist program, offered by Biomimicry 3.8.

The programs are designed for working professionals who want to make the practice of biomimicry central to their careers, most of which include the fields of biology, design, business, and engineering. Applicants to the program typically are **not** interested in additional graduate work in their primary disciplines. Instead, students are looking for the opportunity to apply their existing disciplinary knowledge to the practice and advancement of biomimicry.

Through these degree programs, you will learn the methodology and practice of the discipline and how to facilitate its application across a wide variety of applications. The biomimicry programs are ideal if you are interested in innovative, transdisciplinary learning and the opportunity to work with students from around the globe to advance the field and develop sustainable, real-world applications. You will also apply the fundamentals of your training during a series of practicums, including a self-designed "Biomimicry Virtual Design Lab."

Because of the practical application emphasis of the program, you will benefit the most from your training with at least a 3–4 years of experience after your undergraduate degree. Others who have studied biomimicry have applied their knowledge globally in areas like sustainability, transportation, business, product design, architecture, economics, and nonprofit ventures.

The Biomimicry Center website is a great resource for information. <a href="http://biomimicry.asu.edu">http://biomimicry.asu.edu</a>

Additional biomimicry MS program information is on the School of Life Sciences website: <a href="https://sols.asu.edu/graduate/biomimicry-online-masters-science">https://sols.asu.edu/graduate/biomimicry-online-masters-science</a>

#### **Organization and Administration of Programs**

The Directors of the Biomimicry Center and the Directors of the School of Life Sciences (SOLS) are the representatives to the administration and are responsible for implementing university policies. Although the Directors have final authority on many issues, students are encouraged to consult with program coordinators first about procedures and policies.

#### **Amina Hajdarovic**

Graduate Program Coordinator for the School of Life Sciences (SOLS)
Please contact Amina for all questions regarding your program, after you have been accepted.
<a href="mailto:ahajdaro@asu.edu">ahajdaro@asu.edu</a>
480-965-0386

#### **Mary Kivioja**

Manager of the Biomimicry Center Please contact Mary for information regarding your application and about our scholarships. <a href="mailto:Mary.Kivioja@asu.edu">Mary.Kivioja@asu.edu</a> (480)727-0478

#### **Dayna Baumeister**

Co-Director of the Biomimicry Center Biomimicry Education Program Director Professor of Practice, School of Life Sciences Partner, Biomimicry 3.8 Dayna.Baumeister@asu.edu

#### **Emilia Martins**

Professor and Assistant Director Graduate Programs School of Life Sciences Emilia.Martins@asu.edu

#### **ASU Online Contacts**

#### **General Inquiries**

Email: <u>asuonline@asu.edu</u> Phone: (480) 884-1525

#### **Student Support Coordinator ASU Online**

Phone: 480-884-1969

## Graduate Admissions gograd@asu.edu (480)965-6113

Graduate College grad-gps@asu.edu (480)965-3521

#### **Student Success Teams**

**Enrollment Counselors:** Finding the best program for your goals, application assistance, guidance and updates throughout the admissions process, and preparing you for your first day of classes. Request Info at <a href="mailto:asu.edu/become-student/admission">asu.edu/become-student/admission</a>

**Academic Advisors:** Course scheduling, requirements for majors and certificates, staying on track to graduate, academic policies, and transferable credits. To connect, visit: My ASU > eAdvisor > Advising or <a href="http://asuonline.asu.edu/become-student/academic-advising">http://asuonline.asu.edu/become-student/academic-advising</a>

**Success Coach:** identify and overcome obstacles, navigate ASU resources, short-term and long-term planning, strengths-based approach, and personal connection to ASU. To connect with your coach, visit: My ASU > eAdvisor > Success Coaching

#### **Social Media Connections**

We are working on creating a way that students can connect with each other through a platform that works for everyone but for now, check out the <u>Biomimicry Center Facebook page</u> as well as the group page created by <u>alumni</u> of the programs. You can also follow us on Twitter. Please follow ASU's social media guidelines when communicating with other via social media. These guidelines can be found here: <a href="https://eoss.asu.edu/dos/srr/SocialNetworkingGuidelines">https://eoss.asu.edu/dos/srr/SocialNetworkingGuidelines</a>

Twitter: @BiomimicryASU

**Biomimicry Watering Hole:** All students upon enrollment are registered in a course called Biomimicry Watering Hole. Here you will find a link to the watering hole which serves as our virtual "student lounge". There you can find information and updates about the program from program staff, as well as biomimicry in the news, and opportunities to network with fellow students.

## **Admissions**

## **Admission types**

- Regular Admission Applicant satisfies all requirements for admission and is academically acceptable to both the degree program and the Graduate College.
- Conditional Admission Applicant's grades and test scores are at an acceptable level but the applicant does not have the academic background expected by the degree program and the university. Required deficiency courses are taken and monitored by

the Graduate College and SOLS. Required courses are BMY 501, 502, 503, and 504 which can be taken in any order with the exception of BMY 501 which must be taken in the first semester. All four courses need to be taken within three semesters of continuous enrollment and the student must receive at least an A- in 502, 503 and 504. Students who do not meet the provisions in the required timeframe will be withdrawn from the program. Students who meet the provisions will have their admissions status updated to regular admission.

#### **Defer Admission**

Applicants must register and enroll in courses in the semester they applied to. To change the starting semester, the student must notify The Biomimicry Center, <a href="mary.kivioja@asu.edu">mary.kivioja@asu.edu</a> and request the change through their myASU page. The only opportunity to change the starting semester, without a fee, is <a href="mary.before">before</a> the student is officially accepted into the program.

#### **Enrollment Verification Guidelines for Graduate Students**

These are federally established rates, relevant for financial aid considerations.

	Fall & Spring	Summer
Full Time	9+ credit hours	3+ credit hours
¾ Time	7-8 credit hours	
Half Time	5-6 credit hours	2 credit hours
Less than half time	1-4 credit hours	1 credit hour

#### Research and Teaching Assistants

For fall and spring semesters, research and teaching assistants must be enrolled in at least six credit hours to be considered full time. For summer sessions they must be enrolled in at least two credit hours to be considered full time and one credit hour to be considered half time.

#### Financial Aid Recipients

Full-time and half-time credit requirements may be different for financial aid disbursement purposes. Please review the <u>Award Disbursement Rules</u> to determine the required enrolled hours needed for financial aid disbursement.

#### **Late Registration**

Registering for any class after the <u>deadline</u> requires approval from the college or school offering the course and is an exception to university policy. There is no guarantee that a late request will be approved.

Courses for which the deadline to register has passed are marked in the schedule of classes by a red "add" button.

When this button is selected, students are directed to a page that prompts them to select the appropriate link for the college offering the course. The link connects the student to a customized page with step-by-step instructions on how to request a late add for that particular course. Policies and procedures vary by college/school. See the list below for detailed information and instructions.

For specific policies and instructions on late registration, visit: https://students.asu.edu/lateregistration/graduate https://students.asu.edu/lateregistration/clas

# **Program Content**

## **Faculty**

Faculty members have significant expertise in many of the most important challenges that society faces. Many members of the faculty bring considerable industrial experience to bear on their teaching and research. Some of the following faculty teach the BMY courses, whereas others are available to serve on practicum committees.

#### Karen Allen, MS

Faculty Associate (biology), SOLS

#### **Laurel Anderson**, MBA

Associate Professor (business), W.P. Carey School of Business

#### **Zeynep Arhon**, MBA

Faculty Associate (business), SOLS

#### **Dayna Baumeister, PhD**

Co-Director of the Biomimicry Center, Professor of Practice (biomimicry), SOLS

#### **Thomas Baumeister, PhD**

Faculty Associate (conservation psychology & biology), SOLS

#### **Marie Bourgeois**, MEng

Faculty Associate (engineering), SOLS

#### Michelle Fehler, MS

Lecturer, The Design School, and Faculty Associate, SOLS

#### Jennifer Fewell, PhD

President's Professor, SOLS

#### **Tirupalavanam Ganesh, PhD**

Associate Research Professor (engineering & education), Ira A. Fulton Schools of Engineering

#### Seth GaleWyrick, MS

Faculty Associate (engineering), SOLS

#### **Erin Rovalo, MS**

Faculty Associate (design), SOLS

#### Ted Pavlic, PhD

Assistant Professor (engineering), School of Sustainability

The following faculty have participated in a Biomimicry Immersion Workshop and have in some way incorporated biomimicry into their research and teaching at ASU.

Hanna Breetz - South Africa 2015

Steven Trimble - South Africa 2015

James Scott Reeves - Arizona 2016

Rhett Trujillo - Montana 2017

Shirley Ann Behravesh - Montana 2017

Konrad Rykaczewski - Arizona 201

Prasad Boradkar - South Africa 2015

Molina Walters - California 2017

Adelheid Fischer - California 2015

Juergen Gadau - Costa Rica 2014

Ted Pavlic - Costa Rica 2014

Michelle Fehler - Costa Rica 2014

Clint Penick - Georgia 2017

**Dhruv Bhate** - Georgia 2017

Christine Lee - Georgia 2017

#### Course Information – Graduate Certificate

#### 15 credit hours including the required capstone course BMY 530

BMY 501 Essentials of Biomimicry (1)

BMY 502 Life's Principles (4)

BMY 503 Biology Taught Functionally (4)

BMY 504 Biomimicry Thinking (4)

BMY 530 Virtual Design Lab Practicum (2) (to be taken last)

Total required credit hours: 15 credits

## **Course Information – Master's Degree**

#### **Required Core Courses (13 credit hours)**

BMY 501 Essentials of Biomimicry (1)

BMY 502 Life's Principles (4)

BMY 503 Biology Taught Functionally (4)

BMY 504 Biomimicry Thinking (4)

#### **Elective Courses (11 credit hours)**

BMY 511 Biomimicry and Design (3)

BMY 512 Biomimicry and Engineering (3)

BMY 516 Biomimicry and Business (3)

Note: you must choose at least two courses of 511, 512, and 516.

BMY 517 Human-Nature Connection (2)

BMY 598 Biomimicry Ethos (1)

BMY 598 Topic: iSites (1)

BMY 598 Topic: Communicating Biomimicry (1)

BMY 598 Topic: Facilitating Biomimicry (1)

BMY 598 Topic: Teaching Biomimicry (1)

#### Other Requirements: Practicum Courses (6 credit hours; choose 3):

BMY 530 Virtual Design Lab Practicum (2)

BMY 580 Topic: BioBrainstorm Practicum (2)

BMY 580 Topic: Biomimicry Case Study Practicum (2)

BMY 580 Topic: Biomimicry Genius of Place Practicum (2)

#### **Culminating Experience**

Portfolio (see <u>Digication Portfolio</u> information below on pg. 38)

Total required credit hours: minimum of 30 credits

## **Course Descriptions**

#### Essentials of Biomimicry BMY 501 | 1 Credit

The Essentials of Biomimicry is a one-quarter class (7.5 weeks) offered as an introductory sampler to the various topics (discipline, emulate, ethos, (re)connect & iSites, human-nature connection, Biomimicry Thinking, and Life's Principles) within the discipline of biomimicry. Each week is devoted to a specific topic and is led by a different instructor. The course is intended to provide a basic overview of each aspect of the discipline with ample opportunity for conversation and dialogue around the specific components.

Faculty: Baumeister, D., Arhon, Rovalo, Baumeister, T.

#### **Life's Principles** BMY 502 | 4 Credits

Life's Principles are nature's universal design guidelines based on 3.8 billion years of successful strategies across all life. This 15-week online course takes participants on a deep dive of Life's Principles. It includes the review and study of life's operating conditions on Earth, the six primary principles, and their related sub-principles. This course gives participants the knowledge necessary to bring these design guidelines into practice and provides the opportunity to integrate them into one's discipline.

Faculty: Baumeister, D.

#### **Biology Taught Functionally BMY 503 | 4 Credits**

Biomimicry teaches biology through the lens of function, thereby providing a core understanding in biology for all students, no matter their background. This 15-week course explores how biologists gather and research information and how that knowledge can inform other disciplines. It also introduces the art of translating biological concepts into strategies for application, which is then carried throughout all the courses. You will learn how to work with biologists on a biomimicry team and how to weave biology and biomimicry together. You will learn to look at nature through the function lens, and how to identify subject matter experts needed for interdisciplinary teams.

Faculty: Allen, K.

#### **Biomimicry Thinking BMY 504 | 4 Credits**

Biomimicry Thinking is the practice of biomimicry from a methodology-based approach. This 12-week exploration into the Biomimicry methodology reviews how biology and biomimicry can be incorporated into the four major phases of any design process: scoping, discovering, creating, and evaluation. It introduces the art of translating biological concepts into strategies for application and building a taxonomy of design principles. The course includes a practicing

tools component and a final multi-week group project.

Faculty: Baumeister, D.

#### **Biomimicry Virtual Design Lab** BMY 530 | 2 Credits

This practicum is designed to allow participants to dive deep into the biomimicry tools and resources presented during the program and to apply them selectively to a specific and unique opportunity of the student's choosing. Projects should have a meaningful outcome achievable within the semester and should engage the scoping, discovering, creating and evaluation phases of Biomimicry Thinking. Deliverables are milestone-based, and the final deliverable should have application in a real-world setting.

Faculty: Fehler, Baumeister, D. (advisory)

#### **Biomimicry and Design** BMY 511 | 3 Credits

The Biomimicry and Design course will prepare participants to design sustainable innovations using the biomimicry philosophy and methodology. Participants will complete a 15-week series of lectures and assignments to demystify the design thinking process, understand how to harness the potential of approaching challenges with a design mind, distill a design challenge, understand user needs, build a bridge between biology and design, use a methodology for discovering models from nature, abstract design principles from bio-inspired strategies, and translate those principles into sustainable innovations. The course is not designed to teach one how to be a designer per se, but rather how the discipline works in order to facilitate the involvement of designers into the practice of biomimicry. Faculty: Royalo, E.

#### **Biomimicry and Engineering BMY 512 | 3 Credits**

Biomimicry and Engineering will prepare participants to understand the field of engineering, identify the types of engineers and what each does, what constraints engineers work under, materials selected by engineers, how to present biological ideas to engineers and how to integrate ideas from their discipline into sustainable engineering designs using biomimicry principles. The course is not designed to teach one how to be an engineer, but rather how the discipline works in order to facilitate the involvement of engineers in the practice of biomimicry. A final team project designed to put these ideas into practice is required. Faculty: Bourgeois, M., GaleWyrick, S.

## **Biomimicry and Business** BMY 516 | 3 Credits

BMY 516 is an elective course for students who are interested in applying biomimicry in business in order to generate process- and system-level change. The course addresses business topics from a biomimicry point of view; it challenges students to question the conventional ways of conducting business and come up with new approaches based on nature's strategies. Content focuses on the "design of business" rather than product design. Learning from nature how to innovate and collaborate, assessing and improving existing

business models with Life's Principles, and Open Innovation are examples of topics covered. Faculty: Arhon, Z.

#### **Human-Nature Connection** BMY 517 | 2 Credits

This 15-week course seeks to ground the emerging discipline of biomimicry as a continuation of our ancestral connection with nature. Human-Nature Connection engages participants in an exploration of the meaning and value of connecting with nature. Topics include defining humans, nature, and our connection with nature; establishing the evolutionary, personal, and sociocultural influences on the different expressions of this connection; and illustrating the relevance of biomimicry to the human-nature connection.

Faculty: Baumeister, T.

#### **Biomimicry Ethos** BMY 598 | 1 Credit

Biomimicry offers us a way to (re)examine our relationship with the natural world of which we are a part of, and encourages us to commit to a more harmonious and sustainable way of living on this planet. The 7.5-week course explores the natural pathway that leads from experiencing and understanding life, connecting with life, to committing to care for life. Drawing from diverse academic disciplines as well as various social practices, the course provides practitioners with tangible approaches to care for non-human biological life on the basis of respect and gratitude. Through guided inquiry, analysis, critique, and reflection, participants develop and express a rational justification for our obligations to life-based on how the practice of biomimicry embodies and advances the core tenets of sustainability. Faculty: Baumeister, T.

#### Topic: iSites BMY 598 | 1 Credit

The iSites: Biomimetic Nature Journaling course offers a kick-start to the lifelong practice of nature journaling with a biomimetic intention. Tutorials for becoming a biomimetic nature journalist include drawing techniques, materials selection, and development of observation skills. A series of nature journaling assignments are designed to offer a variety of approaches to nature journaling while also requiring that getting outside and into the natural world becomes a very comfortable experience and a source of inspiration. It is important to understand that this course will require going outside for 30 minutes on a daily basis for the 7.5 weeks of the course and participants should plan accordingly. Faculty: Rovalo, E.

## **Topic: Communicating Biomimicry** BMY 598 | 1 Credit

The ability to articulate the practice and potential of biomimicry to a wide variety of audiences across many disciplines, venues, and situations is a critical skill for a biomimic. This course develops this skill through a wide variety of exercises, training, and feedback. Students will learn how to develop visual, written, and auditory presentations and how to customize those for different kinds of audiences and situations, including cross-disciplinary applications and public and organization-specific settings. Students will assemble course deliverables into a

portfolio demonstrating their communication skills.

Faculty: Baumeister, D.

#### **Topic: Teaching Biomimicry** BMY 530 | 1 Credit

The ability to teach the practice of biomimicry to a wide variety of audiences across many disciplines, venues, and situations is a critical skill set. The Teaching Biomimicry course develops these skills through a wide variety of exercises, training, and feedback. Students learn how to create and execute meaningful learning experiences in biomimicry. Students will assemble course deliverables into a portfolio demonstrating their teaching skills. The course is structured more heavily towards feedback rather than lectures.

Faculty: Baumeister, D.

#### **Topic: Facilitating Biomimicry** BMY 598 | 1 Credit

The ability to facilitate the practice of biomimicry to a wide variety of audiences across many disciplines, venues, and situations is a critical skill set for a biomimic. This course develops these skills through an applied scenario with supportive feedback. Students will learn how to facilitate the implementation of biomimicry within an organization of their choice. Students will assemble course deliverables into a portfolio demonstrating their facilitating skills. Faculty: Baumeister, D.

#### **Topic: Book Club** BMY 591 | 1 Credit Seminar

Optional 1 credit course that is designed to specifically help students who are required to be enrolled in 5 credits per semester for financial aid reasons. Structured like an online book club. Reading and analyzing books to then work collaboratively to write a synopsis. This course is open to anyone who is interested, however, it will <u>not</u> count toward the 30 minimum credits to complete the program.

Faculty: rotating

#### **Biomimicry Case Study Practicum** BMY 580 | 2 Credits

This practicum is designed to allow participants to dive deep into the business case for biomimicry, by doing an in-depth case study analysis of a specific biomimicry example. Each individual will identify, research, and write up a case study from the business perspective. At the conclusion of the practicum and the receipt of everyone's final and polished version, we will compile these case studies for a specific release in a format TBD.

Faculty: Arhon, Z.

#### **BioBrainstorm Practicum BMY 580 | 2 Credits**

This practicum is designed to allow participants to dive deep into the specific biomimicry tools and techniques of a BioBrainstorm. Working in teams, each team will identify a challenge, discover relevant strategies from the biological literature, interpret and translate the scientific information including creating illustrative graphics, summarize the findings, build a taxonomy, and learn how to present the information in a biomimicry context so that it is relevant to

#### **Biomimicry Genius of Place Practicum BMY 580 | 2 Credits**

This practicum is designed to allow participants to dive deep into the specific biomimicry tools and techniques of a Genius Place. During the 15-week period, each team will identify a biome of interest, research place-specific strategies from the biological literature for that biome, interpret and translate the scientific information including creating illustrative graphics, summarize the findings, build a taxonomy, and learn how to present the information in a biomimicry context so that it is relevant to place-based design.

Faculty: Bourgeois, M.

## Plan of Study (iPOS)

The <u>interactive plan of study</u> (iPOS) is the student's official contract between the department and the university. It lists all the classes the student plans to take to complete the degree and indicates who is on the student's supervisory committee. The academic unit's graduate support staff should be the primary contact regarding iPOS and degree requirements. It contains certain degree requirements such as core and elective coursework, as well as, a culminating experience that must be included before it can be approved. *Your advisory committee should consist of the faculty of each of your practicums, plus Dayna Baumeister.* 

While completing the iPOS, keep in mind that this is a "plan" for completing Program requirements and changes, most likely, will need to be made in future semesters.

The iPOS is completed through the online system called the Interactive Plan of Study accessed through MyASU. Revisions to the iPOS are easily made online and should be made each semester if needed. You can access your iPOS by visiting your My ASU > My Programs and Degree Progress > iPOS > Graduate Interactive Plan of Study (iPOS).



The Graduate College offers many tools to assist you with completing your graduate program. At the link below you will find a few helpful guides that will assist you with using these tools. There is a link that provides step-by-step instructions on how to submit your iPOS.

https://graduate.asu.edu/current-students/completing-your-degree/how-guides

The Biomimicry Center requires that students file an iPOS no later than the end of your second semester. A student is not eligible to apply for graduation without an approved iPOS.

After filling out the iPOS online, please inform the SOLS graduate program office that you have completed your iPOS so we can go in and look through the iPOS and send it to the Director for approval. If there are changes that need to be made we will email you with instructions on what to do.

Students should check the iPOS each semester. If you have a change in plans, or if the computer system identifies errors, update your iPOS. To update an iPOS, submit a Course Change request in the my.asu.edu online system. Students can remove courses not taken from the iPOS and/or add courses taken that were not originally listed on the iPOS.

#### **Duration of Program**

Full-time graduate students could aim to finish a master's program within 5 semesters (about 2 years). However, the program is designed for working professionals, who likely will be taking just 3–4 credits/semester. In this latter case, you can expect up to 10 semesters (3 ½ years) to graduate. You have six years to complete your MS degree.

Students pursuing the Graduate Certificate can expect to finish in as few as three semesters (including summer), taking one class per semester, but if continuously enrolled may take up to five semesters.

#### **Recommended Plan of Study for Graduate Certificate**

The following is more specific information regarding the recommended (and in some cases required) ordering and timing of courses. This information should be taken into consideration when building an iPOS. Under current policy, these are the only courses open to Certificate students.

BMY 501 This course should be taken first, ideally before all other courses, but co-enrollment with BMY 502, BMY 503 and BMY 504 is possible.

BMY 502, BMY 503, and BMY 504 These courses can be taken in any order depending on when you begin your studies at ASUOnline. We recommend taking these courses in sequential semesters.

BMY 530 For graduate certificate students, completion of BMY 501, 502, 503, and 504 is required before enrolling in BMY 530 (VDL) (this is your culminating class). You can petition for co-enrollment in 530 and your final course, but only in extenuating circumstances will an exception be granted.

#### Recommended Plan of Study for a Master's degree

The following is more specific information regarding the recommended (and in some cases required) ordering and timing of courses. This information should be taken into consideration when building your iPOS. Please note that the classes are scheduled to accommodate part-time enrollment. We encourage people to complete their studies at a half-time basis in order to experience the highest quality the program has to offer. You are allowed to move along faster, however, each course, with the exception of BMY 530, is offered only once a year.

BMY 501 This course should be taken first, ideally before all other courses, but co-enrollment with BMY 502, BMY 503 and BMY 504 is possible.

BMY 502, BMY 503, and BMY 504 These courses can be taken in any order depending on when you begin your studies at ASUOnline. However, we highly recommend that these courses be taken as early in the program as possible and ideally before any electives are taken, as they form the foundational work for these electives. Additionally, these are intense courses and you will get the most out of them if they are the only course you are taking in a given semester. While this is preferred, specific recommendations for each elective are below.

BMY 511 BMY 504 is a required prerequisite unless written exception by the instructor.

BMY 512 Ideally, BMY 504 is taken prior to this course. Recommended, not required.

BMY 516 Completion of BMY 501 is required. Ideally, BMY 502 and BMY 504 are taken prior to this course. Recommended, not required.

**BMY 517** No prerequisites.

**BMY 598** Biomimicry Ethos. Ideally, BMY 517 is taken prior to this course. Recommended, not required.

BMY 598 Topic iSites. No prerequisites, although if you've taken BMY 502 or 503 first you'll understand more of what you observe during your assignments.

BMY 598 Topic Communicating Biomimicry. BMY 501, 502, and 504 required prerequisites (or co-enrollment). BMY 517 and BMY 598: Ethos recommended.

BMY 598 Topic Teaching Biomimicry. BMY 501, 502, and 504 required prerequisites. BMY 503 and BMY 598 iSites recommended.

BMY 598 Topic Facilitating Biomimicry. BMY 501, 502, and 504 required prerequisites. BMY 516 recommended.

**BMY 530** This is a self-designed practicum, and as such, it is highly recommended that this be in your last semester. BMY 501, 502, 503 and 504 are prerequisites. MS students are eligible to take this course after they have completed at least 20 credits of their program.

**BMY 580** Biomimicry Case Study Practicum. BMY 516, not required, but recommended prerequisite or co-enrollment. It could be completed earlier in the program.

BMY 580 BioBrainstorm Practicum. BMY 503 and BMY 504 required.

**BMY 580** Genius of Biome Practicum. BMY 503 and BMY 504 required. BMY 512 recommended.

#### **Expected Course Workload**

The programs are designed specifically for working professionals, rather than full-time students. In this way, the course availability assumes most students will take 1–2 courses/semester. The amount of workload in a given week corresponds with the number of

credits you are enrolled in. A good rule of thumb is 3–4 hours/week/credit enrolled. This is an average, and some weeks will have more or less. If it is a subject you have less familiarity in, or if English is a second language, please anticipate spending more hours/week.

<u>Keep in mind</u> that 1 credit in a 7.5 week semester is the same workload as 2 credits in a 15 week semester. Likewise, a 2 credit 7.5-week course has the same workload as a 4 credit 15-week course. BMY 504 and BMY 516 are compressed into 12 weeks during the summer, in which case you can expect a minimum 4–5 hours/credit/week for those 12 weeks.

Each course is asynchronous, with no set meeting times, but you will have weekly expectations. Almost all weeks will have weekly assignments to turn in as well as forum participation. Additionally, there are required videos and readings. Most courses incorporate some assignments that require team participation.

#### **Academic Calendar**

It is the student's responsibility to know and regularly check deadlines. ASU Online regularly offers classes in the fall, spring, and summer terms with the following components:

Fall/Spring Session A: first 7.5-week session Fall/Spring Session B: second 7.5-week session Fall/Spring Session C: full semester (15 weeks)

Summer Session A: first 6-week session
Summer Session B: second 6-week session

Summer Session A + B: 12-week session Summer Session C: 8-week session

<u>Note:</u> The Biomimicry program treats the summer semester similar to Fall and Spring. We expect that students stay enrolled and engaged in classes for all semesters. To view the full academic calendar, visit: <a href="https://students.asu.edu/academic-calendar">https://students.asu.edu/academic-calendar</a>

## **Finances**

#### Cost

The cost of this program is \$780 per credit hour, which includes program fees (ASU and other AZ-based university employees are eligible for tuition reduction. Please check the <u>tuition</u> <u>waiver rules</u> and <u>application</u> for details.) If you are receiving a tuition waiver from outside sources, please be aware that your waiver may not cover the full \$780. Technology, Financial Aid Trust and other mandatory university fees will apply.

Additional tuition information: http://asuonline.asu.edu/what-it-costs

#### **Financial Support**

Students can apply for financial aid before they apply for admission to the university; however, students must be admitted to a degree-seeking program of study in order to be offered financial aid. See graduate <u>admission information</u>. Please note that only US students are eligible for loans or teaching and research assistantships however, all students are eligible for scholarships.

You can find information about financial aid from The Biomimicry Center here: <a href="http://biomimicry.asu.edu/education/financial-support/">http://biomimicry.asu.edu/education/financial-support/</a>

Additional Financial Aid information can be found at <a href="https://students.asu.edu/financialaid/apply/graduate">https://students.asu.edu/financialaid/apply/graduate</a>

Financial Aid Contact: 855-278-5080 (toll-free)

Financial Aid for International Students: <a href="https://students.asu.edu/financialaid/apply/international">https://students.asu.edu/financialaid/apply/international</a>

#### **Scholarships**

A limited number of merit + need-based scholarships are available for enrolling students and those who are in their first semester. You must apply before the end of your first semester. Two levels of scholarships are offered, \$2000 per semester (up to 5 semesters – for MS students only) or \$1500 per semester (up to 3 semesters). Up to 4 scholarships are awarded each semester.

#### Scholarship Details

You can apply for a scholarship at any time between your acceptance into the program and the end of your 1st semester.

To be eligible for a scholarship and to maintain your eligibility, the following is required:

- Have and maintain a cumulative GPA of 3.0 or higher. If you drop below a 3.0, you then forfeit funds for every subsequent semester you are below 3.0.
- You must be enrolled in at least 3 credits to apply your scholarship funds to that semester. If you plan to enroll in less than 3 credits, your funds will not disburse.
- You must notify Mary Kivioja (<u>Mary.Kivioja@asu.edu</u>) if you plan to not take courses for a semester, you drop below a 3.0, or you withdraw from your program. Failure to

provide this information before your funds are disbursed will make you ineligible to continue your scholarship.

If you withdraw from the program, you may be responsible for paying back the funds that were awarded to you. Please contact Mary Kivioja (mary.kivioja@asu.edu), immediately, if you plan to withdraw from the program.

Funds will disburse to student accounts the week before tuition deadlines.

#### Scholarship Application Process:

- 1. If you are a US citizen or resident eligible for federal financial aid, fill out the <u>FAFSA</u> form to determine your need score.
- 2. Fill out the <u>application form</u> and submit by the deadline.
  - For summer entry, apply by March 1st.
  - For fall entry, apply for June 1st.
  - For spring entry, apply by November 1st.
- **3.** Awards will be announced no later than 4 weeks before the start of classes each semester.
- 4. Register for classes by **University deadlines**.
- 5. Pay tuition (less your scholarship) no later than <u>University deadlines</u>.
- 6. Your scholarship will be credited to your student account one week before tuition deadlines each semester.

#### **Assistantships**

Students with regular admission to a graduate program in Biomimicry, as well as proof of citizenship or right to work in the US, are eligible to apply for Graduate Research or Graduate Service Assistantships.

#### Research Assistants/Associates (RAs)

A graduate research assistant is a student appointed part-time by the university whose primary responsibilities are research related. Graduate research assistants may assist faculty members in research and creative activities, perform administrative or editorial duties directly connected to research and creative activities, develop and evaluate instructional materials and/or curricula, or assume responsibilities for a designated research area under the direct supervision of a faculty member. Research Assistantship appointments are available one time per year and extend through the entire academic year (fall and spring). RA appointments may be extended through a summer semester but this is dependent upon the project and the availability of supervisors. Research assistantships are awarded on a competitive basis and are funded by The Biomimicry Center. Your hire will be processed by the School of Life Sciences

and managed by the Biomimicry Program leads and faculty. The positions are offered as 0.25 FTE (10 hours/week). Compensation is \$4000/semester, plus 50% of tuition.

#### Graduate Service Assistant (GSA)

While many of the general policies and expectations also apply to graduate service assistants and graduate interns, GSAs and interns are not bound by the same eligibility requirements as TAs and RAs and do not receive the same benefits as TAs and RAs (e.g., tuition remission).

This handbook describes the general roles and responsibilities of TAs and RAs as well as policies regarding their supervision and evaluation.

TA/RA Handbook: <a href="https://graduate.asu.edu/ta-ra-handbook">https://graduate.asu.edu/ta-ra-handbook</a>

# Once you are enrolled:

#### **Grade Point Averages**

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. The Cumulative ASU GPA represents all courses completed at ASU during the graduate career. The Overall Graduate GPA is calculated on all courses numbered 500 or higher that appear on the transcript. Transfer credits are not calculated on the iPOS GPA or the Graduate GPA. 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.

Additionally, an MS student must receive a "B+" or higher in BMY 502, BMY 503, and BMY 504 in order to successfully complete the program. If a grade of B or lower is received, the student has the opportunity to repeat the class and try to earn a higher grade or to transfer credits towards the graduate certificate in Biomimicry.

#### **Coursework Grades**

Graduate-level courses are those numbered 500 or higher. All core courses required by a graduate program must be at least 500-level. Courses with grades of "D", "E", or "W" and audited courses (graded as "X") cannot be included on an iPOS. Courses applied to a previously awarded degree cannot be included on an iPOS.

Any course with a grade of Incomplete ("I") must be completed within one calendar year of the end of the scheduled course. If a regular grade is not assigned within the calendar year, the "I"

becomes permanent. The student will have to re-register for the course to receive credit. Additional information regarding incomplete grades may be found at asu.edu/aad/manuals/ssm/ssm203-09.html.

Graduate students may register to audit one or more courses with the approval of the supervisory committee chair and the consent of the instructor involved. An audited course does not count toward the minimum number of credits required for international students with visa restrictions, students employed as TA/RAs, or students receiving financial assistance. Courses taken for audit do not satisfy the Graduate College continuous enrollment policy.

#### **Academic (Grade) Grievance**

The following steps must be followed by any student seeking to appeal a grade. This process does not address academic integrity allegations, faculty misconduct or discrimination.

Student grade appeals must be processed in the regular semester immediately following the issuance of the grade in dispute (by commencement for fall or spring), regardless of whether the student is enrolled at the university.

There are two stages to the grade grievance process, the informal process, and the formal process. Each contains a series of steps.

For more information on each process, please follow this link: <a href="https://clas.asu.edu/resources/academic-grievance">https://clas.asu.edu/resources/academic-grievance</a>

#### **Satisfactory Progress**

Students are responsible for reading and following satisfactory academic progress policies for the ASU Graduate College, SOLS, and the Biomimicry Center

#### **Graduate College Satisfactory Academic Progress Policy**

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. 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 the Graduate College. The Graduate College Dean makes the final determination.

- 1. Maintain a minimum of 3.00 GPA on both the iPOS and Graduate GPAs. If either GPA falls below 3.00, the student must develop, with their advisor, an academic performance improvement plan that includes the conditions and timeframes for making satisfactory academic progress in their Degree Program.
- 2. Satisfy all requirements of the Graduate Degree Program.

- The iPOS GPA is calculated from all courses that appear on the student's approved iPOS.
- The Graduate GPA is calculated from all courses numbered 500 or higher that appear on the transcript, with the exception of courses counted toward an undergraduate degree at ASU (unless shared with a master's degree in an approved bachelor's/Master's Degree Program); and courses identified as deficiencies in the original letter of admission. The student is considered to be on academic probation until the conditions specified in the academic performance improvement plan are met and both GPAs are above 3.00.
- 3. Satisfy the maximum time limit for graduation from the student's Graduate Degree Program (six years for master's.).
- **4.** Successfully complete the culminating experience of a portfolio (i.e. complete satisfactorily three practicums, plus the completion of the Digication Portfolio requirements).
- 5. Graduate students must stay continuously enrolled in their Degree Program. Failing to do so without a Graduate College-approved <u>Request to Maintain Continuous</u>

  <u>Enrollment</u> is considered a lack of academic progress and may lead to automatic dismissal of the student from the Degree Program. Persistent "w" and "I" grades during multiple semesters on an iPOS or transcript may reflect lack of academic progress.

Full Graduate College Policies and Procedures: <a href="https://graduate.asu.edu/sites/default/files/asu-graduate-policies-and-procedures">https://graduate.asu.edu/sites/default/files/asu-graduate-policies-and-procedures</a> 032019.pdf

Students who are not able to fulfill a requirement by its deadline may submit a petition in writing to their Program Director and the Grad AD requesting an extension to complete the requirement. The petition must:

- Explain extenuating circumstances as to why the requirement cannot be met
- Describe what has been done and will be done to get back on track
- Give the date(s) as to when the requirement will be completed
- Include a letter of support from the student's advisor

Students will be notified whether or not the Program Director and the Grad Associate Director have granted an extension by email or letter. Consequences of unsatisfactory performance and progress will directly affect consideration of eligibility for BMY academic year TA and RA positions. Programs and individual faculty, in addition, may use progress determinations to inform funding decisions.

All graduate students must enroll in EACH Fall and Spring semester (does not include Summer) until they graduate. Further, students must be enrolled in courses that meet the Program requirements. If no additional credit is required toward the degree, the student may enroll in

BMY 591 (this course will not count towards your degree requirements) or petition for continuous enrollment (see below).

If the student fails to enroll for a semester, the Graduate College automatically drops the student from the Program and University. The student would have to reapply, pay the application fees, and be readmitted to continue the Degree Program. There are no special considerations for the new application – the application for readmission is evaluated against the pool of current applications for that year and readmission is NOT guaranteed.

#### **Request to Maintain Continuous Enrollment**

Graduate students planning to discontinue registration for a semester or more must submit a Request to Maintain Continuous Enrollment form. 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.

To submit a petition to maintain continuous enrollment, please fill out the form and send to Amina Hajdarovic (ahajdaro@asu.edu) and Mary Kivioja (mary.kivioja@asu.edu). The form will need to be signed by the Program Manager and then sent to the Graduate College for approval. Once your request has been approved or unapproved by the Graduate College, you will receive an email from them letting you know the decision.

Please note: you are allowed to make <u>one</u> change throughout your program when it comes to continuous enrollment or deferring to start at a later term. For instance, you can not defer your starting semester and then later request to maintain continuous enrollment.

A student with a Graduate College approved Request to Maintain Continuous Enrollment is not required to pay tuition and/or fees, but in turn, is not permitted to place any demands on university faculty or use any university resources. These resources include university libraries, laboratories, recreation facilities or faculty time.

#### **Repeating ASU Courses**

Graduate students (degree or non-degree) may retake any course at ASU; however, all grades are part of the student's permanent academic record and remain on the student transcript as well as in all GPA calculations.

#### **Academic Record Changes**

A student may apply for an academic record change for a prior semester when an application for a grade change is inappropriate to correct the student's records. An academic record change includes adding or dropping a class, changing grade options, or adjusting semester hours.

An academic record change is subject to the approval of:

- 1. the class instructor
- 2. the chair of the department offering the course, AND
- 3. the standards committee of the college offering the course.

#### Withdrawing from a program

If a student wishes to withdraw from his/her graduate degree program and the university, they must complete the <u>Voluntary Withdrawal form</u>. Students must separately complete the appropriate forms with the University Registrar to withdraw from their courses.

#### **Drop/Add and Withdrawal Deadlines**

Registration deadlines determine the last day you are able to add, drop or withdraw from classes. Each class has its own set of registration deadlines which are based on the length of the class as well as the session in which the class is held. The drop/add/withdrawal deadlines listed on the Academic Calendar apply to classes scheduled in the regular A/B/C sessions. If your class does not follow the A/B/C session timelines, the drop/add/withdrawal deadlines are prorated. The best way to determine the registration deadlines for a class you are registered for is to sign in to My ASU and click on the calendar icon a next to the class in the My Classes box. To determine the registration deadlines for a class you have not yet registered for, use the online Class Search and Course Catalog to search for the class and click on the Dates column in the search results.

#### **Drop/add deadline**

This is the last day to add a class or to drop a class without receiving a grade of "W" on your transcript. Adding a class after the drop/add deadline is considered a <u>Late Add</u> and requires instructor, department, and college approval. All withdrawals after this date will result in a grade of "W" on your transcript for each class withdrawn.

#### Course withdrawal deadline

This is the last day to request a withdrawal from a class while staying enrolled in other classes in the same session. A withdrawal from a class after this date is only available as part of a complete session withdrawal (see below).

#### Complete session withdrawal deadline

This is the last day to request a complete withdrawal from a session. As part of a complete session withdrawal, you must withdraw from all of your classes in the session.

#### Other Types of Drops/Withdrawal

There are appropriate circumstances when students may need to withdraw from the university (i.e. medical withdrawal, compassionate leave). The policies for such withdrawals are the same for both undergraduate and graduate students.

For information about these types of withdrawal, please visit: <a href="https://students.asu.edu/drop-add">https://students.asu.edu/drop-add</a>

- Medical and Compassionate Withdrawal
- Military Activation Withdrawal
- Instructor-initiated Drop
- Instructor-initiated Withdrawal

# **Dual or Transfer Enrollment in the Graduate Certificate and the Master's degree**

Please pay close attention to the following options pertaining to the relationship between the programs if you anticipate changing programs or earning both credentials

#### Option 1: Earn both credentials by enrolling in both programs from the start

If you know for sure you want to do both, your easiest logistical path is to enroll in both the certificate and MS right from the start together (or as soon as possible after admission to one), then there will never be a pre-admission issue.

The programs are designed to be nested, the first 13 credits of the 15 credit certificate are the same as the MS program. The last 2-credits of the Certificate earned for BMY 530, however, will not count towards the MS requirement of 30 credits. (You can either take BMY 530 again with a new topic near the end of your MS or choose the other three practicums).

If you are enrolled in both programs and then choose not to go on for the MS you can leave once the certificate is complete, OR continue on and earn both credentials.

To withdraw from either the Graduate Certificate or the Master's Degree Program, you are required to fill out and submit the "Voluntary Complete Withdrawal from a Graduate Degree Program" form (see appendix).

#### Option 2: Switch to the MS after you started the Certificate program

If you want to switch from the certificate to the MS, the earlier you apply to the MS the better, since there is a 12 credit pre-admission policy to degree programs. This means that you can transfer up to 12 credits from one program to another without asking special permission. As soon as you switch, you can bring your credits over. If you wait until after you have earned 13

credits, you will have to petition to bring over the last credit. You will transfer your credits over on your plan of study on the first day of classes.

#### **Option 3: Switch to the Certificate after you started the MS Program**

If you started the MS program, but decide to complete the Certificate instead, you have to withdraw from the MS and enroll in the Certificate <u>before you complete your first 6 credits</u>.

There is a 40% rule for pre-admission to a certificate, so having an MS student apply to a certificate after all the required credits are earned would be against policy.

To withdraw from the MS program, you are required to fill out and submit the "Voluntary Complete Withdrawal from a Graduate Degree Program" for (see appendix).

# Once you're close to graduating:

## **Degree Completion**

#### **Culminating Experience**

The culminating experience for the MS degree consists of the completion of 3 of the 4 Practicum courses and your Digication Portfolio. For the graduate certificate, the culminating experience is the successful completion of BMY 530. These are original works of research and scholarship performed at the graduate level.

You must select one chair and two additional members for your portfolio and list on your iPoS. You should choose the lead instructor for any BMY 580 courses that you take, and if you are including BMY 530, then your primary support faculty for that project as well.

#### **Digication Portfolio**

All students enrolled in the Biomimicry MS program are required to build a portfolio using the ASU Digication platform. Starting in Fall 2018, this is mandatory for all incoming students (as explained in BMY 501) and optional for all previously admitted students. Your digital portfolio will be an online resume of the work and projects that you complete during your studies at ASU. It will be a tool to highlight your accomplishments and skills -- including classwork, teamwork, communication, creativity, and problem-solving. A best practice for curating an engaging digital portfolio is to work within your portfolio during multiple points throughout the degree process. At a minimum, students should update their portfolios at the end of each semester. It's recommended students work on their portfolios more often, designating several appointed times throughout the semester for updates. By including evidence over time of authentic learning, and reflecting on how that evidence expresses communication, critical

thinking, creativity, and collaboration, both the student and the audience will witness a demonstrable growth. When contemplating the evidence to include in your digital portfolio, consider program-specific goals as outlined in the template, before finally providing a framework for how these wider goals offer an opportunity for professional and personal growth. Reflecting on the evidence does more than just frame the experience, it will provide you with opportunities to synthesize their knowledge.

#### **How to Create Your Digication Portfolio:**

The digital portfolio template is available to you in the "Digication" tab in each Canvas course. You will need to create your own personal version from the one provided, which is titled "Biomimicry Template". For more information on how to create a portfolio in Canvas, you can watch the tutorial here:

https://asu.digication.com/new digital portfolio help resources/home-1/published

You will use the provided Biomimicry Template to create your personal digital portfolio, explore the template features and settings, and add to each tab that corresponds with courses you have completed in the program by uploading your final project and reflection. The "About Me" tab is an introduction to who you are, why you are interested in biomimicry, and how you hope to integrate biomimicry into your profession or career. An example bio is provided, and you may also choose to add a professional photograph as well. Ultimately, your digital portfolio will reflect the amount of effort and thought that you put into it- so take this time to showcase your passion and goals!

Once you have created your digital portfolio and personalized it with your information, please title as follows: **FirstLast\_BiomimicryPortfolio**.

For specific questions or if you need technical assistance, you can contact Digication 24/7 year round at <a href="mailto:support@digication.com">support@digication.com</a> or 1-888-342-DIGI (3444).

## **Graduation**

Every student is required to apply for graduation in the semester in which they plan to complete their degree or certificate. The university lists the graduation application deadline on the <u>Academic Calendar</u>. Students can apply after the deadline but will have to pay a late fee in addition to the graduation application fee. A separate application is required for each degree or certificate program.

The graduation deadlines and procedures are set by the office for the Graduate College and are available online at https://graduate.asu.edu/current-students/completing-your-degree.

Deadline dates vary slightly depending on the calendar year, so students should check them carefully in advance of the semester they plan to defend their thesis/dissertation. It is very important that students become familiar with these deadlines so that graduation can occur during the expected term.

Students must apply for graduation through MyASU in accordance with the University Registrar policies. See <u>Application for Graduation</u>. Students must meet all University and the Graduate College degree requirements prior to the conferral of their degree.

Several steps must be completed in order to ensure you can graduate successfully. First, you must have an approved iPOS. Additionally, there is a checklist of requirements at the following links:

- o Checklist to ensure graduation
- o How to graduate: Master's with Portfolio

#### Basic steps in completing a graduate degree

- 1. **Register**. Students MUST register for at least one credit hour during the semester in which they plan to graduate. For students graduating during the summer, enrollment in any one summer session (8-week, 1st 5-week, or 2nd 5-week) fulfills the requirement. If
- 2. Update the iPOS and make sure that it's approved. See "Plans of Study" above.
- **3. Apply for graduation**. Apply for graduation through the MyASU graduation tab. If the application for graduation is made after the deadline, the student will be assessed a late fee and his/her name does not appear in the commencement program.
- **4. Register for commencement.** If planning to attend, sign up via MyASU. Get academic regalia at ASU's Bookstore or find online.
- **5. Attend commencement**, if desired.
- 6. **Receive an official degree or certificate.** Once the Registrar's Office confers your completion of the MS program, students will be mailed their official degree. This takes anywhere between 8–10 weeks. For certificate students, there is no official paper stating your graduation but you can request a transcript which will show that you have successfully completed the certificate program.

#### **Awarding of a Graduate Certificate**

A student will be eligible for the official posting of the graduate certificate to their transcripts when all applicable coursework has been successfully completed and the office for the Graduate College scholarship requirements have been met. Students must submit an iPOS for the graduate certificate program, and apply for graduation. The Biomimicry Center prints paper certificates since ASU does not send their own. We will send you a certificate after you graduate. If you do not receive one, please contact us.

## **Special Circumstances**

#### **Appeals**

SOLS and the Biomimicry Program Manager provides the College of Liberal Arts and Sciences (CLAS) Associate Dean of Graduate Programs with a copy of the letter recommending dismissal of the student, along with supporting documentation. Appeals must be made within 10 days of the notification date. CLAS then notifies students who appeal in writing that the College appeal has been received and will be reviewed. Possible outcomes of an appeal are:

- 1. The CLAS Associate Dean notifies the student in writing of a successful appeal. The letter will include any stipulations or restrictions (e.g., continuation in Program is under the condition of academic probation, contingent on corrections within a time frame).
- 2. The CLAS Associate Dean notifies students in writing of an unsuccessful appeal and that they will be recommended to the Graduate College for dismissal.

Possible reasons for dismissal are:

- GPA is lower than a 3.0
- Non-satisfactory progress
- Requirements for admittance with deficiencies are not met

#### **Academic Probation**

Academic probation affects the student's status but is not reported to the Graduate College or put on a student's permanent academic record. Students can be placed on probation for academic dishonesty or unsatisfactory progress. Students should take being placed on probation as a strong warning that their continuing status in the program is in jeopardy unless corrective action is taken.

Students on probation are notified in writing. The probation letter includes:

- Academic performance and/or Program requirements to be met
- Deadlines for meeting requirements
- Consequences of not meeting requirements

Students on probation may not be eligible for financial support, including graduate assistantships. If so, the probation letter will specify any conditions on financial support. After probation, students can be returned to a status of Satisfactory Progress or recommended for Program Dismissal. Students who meet the academic performance and/or Program requirements by probation deadlines are considered to be making Satisfactory Progress.

#### **Involuntary withdrawal by the Graduate College**

Any student who does not comply with the Graduate College policies may be withdrawn from their graduate program after review by the Vice Provost for the Graduate College.

In addition, an academic unit may recommend the withdrawal of a student from a graduate program for lack of compliance with published departmental policies or lack of satisfactory academic progress. All such recommendations must be submitted to the Graduate College with appropriate documentation (e.g., nature of the issue, communications with student). Only the Vice Provost for the Graduate College may withdraw a student from a graduate program due to a lack of compliance with satisfactory academic progress policies.

A student who has been withdrawn from a graduate program due to lack of compliance with published departmental or the Graduate College policies, or lack of satisfactory academic progress is eligible to apply for admission to the same program only after one year has passed from the term of the withdrawal.

#### **Discrimination Complaints and Equal Opportunity Policy Statement**

ASU promotes equal opportunity through affirmative action in employment and educational programs and activities. Discrimination is prohibited on the basis of race, color, religion, national origin, citizenship, sex, sexual orientation, gender identity, age, disability, special disabled veteran, or Vietnam-era veteran status. Equal opportunity includes, but is not limited to, recruitment, hiring, promotion, termination, compensation, benefits, transfers, university-sponsored training, education, tuition assistance, and social and recreational programs. More information is available at <a href="https://cfo.asu.edu/equity-and-inclusion">https://cfo.asu.edu/equity-and-inclusion</a>.

Any complaint of alleged discrimination or harassment may be filed with the Office of Equity & Inclusion for investigation and resolution. Any employee or student may visit with the Office's staff to discuss, in confidence, any concern without fear of jeopardizing job or academic standing within the University. ASU's Office of Equity and Inclusion phone: (480) 965-5057

#### **Student Anti-Retaliation Statement**

Students have the right to be free from retaliation. Threats or other forms of intimidation or retribution against a student who files a complaint or grievance requests an administrative remedy, participates in an investigation, appears as a witness at an administrative hearing, or opposes an unlawful act, discriminatory practice, or policy are prohibited and subject to university disciplinary procedures. Students with complaints of retaliation should utilize the procedures available under the University Code of Conduct, the Student Code of Conduct, the Graduate Student Grievance Procedure, the Student Employee Grievance Procedure, the Sexual Harassment Policy, nondiscrimination policies, or other available administrative procedures as appropriate. For assistance with procedures, students should contact the Dean of the academic college if the circumstances relate to a course or academic evaluation, the

Director of the Office of Equity and Inclusion if the circumstances relate to a claim or discrimination or harassment, or the Dean of Students for all other circumstances.

#### **Updating Student Name for Official Records**

You can update your name both officially in the ASU system and specifically for your diploma.

To update your name on all official records you may submit the Name Change Application to the Outgoing Transcripts section of the University Registrar Services. Their email is academicfiles@asu.edu Here is a link to the form:

https://students.asu.edu/forms/name-change

To update your name on your diploma you may submit the Diploma Name form. Here is a link to this form: <a href="https://students.asu.edu/forms/diploma-name">https://students.asu.edu/forms/diploma-name</a>

# **Need Help?**

Online services are available to ASU Online graduate students.

#### **Tutoring**

https://tutoring.asu.edu/online-tutoring. Students can make appointments through the website or by calling 480-965-9072.

Tutor Search: https://tutoring.asu.edu/tutor-search

• Students can use this tool to search by course what online tutors work during what time for their specific class

#### **Graduate Writing Center**

ASU's <u>Online Graduate Writing Center</u> specifically serves students enrolled in 500, 600 and 700 level classes. Using Adobe Connect, this real-time, appointment-based assistance allows students to meet one-on-one with a graduate writing consultant to receive feedback on their writing projects at any stage in their development and writing process.

The center is open Sundays–Thursdays with appointments available between the hours of 2 pm and 10 pm.

#### **Student Resources**

Information about other student services such as libraries, online tutoring, career services, and disability resources can be found at the following website: http://asuonline.asu.edu/student-resources/student-services

#### **Technical Support**

ASU provides a number of resources to help you plug in and stay connected to the technology you'll need to complete your degree online.

#### **ASU Help Center**

Visit <u>contact.asu.edu</u> for frequently requested information or visit the <u>My ASU Service</u> <u>Center</u> where you can easily search for answers to your questions using ASU's Knowledge Base or access 24/7 live chat with one of our ASU Help Desk agents. You can also request services or report an issue by creating a support case and our field of experts will route your request accordingly and follow-up by email or your preferred contact method.

#### Troubleshooting Tips for Accessing Online Courses

If you are having issues accessing your courses, here are a few things to try before you contact the ASU Help Center.

**First**: Try a different browser. If that doesn't work:

- Sign out of My ASU (don't just close the browser window.)
- Clear your browser cache.
- Disable your browser's pop-up blocker.
- Log back in and try again.

#### Other common questions and answers

#### Do I need a computer? Can I access my courses from a mobile device?

You will need a desktop or laptop computer to access your classes. A mobile device will not provide the access and functionality necessary for ASU Online courses.

#### Do I need high-speed internet?

Yes. Most ASU Online courses use multimedia tools that are best viewed with high-speed internet, so having the proper connection is essential.

It is also important to have a reliable internet connection at home, or at a place where you can access the internet on a consistent basis. We also recommend having a back-up plan if your

internet connection becomes unavailable, i.e. going to a library, friend/relative's house. Take this into consideration before enrolling in a fully online program.

#### *Are there requirements for web browsers?*

Students should have at least two browsers on their computer. Any browser will work, though preferred browsers are <u>Firefox</u> and <u>Chrome</u>, which can be downloaded for free online.

#### Do I need to purchase software for ASU Online courses?

In general, course access and assignments do not require any special software; however, certain degrees may require specific software programs. In the Biomimicry programs, several courses require submissions of PowerPoint files.

ASU students have access to Google Drive (My Drive via My ASU), where they can create and share Google documents, presentations, spreadsheets and more. Students also have access to hundreds of software titles at no cost through My Apps, also via My ASU. Learn more about My ASU here.

#### The ASU Disability Resource Center

The DRC is a great resource for students with disabilities. It provides services to qualified students with disabilities on all ASU campuses. For convenience, students will find offices located at the Downtown, Polytechnic, Tempe, and West locations. You can contact any DRC office with the following information:

Phone: 480-965-1234 FAX: 480-965-0441 Email: <u>DRC@asu.edu</u>

#### **ASU Counseling Services**

ASU Counseling Services offers confidential, personal counseling and crisis services for students experiencing emotional concerns, problems in adjusting, and other factors that affect their ability to achieve their academic and personal goals.

For more information visit: <a href="https://eoss.asu.edu/counseling">https://eoss.asu.edu/counseling</a>

# **Checklist of things to do: Timeline of benchmarks**

Apply to the program		
	Fill out the application online	
	Submit letters of recommendations (MS 3, CERT 2)	
	Request official transcripts from your previous institutions	
	Submit personal statement	
	Submit curriculum vitae	
	Submit English proficiency test results TOEFL, ILETS, etc (International students	
	only)	
Apply f	for scholarships and financial aid (hint: the Biomimicry Center offers	
schola	rships - go to the website to see!)	
Review	the handbook and the FAQ page on <u>Biomimicry.asu.edu</u> website - understand	
all exp	ectations and requirements	
Sign acceptance letter and return to biomimicry@asu.edu		
Set-up your ASU email and login/familiarize yourself with your MyASU account		
Develop your plan of study according to Biomimicry course calendar		
Register for classes thru my.asu.edu		
Familiarize yourself with Canvas (access through my.asu.edu)		
Pay your tuition		
Submit your plan of study thru my.asu.edu (iPOS)		
Take required courses for program completion		
Adjust changes to your iPOS as you go through the program		
Stay enrolled in at least 1 credit per semester (summer excluded)		
Apply for graduation in the semester of your last course thru my.asu.edu		
Graduate!		