

# BIOLOGICAL/PRE-MEDICAL ILLUSTRATION

The interdepartmental undergraduate BPM I major is designed for students who want to combine their interests and aptitudes in science and art. Based on the theme of "communicating science through art," the major prepares students for careers in biological illustration or for graduate education in medical illustration elsewhere. Graduates enter fields such as biocommunications, environmental display design, freelance illustration, museum display design, and various careers in the publishing industry.

Entrance into the BPM I program is by application to the BPM I Advisory Committee. Eligibility is based on an academic standard of at least 2.00 CGPA on 30 credits of university level work and a consideration of artistic ability as demonstrated through submission of a portfolio of representative drawings or other art work. Freshman and transfer students usually declare pre-BPM I as their major while satisfying the conditions for entrance into the major, although other majors can be declared.

The information below outlines the specific requirements for a BA degree in Biological/Pre-Medical Illustration (BPM I). There are four components to a degree in BPM I:

- Liberal arts general education
- Science core and advanced courses
- Art core and advanced courses
- Electives

## Part 1. College Requirements

### a. Communication Proficiency Requirements

ENGL 150	Critical Thinking and Communication (grade of C or better)	3
ENGL 250	Written, Oral, Visual, and Electronic Composition (grade of C or better)	3
LIB 160	Information Literacy	1
Choose one course from the following:		3
ENGL 302	Business Communication	
ENGL 316	Creative Writing: Playwriting	
Two semesters of college-level world language		0-8
Students with 3 years in high school world language are exempt		
<b>Total Credits</b>		<b>10-18</b>

### B. Liberal Arts and Sciences Requirements\*

Arts and Humanities **		12
Natural Sciences and Mathematical Disciplines		
MATH 104	Introduction to Probability	3-4

or MATH 165 Calculus I  
 or STAT 101 Principles of Statistics  
 or STAT 104 Introduction to Statistics

or more advanced		
CHEM 163 & 163L	College Chemistry and Laboratory in College Chemistry	5
or CHEM 177 & 177L	General Chemistry I and Laboratory in General Chemistry I	
CHEM 231 & 231L	Elementary Organic Chemistry and Laboratory in Elementary Organic Chemistry	4
Social Sciences ***		9
<b>Total Credits</b>		<b>33-34</b>

\* Choose courses to meet International Perspectives & US Diversity requirements

\*\* See <https://las.iastate.edu/students/academics/general-education/> Consider HIST 280, HIST 281; ART H 280, ART H 281; DSN S 183

\*\*\* See <https://las.iastate.edu/students/academics/general-education/>

## Part 2. Course Requirements for Major in BPM I (continued in Part 3)

### A. Biological Sciences Core

LAS 293D	Special Projects: General (F.)	1
or LAS 101	Orientation for Open Option and Preprofessional Students	
BIOL 211 & 211L	Principles of Biology I and Principles of Biology Laboratory I (F.S.)	4
BIOL 212 & 212L	Principles of Biology II and Principles of Biology Laboratory II (F.S.)	4
BIOL 255	Fundamentals of Human Anatomy (F.)	3
BIOL 256	Fundamentals of Human Physiology (S.)	3
BIOL 351	Comparative Chordate Anatomy (S.)	5
BIOL 356	Dendrology	3-4
or BIOL 366	Plant Systematics	
or BIOL 454	Plant Anatomy	
<b>Total Credits</b>		<b>23-24</b>

### B. Art Core

DSN S 131	Drawing I (F.S.)	4
ARTIS 230	Drawing II (F.S.)	3
ARTIS 233	Watercolor Painting (F.S.)	3
ARTIS 308	Computer Modeling, Rendering and Virtual Photography (F.S.)	3
ARTIS 330	Drawing III: Life Drawing (F.S.)	3
BPM I 323	Scientific Illustration Principles and Techniques (F.)	3

BPM I 326	Illustration and Illustration Software (S.)	3
BPM I 327	Illustration as Communication (F.)	3
BPM I 337	Application of Scientific Illustration Techniques (S.)	3
BPM I 497	Illustration Internship	1
<b>Total Credits</b>		<b>29</b>

Beyond the core preparation, students must take 9 credits in the advanced science area and 12 credits in the advanced art area. The courses acceptable in these areas follow. Other courses in art and biological science may be acceptable. See BPM I advisers and/or the BPM I Advisory Committee.

### C. Advanced Art Area

Select 12 total credits from below. At least 6 credits must be studio classes.

Pre-Med Illustration Area		
ARCH 335	Three-Dimensional Studio	3
ARTIS 330	Drawing III: Life Drawing	3
ARTIS 408	Principles of 3D Animation	3
ARTIS 430	Drawing IV (F.S.)	3
BPM I 323	Scientific Illustration Principles and Techniques	3
BPM I 326	Illustration and Illustration Software	3
BPM I 337	Application of Scientific Illustration Techniques	3
BPM I 490	Independent Study	1-3
BPM I 491	Portfolio Design and Professional Development (S.)	2
BPM I 494	Special Topics in Illustration	1-3
General Art Area		
ARTIS 213	Studio Fundamentals: Painting (F.S.)	2
ARTIS 227	Introduction to Creative Digital Photography	3
ARTIS 238	Painting I (F.S.)	3
ARTIS 329	Creative Photography	3
ARTIS 338	Painting II	3
ARTIS 407	Principles of 3D Character Animation	3
ARTIS 409	Computer/Video Game Design and Development	3
ARTIS 438	Painting III (F.S.)	3
BPM I 395	Field Illustration (S.SS.)	1-3
JL MC 306	Broadcast Media Production (F.S.)	3
JL MC 315	Digital Storytelling (F.S.)	3

### D. Advanced Science Area

Select 9 credits total from below.

Pre-Med Illustration Science Area - required/recommended courses by most graduate schools

BBMB 316	Principles of Biochemistry (F.)	3
BIOL 313	Principles of Genetics (F.S.SS.)	3
BIOL 314	Principles of Molecular Cell Biology (F.S.)	3
BIOL 335	Principles of Human and Other Animal Physiology (S.)	3
BIOL 352	Vertebrate Histology (S.)	4
BIOL 423	Developmental Biology (S.)	3
B M S 329	Anatomy and Physiology of Domestic Animals (S.)	3
B M S 448	Principles of Human Gross Anatomy (S.)	4
GEN 340	Human Genetics (F.S.SS.)	3
General Science Area		
A ECL 321	Fish Biology (S.)	3
A ECL 366	Natural History of Iowa Vertebrates (S.)	3
A ECL 457	Herpetology (F.)	2
A ECL 458	Ornithology (S.)	2
A ECL 459	Mammalogy (S.)	2
ANTHR 307	Biological Anthropology (S.)	3
ANTHR 319	Skeletal Biology (F.)	3
ANTHR 424	Forensic Anthropology (S.)	3
BBMB 301	Survey of Biochemistry (S.SS.)	3
BIOL 312	Ecology (F.SS. )	4
BIOL 313L	Genetics Laboratory (F.S.)	1
BIOL 315	Biological Evolution (F.S.)	3
BIOL 328	Molecular and Cellular Biology of Human Diseases (F.)	3
BIOL 336	Ecological and Evolutionary Animal Physiology	3
BIOL 350	Comprehensive Human Anatomy (F.)	4
BIOL 353	Introductory Parasitology (S.)	3
BIOL 354	Animal Behavior (F.)	3
BIOL 355	Plants and People (S.)	3
BIOL 356	Dendrology (F.)	3
BIOL 364	Invertebrate Biology (F)	3-4
BIOL 365	Vertebrate Biology (F.)	4
BIOL 366	Plant Systematics (S.)	4
BIOL 393	North American Field Trips in Biology	1-4
BIOL 394	International Field Trips in Biology	1-4
BIOL 402	Introduction to Pathology (F.)	3
BIOL 430	Principles of Plant Physiology	3
BIOL 436	Neurobiology (F.)	3
BIOL 454	Plant Anatomy (F.)	4
BIOL 455	Bryophyte and Lichen Biodiversity	3
BIOL 456	Principles of Mycology (F.)	3
BIOL 474	Plant Ecology (S.)	3

BIOL 488	Identification of Aquatic Organisms (F.S.)	1
BPM I 395	Field Illustration (S.SS.)	1-3
ENT 370	Insect Biology (F.)	3
ENT 374	Insects and Our Health (S.)	3
MICRO 302	Biology of Microorganisms (F.S.SS.)	3
MICRO 302L	Microbiology Laboratory (F.S.)	1
MICRO 310	Medical Microbiology (F.)	3
NREM 301	Natural Resource Ecology and Soils (F.)	4
NREM 330	Principles of Interpretation (S.)	3
PSYCH 310	Brain and Behavior (F.S.)	3
V PTH 401	Basics of Medical Terminology (F.)	1

A minor in biological illustration is offered. A minimum of 17 credits must be taken, including 8 credits in biological science courses and 9 credits in art and design courses. The minor must include at least 9 credits that are not used to meet any other department, college, or university requirement.

The biological sciences must include:

BIOL 211	Principles of Biology I	3
BIOL 211L	Principles of Biology Laboratory I	1
BIOL 212	Principles of Biology II	3
BIOL 212L	Principles of Biology Laboratory II	1

The art and design courses must include:

BPM I 323	Scientific Illustration Principles and Techniques	3
BPM I 337	Application of Scientific Illustration Techniques	3
Advanced drawing, illustration, electronic media or painting course		3

For more information, contact the BPM I adviser in 102 Catt Hall or view the website listed above.

### Biological/Pre-Medical Illustration, B.A. 120 minimum credits required.

#### Freshman

Fall	Credits	Spring	Credits
LAS 101	1	LIB 160	1
ENGL 150	3	Humanities	3
CHEM 163	4	BIOL 212	3
CHEM 163L	1	BIOL 212L	1
BIOL 211	3	ARTIS 230	3
BIOL 211L	1	Soc Sci Choice	3

DSN S 131	4	CHEM 231.231L or STAT or MATH	3-4
<b>17</b>		<b>17-18</b>	

#### Sophomore

Fall	Credits	Spring	Credits	Summer	Credits
Foreign Lang. or Humanities (ART 280)	3-4	For Lang or Social Sci	3-4	Consider study abroad or attending summer GNSI Workshops or a Biological Station to take advanced Biology Courses	
CHEM 231/231L or STAT or MATH	3-4	BPM I 326	3		
BPM I 323	3	ARTIS 330	3		
ENGL 250	3	Humanities	3		
BIOL 255	3	BIOL 256	3		
<b>15-17</b>		<b>15-16</b>		<b>0</b>	

#### Junior

Fall	Credits	Spring	Credits
BPM I 327	3	BPM I 337	3
Advanced Biology	3-4	BIOL 351	5
ARTIS 308	3	Soc Sci	3
Humanities or Social Sci	3	ARTIS 233	3
Advanced Biology or Art or plant science	3	Humanities and Advanced Art	3

Work with  
BPMI  
advisory  
committee  
to plan  
senior  
project for  
portfolio  
If planning  
to attend  
graduate  
school,  
take GRE  
in Fall and  
prepare  
up to 20  
portfolio  
pieces for  
submission  
in January

15-16		17	
<b>Senior</b>			
<b>Fall</b>	<b>Credits</b>	<b>Spring</b>	<b>Credits</b>
Advanced Biology	3-5	Advanced Biology	3-4
Advanced Art	3-6	Advanced Art	3-6
Humanities/ Social Elective	3	Humanities/ Social Sci/ Elective	3-6
BPMI 497	1	ENGL 302-316	3
Electives	2		
12-17		12-19	

**Courses primarily for undergraduates:**

**BPM I 323: Scientific Illustration Principles and Techniques**

(Cross-listed with ARTIS). (0-6) Cr. 3. Repeatable.

*Prereq: DSN S 131, ARTIS 230, or equivalent, and 3 credits in biological sciences; or permission of the instructor*

Studio basics and professional techniques in black & white, continuous tone, and color. Introduction to professional practice and principles of communicating science through art. Emphasis on tools, materials, and rendering.

**BPM I 326: Illustration and Illustration Software**

(Cross-listed with ARTIS). (0-6) Cr. 3. Repeatable.

*Prereq: ARTIS 323/BPM I 323, or permission of the instructor*

An introduction to digital illustration software. Application of painting, drawing and image making techniques using vector and raster based programs.

**BPM I 327: Illustration as Communication**

(Cross-listed with ARTIS). (0-6) Cr. 3.

*Prereq: ARTIS 326/BPM I 326, or permission of the instructor*

Investigation of illustration as a form of communication. Emphasis on problem solving, effective composition, and advancement of rendering skills.

**BPM I 337: Application of Scientific Illustration Techniques**

(Cross-listed with ARTIS). (0-6) Cr. 3. Repeatable, maximum of 6 credits. S.

*Prereq: ARTIS 327*

Rendering techniques applied to different types of biological and scientific subjects emphasizing communication. The use of traditional and digital media. Term project required.

**BPM I 395: Field Illustration**

Cr. 1-3. Repeatable, maximum of 6 credits. S.SS.

*Prereq: Permission of instructor*

A combination seminar and field trip course emphasizing nature interpretation, field sketching techniques and preparation of a final illustration based on field experience.

**BPM I 398: Cooperative Education**

Cr. R. F.S.SS.

*Prereq: Permission of the program cooperative education coordinator; junior classification*

Required of all cooperative education students. Students must register for these courses prior to commencing each work period.

**BPM I 435I: Illustrating Nature I Sketching**

(Cross-listed with IA LL). Cr. 2. SS.

Sketching plants, animals and terrain. Visual communication, development of a personal style, and integration of typographic and visual elements on a page will be emphasized.

**BPM I 436I: Illustrating Nature II Photography**

(Cross-listed with IA LL). Cr. 2. SS.

Beginning to intermediate technical and compositional aspects of color photography of natural areas and their plants and animals.

**BPM I 490: Independent Study**

Cr. 1-3. Repeatable, maximum of 3 credits.

*Prereq: Written approval of instructor and advisory committee chair on required form in advance of semester of enrollment*

**BPM I 491: Portfolio Design and Professional Development**

Cr. 2. S.

*Prereq: BPMI 337, junior or senior classification in the BPMI curriculum.*

Portfolio and professional preparation including identity package development, writing and speaking. Career-readiness, professional practice, leadership, networking, exploring research subfields within scientific visualization. Creating print and digital visual materials, learning approaches for entering the field, and developing business practice skills. Final portfolio materials presented at the end of the term.

**BPM I 494: Special Topics in Illustration**

Cr. 1-3. Repeatable.

Intensive exploration of illustration techniques in a studio or field setting.

**BPM I 497: Illustration Internship**

Cr. 1-6. Repeatable, maximum of 6 credits.

*Prereq: Junior or senior classification in BPM I, written approval of supervising instructor and advisory committee chair on required form in advance of semester of enrollment*

Offered on a satisfactory-fail basis only.