

MS in Biomedical Visualization

Admission Requirements

Applications are considered on an individual basis. In addition to the Graduate College minimum requirements, applicants must meet the following program requirements:

- **Baccalaureate Field** No restrictions. All prerequisite coursework must be completed with a grade of C or higher. Prior academic work must include:
 - a. General or introductory chemistry.
 - b. Comparative Vertebrate Anatomy and Human Physiology or Anatomy and Physiology I and II with dissection.
 - c. Additional science courses must include two or more of the following (at least one of these courses must be an upper-division course): biochemistry, cell biology, developmental anatomy (vertebrate embryology), genetics, histology, immunology, molecular biology, neuroanatomy, pharmacology, microbiology, neuroscience, neurobiology, physical/biological anthropology, or pathology.
 - d. One or more courses in 2-D vector, 2-D raster, 3-D modeling, 2-D/3-D animation, interactive or motion media, or computer programming is required. Coursework in drawing, life drawing, painting, and digital imaging is highly recommended. Coursework in computer programming is recommended for applicants interested in interactive media.
- **Grade Point Average** At least 3.00/4.00 for the final 60 semester (90 quarter) hours of undergraduate study and for all cumulative graduate work previously taken.
- **Transcripts** Submit unofficial copies of official transcripts from institutions where degrees were earned, and transcripts from all colleges and universities attended within the last eight years. A link to upload will be provided by the Office of Graduate and Professional Admissions five to seven days after application is completed.
- **Tests Required** GRE General Test that includes Verbal, Quantitative, and Writing assessment. Preference will be given to applicants with a combined Quantitative and Verbal score above 300 and a Writing score above a 3.0. Test scores are required for all applicants.
- **Minimum English Competency Test Score**
 - **TOEFL iBT** 95, with subscores of Reading 24, Listening 22, Speaking 24, and Writing 24. **OR,**
 - **IELTS Academic** 7.0, with 6.5 in each of the four subscores, **OR,**
 - **PTE-Academic** 54, with subscores of Reading 51, Listening 47, Speaking 53, and Writing 56.
- **Letters of Recommendation** Three required from instructors or employers. Letters must be on letterhead and uploaded with the application.
- **Personal Statement** The statement should address the applicant's goals for graduate study and career development.
- **Other Requirements** A personal interview with departmental faculty is required. Additionally, a portfolio review by departmental faculty is required. A portfolio of 20 original images must be submitted. The 20

original images must include six full-figure drawings (not paintings) from the nude model that include gestures, short poses and long poses; one drawing of the human hand; one portrait drawing; one black and white tone composition from observation using all basic forms: cube, cone, cylinder, pyramid, and sphere; one still life drawing or painting in color that includes both organic and geometric forms which demonstrates form, volume, texture, and convincing spatial relationships. These 10 images must be created from direct observation, not photographic references. The additional 10 images may include general drawing (pages from sketchbooks encouraged), figure drawing, color media, digital media, graphic design, and sculpture. Medical subject matter images are discouraged.

- **Deadlines** [Application deadlines](#) for this program are listed on the Graduate College website.

Degree Requirements

In addition to the Graduate College minimum requirements, students must meet the following program requirements:

- **Minimum Semester Hours Required** 49–52.
- **Coursework**

Code	Title	Hours
Required Core Courses		
ANAT 441	Gross Human Anatomy	
BHIS 499	Information Sources in Biomedical & Health Information Sciences	
BVIS 501	Professional Practices in Biomedical Visualization	
BVIS 503	Strategic Inquiry in Biomedical Visualization	
BVIS 508	Pathophysiology for Biomedical Visualization	
BHIS 595	Seminar in Biomedical and Health Information Sciences	
BVIS 502	Clinical Sciences for Biomedical Visualization	
BVIS 505	Visual Learning and Visual Thinking I	
BVIS 510	Anatomical Visualization	
BVIS 518	Web Design	
BVIS 552	Graphic Design	
BVIS 575	Business Practices in Biomedical Visualization	
BVIS 595	Seminar in Biomedical Visualization	

And two additional required science courses from the following lists:

At least one of the following:	
ANAT/OSCI 544	Advanced Craniofacial Anatomy
BVIS 560	Molecular Pharmacology for Biomedical Visualization
GEMS 515	Receptor Pharmacology and Cell Signaling
NEUS 403	Human Neuroanatomy
NEUS 502	Foundations of Neuroscience II
GEMS 522	Foundations of Biomedical Sciences II ^a
At least one of the following:	
GEMS 521	Foundations of Biomedical Sciences I ^a

NEUS 501 Foundations of Neuroscience I

Selectives

Select 10 hours from the following:

ART 454	3D Space I: Modeling
ART 455	3D Space II: Animation
BVIS 500	Biomedical Visualization Techniques
BVIS 504	Visual Storytelling in Biomedical Visualization
BVIS 519	Introduction to 3D Modeling
BVIS 520	Modeling Materials and Textures
BVIS 521	Digital Sculpting and Advanced 3D Modeling
BVIS 522	Illustration Techniques
BVIS 523	Haptics
BVIS 530	Surgical Illustration
BVIS 535	Visual Learning and Visual Thinking II
BVIS 536	Serious Game Development
BVIS 537	Advanced Serious Game Development
BVIS 538	Medical Legal Visualization
BVIS 539	Immersive Interactive Visualization
BVIS 541	Animation I
BVIS 542	Animation II
BVIS 543	Animation III
BVIS 544	Animation IV
BVIS 547	360 Animation
BVIS 548	Advanced Illustration Techniques
BVIS 551	3D Printing with Data Segmentation for Medicine
BVIS 562	Advanced Graphic Design
BVIS 580	Practicum in Biomedical Visualization
BVIS 594	Special Topics in Biomedical Visualization
BVIS 596	Independent Study

Additional courses may be taken with the approval of advisor and instructor if in another college.

a *BVIS students who choose to enroll in GEMS 521 should register for 3 semester hours, and students who choose to enroll in GEMS 522 should register for 3 semester hours.*

- **Thesis, Project, or Coursework-Only Options** Thesis or project required. No other options are available.
 - *Thesis*: Students must earn at least 7 hours in BVIS 598.
 - *Project*: Students must earn at least 4 hours in BVIS 597.
- **Other Requirements**
 - *Continuous Registration*: Students who have completed all degree requirements except the thesis/project must register for zero semester hours to maintain continuity of registration.