DEPARTMENT OF VISUALIZATION

Visualization is the study of the art and science used in the creation of traditional and digital visual communication. The Bachelor of Science in Visualization is a studio based program requiring completion of 120 credit hours including areas of traditional art, programming, history and theory as well as digital media. The degree prepares students for the artistic and technical demands facing digital content creators in a variety of visually oriented professions including interactive media, information technology, education, entertainment, and independent practice.

Enrollment in the Visualization Program

Students enrolled in the Bachelor of Science in Visualization (VISL) program will be granted automatic admission to the Sophomore level art and visualization courses by obtaining a 3.6 GPR in category A courses and a 3.0 GPR in category B courses and completing 27 semester credit hours during the first two semesters in the Visualization Program (VISL).

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARTS 115</td>
<td>Drawing for Visualization</td>
<td>3</td>
</tr>
<tr>
<td>VIST 105</td>
<td>Principles of Design I</td>
<td>4</td>
</tr>
<tr>
<td>VIST 106</td>
<td>Principles of Design II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 151</td>
<td>Engineering Mathematics I</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 201</td>
<td>College Physics</td>
<td>4</td>
</tr>
<tr>
<td>VIST 170</td>
<td>Introduction to Visualization Computing Environments</td>
<td>1</td>
</tr>
</tbody>
</table>

If AP or Dual Credit courses are available as substitutions in any of the above courses, sequential or other art/visualization/math/science courses taken at Texas A&M University will be used to calculate the respective GPRs. For change of major and transfer students, equivalent transferable courses may be substituted for any of the above courses. In this case, courses taken at Texas A&M University in the same program area will be specified and used to calculate the respective GPRs.

Students not automatically admitted will be allowed on a space available basis into sophomore level art and visualization courses based on a ranking of the combined GPR of the Category A and Category B courses. An optional 500 word essay may be submitted to explain extenuating circumstances related to the 1st year academic experience and provide justification why the student should be allowed to take sophomore level courses. The essay may be used to adjust the overall student ranking.

Transfer and Change of Major Students

Transfer and change of major students (students currently enrolled in another major at Texas A&M University) who are admitted to the Department of Visualization are classified as lower level (VISL).

Faculty

Akleman, Ergun, Professor
Visualization
PHD, Georgia Institute of Technology, 1992

Bieber, Susanne C, Assistant Professor
Visualization
PHD, Freie Universitat Berlin, 2012

Bologan, Anatol, Lecturer
Visualization
MA, Goldsmiths University of London, 2014

Braman, Gavin S, Lecturer
Visualization
BED, Texas A&M University, 2009

Cagin, Gul, Lecturer
Visualization
MFA, Claremont Graduate University, 2001

Campana, Lilia, Instructional Assistant Professor
Visualization
PHD, Texas A&M University, 2014

Chu Yew Yee, Sharon Lynn, Assistant Professor
Visualization
PHD, Texas A&M University, 2015

Davison, Richard R, Professor
Visualization
MFA, Washington University in St. Louis, 1979

Eilers, Howard F, Associate Professor
Visualization
MFA, Ohio University, 1964

Finch, Krista S, Instructional Assistant Professor
Visualization
MFA, Maryland Institute College of Art, 2000

Finch, Sherman S, Assistant Professor
Visualization
MFA, Maryland Institute College of Art, 1998

Galanter, Philip, Associate Professor
Visualization
MFA, School of Visual Arts, 1999

Honeycutt, Amanda J, Lecturer
Visualization
BS, Texas A&M University, 2011

House, Felice L, Assistant Professor
Visualization
MFA, The University of Texas at Austin, 2011
MS, Texas A&M University, 2006

Jenks, Morgan M, Lecturer
Visualization
MFA, Texas A&M University, 2014

Klein, Barbara J, Lecturer
 Visualization
MS, Sam Houston State University, 2008

Knox, Benjamin C, Assistant Professor of the Practice
Visualization
BED, Texas A&M University, 1993
Koustov, Dmitri V, Lecturer
Visualization
BFA, Ivanovo Art institute, 1987

Lafayette, Carol J, Professor
Visualization
MFA, State University of New York at Buffalo, 1991

Larsen, Terry R, Senior Associate Professor
Visualization
MAR, Cornell University, 1975

Leiderman, Daniil M, Instructional Assistant Professor
Visualization
PHD, Princeton University, 2016

Lisonbee, Laurie J, Lecturer
Visualization
MFA, California State University, Fullerton, 1998

Madrid, Nathan C, Lecturer
Visualization
MFA, Texas Woman's University, 2014

McLaughlin, Timothy D, Associate Professor
Visualization
MS, Texas A&M University, 1994

McNamara, Ann M, Associate Professor
Visualization
PHD, University of Bristol, United Kingdom, 2000

Parke, Frederic I, Professor
Visualization
PHD, University of Utah, 1974

Quek, Francis K, Associate Professor
Visualization
PHD, University of Michigan, 1990

Ragan, Eric D, Assistant Professor
Visualization
PHD, Virginia Polytechnic Institute and State University, 2013

Ramadan, Hadeel M, Lecturer
Visualization
MFA, Virginia Polytechnic Institute and State University, 2014

Schuld, Dawna L, Instructional Assistant Professor
Visualization
PHD, The University of Chicago, 2009

Seo, Jinsil, Assistant Professor
Visualization
PHD, Simon Fraser University, 2011
MFA, School of Visual Arts, 2004

Serra, Gianvito N, Lecturer
Visualization
BFA, Ringling College of Art and Design, 2001

Stoenescu, Livia, Instructional Assistant Professor
Visualization
PHD, Queen's University, Canada, 2010

Sutherland, Susan D, Lecturer
Visualization
MA, University of Wisconsin - Madison, 1994

Tassinary, Louis G, Professor
Visualization
JD, Boston College, 2003
PHD, Dartmouth College, 1984

Thomas, Andre, Lecturer
Visualization

Zawadzki, Mary F, Instructional Assistant Professor
Visualization
PHD, The City University of New York, 2015

**Majors**

- Bachelor of Science in Visualization (http://catalog.tamu.edu/undergraduate/architecture/visualization/bs)

**Minors**

- Art Minor (http://catalog.tamu.edu/undergraduate/architecture/visualization/art-minor)
- Game Design and Development Minor (http://catalog.tamu.edu/undergraduate/architecture/visualization/game-design-development-minor)

**Courses**

- Art (ARTS) (p. 2)
- Visualization (VIST) (p. 4)

**Art**

**ARTS 103 Design I**
Credits 3. 2 Lecture Hours. 4 Lab Hours.
(ARTS 1311) Design I. Two-dimensional design; fundamentals of line, color, form, texture, shape, space and arrangement.

**ARTS 104 Introduction to Graphic Design**
Credit 1. 2 Lab Hours.
Introduction to the concepts and techniques utilized in the layout of graphic presentations; basic digital camera operations, typography, use of color, design principles; integration of type, graphic elements and images.

**Prerequisite:** Major in visualization or minor in art.

**ARTS 111 Drawing I**
Credits 3. 2 Lecture Hours. 4 Lab Hours.
(ARTS 1316) Drawing I. Variety of media techniques and subjects, exploring perceptual and descriptive possibilities; drawing as a developmental process as well as an end in itself; freehand.

**ARTS 115 Drawing for Visualization**
Credits 3. 2 Lecture Hours. 3 Lab Hours.
Investigation of and practice with tools, methods and techniques available for communication of designs; drawing, graphics, rendering and color.

**Prerequisite:** Visualization majors only.

**ARTS 149 Art History Survey I**
Credits 3. 3 Lecture Hours.
(ARTS 1303) Art History Survey I. Survey of architecture, painting, sculpture and the minor arts from prehistoric times to 14th century.
ARTS 150 Art History Survey II
Credits 3. 3 Lecture Hours.
(ARTS 1304) Art History Survey II. Survey of architecture, painting, sculpture and the minor arts from the 14th century to the end of the 19th century.

ARTS 210 Introduction to Photography
Credits 3. 2 Lecture Hours. 3 Lab Hours.
(ARTS 2356) Introduction to Photography. Introduction to the digital camera, creation, manipulation and critique of the digital image; composition and aesthetics; exposure control; digital work-flow; post-processing techniques; layering and compositing; history of the photographic image.
Prerequisite: Non-visualization majors only.

ARTS 212 Life Drawing
Credits 3. 1 Lecture Hour. 6 Lab Hours.
Emphasis on structure and action of the human figure.
Prerequisite: ARTS 111 or ARTS 115 or equivalent, or approval of instructor and undergraduate program coordinator.

ARTS 303 Graphic Design I
Credits 3. 2 Lecture Hours. 4 Lab Hours.
Introduction to the principles of graphic design; composition and their application for printed and digital media.
Prerequisites: ARTS 104, VIST 105, ENDS 105 or approval of instructor and undergraduate program coordinator.

ARTS 304 Graphic Design II
Credits 3. 2 Lecture Hours. 4 Lab Hours.
Continuation of ARTS 303; concepts in advanced graphics as a tool for design solutions for publication and promotion; emphasis on creative thinking over technology.
Prerequisites: ARTS 303; junior or senior classification.

ARTS 305 Painting I
Credits 3. 2 Lecture Hours. 4 Lab Hours.
Exploring potentials of painting media with emphasis on color and composition.
Prerequisite: ARTS 111 or ARTS 115 or approval of instructor and undergraduate program coordinator; junior or senior classification.

ARTS 308 Sculpture
Credits 3. 1 Lecture Hour. 5 Lab Hours.
Sculptural principles of physical form, space and materials; context and content of three-dimensional art forms.
Prerequisite: ARTS 115 or equivalent or approval of instructor and undergraduate program coordinator; junior or senior classification.

ARTS 311 Black and White Photography
Credits 3. 2 Lecture Hours. 4 Lab Hours.
Exploration of vision through the photographic image as a medium of visual expression; basic theory and practice of black and white and/or still photography and/or digital imaging; historic development and aesthetic concern for photographic imagery.
Prerequisites: Approval of instructor and undergraduate program coordinator; junior or senior classification.

ARTS 312 Advanced Photography
Credits 3. 2 Lecture Hours. 3 Lab Hours.
Advanced photographic image-making; development, control and presentation of the expressive photographic image; expression and criticism.
Prerequisite: ARTS 210, VIST 310 or ARTS 311.

ARTS 325 Digital Painting
Credits 3. 2 Lecture Hours. 4 Lab Hours.
Theory and practice of digital painting media; exploration of traditional and new forms of art making and creativity; emphasis on color theory.
Prerequisites: ARTS 103, ARTS 115 or equivalent; junior or senior classification. Field trip required.

ARTS 329 Texas Art History
Credits 3. 3 Lecture Hours.
The development of visual arts in Texas; an examination of art movements, artists and major works exhibiting a broad range of artistic techniques.
Prerequisite: Junior or senior classification or approval of instructor and undergraduate program coordinator.

ARTS 330 The Arts of America
Credits 3. 3 Lecture Hours.
Survey of painting, sculpture, crafts and architecture of prehistoric America to the present; emphasis on art as a record of cultural, economic and social evolution.
Prerequisite: Junior or senior classification or approval of instructor and undergraduate program coordinator.

ARTS 335 The Art and Architecture of Rome
Credits 3. 3 Lecture Hours.
Rome as a microcosm of western civilization; a survey of western architectural and art history from antiquity through the Baroque; a focus on the Eternal City's buildings, paintings, mosaics and sculptures exploring criteria, methods, goals and results of major architectural and artistic movements and the people involved.
Prerequisite: Junior or senior classification or approval of instructor and undergraduate program coordinator.

ARTS 349 The History of Modern Art
Credits 3. 3 Lecture Hours.
Chronological development of late 19th through 20th century art; emphasis on key artists, paintings, sculpture, photography and architecture.
Prerequisite: Junior or senior classification or approval of instructor and undergraduate program coordinator.

ARTS 350 The Arts and Civilization
Credits 3. 3 Lecture Hours.
Investigation of the image of work of selected periods in terms of criticism, aesthetic rationale, specific masters and social significance by going beyond historical chronology.

ARTS 353 Color Theory
Credits 3. 2 Lecture Hours. 4 Lab Hours.
Aspects of color and color theory including optical phenomena, color theory and perception; application and principles with respect to art and design; two-dimensional and three-dimensional projects examining color theories.
Prerequisites: College of Architecture majors or art minors; junior or senior classification.
**ARTS 403 Graphic Design Design III**  
Credits 3. 2 Lecture Hours. 4 Lab Hours.  
Advanced graphic design concepts and practices; development of unified graphic campaigns to promote a product, an organization, a publication, a service, or business; advanced problem-solving techniques based on the design process through research, analysis, and presentation; systematic approach to visual development.  
**Prerequisites:** ARTS 303 and ARTS 304; junior or senior classification or approval of instructor and undergraduate program coordinator; knowledge of industry-standard software (Adobe Photoshop, InDesign and Illustrator) is expected.

**ARTS 445 Byzantine Art and Architecture**  
Credits 3. 3 Lecture Hours.  
A critical and historical investigation of Mediterranean art and architecture from the third century to the middle of the fifteenth century; emphasis on the artistic achievements from the late antique Mediterranean and the Byzantine Empire; investigation of architectural decoration, public monuments, cultural diversity and controversies over images.  
**Prerequisite:** Junior or senior classification.

**ARTS 485 Directed Studies**  
Credits 1 to 4. 1 to 4 Other Hours.  
Special problems in the fine and applied visual and plastic arts. May be repeated for up to 12 credit hours.  
**Prerequisite:** Approval of instructor and undergraduate program coordinator.

**ARTS 489 Special Topics in...**  
Credits 1 to 4. 1 to 4 Lecture Hours. 0 to 4 Lab Hours.  
Selected topics in an identified field of the fine or applied visual and plastic arts. May be repeated for up to 9 credit hours.  
**Prerequisite:** Approval of instructor and undergraduate program coordinator.

**Visualization**

**VIST 105 Principles of Design I**  
Credits 4. 2 Lecture Hours. 6 Lab Hours.  
Survey of principles and theory of design and visual communication; elements and organizational structure of the visual language; sign, symbol, and meaning; visual perception; problem solving and the creative process; design in terms of value as well as color; emphasis on two-dimensional design.

**VIST 106 Principles of Design II**  
Credits 4. 2 Lecture Hours. 6 Lab Hours.  
Fundamentals of spatial design; theory of form; transformations, additive/subtractive techniques as process; 3D composition; traditional modeling and construction techniques; formal visual analysis and critique.  
**Prerequisite:** VIST 105.

**VIST 170 Introduction to Visualization Computing Environments**  
Credit 1. 2 Lab Hours.  
Procedures, practices and environments useful for visual problem solving using programmatic languages; setup and use of the computing environment; useful system tools and commands; basic programming concepts and constructs.  
**Prerequisite:** Visualization majors only or approval of instructor.

**VIST 201 Writing for Design**  
Credit 1. 2 Lab Hours.  
Writing as a discipline for the development, conceptualization, critique and presentation of visual works; emphasis on portfolio and narrative development.  
**Prerequisite:** Major in visualization.

**VIST 205 Principles of Design III**  
Credits 4. 2 Lecture Hours. 6 Lab Hours.  
Introduction to the creative processes, workflows and methodologies used in the field of visualization including graphic design, interactivity and animation.  
**Prerequisites:** ARTS 115; VIST 106; VIST 170.

**VIST 206 Visual Studies Studio I**  
Credits 4. 2 Lecture Hours. 6 Lab Hours.  
Theory and practice of traditional techniques for visual communication and visualization; the camera model; principles of physically based motion; time based media and animation; development of narrative and storytelling in the creative process.  
**Prerequisite:** VIST 205.

**VIST 270 Computing for Visualization I**  
Credits 3. 3 Lecture Hours.  
Continuation of Computing for Visualization I; concepts of object oriented problem solving; system tools; problem solving principles and practice; basics of software interaction and interface organization; development concepts and principles useful in digital art and visualization production.  
**Prerequisite:** MATH 151; VIST 170.

**VIST 271 Computing for Visualization II**  
Credits 3. 3 Lecture Hours.  
Continuation of Computing for Visualization I; concepts of object oriented programming; emphasis on principles and techniques useful for three dimensional visualization and real time graphic display.  
**Prerequisite:** MATH 152; VIST 270.

**VIST 275 Introduction to Visualization**  
Credits 3. 3 Lecture Hours.  
Introduction to visualization concepts, techniques and applications; introduction to significant visualization topics including cultural context, visual perception, the digital image, visual language, geometric modeling, animation, image creation, image compositing; application areas, ethical issues in visualization and the future of visualization.  
**Prerequisites:** MATH 150 or equivalent; non-majors only.

**VIST 284 Visualization Techniques**  
Credit 1. 2 Lab Hours.  
Introduction to software used in the visual arts including 2D raster and vector systems, modeling, rendering, animation, post production and multimedia. Specific course content will vary based upon curriculum requirements. May be repeated for up to 3 credit hours.  
**Prerequisite:** Major in visualization or minor in art.

**VIST 289 Special Topics in...**  
Credits 1 to 4. 1 to 4 Lecture Hours. 0 to 4 Lab Hours.  
Selected topics in an identified area of visualization. May be repeated for credit.  
**Prerequisite:** Approval of instructor.
VIST 305 Visual Studies Studio II
Credits 3. 1 Lecture Hour. 5 Lab Hours.
Theory and practice of visual communication employing digital and conventional media; development of artistic concepts, proposal development and related implementation techniques; introduction to digital painting, 3D modeling, animation, and other technologies. Prerequisite: VIST 206; upper level classification in visualization.

VIST 310 Photography for Visualization
Credits 3. 2 Lecture Hours. 3 Lab Hours.
Advanced aesthetic and thematic control of the digital image; exposure refinement; advanced lighting techniques and digital compositing; digital workflow; image conversion and control; color management; digital forensics; printing technology, processes and presentation. Prerequisites: Visualization major or approval of instructor; junior or senior classification.

VIST 370 Interactive Virtual Environments
Credits 3. 3 Lecture Hours.
Languages and techniques useful for the creation of real-time virtual environments; definition of formal scene description structures; modeling and transformation techniques; simulation techniques; behaviors and message passing; user interaction and animation; multiuser environments; creating virtual interfaces; scripting techniques. Prerequisite: Visualization majors; junior or senior classification; VIST 271.

VIST 372 Creating Digital Environments
Credits 3. 2 Lecture Hours. 2 Lab Hours.
Terminology, principles and practices in the creation of 3D models; mathematical principles of geometrical modeling theory and application of modeling techniques; boolean operations; parametric modeling; modeling; particle systems; L-Systems; nurbs and/or grammar based techniques; lighting setup and control. Prerequisite: Visualization majors; junior or senior classification; VIST 271.

VIST 374 Multimedia Design and Development
Credits 3. 2 Lecture Hours. 4 Lab Hours.
Concepts and techniques for integrating multimedia with user control and interactivity; production of computer presentations and interactive mobile devices; computer animation, graphics, production, and use of digital images; scripting techniques; projects for stand-alone computers and mobile devices. Prerequisite: Junior or senior classification or approval of instructor and undergraduate program coordinator.

VIST 375 Foundations of Visualization
Credits 3. 3 Lecture Hours.
A comprehensive introduction to visualization concepts, techniques and applications; major topic areas include cultural context, application areas, visual perception, the digital image, visual language, coordinate systems, geometric representation, modeling animation, image synthesis, image composing, ethics and the future of visualization. Prerequisites: MATH 152; VIST 271; junior or senior classification.

VIST 405 Visual Studies Studio III
Credits 3. 1 Lecture Hour. 5 Lab Hours.
Theory and practice in the art and science of the visual image; scientific and mathematical principles as process; information theory and sensorial design; interactivity and user integration; integration of real and virtual environments including lighting design and material definition. Prerequisites: VIST 305; CARC 301 or VIST 494.

VIST 406 Visual Studies Studio IV
Credits 3. 1 Lecture Hour. 5 Lab Hours.
Theory and practice in the development of the digital image; non-traditional modeling methods; camera control and animation techniques; special effects; creative lighting methods; non-photorealistic rendering; integration of traditional and digital media in the creation of visual works. Prerequisites: VIST 305; CARC 301 or VIST 494.

VIST 432 Applied Perception
Credits 3. 3 Lecture Hours.
An advanced introduction to perceptual science, including the cognitive, neural and evolutionary processes that underlie perceptual systems as well as the variety of perceptual factors that influence design decisions. Prerequisite: Visualization major; junior or senior classification or approval of instructor.

VIST 441 Scientific and Technological Developments in Visual Arts
Credits 3. 3 Lecture Hours.
Advanced level course focusing on the relationship between art, science and technology; visual arts before the digital revolution; the development of computer graphic arts. Prerequisite: Upper level classification or approval of the undergraduate program coordinator.

VIST 442 Digital Characters: Art, Technology, Uses and Meaning
Credits 3. 3 Lecture Hours.
Examination of the art and technology employed in the creation of digital characters; exploration of the reasons for, and impact of, their use in popular media and science; digital character creation techniques; estimating performance requirements; visual examples and written work used to illustrate topics and application areas. Prerequisite: Junior or senior classification.

VIST 465 Art, Culture and Time Based Media
Credits 3. 2 Lecture Hours. 4 Lab Hours.
Exploration of perception, vision and self-expression for communication through time based media; investigation of expression, vision, and visual language as a process; practice of visual communication strategies. Prerequisites: Junior or senior classification or approval of instructor.

VIST 470 Digital Rendering
Credits 3. 3 Lecture Hours.
Creation of photorealistic images; rendering techniques and control; perceptual and physical principles related to creating realistic images; lighting and environmental effects; properties of materials; rendering models and techniques for adding visual detail; shading languages. Prerequisite: Visualization majors; junior or senior classification; VIST 271.

VIST 472 Digital Compositing
Credits 3. 3 Lecture Hours.
History, mathematical foundations, techniques and applications used in combining two dimensional images for film, video and multimedia; includes theoretical foundations of the digital image, color spaces and corrections, matte techniques, keying, rotoscoping, camera and object tracking, stereo compositing and process workflow. Prerequisite: VIST 271, junior or senior classification.
VIST 474 Designing for the Web
Credits 3. 2 Lecture Hours. 4 Lab Hours.
Principles of web page and site creation; elements of visual design; typography for the web; web technologies; controlling the page real estate through cascading style sheets (CSS); imaging for the web; creation and use of color and graphics; web standards; building complete web sites.
Prerequisite: Junior or senior classification or approval of instructor and undergraduate program coordinator.

VIST 484 Summer Internship
Credits 3. 3 Lecture Hours.
Practical experience in a visualization related company; 10-week internship with a minimum of 400 hours continuous employment; departmental pre-approval through the departmental internship coordinator required; post evaluation conducted following the internship. May not be repeated for credit.
Prerequisites: Upper level classification in visualization and approval of visualization intern coordinator.

VIST 485 Directed Studies
Credits 1 to 6. 1 to 6 Other Hours.
Special problems in visual studies. May be repeated for up to 9 credit hours.
Prerequisite: Approval of instructor and undergraduate program coordinator.

VIST 486 Introduction to Game Design
Credits 3. 3 Lecture Hours.
Computer game design; emphasis on interactive storytelling, game play and interface design; history of computer games, review of selected games; analysis of rules of play and simple game prototype development.
Prerequisite: Junior or senior classification.

VIST 487 Game Development
Credits 3. 2 Lecture Hours. 2 Lab Hours.
Aesthetic and technical aspects of computer game development, including game mechanics, story development, content creation and game programming; includes game design, interface design, 3D modeling and animation, graphics algorithms, shader programming and artificial intelligence; group project includes the design and development of a game from start to finish.
Prerequisite: VIST 486 or CSCE 441 or approval of instructor; junior or senior classification.

VIST 489 Special Topics in...
Credits 1 to 4. 1 to 4 Lecture Hours. 0 to 4 Lab Hours.
Selected topics in an identified field of visual studies. May be repeated for up to 9 credit hours.
Prerequisite: Approval of instructor and undergraduate program coordinator.

VIST 491 Research
Credits 1 to 4. 1 to 4 Other Hours.
Research conducted under the direction of faculty members in visualization; emphasis on visual studies. May be repeated 2 times for credit.
Prerequisites: Upper level classification; approval of instructor and undergraduate program coordinator.