VIST - VISUAL STUDIES (VIST)

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.  
Prerequisite: VIST 105.

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 visual communication.

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.  
Introduction to the theory and practice of visual computer based 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, animatics and post production.  
Prerequisites: 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 work-flow; 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 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 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 undergird perceptual systems as well as the variety of perceptual factors that influence design decision.  
**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.

VIST 494 Internship
Credits 6. 6 Other Hours.
Practical experience in a visualization related company; equivalent of 600 hours over at least 15 weeks; 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.