

VIST - VISUAL STUDIES (VIST)

VIST 105 Principles of Design I

Credits 3. 1 Lecture Hour. 7 Lab Hours.

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; introduction to color theory; emphasis on two-dimensional design.

Prerequisite: Lower division in Visualization.

VIST 106 Principles of Design II

Credits 3. 1 Lecture Hour. 7 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: Grade of C or better in VIST 105.

VIST 131 First Year Seminar

Credit 1. 1 Other Hour.

Seminar on contemporary topics related to Visualization; introduction to college instruction and experiences; focus on writing, exploration, discussion and research.

Prerequisite: Lower division in Visualization.

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: Lower division in Visualization.

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 3. 1 Lecture Hour. 7 Lab Hours.

Introduction to the creative processes, workflows and methodologies used in the field of visualization including interactive design, game design and development and animation.

Prerequisite: ARTS 115; VIST 106; VIST 283.

VIST 206 Visual Studies Studio I

Credits 3. 1 Lecture Hour. 5 Lab Hours.

Theory and practice of visual communication methodologies and processes used in interactive media, game design and development, or animation; visual storytelling.

Prerequisite: Grade of C or better in VIST 205.

VIST 235 Theory and Practice in Visualization

Credits 2. 1 Lecture Hour. 2 Lab Hours.

Professional material development, media theory and trends, copyright law and common business practices; professional practice in pursuit of career paths for creative fields in Visualization.

Prerequisite: Grade of C or better in VIST 205.

VIST 270 Computing for Visualization I

Credits 4. 3 Lecture Hours. 2 Lab Hours.

Theory and practice of visual computer based problem solving; system tools; scripting; software design principles and practice; basics of interactive programming and interface design; development concepts and principles useful in digital art and visualization production.

Prerequisite: MATH 151 and upper division in Visualization.

VIST 271 Computing for Visualization II

Credits 4. 3 Lecture Hours. 2 Lab 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; grade of C or better in 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: Grade of C or better in MATH 150 or MATH 151; non Visualization majors only.

VIST 282 2D Visualization Techniques

Credit 1. 2 Lab Hours.

Introduction to software used in the visual arts including 2D raster and vector images for motion graphics, animation, illustration and design. Specific course content will vary based upon curriculum requirements. May be taken for credit up to two hours.

Prerequisite: Major in visualization or minor in art.

VIST 283 3D Visualization Techniques

Credit 1. 2 Lab Hours.

Introduction to software used in the visual arts including 3D modeling, gaming and animation; applicable to 3D printing and rendering. Specific course content will vary based upon curriculum requirements. May be taken for credit up to two hours.

Prerequisite: Major in visualization.

VIST 284 Visualization Techniques

Credit 1. 2 Lab Hours.

Introduction to software used in the visual arts for technical manipulation of content, including film editing, gaming, Augment Reality (AR)/Virtual Reality (VR), or Audio. Specific course content will vary based upon curriculum requirements. May be repeated two times for credit.

Prerequisite: Major in visualization, minor in art, or minor in game design and development.

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: Grade of C or better in VIST 206.

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: Upper division in Visualization.**VIST 339 Research Techniques in Visualization****Credits 3. 3 Lecture Hours.**

Research techniques used in visualization and creative fields; qualitative and quantitative methods, formulating research questions; determining appropriate methods, research planning and designing, data collection, testing and assessment; data analysis and interpretation.

Prerequisites: Grade of C or better in VIST 206 and VIST 235.**VIST 354 Principles of Multimedia Design****Credits 3. 2 Lecture Hours. 3 Lab Hours.**

Application and design of web and mobile platforms to create interactive products; planning, design, and development of intuitive user interfaces; focus on user-centered design, interaction principles, and standards-based technologies.

Prerequisite: Grade of C or better in VIST 271 or ARTS 303.**VIST 357 Interaction Design****Credits 3. 3 Lecture Hours.**

Concepts, theories and methods in interaction design and interaction; dimensions of interaction design; data gathering methods and evaluation; task analysis; aesthetics and the sensory experience; prototyping, and workflow.

Prerequisite: Upper division in Visualization.**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: Grade of C or better in 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: Grade of C or better in 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.**

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: Grade of C or better in VIST 271.**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: Grade of C or better in VIST 305, and 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: Grade of C or better in VIST 305, and CARC 301 or VIST 494.**VIST 409 Capstone Studio****Credits 3. 1 Lecture Hour. 5 Lab Hours.**

Completion of the proposed capstone project; integration of core methodologies, concept development, drawing and design, art history, aesthetics, research, methodology and processes, scripting and programming and digital communication; required peer reviewed publication or other appropriate venue.

Prerequisites: VIST 405 and VIST 439.**VIST 432 Applied Perception****Credits 3. 3 Lecture Hours.**

Topics in perceptual science useful for Visualization; cognitive, neural and evolutionary processes that undergird perceptual systems; perceptual factors that influence design decision.

Prerequisite: Upper division in Visualization.**VIST 439 Capstone Proposal Development****Credit 1. 2 Lab Hours.**

Individual proposal development for capstone studio; demonstration of ideation and concept development, drawing and design, art history, aesthetics, research, methodology and processes, scripting or programming and digital communication.

Prerequisites: VIST 339 and VIST 375.**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 division in Visualization.**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: Grade of C or better in ARTS 349.

VIST 465 Video 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: Grade of C or better in ARTS 349.**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: Grade of C or better in 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: Grade of C or better in VIST 271.**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: Upper division in Visualization or minor in Art.**VIST 476/CSCE 447 Data Visualization****Credits 3. 3 Lecture Hours.**

Visual representation and design of data and information; 3D visualization, infographics, data narratives, principles of visual data encoding and interaction techniques.

Prerequisite: Grade of C or better in VIST 271, or CSCE 221, or CSCE 441.**Cross Listing:** CSCE 447/VIST 476.**VIST 477/CSCE 446 Virtual Reality****Credits 3. 3 Lecture Hours.**

Theory and practice of virtual reality; interactive 3D virtual environments; input/output devices, 3D interaction techniques, augmented reality, role of realism in VR, navigation techniques, design guidelines and evaluation methods.

Prerequisite: Grade of C or better in VIST 271, CSCE 221, or CSCE 441.**Cross Listing:** CSCE 446/VIST 477.**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 division 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: Grade of C or better in VIST 375, or minor in Game Design and Development.**VIST 487/CSCE 443 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.**Cross Listing:** CSCE 443/VIST 487.**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 0 to 4. 0 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 division in Visualization; 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 division in Visualization and approval of Visualization intern coordinator.