

VIST - VISUAL STUDIES (VIST)

VIST 101/FILM 101 Introduction to Visual Studies

Credits 3. 3 Lecture Hours. Survey of topics in the interdisciplinary field of visual studies, including forms of art, media, and architecture, and visual culture in global and intercultural contexts; application of visual studies methods and techniques to art, media, and architecture; analysis of the visual in contemporary culture; in-class visual studies exercises and discussions. **Cross Listing:** FILM 101/VIST 101.

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 110 Design Innovation

Credits 3. 2 Lecture Hours. 2 Lab Hours. Introduction to fundamental design issues, processes, and theories relevant to design resolution and the creation of new ideas for innovative design products and services by keeping users' needs at the center of the development process; overview of design research, prototyping, evaluation, and communication techniques to generate valuable insights for design innovation.

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 172 Foundations of Visual Computing

Credits 3. 2 Lecture Hours. 2 Lab Hours. Introduction to computer programming and mathematical concepts needed for developing solutions to visual computing problems; includes a graduated series of hands-on programming assignments; introduction to scripting in a professional animation package and emphasis on problem solving and debugging. **Prerequisite:** Lower division in Visualization.

VIST 173 Foundations of Visual Computing II

Credits 3. 2 Lecture Hours. 2 Lab Hours. Continuation of the introduction to programming and mathematical concepts underlying visual computing, with emphases on object-oriented programming and interaction; includes a graduated series of hands-on programming assignments; introduction to scripting in a 3D animation and visual effects package. **Prerequisites:** Grade of C or better in VIST 172.

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 275.

VIST 210 Time and Interaction

Credits 3. 2 Lecture Hours. 2 Lab Hours. Introduction to the history and practice of designing narrative media exploring principles and aesthetics of linear and non-linear interactive media.

VIST 215 Look Development I

Credits 3. 2 Lecture Hours. 4 Lab Hours. Introduction to look development for 3D environments; principles of light transport and material properties; physically-based shading; digital image foundations; texture and shader authoring; adding visual detail through texture data; proceduralism and image-based capture; accurate digital recreation of an asset based on real source material; industry and platform requirements. **Prerequisites:** Grade C or better in VIST 206.

VIST 216/DCED 216 Performance Documentation and Editing

Credits 3. 3 Lecture Hours. Exploration of the technical and artistic skills required for filming and documenting performance; fundamental techniques of camera movement and frame composition; hands-on experience learning and operating various cameras, movement apparatuses and camera rigs, lighting equipment, and professional editing programs to produce archival and promotional documentation of live performances. **Cross Listing:** DCED 216/VIST 216.

VIST 225 Virtual Production Techniques

Credits 3. 2 Lecture Hours. 2 Lab Hours. Introduction to the virtual production techniques utilized in various fields of visualization; topics include live action cinematography, real time engine, direct modeling, and animation digital content creation; procedural digital content creation; animation sequencing and virtual camera control in a real-time engine. **Prerequisites:** Lower division in Visualization, or approval of instructor.

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 275.

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 272 Visual Computing

Credits 3. 2 Lecture Hours. 2 Lab Hours. Emphasis on the procedural and mathematical principles underlying computer programming for visual display and interaction; basics of digital image processing, parametric and implicit shape description, and applied linear algebra; includes an introduction to scripting in a 3D gaming package. **Prerequisite:** Grade of C or better in VIST 173.

VIST 275 Production Techniques

Credits 3. 2 Lecture Hours. 4 Lab Hours. Introduction to the asset-creation techniques utilized in various fields of visualization; topics include game development, visual effects, interactive media, animation, and fabrication; interdisciplinary principles shared by diverse production pipelines, with a focus on 3D visualization. **Prerequisite:** Grade of C or better in VIST 106.

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 301 Field Studies in Design Innovation

Credits 1 to 6. 0 Lecture Hours. 1 to 6 Other Hours. Design innovation in international and domestic environments away from the Texas A&M University campus; emphasis on the cultural, social, economic, geographical, climatic and technological factors influencing design solutions for human needs. May be taken two times for credit.

Prerequisite: Junior or senior classification; approval of assistant dean for international programs and initiatives.

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 311 Field Studies in Design Communication

Credits 3. 2 Lecture Hours. 4 Lab Hours. Art and design communication in international and domestic environments away from the Texas A&M University campus; emphasis on the tools, methods, and techniques for design communication. May be taken two times for credit. **Prerequisites:** Junior or senior classification; approval of Associate Dean for Academic Affairs.

VIST 325 Pre-Visualization and Storyboarding for Virtual Production

Credits 3. 2 Lecture Hours. 2 Lab Hours. Advanced three-dimensional computer animation; merging storytelling and visual communication; story development; expressive character design; acting; speech animation; choreography; stage lighting; storyboards; soundtracks; story reels; production efficiency, and quick iterative refinement. **Prerequisites:** Grade C or better in VIST 305 or VIST 372, or approval of instructor.

VIST 327 Virtual Cinematography and Lighting

Credits 3. 2 Lecture Hours. 2 Lab Hours. Principles and practical application of lighting and cinematography in the virtual production environment; building on the principles of visual communication; exploration of lighting, composition, and camera movement utilized for the achievement of desired presentation goals. **Prerequisites:** Grade of C or better in VIST 225; junior or senior classification.

VIST 331 Field Studies in Design Philosophy

Credits 3. 2 Lecture Hours. 4 Lab Hours. Art and performance experience in international and domestic environments away from the Texas A&M University campus; emphasis on the historical, philosophical, scientific, cultural, social, technical, and economic factors that influence art and performance. May be taken two times for credit. **Prerequisite:** Junior and senior classification; approval of associate dean of academic affairs.

VIST 333/FILM 333 Story for the Screen

Credits 3. 3 Lecture Hours. Exploration of the internal structure of stories; exploration of stories through emotion and action beats; narrative scripts in the visually kinetic language through which live-action and animated films and narratively-driven video games perform stories. **Prerequisites:** Junior or senior classification. **Cross Listing:** FILM 333/VIST 333.

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.

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 272 or ARTS 303.

VIST 357 Interaction Design

Credits 3. 2 Lecture Hours. 2 Lab 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. 2 Lecture Hours. 2 Lab 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 272 or approval of instructor.

VIST 371 Artificial Intelligence in Interaction Design

Credits 3. 2 Lecture Hours. 2 Lab Hours. Addresses challenges and methodologies of designing interactions for artificial intelligence (AI) systems including user-centered design approaches; exploration of how AI transforms the way people interact with technology; work through the design of responsive, intuitive, and ethical AI interfaces; includes a combination of theory, practical design exercises, and project-based learning. **Prerequisites:** PVFA 201; PVFA 301 or concurrent enrollment; junior or senior classification or approval of instructor.

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 386 Game Design I

Credits 3. 2 Lecture Hours. 2 Lab Hours. Game design, emphasis on mechanics, game play and interface design; history of game design, review of selected games; analysis of rules of play and iterative development of table-top games. **Prerequisites:** Junior or senior classification; or minor in Game Design and Development.

VIST 401 World-Building in Games

Credits 3. 2 Lecture Hours. 2 Lab Hours. Emphasis on creating and articulating a compelling setting for a table-top or computer game, and using world-building as a fundamental tool for creating games, structural analysis of ludic narratives and settings, understanding concepts like the chronotope and psychogeography and applying them to game design, and on making equitable and inclusive representations of other cultures. **Prerequisites:** Grade of C or better in VIST 386.

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 VIST 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 408/GLST 408 Techne, Technology, and the Visual Arts

Credits 3. 3 Lecture Hours. Examination of the tension between techne, art, and technology through an exploration of influential theoretical texts; analysis of major challenging works of visual art, ancient and contemporary, analog and digital, human and non-human; investigation of visual art and technology in a global context. **Prerequisites:** Junior or senior classification or approval of instructor. **Cross Listing:** GLST 408/ VIST 408.

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. May be taken two times for credit. **Prerequisites:** Grade of C or better in VIST 305 and VIST 339.

VIST 415 Look Development II

Credits 3. 1 Lecture Hour. 4 Lab Hours. Advanced look development for photorealistic 3D assets and worlds; professional practices focused on efficiency and quality; managing project scale and complexity; procedural geometry-like hair, vegetation, and debris; procedural texture patterning; art and design principles for look development; integrating assets into larger creative projects using concept art and direction. **Prerequisite:** Grade C or better in VIST 215.

VIST 419 Motion Capture Animation

Credits 3. 2 Lecture Hours. 2 Lab Hours. Overview of motion capture technology, history, and techniques; application of motion-captured data to animate digital characters and props, including capture, cleaning and retargeting data for use. **Prerequisites:** Grade of C or better in VIST 305 or approval of instructor.

VIST 420 Business for Creatives

Credits 3. 3 Lecture Hours. Exploration of the essentials of entrepreneurship for creatives, from freelancing to small business ownership; hands-on development of business and financial plans, creating pitch decks, and gaining the knowledge needed to launch successful creative ventures while cultivating an entrepreneurial mindset. **Prerequisite:** Junior or senior classification, or approval of instructor.

VIST 425 Art Direction for Virtual Production

Credits 3. 2 Lecture Hours. 2 Lab Hours. Development of complementary skill sets specialized for the design of real-time environments design, real-time characters, and real-time props used in projects integrating physical and virtual sets for visual storytelling, and/or live performances and broadcast events; may include lighting studies cinematography, photogrammetry, performance capture and other uses of virtual production tools to help achieve the goals of a virtual art department. **Prerequisites:** Grade C or better in VIST 172 or VIST 225; junior or senior classification.

VIST 428 Advanced Game Design

Credits 3. 2 Lecture Hours. 2 Lab Hours. Emphasis on the application of game mechanics for different genres of games; development of mechanics for mobile, VR, PC, and console games; prototyping while also deeply engaging in the subject from an analytical perspective. **Prerequisites:** Grade C or better in VIST 386, or approval of instructor.

VIST 429 On Set Virtual Production

Credits 3. 1 Lecture Hour. 4 Lab Hours. Development of advanced visual storytelling and visual communication projects utilizing virtual production technologies on a soundstage; emphasis on production efficiency on team-based collaborative projects with successive refinement of aesthetic intent; may include story development, expressive performance choreography, design and integrated use of virtual and practical sets and props, stage lighting, and sound; projects may be oriented toward live performance, live broadcast, or commercial production utilizing a combination of in-camera visual effects and post-processing and editing. **Prerequisites:** Grade C or better in VIST 225, VIST 325, VIST 425, or approval of the instructor.

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:** Grade of C or better in VIST 339.

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. 2 Lecture Hours. 2 Lab 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. **Prerequisites:** Grade of C or better in VIST 206 and ARTS 349.

VIST 443 Algorithmic Design

Credits 3. 2 Lecture Hours. 2 Lab Hours. Best practices for the procedural generation of geometry, visual effects, and dynamics; process of creating geometry procedurally, how to create simple dynamic effects such as cloth and destruction simulations, and the fundamentals of creating visual effects such as explosions, smoke, and other fluids. **Prerequisites:** Grade C or better in VIST 272; junior or senior classification.

VIST 465 Video and Time Based Media

Credits 3. 2 Lecture Hours. 4 Lab Hours. Exploration of perception, vision and self-expression through video, film, and other time-based media; emphasis on language, theories, disciplines, and procedures used to plan and produce time-based works; exposure to the history of film and video and the social and conceptual influences on the medium. **Prerequisites:** Junior or senior classification.

VIST 470 Digital Rendering

Credits 3. 2 Lecture Hours. 2 Lab 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. **Prerequisites:** Grade of C or better in VIST 272; junior or senior classification.

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 272.

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 Graphic Design.

VIST 475 Character Animation

Credits 3. 2 Lecture Hours. 2 Lab Hours. Emphasis on the theoretical and practical approaches to 3D character animation; exploration of the 3D animation production pipeline; topics include the Twelve Principles of Animation, analysis of character animation in various media, and introduction to techniques and processes of implementing character animation into a game engine. **Prerequisites:** Grade C or better in VIST 206; junior or senior classification.

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 272, or CSCE 221, or CSCE 441. **Cross Listing:** CSCE 447/VIST 476.

VIST 477/CSCE 446 Virtual Reality

Credits 3. 2 Lecture Hours. 2 Lab 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 272, CSCE 221, or CSCE 441. **Cross Listing:** CSCE 446/VIST 477.

VIST 480 Game Level Design

Credits 3. 2 Lecture Hours. 2 Lab Hours. Game level design, the art of creating the game level context; game 2D & 3D spaces, spatial challenges; flow of game spaces and pacing; players engagement and communication through environment art; storytelling and rewards in game spaces. **Prerequisites:** Grade of C or better in VIST 386 or approval of instructor; junior or senior classification.

VIST 484 Summer Internship

Credits 3 to 6. 3 to 6 Other Hours. Practical experience in a visualization related company; equivalent of 240 hours over at least 5 weeks; departmental pre-approval through the departmental internship coordinator required; post evaluation conducted following the internship. May be taken two times 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 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. **Prerequisites:** Grade of C or better in VIST 386 or CSCE 441, or approval of instructor. **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 3 to 6. 3 to 6 Other Hours. Practical experience in a visualization related company; equivalent of 480-600 hours over at least 12-15 weeks; departmental pre-approval through the departmental internship coordinator required; post evaluation conducted following the internship. May be taken two times for credit. **Prerequisites:** Upper division in Visualization and approval of Visualization intern coordinator.