IMM 110/Introduction to Digital Media   **1 course unit**
(every semester)
Prerequisite: Reserved for IMM majors and minors or by permission of instructor
An introduction to digital media for interactive multimedia through the study of state-of-the-art methods of creating digital media: painting programs, digital image editing, and time-based authoring programs. Computer graphics and digital media combine to make building images and editing graphics easy and effective. Digital media have led to new methods of communications that affect how we work, play and see ourselves and our environment. Through studio and seminar sessions, students will explore ways of constructing types of digital media and consider the aesthetic, technical, and social effects of this work. Critiques of student work, readings, and discussion will examine the evolving formal criteria and social implications of this work. (Core)

IMM 120/Introduction to Interactive Computing   **1 course unit**
(same as CSC 101)
(every semester)
Prerequisite: Reserved for IMM majors and minors or by permission of instructor
A first course in computing languages for interactive multimedia. Students are introduced to the art of programming through state-of-art multimedia technologies (e.g. *Processing*) Through intensive laboratory experience students learn the programming fundamentals (e.g., variables, functions, control structures and logic, persistent storage and networking). Problems related to interactivity are emphasized. Students will understand the distinction between mark-up languages, scripting languages and general purpose programming languages and develop proficiency in the first two. Efficiency, data structure organization and objects are introduced within the context of interactive computing problem solving. (Core)

IMM 130/Design Fundamentals for the Web   **1 course unit**
(spring)
Prerequisite: Reserved for IMM majors and minors or by permission of instructor
This course allows students to develop and practice specific, foundational skills in web production, while simultaneously developing an understanding of and strategies for effective visual communication in general. Students will develop an understanding of when and how to use tools such as HTML, CSS and Javascript. Through readings, lectures and demonstrations, students will also develop an appreciation for fundamental issues of graphical communication, including color, typography and composition. Throughout the course we will compare and contrast traditional approaches to design with similar approaches on the web, examining the differing constraints and additional considerations of designing for a digital and interactive medium. (Core)

IMM 140/Writing for Interactive Media   **1 course unit**
(every semester)
Prerequisite: Reserved for IMM majors and minors or by permission of instructor
Introduces students to the reasoning, rigors and routines of writing for business and professional markets. Students will broaden their conceptual understanding of the relationships between journalism, public relations and marketing while acquiring or improving proficiency in creating multimedia content. (Core)

IMM 211/Animation I   **1 course unit**
(same as AAV 275)
(every semester)
Prerequisite: IMM 110; reserved for IMM majors and minors or by permission of instructor
Surveys traditional and computer animation history, techniques, and terminology. Students will learn basic concepts and skills of 3D digital imaging, animation, rendering, and principles of motion and continuity. The student will produce three-dimensional animation. (In-major option)

IMM 220/Physical Computing   **1 course unit**

(spring)
Prerequisite IMM 120
This course explores the building of interactive systems that bridge the physical and digital world. Using programmable microcontrollers and a range of sensors, students will create installations, environments, games and interactive objects that go beyond the traditional approach of mouse/keyboard input and screen output. Through weekly labs, workshops, projects and readings, students will be introduced to electronics, circuit building, programming, materials and fabrication. With an emphasis on rapid prototyping and project documentation, students will be empowered to move quickly from idea to functional piece.

IMM 230/Dynamic Web Applications   **1 course unit**
 (fall)
Prerequisite: IMM 130; reserved for IMM majors and minors or by permission of instructor
This course provides students with advanced web development skills and strategies to build dynamic web applications. Students will develop an understanding of how to use server-side technologies such as PHP and MySQL to collect, organize and distribute information. In addition, students will utilize client-side frameworks such as jQuery Mobile and PhoneGap to assist in the delivery of data-driven applications on mobile devices. Through workshops and presentations, students will explore topics related to information architecture, social interface design, cloud computing, security, copyright and identity management. (In-major option)

IMM 240/Technical Writing   **1 course unit**
(occasionally)
Prerequisite: IMM 140; reserved for IMM majors and minors or by permission of instructor
This course teaches students the writing, scripting and document design skills needed to create training materials, technical reports, and technical or business proposals in print, online or interactive formats. (In-major option)

IMM 250/ Electronic Music Skills and Literature   **1 course unit**
(same as AAV 385 and MUS 345)
(every semester)
Prerequisite: IMM 110; reserved for IMM majors and minors or by permission of instructor
This course introduces students to electronic music studio techniques, including MIDI, sequencing, sound synthesis, sampling, mixing, and audio production. It also covers theoretical and historical developments in the field of electronic music, including a review of compositions, styles, and technologies. Students create their own musical compositions in the computer lab. Open to students of any major. (In-major option)

IMM 270/ Topics in Interactive Multimedia   **1 course unit**
(Occasionally)
An introductory course focused on current or specialized topics in interactive multimedia. May be repeated for different topics. (In-major option)

IMM 280/Design Perspectives in Interactive Multimedia   **1 course unit**
(spring)
Prerequisites: Three of the following: IMM 110, 120, 130, 140
This class is interdisciplinary, bringing together the various bodies of knowledge that inform the field of interactive multimedia, such as storytelling, interaction design, interface design, project management and user testing. The class provides an overview of concepts necessary both to create and evaluate interactive multimedia projects. Students apply these ideas to a series of individual writing and production assignments, and ultimately to a collaborative project that spans most of the semester. This writing-intensive course is the last of the five core courses for the Interactive Multimedia major, and is a prerequisite for all 300-level and above courses. (Core)

IMM 311/Computer Animation II   **1 course unit**
(spring)

Prerequisites: IMM 211 and IMM 280
This course builds on the foundation in 3D computer animation begun in IMM 211. It develops the student's basic animation skills with additional emphasis on 3D object creation and animation techniques (model building, rendering, animating). Creative and conceptual development are emphasized throughout the course and students will develop individual or group animation projects. (In-major option)

IMM 320/Information Retrieval   **1 course unit**
(same as CSC 320)
(occasionally)
Prerequisites: CSC 230 or CSC 250 or IMM 280
This course will discuss theory and practice of searching and retrieval of text and bibliographic information. Topics covered include automated indexing, statistical and linguistic models, text classification, Boolean and probabilistic approaches to indexing, query formulation and output ranking, information routing and filtering, topic detection and tracking, as well as measures of retrieval effectiveness, including relevance, utility, miss/false-alarm. Techniques for enhancing retrieval effectiveness including relevance feedback, query reformulation, thesauri, concept extraction, and automated summarization. Experimental retrieval approaches from relevant state-of-the-art conferences as well as modern Internet search engines are discussed in detail. (In-major option)

IMM 342/Interactive Storytelling   **1 course unit**
 (occasionally)
Prerequisites: IMM 280
This course will explore existing and experimental methods for telling interactive stories. Interactive stories are defined as stories that allow the audience, listener, or reader to participate in the shaping of the narrative. Students will be able to articulate the differences between linear, non- linear, multilinear and meta-linear narratives. Students will analyze stories, they will create their own interactive stories using multimedia technologies, and they will hypothesize about the potential usefulness and social utility of new storytelling technologies under development. (In-major option)

IMM 350/Interactive Music Programming   **1 course unit**
(same as MUS 336)
(spring)
Prerequisites: IMM 250 and IMM 280
This course will help students develop interactive music programming skills using the Macintosh operating system (OSX). We will use the MAX/MSP development environment to send and receive MIDI messages and process audio streams in real-time. External controllers and sensors will be used to shape and perform musical selections. Final projects will demonstrate both technical and musical skills in composition, interactivity, and/or improvisation. (In-major option)

IMM 351/ Audio Signal Processing   **1 course unit**
Same as MUS 335
(fall)
Prerequisites: IMM 280
Students will learn how to use audio production software on the Macintosh platform, through musical tasks such as score notation, orchestration, and composing. They will also develop quantitative skills in digital signal processing, through technical tasks such as analyzing, filtering, and synthesizing audio data. Software packages include Pd, Finale, Logic, and Audacity. (In-major option)

IMM 360/ Games I: Design and Architecture   **1 course unit**
Same as CSC 365
(fall)
Prerequisite: IMM 280

This is a multidisciplinary course that invites students from a variety of disciplines to participate in the development of a game design while learning about the underlying architecture of a game engine. Students will customize a broad set of learning goals to their own needs, ranging from the purely artistic to the purely technical. Lecture and workshops will provide a full range of exposure to game development including game engine design, story telling, interactivity, networking for multi-user, 3-D pipeline for games, sound, music and dialog. Each semester will focus on a particular type of game, including but not limited to 'role playing,' first person shooter,' 'immersive learning, 'real world simulation.' Students will also address issues of gender and racial equity in the games industry as well as social, ethical and health concerns. (In-major option)

IMM 370/Topics in Interactive Multimedia   1 course unit
(occasionally)
Prerequisite: IMM 280
An intermediate course focused on current or specialized topics in interactive multimedia. May be repeated for different topics. (In-major option)

IMM 391/Independent Study in Interactive Multimedia   variable course units
every semester)
Prerequisites: IMM 280 and approved enrollment form
Individual, in-depth study of an area in interactive multimedia developed in consultation with a faculty mentor. May be repeated for different topics. (In-major option)

IMM 399/Internship in Media   variable course units
(every semester)
Prerequisites: IMM 280 and approved enrollment form
An opportunity to work with interactive multimedia professionals in consultation with a faculty mentor. (In-major option)

IMM 410/Time Media: Video Effects and Compositing   1 course unit
(occasionally)
Prerequisites: IMM 211 and IMM 280
An advanced course in digital media that combines 2D and 3D still and motion image creation with video editing, compositing, and sound in order to produce dynamic media. It explores the way that images, sound, and narrative elements combine to produce significant and meaningful visual effects extending through time. The class looks at the history, aesthetics, and current practice of time-based media. Students will design, produce, and present advanced media projects based on appropriate computer and digital media technologies. Students will use high-end desktop software integrating digital paint, tracking, masking, keying, particles with 2D and 3D composition and special effects. Students will cover the structure, interface, workflow, and techniques used to create sophisticated and complex shots, scenes, and graphic sequences. (In-major option)

IMM 443/Computer-Assisted Reporting   1 course unit
(same as JPW 301)
(annually)
Prerequisites: IMM 280
The course teaches basic skills associated with investigative reporting. Students will learn to mine and interpret official data, to use technology commonly employed in computer-assisted reporting, and to formulate and test a journalistic research hypothesis. Particular attention will be given to issues of ethics, privacy and freedom of information. (In-major option)

IMM 460/ Games II: Implementation and Project Management   1 course unit
(same as CSC 465)
(spring)
Prerequisites: IMM 360 or permission of coordinator

This is a multidisciplinary course that invites students from a variety of disciplines to participate in the implementation of a robust demonstration video game. Programmers, software engineers, digital artists, sound specialists and musicians work collaboratively to create a single game (designed in Games I). Each student defines a personal role in the process so that no two students will complete the same set of course requirements. All students, however, participate in learning about and implementing a project management structure to plan and execute the sequence of activities that must take place to complete the game. Each semester will focus on a particular type of game, including but not limited to 'role playing', 'first person shooter', 'immersive learning', 'real world simulation'. Students will also address issues of gender and racial equity in the games industry as well as social, ethical and health concerns. (In-major option)

IMM 470/Topics in Interactive Multimedia   **1 course unit**
(occasionally)
Prerequisite: IMM 280
An advanced course focused on current or specialized topics in interactive multimedia. May be repeated for different topics. (In-major option)

IMM 498/ Senior Thesis: Research and Innovation   **1 course unit**
(fall)
Prerequisites: Senior standing and IMM 280
The first of two courses in the IMM thesis sequence, to be followed by IMM 498. This course requires students to conduct rigorous research into an area of interest within Interactive Multimedia, and to devise a project that demonstrates that research. Students implement a series of proofs-of-concept and ultimately write a thorough proposal for the project they will execute in the second semester of the IMM sequence, IMM 499. (Capstone)

IMM 499/ Senior Thesis: Process and Promotion   **1 course unit**
(spring)
Prerequisite: IMM 498
The second of two courses in the IMM thesis sequence, preceded by IMM 498 In this capstone course, students work closely with faculty to implement, test and refine the project they devised in the earlier semester. This course is writing-intensive, requiring students to extensively document their research, their process and their results. (Capstone)