MECT122 $ **(3)**
Mechanical Drawing II
Limit dimensioning, drawing, and interpretation of weld symbols. Solid modeling and production drawings using CAD. Weekly: a 3-hour lab. Prerequisite: MECT121. *Spring*

MECT235 $ **(4)**
Materials Technology
Study of industrial materials. Properties of materials correlated with the internal structure. Includes metals, plastics, and ceramics. Weekly: a 3-hour lab. Prerequisites: MATH166, CHEM131. *Spring*

MECT285 **(4)**
Statics and Strength of Materials
Analysis of static force systems. Forces, moments, resultants, free-body diagrams, equilibrium, center of mass, moment of inertia, and friction. Assignments designed to develop problem-solving abilities. Study of internal stress and deformation of elastic bodies. A minimum grade of C required in order to enroll in MECT355. Prerequisite: MATH182. *Fall*

MECT326 $ **Alt (4)**
Fluid Power Systems
Principles and applications of fluid power systems to actuate and/or control machines. Electro-hydraulic-pneumatic systems studied. Principles of fluids introduced. Weekly: a 3-hour lab. Prerequisite: MECT285. *Fall*

MECT355 **(4)**
Dynamics and Kinematics
Fundamentals and applications of dynamics; displacement, velocities, acceleration, work, energy, power impulse, momentum, and impact. Also a study of the basic theories and techniques in the analysis of relative motion, acceleration, and acceleration of machine parts such as linkages, cams, gears, and other mechanisms. Prerequisites: MATH182, MECT285. *Fall*

MECT370 $ **Alt (4)**
Heat Power
Thermodynamics properties, first and second law of thermo-dynamics, ideal gas law, the Carnot Cycle, power and refrigeration cycles, heat transfer power and refrigeration cycles, non-flow gas processes, mixtures of ideal gasses, psychrometric chart, air conditioning, fluid statics, kinematics, dynamics. Weekly: a 3-hour lab. Prerequisite: MECT355. *Fall*

MECT375 $ **Alt (4)**
Fluid Mechanics
Dimensionless parameters, compressible flow, flow-in pipes, open channel flow, drag, lift. Weekly: a 3-hour lab. Prerequisite: MECT355. *Spring*

MECT415 **(3)**
Mechanical Design and Fabrication
The design of machine elements and the calculations necessary in determining the size and shape of machine parts. The selection of materials and the application of standard machine components. Includes bearings, gears, clutches, and couplings. Prerequisite: MECT355. *Spring*

IMAGING AND APPLIED TECHNOLOGY

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Academic Programs	Credits
BT: Automotive Management	68
AT: Automotive Technology	40
BT: Digital Multimedia Technology	67
BT: Graphic Imaging Technology	63-66
Electronic Publishing	
Web Development	
AT: Graphic Imaging Technology	40
BS: Photographic Imaging	66
Minor in Automotive Technology	20
Minor in Digital Multimedia Technology	20
Minor in Imaging Technology	22
Minor in Photographic Imaging	20
Minor in Web Development	23

SEQUENCE OF TWO-YEAR AND FOUR-YEAR PROGRAMS
The Department of Imaging and Applied Technology plans programs using the "ladder concept," allowing a student to complete as much education as desired before entering the work force. Two- and four-year programs are available. Students completing the two-year program may go directly into a four-year program in the same area without the loss of credits. The ladder concept allows students to reach the educational goal that best fits their specific needs.

Programs

AUTOMOTIVE

Two programs are available: A four-year Bachelor in Automotive Management, and a two-year Associate in Automotive Technology. Both programs give the student beginning-level skills in automotive repair. The automotive management provides a solid background in business.

BT: Automotive Management

Major requirements—68
AUTO135, 140, 150, 325, 330, 340, 350, 380; TCED140, 250, 390, 456, ACCT121, 122; FNCE317; BSAD355 plus 6 credits of electives chosen from BSAD210, 341, 384, 410; MKTG310 plus 3 credits of electives chosen from MKTG320, 368, 450
Cognate requirements—3
ECON225

AT: Automotive Technology

Major requirements—40
AUTO135, 140, 150, 325, 330, 340; INDT315; TCED456, plus 12 credits of electives chosen from AUTO350, 380 and other related courses.

All students in these two program options must have written two ASE exams by the end of their first year. By the end of the second year, they must have passed a minimum of five ASE tests in their respective option.

DIGITAL MULTIMEDIA TECHNOLOGY

Digital Multimedia is a very exciting field which utilizes the computer as its main work tool in developing projects needed by clients.

Students learn skills such as digital image manipulation and enhancement, 3-D modeling and animation, digital sound mixing and enhancement, digital video editing, interactive web page design, interactive multimedia, and CD authoring.

BT: Digital Multimedia Technology

Major requirements—56
DGME130, 175, 185, 215, 216, 225, 250, 335, 340, 360, 370; PHTO130; TCED495 plus 12 credits of electives chosen from ART214; DGME305, 345, 387; PHTO115, 300, 365.
Cognate requirements—11
Chosen from ART104, 207, 214; COMM320; CPTR125.

Students are accepted into the Digital Multimedia program on a provisional basis until they demonstrate their skills and abilities. By the end of the students' sophomore year they need to have completed ART104, 207; DGME130, 175, 215, 225; and PHTO130 with a cumulative GPA of at least 3.00. They must also submit a portfolio of their work to the department along with a formal application to the Digital Multimedia program.

Applications and portfolios are reviewed by the department during the month of May and the applicant is notified no later than June 30 of acceptance into the program. Students must have a cumulative GPA of 2.75 in this major for graduation.

GRAPHIC IMAGING TECHNOLOGY

Revolutionized by the introduction of computer technology into the industry, the term "graphic imaging" is no longer limited to the field of printing. The industry now emphasizes online publishing and interactive multimedia. Students work extensively with computer applications. Two options are available.

Electronic Publishing helps students develop skills in the use of computer applications to produce materials for the printed page as well as for Web and CD-ROM publishing and interactive media.

Web Development. In today's economy almost everyone has a web page to help advertise or market a product. This is one of the rapidly growing areas of the job market. Students taking this emphasis will have the needed background to find good paying jobs.

BT: Graphic Imaging Technology

Major requirements—30
DGME130, 175, 215, 225, 250, 335, 350; PHTO365; TCED495.
Emphasis in Electronic Publishing—28
DGME185, 305; GRPH125, 145; PHTO115; plus 10 credits of electives chosen in consultation with advisor.
Cognate requirements—8
ART104, 207; JOUR140
<center>**or**</center>
Emphasis in Web Development—28
CPTR125, 151, 152; DGME340. 387; plus 11 credits of electives chosen from CPTR416; DGME216, 345; PHTO115, 130, 300.
Cognate requirements—5-6
Chosen from ART104, 207, 214, 310.

AT: Graphic Imaging Technology

Major requirements—40
DGME130, 175, 185, 225; GRPH125; INDT315 plus 18 credits of electives chosen from DGME305; GRPH145 and others in consultation with advisor.
Cognate requirement—2
ART207

PHOTOGRAPHIC IMAGING

Photographic imaging fosters creativity in the production of visual images. The subject of these images and the method used to create them vary.

Commercial imaging develops skills required by the commercial industry through the use of studio work and on-location shooting in medium- and large-format photography.

Digital imaging utilizes computer technology to create, enhance, or modify photographic images.

Photography encompasses elements of digital and commercial imaging, and adds individual creativity and photojournalism.

Video emphasis features shooting and digital editing.

BS: Photographic Imaging

Major requirements—46
DGME130, 175; PHTO115, 200, 220, 285.
Emphasis in Photography–21
PHTO300, 365, 385, 400; TCED495; plus 5 credits of electives chosen from DGME216, 345; GTEC395; PHTO130, 210, 410, 425.
Cognate requirements—18-19
ART104, 207, 214, 414; BSAD210; COMM320 or 456, 475.
<center>**or**</center>
Emphasis in Video–21
PHTO130; DGME215, 216, 345; TCED485; plus 7 credits of electives chosen in consultation with advisor.
Cognate Requirements–14
COMM465, 475; ENGL430; JOUR230, 330.

By the end of the sophomore year (min.16 credits in PHTO courses) students are required to pass a portfolio review. The review is a time where the faculty evaluate the students progress by examining their technical and creative abilities. The student must present their portfolio to the faculty, discuss goals and intelligently defend their work.

Minors

Automotive Technology—20
AUTO120, 130, 345, or 135, 140, 150; TCED140 plus 6-7 credits of electives chosen from auto technology.

Digital Multimedia Technology—20
DGME130, 175; plus 13 credits of electives chosen from DGME courses in consultation with advisor and approved by the department.

Imaging Technology—22
ART207; DGME130, 175, 185; GRPH145 plus 3 credits of electives chosen from DGME, GRPH, and PHTO.

Photographic Imaging—20
DGME175; PHTO115, 200, 220, 285.

Web Development—23
ART207; DGME130, 175, 250, 350 plus one cognate chosen from ART104, 214, CPTR125.

Courses (Credits)

See inside front cover for symbol code.

AUTOMOTIVE TECHNOLOGY

AUTO104 $ (2)
Personal Auto Care
Stresses the need for proper procedures in routine automobile maintenance. Helps the automobile owner become a wise consumer with emphasis on how to do simple tune-up, maintenance, and minor repairs. Not applicable to a major or minor. *Fall*

AUTO105 (1)
Automotive Consumerism
Consumer knowledge for the everyday challenges and decisions involved in automobile ownership. Topics include purchasing a new vehicle, how to choose a good repair facility, buying auto insurance, leasing, financing your purchase as well as how to deal with sales-people. When to sell or trade a vehicle along with how to protect your investment is also covered. Not applicable to a major or minor. *Fall*

AUTO135 $ (4)
Engine Performance I
A course dealing with general engine diagnosis emphasizing ignition, fuel, air intake, emission and computer controls. *Fall*

AUTO140 $ (4)
Brakes, Suspension and Steering I
A study of the hydraulic brake system including drum and disc diagnosis and repair. Steering and suspension along with basic wheel alignment will be covered. *Spring*

AUTO150 $ (4)
Automotive Electrical Systems I
A course dealing with general electrical diagnosis and service procedures which covers: starting, charging, lighting, accessories and gauges. *Spring*

AUTO325 $ (4)
Engine Repair
Includes general engine diagnosis and repair covering cylinder heads, block repair, lubrication and exhaust systems. *Fall*

AUTO330 $ (4)
Engine Performance II
An in-depth study of engine diagnosis as it relates to ignition, fuel air induction, emission and computer controls. Use of diagnostic tools will be emphasized. Prerequisite: AUTO135. *Spring*

AUTO340 $ (4)
Brakes, Suspension and Steering II
An advanced study of the hydraulic braking system including ABS diagnosis and repair. In-depth investigation of alignment, steering and suspension will be covered. Prerequisite: AUTO140. *Spring*

AUTO350 $ (4)
Automotive Electrical Systems II
In-depth study of the starting, charging, lighting systems along with accessories and gauges. Emphasis in computer application and control of the automobile operation. Prerequisite: AUTO150. *Spring*

AUTO380 $ (2)
Heating and Air Conditioning
A study of refrigeration theory and repair. Refrigerant recovery and recycling methods, heating and cooling principles are stressed. *Spring*

AUTO425 (1-4)
Automotive Services
Designed to provide experience in automotive diagnosis, estimating, and repair. Students will work on assigned projects. Prerequisites: 20 credits of auto courses with a 3.00 GPA and listed in at least one specialty area by ASE. Repeatable to 8 credits. *Fall, Spring*

DIGITAL MULTIMEDIA TECHNOLOGY

DGME130 $ (3)
Introduction to Digital Graphics
An introductory survey of professional digital and conventional graphics covering understanding the Macintosh computer, electronic publishing, basic printing principles, sound digitizing, vector and raster graphics, interactive multimedia, image acquisition and output, web publishing and e-mail. *Fall, Spring*

DGME175 $ (4)
Digital Imaging
A study of raster graphic fundamentals as they apply to scanned images. Emphasis on image manipulation, restoration, tonal enhancement, on-screen graphics and image acquisition and output. Visual and procedural problems relating to digital imaging will be covered, along with techniques of aesthetic and efficient image enhancement. Prerequisites: DGME130 with a C or better; and ART207. PHTO115 recommended. *Fall, Spring*

DGME185 $ (4)
Desktop Publishing I
Students learn to produce publications on desktop computers, including: brochures, magazine covers, corporate stationery, book covers, etc. Course topics incorporate: effective page layout, basic color theory, monitor calibration, gray balance, tone compression, GCR and UCR, digital proofing, image acquisition, and final output. Applications of color theories and color separation are stressed. Prerequisite: DGME175. *Fall*

DGME215 $ (2)
Introduction to Digital Sound
An introduction to digital sound acquisition, manipulation and storage techniques. Students learn fundamentals of sound terminology, audio digitizing and nonlinear editing. Students will then apply this knowledge to various video, interactive and web applications. Prerequisite: DGME130. *Fall, Spring*

DGME216 $ (3)
Digital Video Editing I
An introductory class covering the fundamental techniques and concepts of nonlinear editing. Students explore the process of video editing from conceptualization to final output. Emphasis on sequencing and continuity, use of visual effects, color correction, audio editing, media management, narration and industry terminology. Prerequisites: DGME175, PHTO130;. PHTO115 or 116 recommended. *Fall, Spring*

DGME225 $ (4)
Digital Vector Graphics
A study of digital vector graphic imaging emphasizing graphic production for print, digital multimedia, and web publishing. Prerequisite: DGME130 or equivalent. *Fall*

DGME250 $ (4)
Web Publishing I
Exploration of the design, storage, retrieval, and delivery of electronic information using text and graphic images. Emphasis on publishing via the Web, kiosks, HTML authoring, and digital formats. Effective organization and planning of data for delivery, efficient design, and ethics are examined. Prerequisite: DGME130 or INFS110. *Fall, Spring*

DGME305 $ (4)
Desktop Publishing II
An advanced study of desktop publishing principles including: grid based layout, typographic applications, layout techniques for printing and web publications, effective electronic file preparation, preflighting, and tips for consistent color reproduction. Prerequisite: DGME185. *Spring*

DGME335 $ (4)
Web Animation
A course of study designed to develop the skills necessary for producing effective animation for the Web. Prerequisites: ART104; DGME130 or equivalent. *Fall, Spring*

DGME340 $ (4)
Interactive Multimedia
A survey of leading multimedia techniques using state-of-the-art software and covering principles of effective digital multimedia production, interactive new media concepts, basic scripting, animation, digital imaging, and sound manipulation. Students produce digital interactive presentations, kiosks, and web-ready programs. Prerequisites: DGME175, 215, 216. *Fall*

DGME345 $ (3)
Digital Video Editing II
An introductory course covering the essential components in video compositing. Students learn how to create innovative visual effects and motion graphics for video. Emphasis on text animation, keyframing, masks, alpha channels, 3D compositing, rendering, application integration, advanced visual and artistic effects. Prerequisite: DGME175, 215, 216. *Spring*

DGME350 $ (4)
Web Publishing II
Advanced study of current web development technologies with emphasis in Java scripting, animation, site quality and efficiency. The class will also stress meeting customer needs and new methods of web development. Prerequisite: DGME250. *Fall, Spring*

DGME360 $ (4)
3-D Modeling
A study of basic 3-D modeling principles and techniques. Students learn 3-D modeling terminology, points and polygonal manipulation, model construction, and surfacing. Students also implement geometric manipulation tools such as: lathe, extrude, boolean effects, metanurbs, text manipulation and more. Prerequisites: ART104; DGME175, 225. *Fall*

DGME370 $ (4)
3-D Animation
Basic 3-dimensional animation and rendering. Students learn to work with splines, keygames, and to manipulate object geometry on the computer as they animate and texture 3-D objects. Basic lighting, compositing and other effects also implemented. Prerequisites: DGME215, 216, 360. *Spring*

DGME387 $ (4)
DVD Authoring/Design
A course emphasizing authoring of interactive DVD-Video. DVD authoring work flow, story boarding, navigation, menu design, bit budgeting, video and audio encoding, DVD video navigational structures, web linking, proofing, pre-mastering, and recording to DVD-R will be covered. Prerequisite: DGME340 (Final Cut Pro). *Spring*

GRAPHIC IMAGING TECHNOLOGY

GRPH125 $ (2)
Principles of Printing
A study of the graphic arts industry including prepress concepts, color science, digital printing, digital image capture and color management. Also more traditional methods in design, layout, text and page composition, film assembly, imposition, and many different printing techniques to produce images on a substrate. Some business aspects and career possibilities will be explored. Open to all students. *Fall*

GRPH145 $ (4)
Screen Graphics I
Basic screen printing principles and practices with emphasis on stencils, fabric selection, frames, inks, squeegees, screen reclamation, photography, digital and conventional artwork to produce screened projects. The sign industry, large format digital printing, UV and curved printing sequences will be explored. Open to all students. *Fall*

GRPH345 $ (4)
Screen Graphics II
In-depth study on making process, simulated process, index and spot separations for screen printing. Other decorating methods will be explored such as transfers, foil, athletic numbering, glow in the dark, puff and UV. Non-textile applications will also be explored, decorating substrates such as plastics (binders, CDs, etc.) and glass (simulated etch, etc.) and many other substrates. Prerequisite: GRPH145. *Spring*

PHOTOGRAPHIC IMAGING

PHTO115 $ (4)
Introduction to Photography
Basic introduction to the principles of the camera and darkroom techniques with consideration toward composition, psychological, and aesthetic attitudes in black-and-white photography. *Fall, Spring*

PHTO116 $ (3)
Intro to Digital Photography
Students will be introduced to photography through the use of digital tools. Digital SLR's and Quadtone printers will be used to explore the technical and aesthetic issues involved in the process of making images. Consideration will be given to digital workflow, managing data, and creating visually appealing photographs. *Fall, Spring*

PHTO130 $ (2-3)
Fundamentals of Video
An introductory course in videography emphasizing the terminology, aesthetics, and methods of video production. PHTO115 recommended. *Fall*

PHTO200 $ (4)
Advanced Photography I
Develops the art of photographic perception and use of photography as a visual language. Emphasizes craftsmanship and awareness of tools available, as well as aesthetics, and the art of seeing creatively. Developing skills beyond introductory camera usage is emphasized. Prerequisite: PHTO115. *Fall, Spring*

PHTO210 (3)
History of Photography
Historical study of significant contributors in the development of photography and their influence on art and society. *Fall, Spring*

PHTO220 $ (4)
Color Photography I
Designed to acquaint students with color materials, their handling and exposure. Aesthetic and communicative aspects of color photography stressed in producing visually effective color transparencies. Prerequisite: PHTO115 or by permission of instructor. *Fall*

PHTO285 $ (4)
Studio
Study of lighting techniques in standard-equipped studio, emphasizing portraiture, commercial illustration, and experimental techniques in both black-and-white and color mediums. Prerequisite: PHTO200. *Spring*

PHTO300 (3)
Media Ethics
An exploration and discussion of the media and the effect it has on society, covering such issues as body image, violence, politics, etc. Students will recognize how moral values of media professionals influence themselves and society. *Spring*

PHTO320 $ (4)
Color Photography II
An image-oriented course, drawing on the student's background in the use of color comprehension, photographic technical and aesthetic understanding, and working knowledge of emulsion and digital photography. Information in this class is for the sole purpose of comprehensive color image. Prerequisites: DGME175; PHTO220. *Fall*

PHTO365 $ (4)
Advanced Digital Imaging
In-depth manipulation using leading industry software, emphasizing high quality image acquisition and output. Students learn to produce duotones, create raster graphic collages, perform critical image enhancement, create custom palettes, and alpha channels for image compositing. Repeatable to 8 credits. Prerequisites: ART207; DGME175 (with a B- or better); PHTO115. *Fall, Spring*

PHTO385 $ (4)
Advanced Studio
An individual approach to an advanced level of studio photography. The student will be able to choose a concentration in the following areas: Portraiture, People/Fashion, Still-Life, Advertising/Illustration, and Location Photography. This course is designed specifically to learn visual concepts and solve visual problems of the commercial photo industry. Repeatable to 12 credits. Prerequisite: PHTO285. *Fall, Spring*

PHTO390 (1-4)
Independent Study in Photography
Further study of photography under direction of instructor. May be repeated. Prerequisites: Prerequisites: PHTO115 or equivalent and approval of the instructor. *Fall, Spring*

PHTO400 $ (4)
Digital Photographic Printing
Study in color printing using traditional emulsion based processes and digital color output. Prerequisites: PHTO220, 365. *Fall*

PHTO410 $ (4)
Advanced Photography II
A course designed for the advanced photographer to investigate personal potential in visual exploration, experimentation, and technical excellence. Discussion involves expanding personal vision and exploring new techniques to achieve goals. Repeatable to 8 credits. Prerequisite: PHTO285. *Spring*

PHTO425 (4)
Travel Photography
Designed to be done in conjunction with on-location photography, and provides a background in the specific needs related to travel. Photographing people and their land in foreign environments is emphasized. Unique materials and equipment are discussed as they relate to travel photography. Repeatable to 8 credits. Prerequisite: PHTO115.

TECHNOLOGY EDUCATION

TCED140 $ (2)
Welding Technology
Oxyacetylene and electric welding processes including oxyacetylene welding, cutting, and brazing; basic shielded metal arc welding and basic gas metal arc welding. A limited amount of out-of-position welding will be stressed. *Fall*

TCED194/494 (1-4)
Project Course/Independent Study
Development of a skill or independent study in a given area by working independently under the supervision of the instructor. Repeatable to 12 credits. Prerequisite: Permission of instructor. *Fall, Spring*

TCED250 $ (3-4)
Machine Shop
Basic set-up and operation of lathes, milling machines, grinders,

drilling machines, and shapers; safety, machine maintenance, off-hand grinding, drill sharpening, layout, and inspection emphasized. *Spring*

TCED254 (3)
Technical Space Utilization
Acquaints students with the planning and organization of technical facilities. Consideration given to space requirements, building structure, material flow, equipment needs, site location, and environment control of such facilities. *Spring*

TCED350 (2)
Teaching of Technology Education
Teaching methods and strategies applicable to the teaching of technology education at the secondary level. The developing of specific learning experiences and learning through problem-solving is covered. Prerequisite: Permission of instructor.

TCED390 (1-4)
Internship
On-the-job internship experience for those students seeking industrial experience which cannot be simulated in a classroom setting. A range of 120-150 clock hours of work are required for each credit. Selected in consultation with the student's advisor. May be repeated.

TCED456 (3)
Safety and Loss Control
Safety and the fundamentals of accident prevention with emphasis on schools, school laboratories, and industrial applications. Introduction to the total program of loss control in industry, including the legal implications for both school and industry. Emphasis on the problem of accident prevention and control. *Spring*

TCED464 (3)
Transportation Technology
The field of transportation as related to technology education at the secondary level. Material handling, transportation involving space and atmospheric, marine, and terrestrial modes included.

TCED465 (3)
Communication Technology
Study in the field of communications as related to the secondary level in technology education. Emphasis on broadcasting, computers, drafting, photography, graphic arts, telecommunications, and their effect on society.

TCED466 (3)
Energy Utilization
Study of different types of energies used by modern society, how they have changed society, and implications for the future.

TCED470 (3)
Manufacturing Technology
Study of the manufacturing process as it relates to the teaching of technology education at the secondary level. Emphasizes materials and processes, research and development, management, marketing, and sales.

TCED275/485 (1-4)
Topics in _____
Repeatable in various areas.

TCED495 (1-4)
Portfolio Development in _____
Helps the student develop a traditional or electronic portfolio for employment or continuing educational purposes. Emphasis in direction, development, and refinement of the individual portfolio. Repeatable to 4 credits. Prerequisites: minimum of 30 credits in a major and permission of the instructor. *Fall*

TCED597 (1-3)
Independent Study
Individual study or research under the direction of a staff member. Repeatable to 6 credits. Prerequisite: Permission of department chair.