College of Applied and Technical Studies

Mission

The Regional Campuses of Kent State University have a long standing history of providing northeast Ohioans with access to Kent State University without leaving their community. Each campus is engaged within its region and has made significant contributions to the civic, cultural, and economic well being of Northeast Ohio's communities. The Campuses have distinguished themselves with applied programs that respond to local needs, an emphasis on workforce preparation and a commitment to providing higher education that is broadly accessible.

The Campuses carry out this mission through the efforts of a faculty committed to the highest standards in the scholarships of discovery, integration, application, teaching and university citizenship. Faculty members actively pursue a variety of creative endeavors, regularly contribute to the scholarship in their disciplines, take pride in their continuing pedagogical successes, and are recognized by the wider University community with teaching and professional development awards. Regional campus faculty are visible citizens in the communities they serve, as well as at every level of university governance.

Undergraduate Programs

- Accounting Technology - A.A.B.
- Agribusiness - B.S.
- Associate of Arts
- Associate of Science
- Business Management Technology - A.A.B.
- Computer Design, Animation and Game Design - A.A.S.
- Criminology and Justice Studies - A.A.S.
- Early Childhood Education Technology - A.A.S.
- Electrical/Electronic Engineering Technology - A.A.S.
- Engineering Technology - B.S.
- Enology - A.A.S.
- Environment Management - A.T.S.
- Environmental Health and Safety - A.A.S.
- Horticulture - B.A.H.
- Horticulture Technology - A.A.S.
- Human Services - A.A.S.
- Individualized Program - A.T.S
- Information Technology - A.A.B.
- Information Technology - B.S.I.T.
- Insurance Studies - B.S.
- Legal Assisting Technology - A.A.S.
- Mechanical Engineering Technology - A.A.S.
- Nursing (A.D.N.) - A.A.S.
- Occupational Therapy Assistant Technology - A.A.S.
- Office Technology - A.A.B.
- Physical Therapist Assistant Technology - A.A.S.
- Radiologic Imaging Sciences - B.R.I.T.
- Radiologic Technology - A.A.S.
- Radiologic Technology - A.T.S.
- Respiratory Care - B.S.
- Respiratory Therapy Technology - A.A.S.
- Technical and Applied Studies - B.T.A.S.
- Veterinary Technology - A.A.S.
- Viticulture - A.A.S.

Minors

- Agribusiness
- Computer Forensics and Security
- Game Design
- Help Desk Support
- Insurance Studies
- Modeling and Animation
- Software Development

**Undergraduate Certificates**

- Business Management Technology
- CAD for Manufacturing
- Computer Forensics and Information Security
- Computer-Aided Drafting: Design Technician
- eBusiness
- Enology
- Entrepreneurship
- Floriculture
- Greenhouse Production
- Hospitality Management
- Medical Billing
- Office Software Applications
- Peace Officers Training Academy
- Viticulture

**College of Applied and Technical Studies Faculty**

- Alicea, Megan R. (2013), Lecturer, Boise State University, 2015
- Antenucci, Robert P. (2010), Assistant Professor, Ph.D., Kent State University, 2013
- Bailey, Mistey D. (2012), Lecturer
- Baker, John J. (2012), Associate Lecturer, M.S., La Roche College, 1990
- Banks, Kathleen C. (1990), Assistant Professor, M.S.N., West Virginia University, 1985
- Barcus, Laurie D. (2005), Associate Lecturer, M.S.N., University of Phoenix, 2006
- Bears, Lorraine E. (1999), Associate Lecturer, M.Tech., Kent State University, 2004
- Beck, Stacy J. (2008), Associate Lecturer, M.P.H., Kent State University, 2004
- Berlin, Kingsly T. (2013), Associate Lecturer, B.S., The Ohio State University, 2005
- Blake, Robert M. (2003), Assistant Professor, M.S., Duke University, 1994
- Bonaduce, Samantha J. (2012), Lecturer, M.S.N., Kent State University, 2015
- Brindley, Lisa K. (1999), Senior Lecturer, M.Ed., Kent State University, 1983
- Britenbaugh, Brandy L. (2019), Lecturer, M.O.T., University of Findlay, 2006
- Brown, Marvine (2015), Lecturer
- Burkholder, Maria R. (2006), Associate Lecturer, B.S., The Ohio State University, 2001
- Burnworth, Christina M. (1995), Lecturer, M.Tech., Kent State University, 2006
- Caldwell, Joy E. (2013), Lecturer
- Cameron, Mary M. (2017), Lecturer, B.S., Kent State University, 2013
- Carvalho, Carolyn J. (2004), Senior Lecturer, M.Tech., Kent State University, 2007
- Casey, Donna J. (2009), Lecturer & Academic Program Director, M.S.N., Walden University, 2009
- Chen, Jie (2001), Professor
- Courcy, Tamra J. (1998), Associate Professor, D.N.P., Kent State University, 2014
- Czayka, Michael A. (1994), Senior Lecturer, M.Tech., Kent State University, 2002
- Daugherty, William S. (2005), Associate Lecturer, M.B.A., University of Hawaii, Manoa, 1974
- Dees, David M., Associate Professor & Dean & Chief Administrative Officer, Ph.D., Kent State University, 2000
- Douglass, Angela T. (2003), Senior Lecturer, M.S.N., Youngstown State University, 2003
- Dragomir, Kelly A. (2012), Associate Lecturer, B.A., Kent State University, 2010
- Drugovich, Collette M. (2014), Associate Lecturer, M.S.N., Grand Canyon University, 2014
- Emens, Susan (1993), Associate Professor & Assistant Dean, M.A.E., Kent State University, 2003
- Freitas, Frances A. (1995), Assistant Professor, Ph.D., Kent State University, 2007
- Fritz, Timothy E. (2003), Lecturer
- Gialousis, Christine D. (2012), Lecturer
- Ginal, Sharon L. (2006), Associate Lecturer, M.S.N., Ursuline College, 2002
- Golden, Shawn D. (2004), Associate Professor, Ph.D., Kent State University, 2014
- Gump, Traci L. (2016), Lecturer, B.S., Ohio University, 2014
- Hager, Deborah L. (2004), Associate Professor, M.S.N., Franciscan University of Steubenville, 2004
- Hancock, Darryl A. (2012), Associate Professor, Ph.D., Chatham College, 2008
- Harding, Mariann M. (2005), Professor, Ph.D., West Virginia University, 2013
- Hildebrandt, Wendy C. (2015), Lecturer, M.S., Western Governors University, 2013
- Iagulli, Margie B. (1997), Senior Lecturer, M.Ed., Kent State University, 2002
- Johnston, Kelly R. (2016), Lecturer, D.V.M., The Ohio State University, 1992
- Jones, Tonnette S. (2013), Lecturer, M.S.N., Ursuline College, 2013
- Kananian, Mary W. (2012), Lecturer, M.S.N., Marquette University, 1988
- Kelly, Johnston R. (2016), Lecturer, D.V.M., The Ohio State University, 1992
- Kiphart, Tiffany M. (2002), Senior Lecturer & Academic Program Director, B.S., Wilmington College of Ohio, 1993
- Koptur, Turan E. (2007), Lecturer, M.T., Kent State University, 2013
- Leija, Lynn M. (2005), Associate Lecturer, B.S., Ohio University, 1991
- Lickwar, Allisha (2017), Lecturer
Main, Amy B. (2013), Assistant Professor, M.S.N., Indiana State University, 2008
Majernik, John G. (2009), Lecturer, M.Ed., Kent State University, 2012
Marshall, Shelley K. (1999), Associate Lecturer, M.Tech., Kent State University, 2008
Martin-Bloodsaw, Charla (2018), Lecturer, B.A., Cleveland State University, 1996
McCreight, Justin M. (2017), Lecturer
McEnroe-Petitte, Denise M. (1996), Associate Professor, Ph.D., Capella University, 2014
Mercuri, Robin J. (2014), Lecturer, M.S.N., Kent State University, 2012
Migge, Victoria L. (2006), Senior Lecturer, M.S., St. Francis University, 2004
Morris, Lora J. (2003), Associate Professor, M.S.N., Ursuline College, 2002
Muscatello, Joseph R. (2004), Associate Professor, D.B.A., Cleveland State University, 2002
Neuman, Jyotsna (1986), Assistant Professor & Interim Assistant Dean, M.A.F.I.S., Cleveland State University, 1981
Newman, Edward (1994), Assistant Professor, M.B.A., Ashland University, 1994
Niederhiser, Dennis L. (2013), Lecturer
Ossler, Robert L. (2011), Lecturer, M.S.N., University of Phoenix, 2010
Panati, Dhruva (2016), Assistant Professor, University Of Tokyo, 2014
Paternite, Judith S. (1995), Professor, Ph.D., Kent State University, 2016
Pech, Sandra L. (2000), Assistant Professor, Ph.D., Kent State University, 2010
Peterson, Cynthia L. (1999), Senior Lecturer, M.P.H., Kent State University, 2008
Rajagopal, Chitra P. (1993), Associate Professor, M.S., Youngstown State University, 1992
Ratican, Sean P. (2018), Assistant Professor
Remedio, Janine M. (2016), Lecturer, M.S.N., Kent State University, 2012
Rempe, Rebecca D. (2010), Associate Lecturer, M.L.I.S., Kent State University, 2004
Rezaei, Dariush (1989), Associate Professor, M.S., University of Arkansas, 1988
Ricketts, Janine M. (2016), Lecturer, M.S., D'Youville College, 1999
Rose, Stacy R. (2001), Associate Professor, M.S.N., Case Western Reserve University, 2000
Schlosser, Elizabeth A. (1995), Associate Professor, B.S., Bowling Green State University, 1989
Schmalzried, Robert J. (2017), Lecturer, Youngstown State University, 2004
Schnurrenberger, Julia K. (2018), Lecturer, M.S.N., Indiana University, Purdue University Indianapolis, 2008
Senita, Julie A. (2004), Associate Professor & Academic Program Director, Ph.D., Kent State University, 2017
Sharma, Sankalp (2017), Assistant Professor
Stefka, Shelly L. (2013), Lecturer, M.S.N., Walden University-Baltimore, 2012
Steidl, Joan M. (2007), Associate Professor, M.A., John Carroll University, 2007
Stocker, Susan J., Associate Professor & Dean & Chief Administrative Officer
Swoboda, Kathleen (2008), Associate Lecturer & Academic Program Director, L.S.M., Kent State University, 2011
Totten, Christopher W. (2018), Assistant Professor, M.Arch., Catholic University of America, 2009
Trebets, Edward (2016), Lecturer, M.Ed., John Carroll University, 1998
Tu, Tszung Hui (2002), Associate Professor, Ph.D., Iowa State University, 2001
Upole, Daryl G. (1992), Associate Lecturer
Vanfossen, Jonathan S. (2007), Lecturer, M.Tech, Kent State University, 2009
Ward, William C. (1988), Associate Professor, M.A., Kent State University, 1997
Watson, Ruth A. (1989), Associate Professor, Ph.D., Kent State University, 2004
Yakovac, Rebecca L. (2012), Lecturer, M.A., The Ohio State University, 1991
Zampino, Anthony C. (1998), Associate Lecturer, M.Tech., Kent State University, 2003
Zarzour, Richard (2019), Lecturer

Courses

Accounting Technology (ACTT)

ACTT 11000 ACCOUNTING I: FINANCIAL 4 Credit Hours
(Introduction to financial accounting, including principles generally accepted when preparing accounting statements for users outside of the business organization.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 4 lecture
Grade Mode: Standard Letter

ACTT 11001 ACCOUNTING II: MANAGERIAL 4 Credit Hours
(Introduction to managerial accounting, including accounting for manufacturing firms, budgeting, standard cost systems, direct costing, segment reporting and cost-volume-profit (CVP) analysis.
Prerequisite: ACTT 11000.
Schedule Type: Lecture
Contact Hours: 4 lecture
Grade Mode: Standard Letter

ACTT 11003 PAYROLL ACCOUNTING 3 Credit Hours
(Introduction to the payroll function, including preparation of payroll and related federal, state and local tax forms required of all businesses. Students study both manual and computerized applications.
Prerequisite: ACTT 11000.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

ACTT 20012 ACCOUNTING SOFTWARE APPLICATIONS 3 Credit Hours
(Students explore accounting, spreadsheet and word processing software.
Prerequisite: ACTT 11001.
Schedule Type: Lecture
Contact Hours: 3 other
Grade Mode: Standard Letter
ACTT 21000 ACCOUNTING III: FINANCIAL 3 Credit Hours
An intensive and practical study of financial accounting principles pertaining to balance sheet, income statement accounts and statement analyses.
Prerequisite: ACTT 11001.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

ACTT 21001 ACCOUNTING IV-FINANCIAL 3 Credit Hours
Continuation of ACTT 21000. Course covers income statement accounts and financial statement analyses. Students study both manual and computerized applications.
Prerequisite: ACTT 21000.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

ACTT 21003 FUNDAMENTALS OF TAX PREPARATION 3 Credit Hours
A non-technical presentation of federal income tax laws and regulations as they relate to individuals.
Prerequisite: ACTT 11000.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

ACTT 21092 INTERNSHIP IN ACCOUNTING TECHNOLOGY (ELR) 2-3 Credit Hours
(Repeatable for credit) Supervised field experience requires either minimum 14 hours each week for unpaid work experiences or minimum 20 hours each week for paid work experiences.
Prerequisite: ACTT 21000; and special approval.
Schedule Type: Practicum or Internship
Contact Hours: 24-36 other
Grade Mode: Satisfactory/Unsatisfactory
Attributes: Experiential Learning Requirement

ACTT 21095 SPECIAL TOPICS IN ACCOUNTING TECHNOLOGY 1-3 Credit Hours
(Repeatable for credit) Topics in accounting vary per course offering.
Prerequisite: Special approval.
Schedule Type: Lecture
Contact Hours: 1-3 lecture
Grade Mode: Standard Letter

ACTT 21096 INDIVIDUAL INVESTIGATION IN ACCOUNTING TECHNOLOGY 1-3 Credit Hours
(Repeatable for credit) Independent in-depth research of an accounting topic supervised and coordinated by an accounting technology faculty member.
Prerequisite: 12 credit hours of ACTT courses; and special approval.
Schedule Type: Individual Investigation
Contact Hours: 1-3 other
Grade Mode: Standard Letter

ACTT 31063 INTRODUCTION TO COST ACCOUNTING 3 Credit Hours
Cost accounting concepts and systems; role of costs in decision making; budgeting concepts and procedures; analysis of revenue, cost and income variances.
Prerequisite: ACTT 11001.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

ACTT 36110 PRINCIPLES OF FRAUD EXAMINATION 3 Credit Hours
Study of occupational fraud, abuse, detection and prevention within the realm of an enterprise.
Prerequisite: ACTT 11000 and ACTT 11001.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

ACTT 36120 ETHICAL ISSUES RELATING TO FRAUD EXAMINATION 3 Credit Hours
Understanding ethical dilemmas, issues and professionalism relating to fraud examination.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

ACTT 46170 CASE STUDIES IN FRAUD EXAMINATION 3 Credit Hours
Application of principles of fraud examination, detection and evaluation of recommended action plans to specific fraud cases.
Prerequisite: ACTT 36110 and IT 36318.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

ACTT 46191 SEMINAR IN FRAUD EXAMINATION 3 Credit Hours
(Repeatable for credit) Capstone course for students studying fraud examination and related areas. Students research, analyze and present current fraud issues.
Prerequisite: ACTT 46170 and special approval.
Schedule Type: Seminar
Contact Hours: 3 other
Grade Mode: Standard Letter

Agribusiness (AGRI)

AGRI 20000 ECONOMIC PERSPECTIVES ON FOOD AND AGRICULTURE 3 Credit Hours
Introduction of the role of economics in agriculture at the firm, national, and international level. An overview of the structure and scope of the U.S. Food and Fiber Sector and its current trends and implications for the national economy. Students learn to apply various economic principles and concepts relating to production agriculture, business management, consumer behavior, market price analysis and equilibrium, international trade and public policy formation.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

AGRI 30000 FARM BUSINESS MANAGEMENT 3 Credit Hours
Develops an understanding of the various business management decisions involved in the organization and operation of a farm business operation for continuous profit and production cost efficiency. Students acquire knowledge and proficiency in applying the various economic principles and farm business management analysis concepts which aid a farm operator or owner in the decision making process for a farm business operation.
Prerequisite: ACTT 11000 and BMRT 11009.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
AGRI 31000 AGROBIOLOGICAL SYSTEMS 3 Credit Hours
Intended for students interested in careers in crop production. Focus is on the structure and function of plant and the interactions between plants and the environment. Includes a study of crop physiology, plant nutrition, plant disease, plant breeding, and plant ecology.
Prerequisite: ACTT 11000 and ACTT 11001 and BMRT 11009.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

AGRI 20000 ADVANCED FARM BUSINESS MANAGEMENT 3 Credit Hours
Application of economics and business principles to the management of a Farm Business. Use of analytical tools such as enterprise budgeting, linear programming, pro-forma cash flow budgeting, capital budgeting, and risk management analysis to aid the decision-making process. Understanding of farm transfer and succession planning and its importance in the intergenerational viability of a farm business.
Prerequisite: AGRI 30000.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

AGRI 32000 FARM RECORDS ANALYSIS AND INCOME TAX MANAGEMENT 3 Credit Hours
Develop an understanding of the procedures involved with farm recordkeeping and interprets the ways in which farm records can be used to evaluate and to improve the economic performance and profitability of a farm business. Students have the opportunity to gain an understanding of the current tax system. Students learn to apply the various tax management methods and strategies that can be used to maximize the after tax income to a farm business operation.
Prerequisite: AGRI 30000.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

AGRI 33000 AGRICULTURAL COMMODITY MARKETING 3 Credit Hours
Covers the economic factors, socioeconomic trends, farm demographic changes, global competitiveness, and consumer attitudes that shape the current structure and operation of the U.S. agricultural marketing system. Includes how decisions at one level in the value chain impact all other levels and explores how and when the system changes as a result of individual decisions. Also focuses on quality-based marketing, contracting and provides a global perspective.
Prerequisite: AGRI 20000 and BMRT 11009.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

AGRI 34000 LIVESTOCK PRODUCTION MANAGEMENT 3 Credit Hours
An introduction to the livestock industry and its role in society and our economy. Principles of livestock production management are introduced for beef, swine, dairy cattle, horses, sheep, goats and poultry.
Prerequisite: AGRI 31000.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

AGRI 35000 CROP AND FORAGE PRODUCTION MANAGEMENT 3 Credit Hours
Deals with crop plants in relation to the environment, crop improvement, seeds, and seedling. The practice of tillage, fertilizer, rotation, cropping, and weed control is covered. Pastureland and farmland, the harvest of field crops, and the handling and marking of grain seeds and hay are also included, as well as crops of the grass family, perennial forage grasses, the legume family and miscellaneous crops.
Prerequisite: AGRI 30000.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
AGRI 43000  AGRICULTURAL ENVIRONMENTAL LAW  3 Credit Hours
To acquaint students with the fundamentals of state and federal pollution control law. Major topics include: air pollution control, water pollution control, toxic substance control, solid waste management and disposal, Superfund, wetlands, endangered species, land use regulation, environmental assessment, environmental law administration and enforcement and global environmental law.
Prerequisite: AGRI 30000 and BMRT 21000.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

AGRI 44000  AGRICULTURAL AND INTERNATIONAL TRADE POLICY  3 Credit Hours
History, development, programs, and analysis of public policy issues in agriculture and natural resources. Analysis of science, economic, and political factors involved in policy development. Emphasis on farm policy and farm structure; food and nutrition; trade and development; and natural resources, the environment, and bioenergy, with special attention to issues and policies impacting Ohio and the United States.
Prerequisite: AGRI 20000 and ECON 22061.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

AGRI 45000  SENIOR SEMINAR (WIC)  3 Credit Hours
Capstone course designed to expose Agribusiness majors to current events and the interpretation of those events in an economics framework for use in management decision making. Students are introduced to the scientific method and complete a senior research project.
Prerequisite: Agribusiness (AGRI) major; and senior standing.
Schedule Type: Seminar
Contact Hours: 3 other
Grade Mode: Standard Letter
Attributes: Writing Intensive Course

Allied Health Sciences (AHS)

AHS 11001  PERSONAL TRAINING, WELLNESS AND EXERCISE  3 Credit Hours
Theoretical and practical competencies required of a qualified personal trainer, including exercise, nutrition and wellness concepts that are immediately applicable to improve personal lifestyle decisions. Receive hands on experience in training, instruction and professional skill development. Upon completion students are qualified to sit for the personal trainer certification exam administered by the National Council on Strength and Fitness (NCSF).
Prerequisite: None.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 lecture, 2 lab
Grade Mode: Standard Letter

AHS 12000  BASIC PRINCIPLES OF PHARMACOLOGY  2 Credit Hours
Identify and apply the basic principles of pharmacology to client care. Explore pharmacetics, pharmacokinetics, pharmacodynamics, pharmacology-related math, drug classification, and safe preparation and administration of medications.
Prerequisite: Nursing Technology, Nursing, Physical Therapist Assistant Technology, Occupational Therapist Assistant Technology, Radiologic Technology or Respiratory Therapy Technology major.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

AHS 12005  CONCEPTS IN LIFESPAN DEVELOPMENT  3 Credit Hours
Developmental theories and assessment measures throughout the lifespan, with application to the rehabilitation client.
Prerequisite: PSYC 11762.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

AHS 12010  PROFESSIONALISM IN HEALTHCARE  1 Credit Hour
Provides information concerning the professional behaviors and communication skills necessary for all healthcare providers to effectively interact with clients, related healthcare professionals and others. Students will gain an understanding of the importance of being professional, ethical and competent in their fields.
Prerequisite: None.
Schedule Type: Seminar
Contact Hours: 1 other
Grade Mode: Standard Letter

AHS 14016  PATIENT CARE MANAGEMNT  2 Credit Hours
Ethical and legal aspects, interpersonal communication, history taking, physical assistance and monitoring, medical emergencies, infection control, aseptic and non-aseptic techniques, patient tubes and lines, safe patient movement and handling techniques, immobilization techniques, vital signs, and pharmacology are topics covered. Some activities are done in the lab setting.
Prerequisite: Special approval.
Schedule Type: Combined Lecture and Lab
Contact Hours: 1 lecture, 2 lab
Grade Mode: Standard Letter

AHS 22002  CLINICAL KINESIOLOGY  3 Credit Hours
Function of the human body with emphasis on the musculoskeletal system and gross body measurements.
Prerequisite: BSCI 11010; and special approval.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

AHS 22003  CLINICAL KINESIOLOGY LABORATORY  1 Credit Hour
Application of human body movement and function concepts.
Prerequisite: BSCI 11010; and special approval.
Schedule Type: Laboratory
Contact Hours: 3 lab
Grade Mode: Standard Letter

AHS 24010  MEDICAL TERMINOLOGY  1 Credit Hour
Terminology utilized by the medical profession. Emphasis is on definition, spelling, pronunciation and correct usage of terms.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 1 lecture
Grade Mode: Standard Letter

AHS 24014  ADVANCED IMAGING  2 Credit Hours
The procedures and equipment used in advanced imaging modalities including radiography and fluoroscopy, interventional radiology, computed tomography, magnetic resonance imaging, diagnostic medical sonography, nuclear medicine, PET scanning, mammography and radiation therapy. Also includes overview of billing and coding of these types of procedures.
Prerequisite: Special approval.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter
AHS 24028  RADIOLOGIC PATHOLOGY  3 Credit Hours
Disease processes and the pathologies associated with each anatomical
system in the human body are described and their application to all
imaging modalities in the radiologic and imaging sciences.
Prerequisite: BSCI 11010 and BSCI 11020 or BSCI 21010 and BSCI 21020
or ATTR 25057; and ATTR 25058 or EXSC 25057 and ATTR 25058.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

Aviation Maintenance Technology (AMRT)

AMRT 10010  FAA REGULATIONS AND DOCUMENTATION  2 Credit Hours
FAA history, inspections, documentation and aircraft drawings.
Comprehensive course for the AMRT candidate to meet the requirements
for FAA certification.
Corequisite: AMRT 10040.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

AMRT 10020  AIRCRAFT TOOLS AND TECHNIQUES  2 Credit Hours
Welding for the aviation maintenance technician and understanding of
fluid lines and fittings. Comprehensive course for the AMRT candidate to
meet the requirements for FAA certification.
Corequisite: AMRT 10010.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 other
Grade Mode: Standard Letter

AMRT 10030  AIRFRAME I  3 Credit Hours
Understanding aircraft systems and corrosion control. Comprehensive
course for the AMRT candidate to meet the requirements for FAA certification.
Corequisite: AMRT 10010.
Schedule Type: Combined Lecture and Lab
Contact Hours: 3 other
Grade Mode: Standard Letter

AMRT 10040  AVIATION POWER PLANT I  4 Credit Hours
Study of aviation engines and propellers. Comprehensive course for the
AMRT candidate to meet the requirements for FAA certification.
Corequisite: AMRT 10010.
Schedule Type: Combined Lecture and Lab
Contact Hours: 4 other
Grade Mode: Standard Letter

AMRT 20010  AIRFRAME II  3 Credit Hours
Understanding aircraft structures. Comprehensive course for the AMRT candidate to meet the requirements for FAA certification.
Prerequisite: AMRT 10030.
Schedule Type: Combined Lecture and Lab
Contact Hours: 3 other
Grade Mode: Standard Letter

AMRT 20020  AIRFRAME III  2 Credit Hours
Advanced airframe course. Comprehensive course for the AMRT candidate to meet the requirements for FAA certification.
Corequisite: AMRT 20010.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 other
Grade Mode: Standard Letter

AMRT 20030  AVIATION ELECTRONICS  3 Credit Hours
Electronics and systems for the aviation maintenance technician.
Comprehensive course for the AMRT candidate to meet the requirements for FAA certification.
Prerequisite: EERT 12001.
Schedule Type: Combined Lecture and Lab
Contact Hours: 3 other
Grade Mode: Standard Letter

AMRT 20040  PRINCIPLES OF FLIGHT  3 Credit Hours
Nature of light, sound and aerodynamics. Comprehensive course for the AMRT candidate to meet the requirements for FAA certification.
Prerequisite: PHY 12202.
Schedule Type: Practicum or Internship
Contact Hours: 3 other
Grade Mode: Standard Letter

Business Management Related Technology (BMRT)

BMRT 11000  INTRODUCTION TO BUSINESS  3 Credit Hours
(Equivalent to BUS 10123) Overview of social, economic and consumer
environments as related to large and small business. Emphasis is on
production, marketing, finance, management and human resources. It is
recommended that any reading courses indicated by COMPASS score are
taken prior to enrolling in this course.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

BMRT 11006  BUSINESS COMPUTATIONS I  3 Credit Hours
Application of algebraic and arithmetic concepts to accounting, finance
and marketing. Computation of finance charges, taxes, fundamentals of
inventory control and depreciation.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
BMRT 11009  INTRODUCTION TO MANAGEMENT TECHNOLOGY  3 Credit Hours
(Equivalent to MGMT 24163) Study of planning, organizing, directing/leadership, controlling, staffing, decision making, and communication theories and management applications of human and material resources and methods. It is recommended that any reading courses indicted by COMPASS score are taken prior to enrolling in this course.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

BMRT 21000  BUSINESS LAW AND ETHICS I  3 Credit Hours
(Equivalent to FIN 26074) Introduction to American law as related to government, business, society and the ethical issues that occur in the legal environment. Emphasis is on contract law. Relevant past and current law issues are addressed.
Prerequisite: RC 00006 or minimum 86 Compass Reading score; and ENG 01001, ENG 11011, ENG 21011 or minimum 67 Compass Writing score.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

BMRT 21004  BUSINESS ANALYTICS I  3 Credit Hours
(Equivalent to MGMT 24056) This course is an introduction to concepts in statistical methods and their application to real-world problems. This course will examine both the theoretical and practical side of the different methods. Students will be given ample opportunities to apply the techniques to different real-world programs. The goal of the course is for students to understand fundamental statistical concepts and methods, and their applications.
Prerequisite: MATH 11010.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

BMRT 21008  CASE STUDIES IN MANAGEMENT TECHNOLOGY  3 Credit Hours
Application of management theory to actual business situations. Emphasis on decision making and evaluation of methods and styles of management in all functional areas.
Prerequisite: BMRT 11000 or BMRT 11009 or MGMT 24163 or BUS 10123.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

BMRT 21011  FUNDAMENTALS OF FINANCIAL MANAGEMENT  3 Credit Hours
Understanding basic financial reports for analysis and performance of a business. Preparation of sales forecasts to develop capital and expense budgets.
Prerequisite: ACTT 11000 and IT 11000 or special approval of BMRT faculty.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

BMRT 21020  INTRODUCTION TO ENTREPRENEURSHIP  3 Credit Hours
Provides information about the functional elements of starting a small business. Includes the use of instruments, exercises and case analyses to assess entrepreneurial skills.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

BMRT 21023  FINANCING THE BUSINESS VENTURE  3 Credit Hours
Course deals with determining capital needs, identifying sources of capital, developing a financial plan and interpreting financial statements. Both public and private loan programs will be reviewed.
Prerequisite: BMRT 21020 or special approval of full-time BMRT faculty.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

BMRT 21050  FUNDAMENTALS OF MARKETING TECHNOLOGY  3 Credit Hours
(Equivalent to MKTG 25010) An overview of the process, activities, and problems associated with the conception, planning and execution of pricing, promotion, product and placement of goods and services
Prerequisite: ECON 22060.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

BMRT 21052  PROFESSIONAL SELLING TECHNIQUES  3 Credit Hours
Study of personal selling as a promotional technique to determine and satisfy the needs of buyers and to build a long-term relationship among all parties.
Prerequisite: BMRT 11000 or special approval of full-time BMRT faculty.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

BMRT 21053  ADVERTISING IN BUSINESS  3 Credit Hours
A practical approach to the study of advertising. Emphasis is on the effective use of the media creating advertising operations and advertising management.
Prerequisite: BMRT 21050 or special approval of BMRT faculty.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

BMRT 21092  INTERNSHIP IN MANAGEMENT TECHNOLOGY (ELR)  1-3 Credit Hours
(Repeatable for credit) Students participate in a supervised educational experience. Each credit hour requires a minimum of seven hours work without pay or 10 hours work with pay per week for 15 weeks.
Prerequisite: Special approval of full-time BMRT faculty.
Schedule Type: Practicum or Internship
Contact Hours: 7-21 other
Grade Mode: Standard Letter
Attributes: Experiential Learning Requirement

BMRT 21095  SPECIAL TOPICS  1-3 Credit Hours
(Repeatable for credit) Special topics in business technology announced when scheduled.
Prerequisite: Special approval from full-time BMRT faculty.
Schedule Type: Lecture
Contact Hours: 1-3 lecture
Grade Mode: Standard Letter
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>BMRT 21096</td>
<td>INDIVIDUAL INVESTIGATION IN BUSINESS TECHNOLOGY</td>
<td>1-3</td>
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<tr>
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<td>(Repeatable for credit) Individual study in business and related fields.</td>
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<td></td>
<td>Prerequisite: Business Management Technology major; and special approval from full-time BMRT faculty.</td>
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<td>Schedule Type: Individual Investigation</td>
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<td>Contact Hours: 1-3 other</td>
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<td>Grade Mode: Standard Letter-IP</td>
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<tr>
<td>BMRT 31005</td>
<td>PURCHASING AND SUPPLY MANAGEMENT</td>
<td>3</td>
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<td></td>
<td>Investigates the purchasing, planning and logistics functions of supply chain management. Process control, negotiations, quality control, service measurement and other quantitative methods are covered.</td>
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<td></td>
<td>Prerequisite: BMRT 11000 or BMRT 11009.</td>
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<td>Schedule Type: Lecture</td>
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<td>Contact Hours: 3 lecture</td>
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<td>Grade Mode: Standard Letter</td>
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<tr>
<td>BMRT 31006</td>
<td>HUMAN RESOURCE MANAGEMENT</td>
<td>3</td>
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<td>The study of contemporary issues of human resources. Covers planning, job design, selection, appraisal, compensation, training, life quality, safety/health, diversity and unions.</td>
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<td>Prerequisite: BMRT 11009 or MGMT 24163.</td>
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<td>Schedule Type: Lecture</td>
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<td>Contact Hours: 3 lecture</td>
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<td>Grade Mode: Standard Letter</td>
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<tr>
<td>BMRT 31009</td>
<td>SEMINAR IN MANAGEMENT TECHNOLOGY</td>
<td>3</td>
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<td>Last semester students of business management technology engage in critical reading, writing and discussion to apply business theory to on-the-job experiences.</td>
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<td>Prerequisite: BMRT 21008 or special approval of full-time BMRT faculty.</td>
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<td>Schedule Type: Lecture</td>
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<td>Contact Hours: 3 lecture</td>
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<td>Grade Mode: Standard Letter</td>
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<tr>
<td>BMRT 36401</td>
<td>APPLICATIONS OF TECHNOLOGY MANAGEMENT SOFTWARE</td>
<td>3</td>
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<td>Combination of computer and business applications for managing technology within an organization. Focus is on using emerging computer software programs for the enhancement of decision making. Course is 2 hours lecture, 1 hour lab.</td>
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<td></td>
<td>Prerequisite: BMRT 11000 and IT 12000; or special approval of full-time Applied Business faculty.</td>
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<td>Schedule Type: Combined Lecture and Lab</td>
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<td>Contact Hours: 3 other</td>
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<td>Grade Mode: Standard Letter</td>
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<tr>
<td>BMRT 36410</td>
<td>SECURITY FOR BUSINESS STUDENTS</td>
<td>3</td>
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<td></td>
<td>Concepts and principles of security and safety in industrial and commercial settings. Focus on executive oversight of corporate security functions. Includes risk analysis, security surveys, emergency preparedness and security policies and procedures.</td>
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<td>Prerequisite: Junior standing.</td>
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<td></td>
<td>Schedule Type: Lecture</td>
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<td>Contact Hours: 3 lecture</td>
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<td>Grade Mode: Standard Letter</td>
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<tr>
<td>BMRT 36415</td>
<td>CUSTOMER SERVICE</td>
<td>3</td>
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<td></td>
<td>Analysis and definition of customer satisfaction with an emphasis on quality customer service that includes techniques for assessing company service efforts and developing customer satisfaction programs.</td>
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<td>Prerequisite: Sophomore standing.</td>
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<td>Schedule Type: Lecture</td>
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<td>Contact Hours: 3 lecture</td>
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<td>Grade Mode: Standard Letter</td>
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<tr>
<td>BMRT 36420</td>
<td>PHYSICAL SECURITY</td>
<td>3</td>
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<td>Elements of design, technology and procedures that deter, delay, detect and defeat criminal activity. Deployment and optional countermeasures. Budgeting based on risk analysis.</td>
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<td>Prerequisite: Junior standing.</td>
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<td></td>
<td>Schedule Type: Lecture</td>
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<td>Contact Hours: 3 lecture</td>
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<td>Grade Mode: Standard Letter</td>
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<tr>
<td>BMRT 36430</td>
<td>SECURITY MANAGEMENT</td>
<td>3</td>
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<td></td>
<td>Principles of security and safety in private business and institutions. Emphasis on proprietary departments and security of those departments. Focus on need for proprietary security organization, internal controls, external threats and electronic devices. Examination of departmental policies and procedures.</td>
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<td>Prerequisite: Junior standing.</td>
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<td>Schedule Type: Lecture</td>
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<td>Contact Hours: 3 lecture</td>
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<td>Grade Mode: Standard Letter</td>
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<tr>
<td>BMRT 36440</td>
<td>SECURITY INVESTIGATION</td>
<td>3</td>
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<td>Addresses future of private security, conducting interviews and dealing with testimonial evidence. Following leads, collecting evidence, preserving crime scenes, use of investigative tools, surveillance techniques and report writing.</td>
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<td>Prerequisite: Junior standing.</td>
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<td>Schedule Type: Lecture</td>
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<td>Contact Hours: 3 lecture</td>
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<td>Grade Mode: Standard Letter</td>
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<tr>
<td>BMRT 40092</td>
<td>PRACTICUM IN APPLIED BUSINESS AND TECHNOLOGY (ELR)</td>
<td>1-4</td>
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<td>(Repeatable for a maximum of 4 credit hours) On sight internship or a project with a business or technology related organization approved by the Instructor.</td>
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<td>Prerequisite: Junior standing and special approval.</td>
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<td>Schedule Type: Field Experience, Practicum or Internship</td>
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<td>Contact Hours: 7-28 other</td>
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<td>Grade Mode: Standard Letter</td>
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<td>Attributes: Experiential Learning Requirement</td>
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<tr>
<td>BMRT 40096</td>
<td>INDIVIDUAL INVESTIGATION IN BUSINESS AND TECHNOLOGY</td>
<td>1-4</td>
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<td>(Repeatable for a maximum of 4 credit hours) Perform an individual project or research assignment as approved by the instructor.</td>
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<td>Prerequisite: Junior standing; and special approval.</td>
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<td>Schedule Type: Individual Investigation</td>
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<td></td>
<td>Contact Hours: 7-28 other</td>
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<td>Grade Mode: Standard Letter</td>
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BMRT 46295  SPECIAL TOPICS IN APPLIED BUSINESS  2-3 Credit Hours
(Repeatable for credit) Specialized advance instruction oriented primarily to applied business topics. Topics will vary and will be announced as scheduled.
Prerequisite: Special approval.
Schedule Type: Lecture
Contact Hours: 2-3 lecture
Grade Mode: Standard Letter

BMRT 46409  STRATEGIC MANAGEMENT OF TECHNOLOGY AND INNOVATION  3 Credit Hours
An examination using case studies and readings of the management of technology and innovation through perspectives at the product line, business unit and corporate levels.
Prerequisite: BMRT 21050 and BMRT 21011; and junior standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

BMRT 46410  CRISIS AND DISASTER MANAGEMENT PLANNING  3 Credit Hours
Addresses planning process for mitigation and recovery strategies for natural and man-made crisis and disasters. Includes risk assessment, incident management and planning evaluation.
Prerequisite: Junior standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

BMRT 46418  LABOR STUDIES IN TECHNOLOGY  3 Credit Hours
This course will include the history of the labor movement, interrelationships of labor with business and industry, labor law, contemporary labor problems that emphasizes how unions are organized, contracts, arbitration and management issues.
Prerequisite: Junior standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

BMRT 46420  LEGAL ISSUES IN SECURITY  3 Credit Hours
Survey of laws applicable to security risks including torts, labor, employment, criminal and constitutional issues.
Prerequisite: Junior standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

Early Childhood Education Technology (ECET)

ECET 21005  PARTNERSHIPS IN CHILD GUIDANCE  3 Credit Hours
(Repeatable for a maximum of 6 credit hours) Analysis and special study of significant current issues in the early childhood education field. Twelve field experience hours required. Students are required to complete Bureau of Criminal Investigation and Identification (BCII) and Federal Bureau of Investigation (FBI) background checks and submit the results to authorized personnel at their assigned school/agency before the first day of the semester in which student teaching/internship will take place.
Prerequisite: ECED 10120 and ECED 20163.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

ECET 21010  INFANT AND TODDLER CURRICULUM AND SERVICES  3 Credit Hours
Infant/toddler development, environments and curriculum; theoretical perspectives; family involvement; community involvement; community resources, collaboration and advocacy; 38 hours of field experience required. Students are required to complete Bureau of Criminal Investigation and Identification (BCII) and Federal Bureau of Investigation (FBI) background checks and submit the results to authorized personnel at their assigned school/agency before the first day of the semester in which student teaching/internship will take place.
Prerequisite: ECED 10120 and ECED 20163.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

ECET 21095  SPECIAL TOPICS IN EARLY CHILDHOOD EDUCATION TECHNOLOGY  1-3 Credit Hours
(Repeatable for credit) Intensive study of significant current issues in the early childhood education field.
Prerequisite: Departmental special approval.
Schedule Type: Lecture
Contact Hours: 1-3 other
Grade Mode: Standard Letter

ECET 21096  INDIVIDUAL INVESTIGATION IN EARLY CHILDHOOD EDUCATION TECHNOLOGY  1-3 Credit Hours
(Repeatable for a maximum of 6 credit hours) Analysis and special research in the early childhood education field.
Prerequisite: Departmental special approval.
Schedule Type: Individual Investigation
Contact Hours: 1-3 other
Grade Mode: Standard Letter

ECET 22000  PRESC HEOL CURRICULUM  3 Credit Hours
Preschoolers' development, environments and curriculum; theoretical perspectives; family involvement; community resources, collaboration and advocacy; 38 hours of field experience required. Students are required to complete Bureau of Criminal Investigation and Identification (BCII) and Federal Bureau of Investigation (FBI) background checks and submit the results to authorized personnel at their assigned school/agency before the first day of the semester in which student teaching/internship will take place.
Prerequisite: ECET 21010 and ECED 20163.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
ECET 22130  EMERGING LITERACY  3 Credit Hours
(Equivalent to ECED 30123) Theoretical and practical issues in acquisition and development of literacy. Developmentally appropriate instructional practices, integration across the curriculum, individual differences and assessment are addressed. Field hours required. Students are required to complete Bureau of Criminal Investigation and Identification (BCII) and Federal Bureau of Investigation (FBI) background checks and submit the results to authorized personnel at their assigned school/agency before the first day of the semester in which student teaching/ internship will take place.
Prerequisite: ECED 10120 and ECED 20163.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

ECET 22140  STUDENT TEACHING SEMINAR (ELR)  3 Credit Hours
(Equivalent to ECED 40165) A reflective approach to make student teaching experience more valuable. Students develop and implement developmentally appropriate curriculum and assessment for young children, prepare a professional development plan and develop a professional portfolio.
Prerequisite: Special approval.
Corequisite: ECET 22192.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter-IP
Attributes: Experiential Learning Requirement

ECET 22192  STUDENT TEACHING (ELR)  4 Credit Hours
(Equivalent to ECED 40192) Student spends 180 hours at an approved preschool program under the supervision of a program faculty member or supervising teacher. Students are required to complete Bureau of Criminal Investigation and Identification (BCII) and Federal Bureau of Investigation (FBI) background checks and submit the results to authorized personnel at their assigned school/agency before the first day of the semester in which student teaching or internship will take place.
Prerequisite: Official valid certification of Child Safety Training, approved Basic Life Support and ALICE training; and special approval.
Corequisite: ECET 22140.
Schedule Type: Practicum or Internship
Contact Hours: 12 other
Grade Mode: Satisfactory/Unsatisfactory
Attributes: Experiential Learning Requirement

Electrical Engineering and Related Technologies (EERT)

EERT 10192  OVERHEAD LINE TECHNOLOGY PRACTICUM I (ELR)  5 Credit Hours
Practical application of electrical overhead line worker job duties in a setting under direct supervision of First Energy Personnel. Prior to enrollment, students must be accepted into the First Energy Power Systems Institute (PSI).
Prerequisite: Special approval.
Schedule Type: Practicum or Internship
Contact Hours: 15 other
Grade Mode: Standard Letter
Attributes: Experiential Learning Requirement

EERT 10292  OVERHEAD LINE TECHNOLOGY II PRACTICUM (ELR)  5 Credit Hours
Supervised practical application of electrical overhead line worker duties including the use of ladders, rescue operations, and transformers under the supervision of FirstEnergy personnel.
Prerequisite: EERT 10192; and special approval.
Schedule Type: Practicum or Internship
Contact Hours: 15 other
Grade Mode: Standard Letter
Attributes: Experiential Learning Requirement

EERT 12000  ELECTRIC CIRCUITS I  4 Credit Hours
Direct current circuit analysis involving current and voltage, resistance, energy and power, Ohm's law, series and parallel networks. Mesh and nodal analysis, network theorems and DC instruments.
Corequisite: MATH 11010.
Schedule Type: Combined Lecture and Lab
Contact Hours: 3 lecture, 2 lab
Grade Mode: Standard Letter
Attributes: CTAG Electrical Engineer Technology, TAG Engineering Technology

EERT 12001  ELECTRIC CIRCUITS II  3 Credit Hours
Analysis of capacitive, inductance and magnetic circuits and transients in R-L-C combinations. AC network analysis: mesh and nodal, phasor algebra, power factor, resonance.
Prerequisite: EERT 12000.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 lecture, 2 lab
Grade Mode: Standard Letter
Attributes: TAG Engineering Technology

EERT 12005  ELECTRICAL/ELECTRONIC DRAWING  2 Credit Hours
Electrical Electronic drawing techniques using current computer-aided design software emphasizing schematic, block and wiring diagrams, document markups, circuit board printing, circuit or power layout is covered as needed.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

EERT 12010  INTRODUCTION TO ELECTRONICS  4 Credit Hours
Semiconductor theory. Properties and application of PN junctions and bipolar junction transistors, amplifiers, field effect transistors (FET) amplifiers, JFET and MOSFET biasing and their use in simple circuits.
Prerequisite: EERT 12000.
Schedule Type: Combined Lecture and Lab
Contact Hours: 3 lecture, 2 lab
Grade Mode: Standard Letter
Attributes: TAG Engineering Technology

EERT 20192  OVERHEAD LINE TECHNOLOGY III PRACTICUM (ELR)  5 Credit Hours
Supervised practical applications of electrical line worker job duties under the supervision of FirstEnergy personnel. Emphasis on URD equipment, grounding distribution circuits and working with energized three phase circuits.
Prerequisite: EERT 10292; and special approval.
Schedule Type: Practicum or Internship
Contact Hours: 15 other
Grade Mode: Standard Letter
Attributes: Experiential Learning Requirement
EERT 20292  OVERHEAD LINE TECHNOLOGY PRACTICUM IV (ELR)  5 Credit Hours
Supervised practical application of electrical overhead line worker job duties under the direct supervision of FirstEnergy personnel. Emphasis on line equipment, hot line tools, and transmission.
Prerequisite: EERT 20192; and special approval.
Schedule Type: Practicum or Internship
Contact Hours: 15 other
Grade Mode: Standard Letter
Attributes: Experiential Learning Requirement

EERT 21010  ENGINEERING AND PROFESSIONAL ETHICS  3 Credit Hours
Application of codes of ethics in the engineering and technology profession reflective of social and moral responsibilities to the public and accountability in engineering practice.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

EERT 21096  INDIVIDUAL INVESTIGATION IN ELECTRICAL/ENGINEERING TECHNOLOGY  1-4 Credit Hours
(Repeatable for credit) Independent in depth research of an electrical electronic engineering technology topic supervised and coordinated by an engineering technology faculty member.
Prerequisite: Permission.
Schedule Type: Individual Investigation
Contact Hours: 1-4 other
Grade Mode: Standard Letter

EERT 22000  ELECTRICITY/ELECTRONICS WITH APPLICATIONS  3 Credit Hours
Basic electronics theory and fundamental concepts of electrical/electronic and digital circuits with applications in the various fields of engineering.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

EERT 22002  INDUSTRIAL CONTROLS  3 Credit Hours
Introduction to control of AC and DC machinery by electromechanical and solid state devices. Study of circuits, troubleshooting methods and logic systems.
Prerequisite: EERT 12010 or EERT 22000; and special approval.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

EERT 22004  DIGITAL SYSTEMS  4 Credit Hours
Modern integrated digital logic families. Analysis and design of digital circuits such as gates, multivibrators, comparators, counters, registers including interface, control memory and computer circuits. Programmable logic controllers and integrated circuit technologies.
Prerequisite: None.
Schedule Type: Combined Lecture and Lab
Contact Hours: 3 lecture, 2 lab
Grade Mode: Standard Letter
Attributes: CTAG Electrical Engineer Technology

EERT 22005  ELECTRONIC INSTRUMENTATION  3 Credit Hours
Understanding of automation control and process characteristics. Application of various type of measurement devices & control equipments. Use of modern simulation software for process control and troubleshooting.
Prerequisite: EERT 12010.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 lecture, 2 lab
Grade Mode: Standard Letter

EERT 22006  ELECTRICAL MACHINES  3 Credit Hours
Introduction to transformer action, losses and efficiency. Fundamentals of DC and AC motors and generators and three phase systems.
Prerequisite: EERT 12001.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

EERT 22011  ELECTRONIC SYSTEMS  2 Credit Hours
Continuation of EERT 12010. Frequency effects, Miller’s Theorem, decibel notation and negative feedback, Oscillators, Op-amps, circuits and applications, Thyristors and electronically regulated power supplies.
Prerequisite: EERT 12010.
Schedule Type: Combined Lecture and Lab
Contact Hours: 1 lecture, 2 lab
Grade Mode: Standard Letter
Attributes: TAG Engineering Technology

EERT 22014  MICROPROCESSORS AND ROBOTICS  3 Credit Hours
An introduction to microprocessor system fundamentals, number systems, binary codes, hexa-decimal codes, Programming fundamentals in C , C++ software, Microcontroller hardware architecture and instruction set, with applications to robot systems motor control, sensors.
Prerequisite: None.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 lecture, 2 lab
Grade Mode: Standard Letter
Attributes: TAG Engineering Technology

EERT 22016  PRODUCTIVITY SOFTWARE FOR INDUSTRY  1 Credit Hour
(Repeatable for a maximum of 3 credit hours) Introduces students to the use of computers for word processing, spreadsheets and database management applications. Students receive hands-on training on the use of the software applicable to engineering problems using hands-on formats.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 1 lab
Grade Mode: Satisfactory/Unsatisfactory-IP

EERT 22018  PC/NETWORK ENGINEERING AND TROUBLESHOOTING  3 Credit Hours
Covers the service, maintenance, upgrade and optimization of personal computers. Specification, installation and maintenance of local area networks is covered. Students learn communication protocols and network architecture. Two lectures and two labs.
Prerequisite: None.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 lecture, 2 lab
Grade Mode: Standard Letter
EERT 22095  SPECIAL TOPICS IN ELECTRICAL/ELECTRONIC AND RELATED ENGINEERING TECHNOLOGIES  1-3 Credit Hours
(Repeatable for credit) Special topics in electrical/electronic engineering technology.
Prerequisite: Permission.
Schedule Type: Lecture
Contact Hours: 1-3 lecture
Grade Mode: Standard Letter

EERT 23000  SENSORS  2 Credit Hours
A study of sensors, transducers, relays, solenoids, servomotors, actuators, lasers, LEDs, photonic and temperature sensors and electronic devices in electromechanical control.
Prerequisite: Sophomore standing.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 other
Grade Mode: Standard Letter

EERT 32003  TECHNICAL COMPUTING  3 Credit Hours
A hands-on introduction to computation, through object-oriented programming and problem solving. Programming in the C++ language.
Corequisite: MATH 11010.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

EERT 32005  INSTRUMENTATION  3 Credit Hours
Introduction to modern industrial controls, interfacing devices, transducer systems, and process control methods.
Prerequisite: Junior Standing.
Schedule Type: Combined Lecture and Lab
Contact Hours: 3 lecture, 1 lab
Grade Mode: Standard Letter

Engineering Technology (ENGT)

ENGT 12005  APPLICATIONS IN COMPUTER-AIDED DESIGN  2 Credit Hours
Course for training on the use of a popular, computer-aided drafting and design software. Practice with the advanced features of the software applicable to modern design in the graphics, mechanical, industrial and electronics fields.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

ENGT 20192  INTERNSHIP IN ENGINEERING TECHNOLOGY (ELR)  2 Credit Hours
(Repeatable for credit) Supervised internship experience in approved business or industrial environment relative to the student's major. The internship experience must be for a period of at least 12 consecutive weeks at 25 hours per week, or 20 hours per week for 15 weeks, totaling not less than 300 hours. Most co-ops occur during the summer.
Prerequisite: Sophomore standing; and special approval.
Schedule Type: Practicum or Internship
Contact Hours: 20 other
Grade Mode: Standard Letter
Attributes: Experiential Learning Requirement

ENGT 22000  STATISTICAL PROCESS CONTROL  4 Credit Hours
Process variability, process monitoring, statistical methods using control charts for variables and attributes; acceptance sampling plans; process capability, process adjustment, process improvement.
Prerequisite: Special approval.
Schedule Type: Lecture
Contact Hours: 4 lecture
Grade Mode: Standard Letter

ENGT 22003  SUPERVISION AND LABOR RELATIONS  5 Credit Hours
Practical methods and techniques for improving supervision and labor relations in industry. Personnel and performance evaluation, implementing policy, labor contracts, collective bargaining, wage and salary administration.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 5 lecture
Grade Mode: Standard Letter

ENGT 22006  ECONOMIC DECISION ANALYSIS  3 Credit Hours
Economic decision making for industrial engineering technology with applications emphasis, estimating economic elements, interest and economic equivalence, methods of comparing alternatives and evaluating replacement alternatives.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
Attributes: TAG Engineering

ENGT 22010  COMPUTER INTEGRATED MANUFACTURING  3 Credit Hours
Planning, developing and implementing a strategy to control and coordinate all the engineering production and business operations within a manufacturing enterprise.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

ENGT 33095  SPECIAL TOPICS IN ENGINEERING TECHNOLOGY  1-4 Credit Hours
Special topics of immediate interest in engineering technology.
Prerequisite: Junior standing.
Schedule Type: Lecture
Contact Hours: 1-4 lecture
Grade Mode: Standard Letter

ENGT 43092  ENGINEERING TECHNOLOGY PRACTICUM (ELR)  1-3 Credit Hours
(Repeatable for a maximum to 3 credit hours) Supervised work experience. One credit hour for 50 work hours.
Prerequisite: None.
Schedule Type: Practicum or Internship
Contact Hours: 3.33-10 other
Grade Mode: Satisfactory/Unsatisfactory
Attributes: Experiential Learning Requirement
Enology (ENOL)

**ENOL 14600 INTRODUCTION TO ENOLOGY** 3 Credit Hours
Targets people who became interested in home winemaking with possibilities to grow into the small business opportunity, as well as cellar employees interested in winemaking career. During this course, students build proper basic understanding of winemaking which alleviates common home winemaker’s errors.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter-IP

**ENOL 14800 WINERY SANITATION** 3 Credit Hours
The basic science and technology of winery sanitation that includes an introduction to wine microbiology. Covers all methods used for winery sanitation including premises, tanks, pumps, filters, oak barrels and sampling equipment, including but not limited to chemical agents, reagents and thermal treatments leading to sterile bottling. Environmental issues and compliance are also addressed.
Prerequisite: ENOL 14600.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter-IP

**ENOL 16000 WINERY EQUIPMENT OPERATION** 2 Credit Hours
Covers process technologies and process systems used in modern commercial wineries. Overview of winemaking systems, including work place safety, cleaning and sanitation procedures, winemaking equipment and materials, tanks, barrels and barrel alternatives, filtration systems and bottling equipment. Also touches upon on chillers and electrical needs.
Prerequisite: ENOL 14600.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter-IP

**ENOL 21000 INTRODUCTION TO WINE MICROORGANISMS** 3 Credit Hours
Introduction to the basic principles of wine microbiology and the variety of microorganisms frequently encountered in the wine making process. Yeasts, bacteria and molds play vital roles in the production of wine, both beneficial and harmful. Students become familiar with the morphology, reproduction and sensory attributes of wine microorganisms in order to understand their influence on winemaking and to be able to manage them effectively.
Prerequisite: ENOL 14600.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2.5 lecture, 1 lab
Grade Mode: Standard Letter-IP

**ENOL 24600 INTERMEDIATE ENOLOGY - HARVEST AND CRUSH** 2 Credit Hours
Focused on advanced science and technology concepts of winemaking as it relates to pre-harvest, fruit harvest, and procedures involved in juice and must preparation. Builds on the fundamentals taught in Introduction to Enology, Molecular Principles of Grape and Wine, and Wine Microbiology.
Prerequisite: ENOL 14600.
Schedule Type: Combined Lecture and Lab
Contact Hours: 1.5 lecture, 1 lab
Grade Mode: Standard Letter-IP

**ENOL 24700 INTERMEDIATE ENOLOGY - POSTHARVEST** 2 Credit Hours
Focused on advanced science and technology concepts of winemaking as it relates to post harvest procedures involved in stabilization, clarification, fining, and bottling. Builds on the fundamentals taught in Introduction to Enology, Molecular Principles of Grape and Wine, Wine Microbiology, Wine and Must Analysis, and Intermediate Enology Harvest and Crush.
Prerequisite: ENOL 14600 and ENOL 24600.
Schedule Type: Combined Lecture and Lab
Contact Hours: 1.5 lecture, 1 lab
Grade Mode: Standard Letter-IP

**ENOL 25792 FALL WINE PRODUCTION FIELD WORK (ELR)** 3 Credit Hours
Principles of grape juice and wine analysis and the reasons for use of each analysis. Analyses of a practical and useful nature are chosen for the laboratory exercises demonstrating various chemical, physical and biochemical methods. Students participate in workshops and hands-on experiences at participating wineries.
Prerequisite: ENOL 14600; and ENOL 14800; and ENOL 16000.
Corequisite: ENOL 24600.
Schedule Type: Field Experience, Lecture
Contact Hours: 5 lecture, 2.5 other
Grade Mode: Standard Letter-IP
Attributes: Experiential Learning Requirement

**ENOL 25992 CELLAR OPERATIONS FIELD WORK (ELR)** 2 Credit Hours
Provide students initiated in the field of enology with actual and practical exposure to the technology of wine making as is performed during the passive vineyard periods associated with winter and spring. Students are expected to improve their understanding of the methods and science involved by on-site participation in each of the various activities associated with finished wine production. Course serves as actual practical exposure and may qualify as experience for those seeking employment in commercial enology.
Prerequisite: ENOL 25792.
Schedule Type: Field Experience, Lecture
Contact Hours: 6 lecture, 4.25 other
Grade Mode: Standard Letter-IP
Attributes: Experiential Learning Requirement

**ENOL 26600 SENSORY EVALUATION** 3 Credit Hours
Intended for those individuals who need to develop an understanding of the principles of sensory evaluation used in commercial wine making. It also benefits wine enthusiasts interested in reaching advanced levels of appreciation, as well wine producers, wine merchants and enologists, who by the nature of their profession need to discern flavors and establish tasting benchmarks. Students practice sensory analysis at home and in workshops to further their sensory evaluation skills and techniques.
Prerequisite: ENOL 14600.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2.5 lecture, 1 lab
Grade Mode: Standard Letter-IP
ENOL 26800  WINE AND MUST ANALYSIS  3 Credit Hours
Principles of grape juice and wine analysis and the reasons for use of each analysis. Analyses of a practical and useful nature are chosen for the laboratory exercises demonstrating various chemical, physical and biochemical methods. Students participate in workshops and hands-on experiences at participating wineries.
Prerequisite: ENOL 14600.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2.5 lecture, 1 lab
Grade Mode: Standard Letter-IP

Environmental Health and Safety (EVHS)

EVHS 10001  ENVIRONMENTAL TECHNOLOGY I  3 Credit Hours
Survey course in environmental technology, including health and safety, history, environmental compliance and related issues.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

EVHS 10004  TOXICOLOGY  3 Credit Hours
Examination of the terminology and classification of poisons that affect humans. Includes poison sources, modes of exposure, health effects and control measures.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

EVHS 10010  INDUSTRIAL HYGIENE I  4 Credit Hours
In-depth study of safety methods and procedures with lab for identifying, monitoring, handling, containing and disposing of hazardous substances and hazardous conditions in the workplace.
Prerequisite: EVHS 10004.
Schedule Type: Lecture
Contact Hours: 4 lecture
Grade Mode: Standard Letter

EVHS 20001  ENVIRONMENTAL LAW  3 Credit Hours
Emphasize civil, criminal and tort liability issues; procedural and constitutional requirements; and administrative codes, rules and regulations for fire, health, safety and environmental hazards.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

EVHS 20004  ENVIRONMENTAL HEALTH AND SAFETY I  3 Credit Hours
Examination of hazards assessment including organizational, environmental and disaster planning; health and safety inspection and reporting criteria; and first aid procedures.
Prerequisite: EVHS 10001.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

EVHS 20008  ENVIRONMENTAL SAFETY ADMINISTRATION  3 Credit Hours
Organization and operation of environmental safety unit; relationships with business governmental and community entities involved in environmental safety and hazards control.
Prerequisite: EVHS 10010.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

EVHS 20092  ENVIRONMENTAL TECHNOLOGY INTERNSHIP I (ELR)  3 Credit Hours
(Repeatable for credit) This on-or off campus experience gives students an opportunity to apply learned concepts in the classroom to practical environmental technology situations.
Prerequisite: EVHS 20008.
Schedule Type: Practicum or Internship
Contact Hours: 21 other
Grade Mode: Standard Letter
Attributes: Experiential Learning Requirement

EVHS 21001  INDUSTRIAL HYGIENE II  4 Credit Hours
Emphasis is placed on methodologies of gas, vapor, and aerosol sampling; including instrumentation function and calibration. Measurement and evaluation of physical hazards including noise, heat stress, lighting and radiation hazards. Includes a major emphasis upon the types of problems and calculations likely to be found in general industry. Laboratory exercises and use of a case study to explore the methods of sampling.
Prerequisite: BSCI 10120; and CHEM 10052; and EVHS 10010.
Schedule Type: Lecture
Contact Hours: 3 lecture, 1 lab
Grade Mode: Standard Letter

EVHS 21092  ENVIRONMENTAL TECHNOLOGY INTERNSHIP II (ELR) (Repeatable for credit) This on- or off campus experience gives students an opportunity to apply learned concepts in the classroom to practical environmental technology situations.
Prerequisite: EVHS 20092; and special approval.
Schedule Type: Practicum or Internship
Contact Hours: 21 other
Grade Mode: Standard Letter
Attributes: Experiential Learning Requirement

EVHS 22095  SPECIAL TOPICS IN ENVIRONMENTAL HEALTH AND SAFETY  3 Credit Hours
(Repeatable for a total of 6 hours) Specialized instruction oriented primarily to application of current technology developed for the field of environmental technology. Course is repeatable as the specific topics will vary.
Prerequisite: Special approval.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

EVHS 22096  INDIVIDUAL INVESTIGATION IN ENVIRONMENTAL HEALTH AND SAFETY  1-3 Credit Hours
(Repeatable for credit) Independent research of environmental technology topic supervised by an environmental technology faculty member.
Prerequisite: Special approval.
Schedule Type: Individual Investigation
Contact Hours: 1-3 other
Grade Mode: Standard Letter
EVHS 30002  ENVIRONMENTAL ISSUES II  3 Credit Hours
Current topics in environmental technology including climate change and alternative energy sources.
Prerequisite: EVHS 10001.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

EVHS 30020  HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE  4 Credit Hours
Study of hazardous waste operations and emergency response to release of hazardous materials in compliance with EPA and OSHA regulations (29CFR 1910.120).
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 4 lecture
Grade Mode: Standard Letter

EVHS 40006  FIRE PREVENTION AND CONTROL  3 Credit Hours
Conditions and properties conducive for combustible states and hazards; techniques and procedures for fire extinguishing and control; preventative strategies; fire codes and alarm systems.
Prerequisite: EVHS 10001.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

GAE 42004  ADVANCED FUEL CELL TECHNOLOGY  3 Credit Hours
Covers the theory and applications of fuel cell technology with an emphasis to proton exchange membrane fuel cells (PEMFCs). Students learn fuel cell component, stack and system design principles and fabrication methods, performance characterization, fuel cell testing and diagnostics methods. Students are introduced to transport phenomena in fuel cells. Introduction to hydrogen storage, generation and delivery, as well as hydrogen safety and regulations.
Prerequisite: GAE 32000.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

Horticulture (HORT)

HORT 10195  SPECIAL TOPICS IN HORTICULTURE  1-3 Credit Hours
(Repeatable for credit) Analysis of significant and current issues in horticulture not covered in regular courses.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 1-3 lecture
Grade Mode: Standard Letter

HORT 16001  INTRODUCTION TO HORTICULTURE  1 Credit Hour
A survey of those opportunities available within the "green industry" both in education and as a career option. Guest speakers and field trips are part of the class.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 1 lecture
Grade Mode: Standard Letter

HORT 16010  FLORAL DESIGN I  3 Credit Hours
Introduction to the concepts and practices of floral design for use in commercial settings. Topics include floral design theory, history, techniques and the skills required in the commercial floral design industry. Lab experience covers construction of basic floral products.
Prerequisite: None.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 lecture, 2 lab
Grade Mode: Standard Letter

HORT 16011  FLORAL DESIGN II  3 Credit Hours
Advanced training in a broad array of floral design applications including wedding design, contemporary European and Asian design, tropical flowers and outdoor compositions. Students will be provided hands-on laboratory activities to apply the principles of design.
Prerequisite: None.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 lecture, 2 lab
Grade Mode: Standard Letter

HORT 16020  PLANT MATERIALS I  3 Credit Hours
Design, selection, culture, and maintenance of flowering plants and foliage including annuals, perennials, bulbs and tropical plants for indoor and outdoor use.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

Green and Alternate Energy (GAE)

GAE 32000  FUEL CELL TECHNOLOGY  3 Credit Hours
Designed to provide a general perspective to fuel cell technology. Students are introduced to the various types of fuel cells, historical perspective, terminology, applications, fuel cell operation, basic electrochemical and thermodynamics principles involved in fuel cells, fuel cell components, materials and systems. Students learn basic fuel cell design principles and calculations.
Prerequisite: PHY 13012 or PHY 13002.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

GAE 42004  ADVANCED FUEL CELL TECHNOLOGY  3 Credit Hours
Covers the theory and applications of fuel cell technology with an emphasis to proton exchange membrane fuel cells (PEMFCs). Students learn fuel cell component, stack and system design principles and fabrication methods, performance characterization, fuel cell testing and diagnostics methods. Students are introduced to transport phenomena in fuel cells. Introduction to hydrogen storage, generation and delivery, as well as hydrogen safety and regulations.
Prerequisite: GAE 32000.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

GAE 42005  ADVANCED FUEL CELL TECHNOLOGY  3 Credit Hours
Covers the theory and applications of fuel cell technology with an emphasis to proton exchange membrane fuel cells (PEMFCs). Students learn fuel cell component, stack and system design principles and fabrication methods, performance characterization, fuel cell testing and diagnostics methods. Students are introduced to transport phenomena in fuel cells. Introduction to hydrogen storage, generation and delivery, as well as hydrogen safety and regulations.
Prerequisite: GAE 32000.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

GAE 42006  ADVANCED FUEL CELL TECHNOLOGY  3 Credit Hours
Covers the theory and applications of fuel cell technology with an emphasis to proton exchange membrane fuel cells (PEMFCs). Students learn fuel cell component, stack and system design principles and fabrication methods, performance characterization, fuel cell testing and diagnostics methods. Students are introduced to transport phenomena in fuel cells. Introduction to hydrogen storage, generation and delivery, as well as hydrogen safety and regulations.
Prerequisite: GAE 32000.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

GAE 42003  LEAN MANUFACTURING, SIX SIGMA AND OPERATIONS TECHNOLOGY  3 Credit Hours
Designed to provide a better understanding of the components and underlying philosophy of Theory of Constraints, Lean, and Six Sigma and how the elements and philosophies work together to support an companies operational plan.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
HORT 16021  WHOLESALE FLORICULTURE  3 Credit Hours
Commercial production, marketing, inventory management and post-harvest care associated with the floriculture industry.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

HORT 16022  GREENHOUSE STRATA  3 Credit Hours
Introduction to growing containerized plants in greenhouses and nurseries. Emphasis will be on issues related to traditional and alternative substrates, root media, irrigation practices, and soil matter.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

HORT 26001  OCCUPATIONAL REGULATIONS AND SAFETY  2 Credit Hours
Presentation of the basic standards, rules, safety regulations and laws pertaining to horticultural and related industries which will affect the work atmosphere. Lecture two hours weekly; offered only at the Geauga and Salem campuses.
Corequisite: BSCI 16001 and HORT 16001.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

HORT 26010  ARBORICULTURE  3 Credit Hours
Basics of pruning and tree climbing techniques. Covers the equipment and safe use of equipment commonly found in the arboricultural industry. Lecture two hours weekly; lab three hours weekly; offered only at the Salem campuses.
Prerequisite: BSCI 16001 and HORT 16001.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 lecture, 3 lab
Grade Mode: Standard Letter

HORT 26011  COOPERATIVE WORK EXPERIENCE IN TREE CARE  3 Credit Hours
(Repeatable for credit) Cooperative work program through which the skills necessary to perform professionally in this occupation will be acquired. This course offered only at the Salem Campus. Requires a minimum of 30 hours per week of work experience. Not more than 9 semester hours in this or a combination of other work experience classes will be allowed.
Corequisite: HORT 26010.
Schedule Type: Field Experience
Contact Hours: 3 lecture
Grade Mode: Satisfactory/Unsatisfactory-IP

HORT 26012  URBAN FORESTRY  3 Credit Hours
Urban forestry and the planning and managing of urban green-scapes. Appraisal and computerized GIS/GPS inventory of urban vegetation, urban land use planning and legal ordinances, maintenance and management of street and park trees. Outdoor field trips and guest lecturers.
Prerequisite: HORT 16001 and BSCI 16001.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

HORT 26016  IRRIGATION DESIGN AND MAINTENANCE  3 Credit Hours
Principles of irrigation design, installation maintenance and drainage. Specific information about the selection of sprinkler heads, pipe, pumps, basic hydraulics, water conservation methods and automatic control systems shall be explored. Drawing of irrigation plans shall be required.
Prerequisite: HORT 16001 and BSCI 16001.
Schedule Type: Combined Lecture and Lab
Contact Hours: 3 other
Grade Mode: Standard Letter

HORT 26018  LANDSCAPE CONSTRUCTION  3 Credit Hours
The basic skills and techniques involved in landscape contracting and construction, including building material data, site grading, contour mapping, deck construction, water features, lighting, landscape paving and retaining walls. Field trips and outside hands-on experience.
Prerequisite: HORT 16001 or advisor's approval.
Schedule Type: Combined Lecture and Lab
Contact Hours: 3 other
Grade Mode: Standard Letter

HORT 26020  LANDSCAPE MANAGEMENT  3 Credit Hours
A detailed discussion and practice of managing trees, shrubs and flowers within the landscape. Additional concepts such as the types of equipment used in the "green industry," marketing, writing specifications, bidding projects and personnel management.
Prerequisite: BSCI 16001 and HORT 16001.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
Attributes: CTAG Horticulture

HORT 26021  COOPERATIVE WORK EXPERIENCE IN LANDSCAPE MANAGEMENT  3 Credit Hours
(Repeatable for credit) Cooperative work program through which the skills necessary to perform professionally in this occupation will be acquired. This course offered only at the Salem Campus. Requires a minimum of 30 hours per week of work experience. Not more than 9 semester hours in this or a combination of other work experience will be allowed.
Corequisite: HORT 26020.
Schedule Type: Field Experience
Contact Hours: 3 lecture
Grade Mode: Satisfactory/Unsatisfactory-IP

HORT 26030  TURF GRASS MANAGEMENT  3 Credit Hours
Basic principles of turf management. Covers turf equipment and the safe use of equipment commonly found in the turf industry. Lecture two hours weekly; lab three hours weekly; course offered only at the Salem campus.
Prerequisite: BSCI 16001 and HORT 16001.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 lecture, 3 lab
Grade Mode: Standard Letter
Attributes: CTAG Horticulture
HORT 26031  COOPERATIVE WORK EXPERIENCE IN TURF GRASS MANAGEMENT  3 Credit Hours
(Repeatable for Credit) Cooperative work program through which the skills necessary to perform professionally in this occupation will be acquired. This course offered only at the Salem Campus. Requires a minimum of 30 hours per week of work experience. Not more than 9 semester hours in this or a combination of other work experience classes will be allowed.
Corequisite: HORT 26030.
Schedule Type: Field Experience
Contact Hours: 3 lecture
Grade Mode: Satisfactory/Unsatisfactory-IP

HORT 26032  GOLF COURSE MANAGEMENT  3 Credit Hours
The golf course environment as it relates to turf grass maintenance and pest/disease management. The construction and management of greens, tees, water and bunker management practices, turf aerification issues, topdressing and administrative concerns.
Prerequisite: HORT 16001 and HORT 26031 and BSCI 16001.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

HORT 26046  LANDSCAPE DESIGN I  3 Credit Hours
An introduction to landscape appreciation and history, the landscape industry and elements of the landscape design process. Students will assess proper plant placement and uses, develop graphic communication skills and present a project. Field trips and project site work as required.
Prerequisite: HORT 16001 and BSCI 16001 and BSCI 26003.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 lecture, 4 lab
Grade Mode: Standard Letter

HORT 30195  SPECIAL TOPICS IN HORTICULTURE  3 Credit Hours
(Repeatable for credit) Analysis of significant and current topics in horticulture not covered in regular classes.
Prerequisite: None.
Schedule Type: Laboratory, Lecture, Combined Lecture and Lab
Contact Hours: 2 lecture, 2 lab
Grade Mode: Standard Letter

HORT 36014  PLANT PROPAGATION AND GREENHOUSE PRODUCTION  3 Credit Hours
Asexual/vegetative propagation including anatomical and physical concepts. Techniques covered include cuttings, budding, grafting, layering, dividing and micropropagation. Plant propagation by seeding and plugs are promoted along with crop production. Students provide an annual production schedule. Lecture two hours weekly, lab three hours weekly.
Prerequisite: HORT 16001 and BSCI 16001.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 lecture, 3 lab
Grade Mode: Standard Letter

HORT 36018  LANDSCAPE CONSTRUCTION II  3 Credit Hours
Advanced landscape construction techniques involved in landscape contracting with an emphasis on the overall layout and planning of a landscape project. Students master and research product documentation, layout plans, written specifications and detailed construction drawings as they pertain to built landscape environments. Specific field site work with real world applications. Lecture two hours weekly; lab 3 hours weekly.
Prerequisite: HORT 26018; and junior or senior standing.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 lecture, 3 lab
Grade Mode: Standard Letter

HORT 36025  PROFESSIONAL PRACTICE IN HORTICULTURE (WIC)  3 Credit Hours
Investigation into owning and operating a green industry company including customer relations, wholesale and retail marketing, project bidding, potential profit and loss margins, communication requirements, and overall services to public and private clientele.
Prerequisite: HORT 26001 and HORT 26016 and HORT 26018.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
Attributes: Writing Intensive Course

HORT 36034  SPORTS TURF MANAGEMENT  3 Credit Hours
Identification of grass plant species; culture and morphology; turf ecology with practical information on turf establishment and cultural practices. Covers issues of design, renovation, and maintenance of sports grounds and facilities. Class requires 20 hours service learning component.
Prerequisite: HORT 26030; and junior or senior standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

HORT 36046  LANDSCAPE DESIGN II  3 Credit Hours
Advanced landscape design looking at overall landscape planning, including site and planting design, site amenities, irrigation design and client needs. Special attention to communication formats such as color rendering and graphics, as well as to overall presentation. Some design modeling and graphic sketching are included.
Prerequisite: HORT 26012 or HORT 26032 or HORT 26046; and junior or senior standing.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 lecture, 3 lab
Grade Mode: Standard Letter

HORT 36092  INTERNSHIP IN HORTICULTURE (ELR)  1-4 Credit Hours
(Repeatable for credit) Internship experience in an advanced field of study within the horticulture/green industry, building on the student’s understanding of science-based fundamentals. Internship requires a minimum of 210 working hours with an approved public organization or private green industry firm, and 2 hours per week consultation on independent research as approved and supervised by the academic program director. Work includes supporting documentation and written reports as deemed appropriate give the subject studied.
Prerequisite: Special approval.
Schedule Type: Practicum or Internship
Contact Hours: 3-12 other
Grade Mode: Standard Letter
Attributes: Experiential Learning Requirement
HSRV 41096  INDIVIDUAL INVESTIGATION IN HORTICULTURE  1-3 Credit Hours
(Repeatable for credit) Research under the direction of a horticulture faculty/program director mentor. Investigation of specific horticulture topics that build upon previous concentration areas of study.
Prerequisite: Junior or senior standing.
Schedule Type: Individual Investigation
Contact Hours: 1-3 other
Grade Mode: Standard Letter-IP

HORT 46014  GARDEN CENTER AND NURSERY PRODUCTION MANAGEMENT  3 Credit Hours
Survey of plant production of container, bare-root, balled-in-burlap plant materials in a nursery setting. Exploration of physiological principles involved, including planting, maturity dates for harvest, shipping, garden center activities and wholesale and retail marketing of stock.
Prerequisite: BSCI 26002 and BMRT 11000; and junior or senior standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

HORT 46092  PRACTICUM IN HORTICULTURE (ELR)  3 Credit Hours
(Repeatable for credit) An in-depth individual project, combining field experiences with original research within a green industry niche. Area of interest supports the student’s educational goals given their intended concentration of past class work.
Prerequisite: HORT 36092; and junior or senior standing.
Schedule Type: Practicum or Internship
Contact Hours: 16 other
Grade Mode: Standard Letter-IP
Attributes: Experiential Learning Requirement

Human Services (HSRV)

HSRV 11000  FOUNDATIONS OF HUMAN SERVICES  3 Credit Hours
An overview of the roles, history, values, systems, policies, theories and core conceptions of the human services professions across a range of social problems including child abuse and neglect, addictions, poverty, aging, mental health and illness, prevention and corrections, etc., and society’s response through the human service delivery system.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

HSRV 11001  GROUP METHODS IN HUMAN SERVICES  3 Credit Hours
Introduction to theory, research and application of the practice, structure and function, analysis, problem solving strategies and skills in working with small groups with respect to the cultural context, types of groups and special populations such as addiction are addressed from a systems perspective within the human services purposes, values and ethics framework.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

HSRV 11002  SURVEY OF COMMUNITY RESOURCES  3 Credit Hours
A survey of providers at the federal, regional, state and local levels, including services provided and regulations of private and public agencies.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

HSRV 21000  DYNAMICS OF HELPING RELATIONSHIPS  3 Credit Hours
Introduction to communication skills in systems of professional practice with emphasis on skill development in motivational interviewing, principles of effective communication, functions and purposes of communication, active listening, building empathy, establishing therapeutic rapport, case conceptualization and provisions of assistance.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

HSRV 21001  ASSESSMENT METHODS IN HUMAN SERVICES  3 Credit Hours
Introduction to client assessment, intervention and evaluation methods for generalist practice within a strengths based recovery model with emphasis on the biopsychosocial development across the lifespan. Understanding of mental illness, addictions, developmental disabilities and the impact of trauma, etc.; utilization of specific assessment skills and tools including: stages of change, level of care, recovery and resiliency, crisis response and de-escalation, etc.
Prerequisite: HSRV 11000 or HSRV 21003; or permission.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

HSRV 21002  COMMUNITY SUPPORTIVE CASE MANAGEMENT AND ADVOCACY IN HUMAN SERVICES  3 Credit Hours
Introduction to the purposes, intent and activities of a community supportive case manager: assessment, facilitation and coordination of services, linkage, referral, coordination assistance in crisis management and stabilization, outreach, education, training; intervention, support and elimination of barriers to autonomy. Develop an understanding of systems of care; and population characteristics: mental health, addiction, recovery, culture, age, and gender, etc. with emphasis on advocacy in human services practices. Recommend students take HST 21001 in preparation.
Prerequisite: HSRV 11000 or HSRV 21003, or permission.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

HSRV 21003  SOCIAL WELFARE IN HUMAN SERVICES  3 Credit Hours
Introduction to the history and development of social welfare including current federal and state social policy in the delivery of services; understanding of ideologies, values and ethics forming the social services foundation; financial, organizational and administrative structures influencing social services; fields of practice, populations served, mechanisms of poverty, oppression and discrimination; diversity issues in delivery of services and empowering at risk and vulnerable populations.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
HSRV 21092  INTERNSHIP IN HUMAN SERVICES I (ELR)  3 Credit Hours
(Repeatable for credit) Supervised field experience in a human service agency totaling equivalent of 315 hours. Joint university-agency supervision.

Prerequisite: Special approval.
Schedule Type: Practicum or Internship
Contact Hours: 21 other
Grade Mode: Standard Letter
Attributes: Experiential Learning Requirement

HSRV 21095  SPECIAL TOPICS IN HUMAN SERVICES  1 Credit Hour
(Repeatable for credit) Discussion of a major topic within human services.

Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 1 lecture
Grade Mode: Standard Letter

HSRV 21192  INTERNSHIP IN HUMAN SERVICES II (ELR)  3 Credit Hours
(Repeatable for credit) Continued supervised field experience in a human services agency totaling 315 hours equivalent. Joint university-agency supervision.

Prerequisite: Special approval.
Schedule Type: Practicum or Internship
Contact Hours: 21 other
Grade Mode: Standard Letter
Attributes: Experiential Learning Requirement

Information Technology (IT)

IT 11000  INTRODUCTION TO OFFICE PRODUCTIVITY APPS  3 Credit Hours
(Equivalent to CIS 24053) Covers the basic concepts and use of computer systems, including hardware, personal productivity software, Internet usage and file management.

Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
Attributes: TAG Business

IT 11002  VISUAL BASIC PROGRAMMING  3 Credit Hours
Visual Basic.NET language introducing concepts of object-oriented, event-driven program design and implementation.

Prerequisite: IT 11004.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 11004  SURVEY OF INFORMATION TECHNOLOGY  3 Credit Hours
Overview introduction to information technologies, career paths and professional certifications available.

Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 11005  INTRODUCTION TO OPERATING SYSTEMS AND NETWORKING TECHNOLOGY  3 Credit Hours
Survey of desktop and network operating systems essentials, including file and disk management, system tools utilization, resource sharing and introductory network concepts.

Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 11006  INTRODUCTION TO WEB SITE TECHNOLOGY  3 Credit Hours
Focuses on website technologies, including HTML. Students learn the history of the Internet and effective search techniques.

Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 11009  COMPUTER ASSEMBLY AND CONFIGURATION  4 Credit Hours
Covers disk operating system functions and features; hardware/software installation procedures; file and directories management; system configuration/optimization; backup procedures.

Prerequisite: CS 33211 or DSCI 26010 or IT 11005 or TECH 10001.
Schedule Type: Lecture
Contact Hours: 4 lecture
Grade Mode: Standard Letter

IT 12000  INTERMEDIATE OFFICE PRODUCTIVITY APPS  3 Credit Hours
Covers intermediate concepts and integration of computer applications. Emphasis on software suites, specifically word processing, electronic spreadsheets, database and presentation applications.

Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 13000  APPLIED SECURITY ESSENTIALS  3 Credit Hours
Course covering a basic introduction to securing connected devices. Topics include computer security, Internet security, and mobile security.

Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 20001  C++ PROGRAMMING  3 Credit Hours
Course using C++ introducing concepts of software development, object-oriented event-driven programming, testing and debugging, simple and complex data types language syntax and semantics.

Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 20001  JAVA PROGRAMMING  3 Credit Hours
Course using Java introducing concepts of software development, object-oriented event-driven programming, testing and debugging, simple and complex data types, language syntax and semantics.

Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
IT 20021  C# PROGRAMMING  3 Credit Hours
Introductory concepts of C#: development environment, variables, decisions, looping, arrays, strings, methods, exception and event handling.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 21002  NETWORK SETUP AND CONFIGURATION  4 Credit Hours
Introduces networking in local area network (LAN) and wide area network (WAN) environments. Topics include network protocol, configuration, operation, setup, installation, administration, management and security.
Pre/corequisite: IT 11009.
Schedule Type: Lecture
Contact Hours: 4 lecture
Grade Mode: Standard Letter

IT 21005  VISUAL BASIC DATABASE PROGRAMMING  4 Credit Hours
Advanced course in the visual basic language focusing on database systems development.
Prerequisite: CS 13001 or DSCI 15310 or IT 11002 or CIS 24065.
Schedule Type: Lecture
Contact Hours: 4 lecture
Grade Mode: Standard Letter

IT 21007  INTERNET ETHICS AND POLICIES  3 Credit Hours
Covers the ethics, issues and policies regarding the Internet. Course includes discussion/research on intellectual property/freedom, hacking, pornography, privacy.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 21008  COMPUTER METHODS IN SCIENCE AND ENGINEERING  3 Credit Hours
Use of computers in problems related to science and engineering. Course includes introduction to elements of a high-level scientific language.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 21009  SEMINAR IN COMPUTER TECHNOLOGY  3 Credit Hours
Capstone course encompassing critical reading, writing and discussion applying the current theories of computer technologies to on-the-job experiences. Students develop a portfolio to confirm their level of knowledge.
Prerequisite: IT 11002 and IT 11005 and IT 11006 and IT 11009 and IT 21002 and IT 21010.
Schedule Type: Seminar
Contact Hours: 3 other
Grade Mode: Standard Letter

IT 21010  WORKGROUP PRODUCTIVITY SOFTWARE  3 Credit Hours
Research project-oriented course emphasizing workgroup methodologies for group project management, problem definition, data retrieval and analysis, conclusions and recommendations.
Prerequisite: IT 12000; or OTEC 16639 and OTEC 26611.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 21011  TECHNIQUES OF MULTIMEDIA WEB DESIGN  3 Credit Hours
Focuses on developing and managing effective web sites using multimedia elements, including sound and video.
Prerequisite: IT 11006 or DSCI 13210.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 21036  WEB SCRIPTING I  3 Credit Hours
Course focuses on client-side scripting needed to create interactive and dynamic websites. The use of scripting in context with various technologies is explored.
Prerequisite: CS 13001 and CS 27101; or DSCI 15310; or IT 11002 and IT 11006; or CIS 24065; or TECH 26301.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 21092  COMPUTER PRACTICUM (ELR)  1-3 Credit Hours
(Repeatable for credit) Supervised work experience in information technology environment; 45 hours supervised work experience per credit hour.
Prerequisite: Sophomore standing.
Schedule Type: Practicum or Internship
Contact Hours: 3-9 other
Grade Mode: Standard Letter
Attributes: Experiential Learning Requirement

IT 21095  SPECIAL TOPICS IN COMPUTER TECHNOLOGY  1-4 Credit Hours
(Repeatable for credit) Topics announced when scheduled.
Prerequisite: Special approval.
Schedule Type: Lecture
Contact Hours: 1-4 lecture
Grade Mode: Standard Letter

IT 21096  INDIVIDUAL INVESTIGATION IN COMPUTER TECHNOLOGY  1-4 Credit Hours
(Repeatable for credit) Individual study in computer field.
Prerequisite: Special approval.
Schedule Type: Individual Investigation
Contact Hours: 7-28 other
Grade Mode: Standard Letter

IT 21100  LOCAL AREA NETWORK TROUBLESHOOTING  3 Credit Hours
Covers local area network troubleshooting techniques. Topics include identifying the scope of the problem, systematic troubleshooting approaches, problem resolution and ongoing maintenance.
Prerequisite: CS 33211 or DSCI 26010 or IT 21002 or; TECH 23010 and TECH 26301.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
IT 21110  INTRODUCTION TO ROUTING AND SWITCHING  3 Credit Hours
Introduces internetworking concepts. Topics include networking standards, cabling, Transmission Control Protocol/Internet Protocol (TCP/IP), router configuration, local area network (LAN) and wide area network (WAN) segments and other related topics.
Prerequisite: CS 33211 or DSCI 26010 or IT 21002; or TECH 23010 and TECH 26301.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 21200  ETHICAL HACKING  3 Credit Hours
Tools and techniques ethical hackers and security testers use to discover vulnerabilities and solutions to protect computer networks.
Prerequisite: CS 33211 or DSCI 26010 or IT 21002; or TECH 23010 and TECH 26301.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 31002  HEALTH INFORMATION TECHNOLOGY SUPPORT  3 Credit Hours
Course covers skills and knowledge required to implement and support healthcare IT (HIT) systems including regulatory and compliance issues; organizational behavior, IT and medical business operations; best practices and security.
Prerequisite: Junior standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 32002  LINUX NETWORKING  4 Credit Hours
Course covering network administration topics with the Linux operating system. Topics include distributions, storage solutions, network services and current security practices.
Prerequisite: CS 33211 or DSCI 26010 or IT 21002; or TECH 23010 and TECH 26301.
Schedule Type: Lecture
Contact Hours: 4 lecture
Grade Mode: Standard Letter

IT 36095  SPECIAL TOPICS IN COMPUTER TECHNOLOGY  2-3 Credit Hours
(Repeatable for credit) Various special courses will be announced in the schedule of classes.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 2-3 lecture
Grade Mode: Standard Letter

IT 36301  ADVANCED C++ PROGRAMMING  4 Credit Hours
Course using C++ classes and data abstraction, stream I/O, inheritance, standard template library, Microsoft Foundation Classes, system programming concepts using Unified Modeling Language.
Prerequisite: IT 20001.
Schedule Type: Lecture
Contact Hours: 4 lecture
Grade Mode: Standard Letter

IT 36302  ADVANCED C# PROGRAMMING  3 Credit Hours
Advanced concepts of C# including classes and objects, inheritance, polymorphism, arrays, exception handling, files and streams and Extensible Application Markup Language (XAML).
Prerequisite: IT 20021.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 36303  DIGITAL IMAGE MANIPULATION  3 Credit Hours
Course covers various concepts involved in the creation and manipulation of digital images.
Prerequisite: IT 11006 or DSCI 13210.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 36305  ERGONOMICS IN COMPUTER SYSTEMS  3 Credit Hours
Introduction to ergonomics, usability design and assessment methods for the development of computer hardware, software and systems.
Prerequisite: Junior standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 36310  MULTIMEDIA DEVELOPMENT TOOLS  3 Credit Hours
Course focuses on advanced technologies for Web development, including DHTML, plug-ins, etc. Students learn to create more interactive and dynamic websites.
Prerequisite: IT 21011 or DSCI 13210.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 36311  ADVANCED JAVA PROGRAMMING  4 Credit Hours
Course using Java abstract data types and objects, object-oriented, event-driven design, file organization and access, and systems programming concepts.
Prerequisite: IT 20011.
Schedule Type: Lecture
Contact Hours: 4 lecture
Grade Mode: Standard Letter

IT 36314  SEMINAR IN EMERGING COMPUTER AND INFORMATION TECHNOLOGIES  3 Credit Hours
Survey of new and emerging technologies in computer and information technology.
Prerequisite: Junior standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
IT 36315 CERTIFICATION PREPARATION IN COMPUTER TECHNOLOGY 3 Credit Hours
(Repeatable for a maximum of 6 credit hours) Certification preparation course to help students prepare for professional certification attempts in computer technology. Certification is not guaranteed, and certification fees may apply.
Prerequisite: Special approval.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 36318 SURVEY OF INFORMATION SECURITY, INTERNET FRAUD AND COMPUTER FORENSICS (WIC) 3 Credit Hours
Course provides a non-technical introduction to contemporary issues in information security, Internet fraud and computer forensics.
Prerequisite: ENG 21011 or HONR 10297; and junior standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
Attributes: Writing Intensive Course

IT 36320 COMPUTER FORENSICS 3 Credit Hours
Hands-on skills in incident response, forensic preparation and data recovery and analysis.
Prerequisite: CS 33211 or DSCI 26010 or IT 21002; or TECH 23010 and TECH 26301.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 36321 NETWORK FORENSICS 3 Credit Hours
Emphasizing hands-on skills in live incident response, the proper use of network forensic tools, network monitoring, live data capture, evidence analysis, data integrity and other related topics.
Prerequisite: CS 33211 or DSCI 26010 or IT 21002; or TECH 23010 and TECH 26301.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 36322 SOCIAL MEDIA AND MOBILE DEVICE FORENSICS 3 Credit Hours
Course covers data collection and analysis techniques for social media and mobile devices.
Prerequisite: Junior standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 36330 LOCAL AREA NETWORK SECURITY FUNDAMENTALS 3 Credit Hours
Examines the primary issues involved in securing resources in a local area network (LAN), including threat assessment, countermeasures, best practices, security protocols, cryptography and management-related issues.
Prerequisite: CS 33211 or DSCI 26010 or IT 21002; or TECH 23010 and TECH 26301.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 36331 ADVANCED ROUTING AND SWITCHING 3 Credit Hours
Reinforcing Internetworking concepts. Topics include network standards, LAN switching, VLANs, network designs, routing protocols and configuration, LAN and WAN segments, and other related topics.
Prerequisite: IT 21110.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 36336 WEB SCRIPTING II 3 Credit Hours
Focuses on server-side scripting needed to create interactive and dynamic websites.
Prerequisite: IT 21036.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 36340 HELP DESK SUPPORT 3 Credit Hours
Examination of help desks that exist, importance within organizations, the roles and skills required, and methods and technologies commonly employed.
Prerequisite: IT 11009 or TECH 23010.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 36350 PROGRAMMING OFFICE PRODUCTIVITY APPLICATIONS 3 Credit Hours
Introduces the use of Visual Basic for Applications (VBA) as a tool to create customized programs that automate repetitive and/or complex tasks performed using office suite applications.
Prerequisite: IT 11002 and IT 21010.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 36355 COMMAND LINE UTILITIES 3 Credit Hours
Course prepares students to perform effectively in Windows, Linux and various server command line environments. Topics include command syntax, batch files, script files and internal and external commands.
Prerequisite: CS 33211 or DSCI 15310 or DSCI 26010 or IT 21002; or TECH 23010 and TECH 26301.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 36392 INTERNSHIP FOR COMPUTER TECHNOLOGY STUDENTS (ELR) 1-3 Credit Hours
(Repeatable for a maximum of 6 credit hours) An arranged work experience for students in the information technology field. Students complete 45 hours of internship per credit.
Prerequisite: Junior standing.
Schedule Type: Practicum or Internship
Contact Hours: 3-9 other
Grade Mode: Standard Letter
Attributes: Experiential Learning Requirement

IT 40000 CYBERSECURITY 3 Credit Hours
Builds on a background in networking and focuses on cybersecurity best practices, standard models and regulatory requirements.
Prerequisite: CS 33211 or DSCI 26010 or IT 21002; or TECH 23010 and TECH 26301.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
IT 41002  CLOUD TECHNOLOGY  3 Credit Hours
Concepts of cloud computing, including storage; services; technology; and management.
Prerequisite: CS 33211 or DSCI 26010 or IT 21002; or TECH 23010 and TECH 26301.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 41010  MOBILE APPLICATIONS FOR INFORMATION TECHNOLOGY  
3 Credit Hours
Course covers enterprise mobility technical concepts, strategies, and solutions across various domains and industries. Includes topics such as organizational issues, IT and business operations; and best practices and security.
Prerequisite: Junior standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 42000  SOCIAL MEDIA SECURITY  3 Credit Hours
Personal and corporate social media presence, security risks, intellectual property and ethical issues.
Prerequisite: Junior standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 42002  WIRELESS AND MOBILE DEVICE SECURITY  3 Credit Hours
Course covers wireless and mobile device security. Topics include risk assessments, threats, vulnerabilities and current security practices.
Prerequisite: CS 33211 or DSCI 26010 or IT 21002; or TECH 23010 and TECH 26301.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 43000  HEALTHCARE INFORMATION SYSTEMS  3 Credit Hours
Course focuses on the roles and responsibilities of the health information technology professional including the technology, legal and ethical responsibilities and complex systems and environment.
Prerequisite: Junior standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 46300  ADVANCED COMPUTER ASSEMBLY AND CONFIGURATION  
3 Credit Hours
Focus is on advanced system components, streamlined operating system installation procedures, and current technology in local area network (LAN) connectivity.
Prerequisite: IT 11009; and junior standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 46303  DIGITAL VIDEO EDITING  3 Credit Hours
Utilizes digital imaging technologies to produce videos. Includes timelines; filming, importing/exporting video; audio; effects, transitions and captions.
Prerequisite: IT 36303.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 46308  ADVANCED VISUAL BASIC PROGRAMMING  3 Credit Hours
Advanced concepts of visual basic, including classes and objects, inheritance, polymorphism, arrays, exception handling, files and streams and dynamic-link library (DLL).
Prerequisite: CS 13001 or DSCI 15310 or IT 11002 or CIS 24065.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 46309  ASP.NET WEB PROGRAMMING  3 Credit Hours
Using Visual Studio and the ASP.NET platform to develop secure, data-aware web applications. Topics covered include HTML and CSS, testing and debugging, master pages, state management, security and authentication, SQL and object data sources.
Prerequisite: IT 11002 or IT 20021 or CS 13001 or DSCI 15310 or CIS 24065.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 46310  TECHNOLOGY OF OPERATING SYSTEMS  3 Credit Hours
Course covers installation, configuration, tuning and communication among state-of-the-art desktop operating systems, using available system tools, utilities and files.
Prerequisite: CS 33211 or DSCI 26010 or IT 21002; or TECH 23010 and TECH 26301.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 46311  TECHNOLOGY OF NETWORKING  3 Credit Hours
Advanced topics of enterprise network management, including DNS, IP addressing, routing basics, subnet masking, firewalls, storage redundancy techniques, and general tuning, optimizing, troubleshooting, recovery strategies.
Prerequisite: CS 33211 or DSCI 26010 or IT 21002; or TECH 23010 and TECH 26301.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 46312  SCRIPTING FOR NETWORK ADMINISTRATORS  3 Credit Hours
Covers scripting technologies to configure and manage resources and services of local area network (LAN) servers and workstations.
Prerequisite: IT 21002 and IT 21036.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 46313  VIRTUAL MACHINE CONFIGURATION AND ADMINISTRATION  
3 Credit Hours
Focus on configuring and administering virtual machine software.
Prerequisite: CS 33211 or DSCI 26010 or IT 21002; or TECH 23010 and TECH 26301.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
IT 46314  ADVANCED SERVER CONFIGURATION  3 Credit Hours
Course focus is on the core service roles provided by application services, including configuration, maintenance and security.
Prerequisite: CS 33211 or DSCI 26010 or IT 21002; or TECH 23010 and TECH 26301.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 46315  SQL WITH ORACLE  3 Credit Hours
Focus is on Structured Query Language. (SQL) and relational databases using Oracle, a comprehensive and fully integrated stack of cloud applications and platform services.
Prerequisite: CS 13001 or DSCI 15310 or IT 21005 or CIS 24065.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 46320  CLOUD FORENSICS  3 Credit Hours
Concepts of cloud forensics, including legal consideration and software tools involved with discovery in the cloud.
Prerequisite: CS 33211 or DSCI 26010 or IT 21002; or TECH 23010 and TECH 26301.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 46321  WEB DATABASE INTEGRATION  3 Credit Hours
Course focus is on integrating data sources into websites. Current topics include advanced concepts in server-side processing principles, web forms, database programming objects and Structured Query Language (SQL).
Prerequisite: IT 21036.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 46331  LOCAL AREA NETWORK SECURITY AND FIREWALLS  3 Credit Hours
Course examines the primary issues involved in defining and configuring a local area network (LAN) defense perimeter, including LAN security analysis, implementing firewalls and intrusion detection systems.
Prerequisite: IT 36330.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 46340  DATA DESIGN AND IMPLEMENTATION  3 Credit Hours
Explores the role and design of databases in organizations, with emphasis on the technologies used in their implementation. Emphasis on Structured Query Language (SQL).
Prerequisite: IT 21005 and IT 21010.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

IT 46350  DATABASE ADMINISTRATION AND REPORTING TOOLS  3 Credit Hours
Examines the role of database administrator, focusing on maintaining, validating and securing data along with use of report writing tools, techniques and best practices.
Prerequisite: IT 21005 and IT 21010.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

Insurance Studies (INS)

INS 29000  INTRODUCTION TO INSURANCE AND RISK  3 Credit Hours
Introduction into the fields of insurance and risk management including, property and casualty, life, health, auto and other types of insurances. Personal and commercial risks are identified and quantified for potential loss.
Prerequisite: ACTT 11000 or BMRT 11000.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

INS 39000  INSURANCE LAW, FINANCE AND RISK MANAGEMENT  3 Credit Hours
Next-level insurance and risk management topics including ERM, insurance law and financial statement analysis. Other topics include impact of laws and regulation on insurers and additional elements of life insurance, annuities, IRAs, auto insurance, crime insurance and surety bonds.
Prerequisite: INS 29000.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
Attributes: Writing Intensive Course

INS 39001  INSURANCE OPERATIONS (WIC)  3 Credit Hours
A detailed review of the strategic and tactical operations of the insurance industry. Explores the Function and role of insurers, claims management, rate making, financial structures and underwriting.
Prerequisite: INS 39000 with a minimum grade of C grade.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

INS 49000  LIFE AND HEALTH INSURANCE  3 Credit Hours
A detailed review of life and health insurance and their impact on individuals and society. The objective is a familiarization with various life and health products and how these products protect people and their families against financial losses caused by death, accident, sickness or disability.
Prerequisite: INS 39001 with a minimum C grade.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

INS 49001  PERSONAL LINES INSURANCE  3 Credit Hours
Study of property and casualty personal lines of insurance including automobile, homeowner, dwelling and other residential policies, "toys" such as motor homes, motorcycles and boats, and high-risk plans for earthquake, flood and windstorm.
Prerequisite: INS 39001 with a minimum C grade.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

INS 49002  COMMERCIAL INSURANCE  3 Credit Hours
Advanced concepts in commercial lines insurance including commercial property, commercial liability, business income, commercial crime and equipment breakdown insurance, commercial auto, workers compensation, business owners and specialty coverages.
Prerequisite: INS 39001 with a C grade.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
INS 49092 INSURANCE PRACTICUM GENERAL (ELR)  3 Credit Hours (Repeatable for credit) Course requires an on-site internship and/or a project with an insurance related organization approved by the Instructor.
Prerequisite: INS 39000 and 39001; and special approval.
Schedule Type: Practicum or Internship
Contact Hours: 21 other
Grade Mode: Satisfactory/Unsatisfactory-IP
Attributes: Experiential Learning Requirement

Mechanical Engineering and Related Technology (MERT)

MERT 12000 ENGINEERING DRAWING  3 Credit Hours
Engineering drawing principles and techniques: orthographic projection, sketching, sections, auxiliary views, dimensioning and conventional practices.
Prerequisite: None.
Schedule Type: Laboratory, Lecture, Combined Lecture and Lab
Contact Hours: 2 lecture, 2 lab
Grade Mode: Standard Letter

MERT 12001 COMPUTER-AIDED DESIGN  3 Credit Hours
Introduces 3D modeling techniques to design and draft mechanical components and assemblies.
Prerequisite: MERT 12000.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 lecture, 2 lab
Grade Mode: Standard Letter
Attributes: CTAG Mechanical Engineering Technology, TAG Engineering Technology

MERT 12004 MANUFACTURING PROCESSES  3 Credit Hours
Introduces students to the various manufacturing processes such as extrusion, molding, forging, casting, stamping, piercing, joining and finishing. Investigates the various ways parts are made from the vast array of materials available.
Prerequisite: None.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 lecture, 2 lab
Grade Mode: Standard Letter
Attributes: CTAG Mechanical Engineering Technology, TAG Engineering Technology

MERT 12005 PROPERTIES OF MATERIALS  3 Credit Hours
Covers the chemical and physical properties of engineering materials such as metals (ferrous and non-ferrous), polymers, ceramics and composites. Students learn the mechanical and physical properties of materials, and the effects that manufacturing processes have on the material's properties.
Prerequisite: None.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 lecture, 2 lab
Grade Mode: Standard Letter
Attributes: TAG Engineering Technology

MERT 21096 INDIVIDUAL INVESTIGATION IN MECHANICAL ENGINEERING TECHNOLOGY  1-4 Credit Hours
(Repeatable for credit) Independent in depth research of a mechanical engineering technology topic supervised and coordinated by an engineering technology faculty member.
Prerequisite: Permission.
Schedule Type: Individual Investigation
Contact Hours: 1-4 other
Grade Mode: Standard Letter

MERT 22003 COMPUTER-AIDED TOOL DESIGN  3 Credit Hours
Tool design practices and procedures including materials, commercial standards, cutting tools, drill jigs, fixtures, dies and gauges using computer-aided design.
Prerequisite: MERT 12001.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
Attributes: TAG Engineering Technology

MERT 22005 STATICS  3 Credit Hours
Basic vector mechanics, calculation of reactions from applied forces, drawing free body diagrams, working with equations of equilibrium, analysis of simple structures, calculating mass properties and forces due to friction.
Prerequisite: None.
Corequisite: MATH 11022.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Satisfactory/Unsatisfactory
Attributes: TAG Engineering Technology

MERT 22008 SPECIAL TOPICS IN MECHANICAL ENGINEERING TECHNOLOGY  1-3 Credit Hours
(Repeatable for credit) Special topics in mechanical engineering technology.
Prerequisite: Permission.
Schedule Type: Lecture
Contact Hours: 1-3 lecture
Grade Mode: Standard Letter
MERT 32004  MACHINE DESIGN  3 Credit Hours
This course provides the concepts, procedures, data, and decision analysis techniques necessary to design machine elements commonly found in mechanical devices and systems.
Prerequisite: MERT 12001 and MERT 22007.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MERT 34002  ADVANCED SOLID MODELING  3 Credit Hours
Advance parametric solid modeling using advanced software (CREO) to create and analyze solid models. Includes model creation using advanced features, introduction to FEA simulation, and manufacturing simulations.
Prerequisite: MERT 12001.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MERT 42000  THERMODYNAMICS FOR ENGINEERING TECHNOLOGY  3 Credit Hours
Includes the study of the first and second laws of thermodynamics with a detailed study of various types of heat engines. Additional topics include principles of heat transfer and energy management.
Prerequisite: PHY 13001 and PHY 13002 or PHY 13011 and PHY 13012.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MERT 43001  DYNAMICS FOR ENGINEERING TECHNOLOGY  3 Credit Hours
Kinematics and kinetics of particles; Newton's laws; energy and momentum methods; system of particles; kinematics and kinetics of planar motions of rigid bodies; plane motion of rigid bodies; mechanical vibrations.
Prerequisite: PHY 13002 or PHY 13012.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

Modeling, Animation and Game Creation (MAGC)

MAGC 11003  SOLID MODELING  3 Credit Hours
Instruction given in the best usage approaches for parametric design philosophy through a hands-on, practice-intensive curriculum. Students acquire the knowledge needed to complete the process of designing models from conceptual sketching, through to solid modeling, assembly design and drawing production with rendering techniques for presentation.
Prerequisite: MAGC 12000; Computer Design, Animation and Game Design concentration in the Engineering Technology major or Game Design minor or Modeling and Animation minor.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MAGC 12000  TWO DIMENSION GRAPHICS  3 Credit Hours
Introductory course for creation of two-dimension graphics using vector and raster imaging for use in mapping and character development in animation and gaming.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MAGC 12001  MODELING AND TEXTURING I  3 Credit Hours
Introduction to the basic concepts of three-dimension modeling and animation. Topics include terminology, techniques of creating textures and imaging for mapping, three-dimension modeling, lighting, shading and rendering.
Prerequisite: MAGC 12000; and Computer Design, Animation and Game Design concentration in the Engineering Technology major or Game Design minor or Modeling and Animation minor.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MAGC 21000  FUNDAMENTALS OF MIXED REALITY  3 Credit Hours
Course explores the fundamentals of virtual and augmented reality available today (education, medical, games, architecture, etc.).
Prerequisite: Computer Design, Animation and Game Design concentration in the Engineering Technology major or Game Design minor or Modeling and Animation minor; and sophomore standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MAGC 21092  ANIMATION AND GAME DESIGN PRACTICUM (ELR)  1-3 Credit Hours
(Repeatable for a maximum of 6 credit hours) Supervised work experience. One credit hour for 50 work hours.
Prerequisite: None.
Schedule Type: Practicum or Internship
Contact Hours: 3.333-10 other
Grade Mode: Satisfactory/Unsatisfactory
Attributes: Experiential Learning Requirement

MAGC 22000  TWO-DIMENSION COMMUNICATION  3 Credit Hours
Comprehensive training with 2D and 3D elements of computer-aided-design (CAD) from the foundation to advanced techniques applicable to design in the graphics, mechanical, industrial and electronics fields.
Prerequisite: Computer Design, Animation and Game Design concentration in the Engineering Technology major or Game Creation minor or Modeling and Animation minor.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MAGC 22001  MODELING FOR ARCHITECTURE  3 Credit Hours
Introduction to building information modeling (BIM) fundamentals using an industry-standard architectural software application, including creation of full 3D architectural project into working drawings.
Prerequisite: Computer Design, Animation and Game Design concentration in the Engineering Technology major or Game Design minor or Modeling and Animation minor.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MAGC 22002  COMPUTER-AIDED DESIGN: CIVIL APPLICATIONS  2 Credit Hours
A course on the use of computer-aided drafting and design for civil engineering applications.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter
MAGC 22004  MODELING AND TEXTURING II 3 Credit Hours
3D modeling and computerized techniques. Introduction to the basic concepts, terminology and techniques of 3D modeling, lighting, shading, imaging and animation.
Prerequisite: MAGC 12001.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MAGC 22005  MULTIMEDIA AND GAME DESIGN 3 Credit Hours
2D and 3D game development which includes the creation of flowcharts, roughs and interactive navigation systems. Integration of images, animation, video, sound and custom code for the app or game for mobile device.
Prerequisite: MAGC 22001.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MAGC 22007  THREE-DIMENSION MODELING PROJECT 1 Credit Hour
A guided project course in 3-D modeling for computer animation and game design.
Prerequisite: MAGC 22005.
Schedule Type: Lecture
Contact Hours: 1 lecture
Grade Mode: Standard Letter-IP

MAGC 22008  PROJECT IN TEXTURE AND MATERIAL CREATION 1 Credit Hour
A guided project course in texture and material creation for computer animation and game design.
Prerequisite: MAGC 22007.
Schedule Type: Lecture
Contact Hours: 1 lecture
Grade Mode: Standard Letter-IP

MAGC 22009  APPLIED ENGINEERING SOFTWARE 3 Credit Hours
A course on the use of the computer as a problem solving tool for applications in engineering and manufacturing. Emphasis is on the use of productivity software training on the use of the software applicable to engineering problems using hands-on workshop formats.
Prerequisite: None.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 lecture, 2 lab
Grade Mode: Standard Letter

MAGC 22010  DIGITAL SCULPTING 3 Credit Hours
This course will explore interactive 3D sculpting to create highly-detailed and realistic models for use in games, film, animation and illustration.
Prerequisite: MAGC 12001; Computer Design, Animation and Game Design concentration in the Engineering Technology major or Game Design minor or Modeling and Animation minor.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MAGC 22006  PROJECT IN TEXTURE AND MATERIAL CREATION 1-3 Credit Hours
(Repeatable for credit) Special topics in Computer Animation and game design. Repeated registration permitted.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 1-3 lecture
Grade Mode: Standard Letter

MAGC 23020  GAMING AND CULTURE 3 Credit Hours
Familiarize students with the basic issues of culture and social aspects in different contexts including the relationship between culture and gaming. What is play, what is experiencing, and what are the cultural determinants that are at work in the process.
Prerequisite: Sophomore standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MAGC 33010  COMPETITIVE GAMING 3 Credit Hours
Introduction to eSports cultures and exploration of streaming techniques and layouts. The business culture of eSports, developing teams, communities, competitive gaming, event marketing and organizing an eSports event.
Prerequisite: Junior standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MAGC 33030  GAMES FOR EDUCATION 3 Credit Hours
This course explores using games for education and industry training.
Prerequisite: MAGC 12000, and Computer Design, Animation and Game Design concentration in the Engineering Technology major or Game Design minor or Modeling and Animation minor; and junior standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MAGC 33095  SPECIAL TOPICS IN MODELING, ANIMATION AND GAME CREATION 1-3 Credit Hours
To be determined based on special course topic presented.
Prerequisite: Computer Design, Animation and Game Design concentration in the Engineering Technology major.
Schedule Type: Lecture
Contact Hours: 1-3 lecture
Grade Mode: Standard Letter

MAGC 34000  CHARACTER ANIMATION 3 Credit Hours
Continuation of the study and technology applications of computer animation with emphasis on camera usage and the production of a comprehensive animation project involving the animation thought process (ATP).
Prerequisite: MAGC 22004.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MAGC 34001  ANIMATION PROJECT 3 Credit Hours
Continued study of practical technology applications of computer animation with emphasis on scripting code writing, systems line variables and fluent realism factors within the ATP.
Prerequisite: MAGC 34000.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MAGC 34003  ANIMATION THEORY 3 Credit Hours
A comprehensive course covering the fundamentals of storytelling with animation and motion graphics. Coverage of concept development, pre-production, storyboarding, color and design.
Prerequisite: MAGC 22004.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
MAGC 34004 TECHNOLOGY OF LIGHT, COLOR, DESIGN AND LAYOUT  2 Credit Hours
A course dealing with the study of the technical principles and applications of light, color, design and layout to the production of computer animation for engineering materials and products.
Prerequisite: MAGC 22004.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

MAGC 34005 ENVIRONMENTAL GAME DESIGN  3 Credit Hours
In this course, we will learn the essentials of game environment creation. We will look at how textures, terrains, foliage, particle effects, lighting and blueprinting work and are created in a computer-aided software. We will also learn to import 3D models in to our game environment.
Prerequisite: MAGC 22004; and junior standing.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MAGC 43000 INTERACTIVE GAME DESIGN  3 Credit Hours
This course is the continuation of MAGC 34005 and a group project based course. We will be covering how to add characters and blueprint scripting aspects in Unreal Engine. Our purpose is to create a playable 3D game in Unreal Engine
Prerequisite: MAGC 34005.
Schedule Type: Lecture
Contact Hours: 2 lecture, 2 lab
Grade Mode: Standard Letter

MAGC 43001 ANIMATION PRODUCTION AND VISUAL EFFECTS  3 Credit Hours
A course dealing with the technical and business aspects of pre-and post production planning for multimedia video or film projects. Covers a systematic approach to content organization and development, scripting, visualization. We will explore effects such as particles and volumes (fire, smoke, liquids) inside 3D scenes as well as compositing effects.
Prerequisite: MAGC 22004.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MAGC 43002 GRAPHICS DESIGN TECHNOLOGY  3 Credit Hours
A course of study in the technology of creating knowledge and effects using computer-graphics concepts to create photo-realistic composite images and to restore and enhance a wide array of images.
Prerequisite: MAGC 22004.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MAGC 43025 REAL-TIME RENDERING FOR ANIMATION  3 Credit Hours
This course focuses on using a game engine, also known as a real-time renderer, to present stories and animation in real-time. This includes meeting performance targets, interactivity, and animation.
Prerequisite: MAGC 34001 and MAGC 34005.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MAGC 43032 TECHNOLOGY OF LIGHT, COLOR, DESIGN AND LAYOUT  2 Credit Hours
This course focuses on using a game engine, also known as a real-time renderer, to present stories and animation in real-time. This includes meeting performance targets, interactivity, and animation.
Prerequisite: MAGC 22004.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

MAGC 43092 INTERNSHIP IN MODELING, ANIMATION AND GAME CREATION (ELR)  1-3 Credit Hours
A credit-bearing work experience with educational outcomes, utilizing and enhancing a student's academic learning in practical occupational situations. The student is expected to complete pre-determined assignments, which may include a weekly journal, final paper, or an experience report.
Prerequisite: Computer Design, Animation and Game Design concentration in the Engineering Technology major and junior standing; and special approval.
Schedule Type: Field Experience
Contact Hours: 1-3 other
Grade Mode: Standard Letter
Attributes: Experiential Learning Requirement

MAGC 43096 INDIVIDUAL INVESTIGATION IN MODELING, ANIMATION AND GAME CREATION  1-3 Credit Hours
(Repeatable for Credit) Research or individual investigation in areas not covered in the existing curriculum for baccalaureate level students at or above the junior level.
Prerequisite: Special approval.
Schedule Type: Individual Investigation
Contact Hours: 1-3 other
Grade Mode: Standard Letter

Nursing Technology (NRST)
NRST 10001 FOUNDATIONS OF NURSING AGENCY  5 Credit Hours
Development of basic nursing skills and physical assessment. Students begin implementation of the nursing process using universal self-care requisites as an organizational framework.
Prerequisite: Admission to technical study; and nursing ADN major.
Schedule Type: Clinic, Combined Lecture and Lab
Contact Hours: 2 lecture, 4.67 lab, 4.33 other
Grade Mode: Standard Letter
Attributes: CTAG Nursing/Associate Degree

NRST 10003 NURSING AGENCY  6 Credit Hours
Emphasizes broad concepts common to nursing practice. Increasingly complex skills are introduced. Care focuses on simple therapeutic self-care demands.
Prerequisite: Minimum C grade in the following: BSCI 11010 and CHEM 10055 (or CHEM 10050) and NRST 10001 and UC 10097 and one from the Kent Core Mathematics and Critical Reasoning category; and nursing ADN major; and minimum 2.000 overall GPA.
Schedule Type: Clinic, Combined Lecture and Lab
Contact Hours: 3.5 lecture, 3 lab, 4.5 other
Grade Mode: Standard Letter
Attributes: CTAG Nursing/Associate Degree
NRST 10006  LPN TO ASSOCIATE DEGREE IN NURSING TRANSITION 3 Credit Hours
Course is designed for the advanced placement of licensed practical nurses (LPN) to the nursing program. Course includes content areas from all first-year nursing courses, with both theory and lab. Orem’s theory is introduced, emphasizing the assessment of the client’s self-care assets and self-care deficits.
Prerequisite: Admission to technical study; and minimum 2.700 overall GPA; and nursing ADN major.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 lecture, 3 lab
Grade Mode: Standard Letter

NRST 10008  PARAMEDIC TO ASSOCIATE DEGREE IN NURSING TRANSITION 5 Credit Hours
Course serves to validate prior learning, update and enhance the student’s knowledge, begin the process of role transition and prepare students for advanced placement into the Nursing program.
Prerequisite: Admission to technical study; and minimum 2.700 overall GPA; and nursing ADN major.
Schedule Type: Clinic, Lecture
Contact Hours: 3.5 lecture, 1.83 lab, 2.67 other
Grade Mode: Standard Letter

NRST 10009  BASIC PRINCIPLES OF PHARMACOLOGY  2 Credit Hours
Students identify and apply the basic principles of pharmacology to client care. In addition, they explore pharmacodynamics, pharmacokinetics, pharmacodynamics, pharmacology-related math, drug classification, and safe preparation and administration of medications.
Prerequisite: Major in one of the following: Nursing ADN, Nursing BSN, Radiologic Technology, Respiratory Therapy Technology, Physical Therapist Assistant Technology or Occupational Therapy Assistant Technology.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

NRST 10010  THERAPEUTIC USE OF SELF  1 Credit Hour
Course focus is on the self-care of individuals, with emphasis on understanding human relationships in the promotion of self-care. Culture, values and past experiences as factors in communication are explored.
Prerequisite: NRST 10001 with a minimum C grade; and minimum 2.000 overall GPA; and nursing ADN major.
Schedule Type: Lecture
Contact Hours: 1 lecture
Grade Mode: Standard Letter

NRST 20205  PSYCHOSOCIAL SELF CARE DEFICITS  3 Credit Hours
Course focuses on providing mental health nursing care utilizing the nursing process for the emotionally ill client, family and community with psychiatric mental health needs. Emphasis is placed on understanding holistic human needs and promotion of the professional therapeutic nurse-client relationship.
Prerequisite: Minimum C grade in BSCI 11020, NRST 10003, NRST 10010, NUTR 23511 (or NUTR 33512) and PSYC 11762; and nursing ADN major; and minimum 2.000 overall GPA.
Schedule Type: Clinic, Laboratory, Lecture
Contact Hours: 2 lecture, .333 lab, 2.667 other
Grade Mode: Standard Letter

NRST 20206  NURSING AGENCY II  5 Credit Hours
Course focuses on nursing care of adults with intermediate therapeutic self-care demands. Emphasis is placed on the nurse as a provider of care.
Prerequisite: Minimum C grade in BSCI 11020, BSCI 20021, NRST 10003, NRST 10010, NUTR 23511 (or NUTR 33512) and PSYC 11762; and nursing ADN major; and minimum 2.000 overall GPA.
Schedule Type: Clinic, Laboratory, Lecture
Contact Hours: 2.5 lecture, 1.5 lab, 6 other
Grade Mode: Standard Letter

NRST 20207  PSYCHOSOCIAL SELF-CARE DEFICITS  4 Credit Hours
Course focus is on providing mental health nursing care utilizing the nursing process for the emotionally ill client, family and community with psychiatric mental health needs. Emphasis is placed on understanding holistic human needs and promotion of the professional therapeutic nurse-client relationships.
Prerequisite: Minimum C grade in NRST 10003, NUTR 33512 and PSYC 11762; and nursing ADN major; and minimum 2.000 overall GPA.
Schedule Type: Clinic, Lecture
Contact Hours: 3 lecture, .333 lab, 2.667 other
Grade Mode: Standard Letter

NRST 20208  NURSING AGENCY III  6 Credit Hours
Course covers nursing care of individuals with complex therapeutic self-care demands. Emphasis is placed on the nurse as provider and manager of patient care.
Prerequisite: Minimum C grade in NRST 20205, NRST 20206 and NURS 20950; and nursing ADN major; and minimum 2.000 overall GPA.
Schedule Type: Clinic, Combined Lecture and Lab
Contact Hours: 3 lecture, 5 lab, 8.5 other
Grade Mode: Standard Letter

NRST 20209  MATERNAL/NEWBORN DEVELOPMENT SELF-CARE  2 Credit Hours
Course covers nursing care of the expectant and newly-delivered family. The nursing approach acknowledges the mother's self-care abilities and dependent care agent role. Health deviations related to childbirth are incorporated.
Prerequisite: BSCI 11020, BSCI 20021, NRST 10003, NRST 10010, NURS 20950, NUTR 23511 (or NUTR 33512) and PSYC 11762; and nursing ADN major; and minimum 2.000 overall GPA.
Schedule Type: Clinic, Laboratory, Lecture
Contact Hours: 1 lecture, 3 other
Grade Mode: Standard Letter

NRST 20210  CHILD AND FAMILY DEVELOPMENT SELF-CARE  2 Credit Hours
Course covers family-centered nursing care of children. Developmental self-care requisites and common health deviations are emphasized.
Prerequisite: Minimum C grade in NRST 20205, NRST 20206 and NURS 20950; and minimum 2.000 overall GPA.
Schedule Type: Clinic, Combined Lecture and Lab
Contact Hours: 1 lecture, 4 lab, 2.6 other
Grade Mode: Standard Letter

NRST 21095  SPECIAL TOPICS  2-4 Credit Hours
(Repeatable for credit) Scheduled topic of interest to students and faculty.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 2-4 lecture
Grade Mode: Standard Letter
NRST 21096  INDIVIDUAL INVESTIGATION IN NURSING  1-3 Credit Hours
(Repeatable for a total of 18 hours) Readings and/or investigation of nursing topics supervised by nursing faculty.
Prerequisite: Special approval.
Schedule Type: Individual Investigation
Contact Hours: 3 other
Grade Mode: Satisfactory/Unsatisfactory

Occupational Therapy Assistant Technology (OCAT)

OCAT 10000  FOUNDATIONS IN OCCUPATIONAL THERAPY  2 Credit Hours
Introduction to basic theoretical concepts, professional development, profession of occupational therapy, its place in the health care system, and the role and function of the Occupational Therapist and Occupational Therapist Assistant.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

OCAT 10001  OCCUPATIONAL THERAPY PRACTICE SKILLS I  3 Credit Hours
Development of the OT practice skills in therapeutic use of occupation, including crafts, activity analysis, and basic documentation.
Prerequisite: OCAT 10003 with a minimum C grade.
Schedule Type: Laboratory, Lecture
Contact Hours: 2 lecture, 3 lab
Grade Mode: Standard Letter

OCAT 10002  THERAPEUTIC TECHNIQUES I - PSYCHOSOCIAL  4 Credit Hours
Application of occupational therapy skills and techniques in treatment programs, concerned with psychosocial dysfunction.
Prerequisite: OCAT 10003 with a minimum C grade.
Schedule Type: Combined Lecture and Lab
Contact Hours: 3 lecture, 3 lab
Grade Mode: Standard Letter

OCAT 10003  OCCUPATIONAL THERAPY PRACTICE SKILLS LABORATORY  1 Credit Hour
Development of basic assessment and intervention skills as related to clients with physical and mental disabilities.
Prerequisite: Admission to technical study; and occupational therapist assistant technology majors.
Schedule Type: Laboratory
Contact Hours: 3 lab
Grade Mode: Standard Letter

OCAT 10004  OCCUPATIONAL THERAPY ASSISTANT TERMINOLOGY  1 Credit Hour
An introduction to key terms utilized in occupational therapy and rehabilitation settings. Emphasis is on increasing professional understanding of occupational therapy terminology including related medical terminology found in professional documentation. Student is introduced to Occupational Therapy Practice Framework terminology.
Prerequisite: Occupational therapy assistant technology major.
Schedule Type: Lecture
Contact Hours: 1 lecture
Grade Mode: Standard Letter

OCAT 10010  PROFESSIONALISM IN HEALTHCARE  1 Credit Hour
Provides information concerning professional behaviors, character traits, work ethics and communication skills that OTAs will need as they interact with other healthcare professionals. Students need to understand the importance of being professional, competent, ethical and legal.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 1 lecture
Grade Mode: Standard Letter

OCAT 10092  THERAPEUTIC TECHNIQUES - FIELDWORK 1A (ELR)  1 Credit Hour
Under the supervision of personnel in selected facilities or agencies, the student will apply knowledge, skills and techniques acquired in the concurrent OCAT therapeutic technique courses.
Prerequisite: OCAT 10003 with a minimum C grade.
Schedule Type: Practicum or Internship
Contact Hours: 5.6 other
Grade Mode: Satisfactory/Unsatisfactory
Attributes: Experiential Learning Requirement

OCAT 20000  THERAPEUTIC TECHNIQUES II - PHYSICAL DYSFUNCTION I  4 Credit Hours
Application of occupational therapy skills and techniques in treatment programs, specifically concerned with physical dysfunctions.
Prerequisite: OCAT 10001 and OCAT 10002 with a minimum C grade.
Schedule Type: Combined Lecture and Lab
Contact Hours: 3 lecture, 3 lab
Grade Mode: Standard Letter

OCAT 20001  OCCUPATIONAL THERAPY MANAGEMENT AND LEADERSHIP SKILLS  2 Credit Hours
Introduction to management and leadership issues in occupational therapy practice, including ethics, licensure, reimbursement related to practice settings, research and skills required for performance of administrative tasks in an occupational therapy department.
Prerequisite: OCAT 10002.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

OCAT 20003  OCCUPATIONAL THERAPY PRACTICE SKILLS III  3 Credit Hours
Development of the occupational therapy practice skills including therapeutic use of occupation, leisure, adapting equipment and environment, therapeutic exercises, activity analysis and documentation.
Prerequisite: OCAT 10001 and OCAT 10002.
Schedule Type: Laboratory, Lecture
Contact Hours: 2 lecture, 3 lab
Grade Mode: Standard Letter

OCAT 20004  THERAPEUTIC TECHNIQUES III - DEVELOPMENTAL DISABILITIES  3 Credit Hours
Application of occupational therapy skills and techniques applied to patients/clients with developmental disabilities.
Prerequisite: OCAT 20000.
Schedule Type: Laboratory, Lecture
Contact Hours: 2 lecture, 3 lab
Grade Mode: Standard Letter
OCAT 20006  THERAPY TECHNIQUES IV-PHYSICAL DYSFUNCTION II  
3 Credit Hours  
Continued application of occupational therapy skills and techniques in treatment programs in the area of physical dysfunction.  
Prerequisite: OCAT 10002 and OCAT 20000 with a minimum C grade.  
Schedule Type: Combined Lecture and Lab  
Contact Hours: 2 lecture, 3 lab  
Grade Mode: Standard Letter

OCAT 20092  THERAPEUTIC TECHNIQUES - FIELDWORK 1B (ELR)  
1 Credit Hour  
Under the supervision of personnel in selected healthcare facilities or agencies, the student will apply knowledge, skills, and techniques acquired in the concurrent OCAT therapeutic techniques course.  
Prerequisite: OCAT 10000 and OCAT 10002.  
Corequisite: OCAT 20000.  
Schedule Type: Practicum or Internship  
Contact Hours: 5.6 other  
Grade Mode: Satisfactory/Unsatisfactory  
Attributes: Experiential Learning Requirement

OCAT 20192  CLINICAL APPLICATIONS I (ELR)  
4 Credit Hours  
Under the supervision of personnel in selected healthcare agencies, the student will apply knowledge, skills and techniques acquired in prior OCAT courses.  
Prerequisite: Minimum C grade in OCAT 10000 and OCAT 10001 and OCAT 10002 and OCAT 20000 and OCAT 20001 and OCAT 20003 and OCAT 20006.  
Schedule Type: Field Experience  
Contact Hours: 20 other  
Grade Mode: Satisfactory/Unsatisfactory  
Attributes: Experiential Learning Requirement

OCAT 20292  CLINICAL APPLICATIONS II (ELR)  
4 Credit Hours  
Under the supervision of personnel in selected healthcare agencies, the student will apply knowledge, skills and techniques acquired in prior OCAT courses.  
Prerequisite: OCAT 10000, OCAT 10001, OCAT 10002, OCAT 20000, OCAT 20001, OCAT 20003 and OCAT 20006.  
Schedule Type: Practicum or Internship  
Contact Hours: 20 other  
Grade Mode: Satisfactory/Unsatisfactory  
Attributes: Experiential Learning Requirement

OCAT 21000  OCCUPATIONAL THERAPY LICENSURE PREPARATION  
1 Credit Hour  
Students in the course are informed on how to prepare for their national certification exam and apply for licensure in preparation for practice as occupational therapy assistants. Content includes a brief review of occupational therapy concepts and theories, test taking, study strategies and practice of simulated exam questions.  
Prerequisite: OCAT 20006.  
Schedule Type: Seminar  
Contact Hours: 1 lecture  
Grade Mode: Standard Letter

OCAT 21095  SPECIAL TOPICS IN OCCUPATIONAL THERAPIST ASSISTANT TECHNOLOGY  
1-4 Credit Hours  
(Repeatable maximum 6 times for credit) Special topics in Occupational Therapy Assistant Technology; topics announced when scheduled.  
Prerequisite: OCAT 10003.  
Schedule Type: Lecture  
Contact Hours: 1-4 lecture  
Grade Mode: Standard Letter

OCAT 21096  INDIVIDUAL INVESTIGATION IN OCCUPATIONAL THERAPIST ASSISTANT TECHNOLOGY  
1-4 Credit Hours  
(Repeatable for credit) Individual study in Occupational Therapy Assistant Technology and related fields; open to OCAT majors.  
Prerequisite: OCAT 10003.  
Schedule Type: Individual Investigation  
Contact Hours: 1-4 other  
Grade Mode: Standard Letter-IP

Office Technology (OTEC)

OTEC 16620  WORD PROCESSING I  
3 Credit Hours  
Builds expertise in creating business documents applying the basic features of popular word processing software. Emphasis on hands on experience.  
Prerequisite: None.  
Schedule Type: Lecture  
Contact Hours: 3 lecture  
Grade Mode: Standard Letter

OTEC 16621  WORD PROCESSING II  
3 Credit Hours  
Design and create documents by using advanced features of word processing software.  
Prerequisite: OTEC 16620.  
Schedule Type: Lecture  
Contact Hours: 3 lecture  
Grade Mode: Standard Letter

OTEC 16625  BUSINESS PRESENTATIONS  
3 Credit Hours  
Development and production of professional computer-projected presentation materials using popular software. Includes use of graphic design techniques, color layout design principles and transparencies.  
Prerequisite: None.  
Schedule Type: Lecture  
Contact Hours: 3 lecture  
Grade Mode: Standard Letter

OTEC 16638  GOOGLE APPLICATIONS FOR ADMINISTRATIVE PROFESSIONALS  
3 Credit Hours  
Introduction to Google Applications. Students will learn to create, modify and manage the various Google Applications; utilize Google Drive; and learn to apply Google Application skills in the work environment and for personal use.  
Prerequisite: None.  
Schedule Type: Lecture  
Contact Hours: 3 lecture  
Grade Mode: Standard Letter

OTEC 16639  DATABASE APPLICATIONS  
3 Credit Hours  
Concepts, terminology and use of current database software to manage and retrieve business information. Emphasis on hands-on experiences.  
Prerequisite: None.  
Schedule Type: Lecture  
Contact Hours: 3 lecture  
Grade Mode: Standard Letter

OTEC 16640  ADVANCED DATABASE APPLICATIONS  
3 Credit Hours  
Provides the student with the skills and knowledge on creating advanced queries, forms and reports. Students learn how to customize, automate and secure the database structure.  
Prerequisite: OTEC 16639; and special approval.  
Schedule Type: Lecture  
Contact Hours: 3 lecture  
Grade Mode: Standard Letter
OTEC 16680  COMPUTER KEYBOARDING  1 Credit Hour  
Basic keyboarding course using computers for students having no  
previous keyboarding instruction or a speed of less than 30 words a  
minute. To pass the course students must keyboard above 30 words a  
minute for three minutes with no more than three errors.  
Prerequisite: None.  
Schedule Type: Lecture  
Contact Hours: 1 lecture  
Grade Mode: Standard Letter  

OTEC 26611  SPREADSHEET APPLICATIONS  3 Credit Hours  
Use of electronic spreadsheets from beginning to advanced applications  
that may prepare for software certification.  
Prerequisite: None.  
Schedule Type: Lecture  
Contact Hours: 3 lecture  
Grade Mode: Standard Letter  

OTEC 26622  DESKTOP PUBLISHING I  3 Credit Hours  
Study and application of the principles of proper document design using  
high-end desktop publishing software for newsletters, brochures, reports,  
forms and other computer-based business documents.  
Prerequisite: OTEC 16620.  
Schedule Type: Lecture  
Contact Hours: 3 lecture  
Grade Mode: Standard Letter  

OTEC 26623  DESKTOP PUBLISHING II  3 Credit Hours  
High-end layout design and illustration software. Includes advanced  
documents, Web publishing, makeovers, computer graphic concepts and  
formatting, image editing techniques and the use of color.  
Prerequisite: OTEC 26622.  
Schedule Type: Lecture  
Contact Hours: 3 lecture  
Grade Mode: Standard Letter  

OTEC 26635  ADMINISTRATIVE RESOURCE MANAGEMENT  3 Credit Hours  
Explores how office professionals can apply resource management  
skills to the areas of space/workflow, forms, budgetary control, staff and  
materials supplies.  
Prerequisite: None.  
Schedule Type: Lecture  
Contact Hours: 3 lecture  
Grade Mode: Standard Letter  

OTEC 26636  PROJECT MANAGEMENT FOR ADMINISTRATIVE  
PROFESSIONALS  1 Credit Hour  
Provides the basic tools needed to effectively manage projects and to  
automate and streamline such functions as resource allocation, work  
scheduling and communication. Project management software is used in  
the course.  
Prerequisite: None.  
Schedule Type: Lecture  
Contact Hours: 1 lecture  
Grade Mode: Standard Letter  

OTEC 26638  BUSINESS COMMUNICATIONS  3 Credit Hours  
Theory and application of oral and written business communication  
with emphasis on business letters, reports, employment process, visual  
presentations and electronic communications. Basic word processing  
skills are suggested.  
Prerequisite: ENG 11011 or HONR 10197.  
Schedule Type: Lecture  
Contact Hours: 3 lecture  
Grade Mode: Standard Letter  

OTEC 26640  CURRENT TECHNOLOGIES  3 Credit Hours  
Current trends and technology for the marketplace from an end user  
perspective.  
Prerequisite: None.  
Schedule Type: Lecture  
Contact Hours: 3 lecture  
Grade Mode: Standard Letter  

OTEC 26650  MEDICAL BILLING PROCEDURES  3 Credit Hours  
Introductory course in the preparation of various medical documents and  
forms in the health care industry. Use of computers and various word  
processing software is included. This course requires a 30 clock hour  
internship.  
Prerequisite: OTEC 26655 and OTEC 26656.  
Schedule Type: Lecture  
Contact Hours: 3 lecture  
Grade Mode: Standard Letter  

OTEC 26655  ICD CODING  3 Credit Hours  
Basic medical coding using the current version of the ICD classification  
system and nomenclature.  
Prerequisite: HED 14020.  
Schedule Type: Lecture  
Contact Hours: 3 lecture  
Grade Mode: Standard Letter  

OTEC 26656  CPT CODING  3 Credit Hours  
Introduction to coding rules for the CPT and Level II coding systems,  
incorporating and applying ICD rules to code patient services.  
Prerequisite: OTEC 26655.  
Schedule Type: Lecture  
Contact Hours: 3 lecture  
Grade Mode: Standard Letter  

OTEC 26691  SEMINAR FOR ADMINISTRATIVE PROFESSIONALS  3  
Credit Hours  
Refines job search strategies, integrates coursework with realistic office  
settings, presents interpersonal and ethical issues, provides outreach  
activities, and emphasizes career management.  
Prerequisite: Sophomore standing.  
Schedule Type: Seminar  
Contact Hours: 3 other  
Grade Mode: Standard Letter  

OTEC 26692  INTERNSHIP FOR ADMINISTRATIVE PROFESSIONALS  
(ELR)  1-3 Credit Hours  
(Repeatable for a maximum of 4 credit hours)Supervised field experience  
of ten hours per week paid or seven hours per week unpaid in a business  
environment functioning as an administrative professional.  
Prerequisite: Sophomore standing; and special approval.  
Schedule Type: Practicum or Internship  
Contact Hours: 7-21 other  
Grade Mode: Standard Letter  
Attributes: Experiential Learning Requirement
POTA 11001  PEACE OFFICERS ACADEMY I  6 Credit Hours
This course studies the role of the peace officer, principles of the American criminal justice system, ethics and professionalism. This course also studies the Ohio criminal code, constitutional law, the tenets of civil liability to law enforcement. It also covers case investigation, forensic procedures, interviews, execution of search warrants and physical conditioning. The student will comply with all the student performance objectives and requisite proficiencies as mandated by the Ohio Peace Officer Training Commission curriculum.
Prerequisite: Admission into the peace officers academy training certificate program.
Schedule Type: Combined Lecture and Lab
Contact Hours: 18.5 lecture, 3.6 lab
Grade Mode: Standard Letter

POTA 11002  PEACE OFFICERS ACADEMY II  5 Credit Hours
This course is designed to address the skills necessary for a first responder to administer aid and assistance in an emergency situation. Crowd control, HazMat, weapons of mass destruction, incident command systems and terrorism awareness is taught. Safe handling techniques and usage of firearms and they safety are covered. Students must demonstrate a measured skill level firing handguns and comply with all student performance objectives and requisite proficiencies as mandated by the Ohio Peace Officer Training Commission curriculum.
Prerequisite: Admission into the peace officers academy training certificate program.
Schedule Type: Combined Lecture and Lab
Contact Hours: 10.3 lecture, 8.4 lab
Grade Mode: Standard Letter

POTA 11003  PEACE OFFICERS ACADEMY III  6 Credit Hours
This course studies the means of dealing with interpersonal communications and intervention with groups and individuals who require law enforcement involvement. Emphasis is placed on patrol techniques, the principles and application of defense and pursuit driving. Students are trained in the reasonable responses to resistance or aggression and are taught self-defense techniques. The student will comply with all the student performance objectives and requisite proficiencies as mandated by the Ohio Peace Officer Training Commission curriculum.
Prerequisite: Admission into the peace officers academy training certificate program.
Schedule Type: Combined Lecture and Lab
Contact Hours: 12 lecture, 9.6 lab
Grade Mode: Standard Letter

POTA 11004  PEACE OFFICERS ACADEMY IV  5 Credit Hours
This course covers traffic enforcement, crash investigation, OVI enforcement, traffic technologies. Physical conditioning for law enforcement is mandatory. The student will comply with all the student performance objectives and requisite proficiencies as mandated by the Ohio Peace Officer Training Commission curriculum.
Prerequisite: Admission into the peace officers academy training certificate program.
Schedule Type: Combined Lecture and Lab
Contact Hours: 14.4 lecture, 3.6 lab
Grade Mode: Standard Letter

Physical Therapist Assistant Technology (PTST)

PTST 10000  INTRODUCTION TO PHYSICAL THERAPIST ASSISTANT 1 Credit Hour
Introduces the physical therapy profession; current and historical physical therapist practice; and the role, responsibilities and expectations of a Physical Therapist Assistant.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 1 lecture
Grade Mode: Standard Letter

PTST 10001  PRINCIPLES OF PATIENT CARE IN PHYSICAL THERAPY 4 Credit Hours
Students develop an understanding of the underlying principles of basic physical therapy procedures and the applications of these concepts in the physical therapy setting.
Prerequisite: Admission to technical study; and physical therapist assistant technology major.
Schedule Type: Combined Lecture and Lab
Contact Hours: 3 lecture, 3 lab
Grade Mode: Standard Letter

PTST 10003  CLINICAL CONDITIONS I  2 Credit Hours
Introduction to the pathology, treatment and clinical implications for medical conditions commonly encountered in physical therapy practice: Integumentary, cardiovascular, pulmonary, endocrine and digestive systems.
Prerequisite: Admission to technical study; and physical therapist assistant technology major.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter
PTST 10004  PHYSICAL THERAPY PROCEDURES I  4 Credit Hours
Theory and techniques of treatment procedures with emphasis on modalities. Maintenance of equipment and supplies.
Prerequisite: Admission to technical study; and physical therapist assistant technology major.
Schedule Type: Combined Lecture and Lab
Contact Hours: 3 lecture, 3 lab
Grade Mode: Standard Letter

PTST 10010  TRANSITIONS IN PHYSICAL THERAPY  8 Credit Hours
Validates prior learning in the course content of PTST 10004, PTST 20003, PTST 20004; builds knowledge necessary for the physical therapist assistant technology (PTST) degree; and prepares students who have previously completed an approved allied health program for advanced placement in PTST. Students successfully competing this course with a grade of C (2.000) or better will receive six (6) transfer credit hours.
Prerequisite: Physical therapist assistant technology transition concentration; and special approval.
Schedule Type: Combined Lecture and Lab
Contact Hours: 7 lecture, 3 lab
Grade Mode: Standard Letter

PTST 11005  PHYSICAL THERAPY PRACTICE I  2 Credit Hours
Learn the essentials of safe, ethical, legal, and value-based behaviors in patient care. Acquire documentation skills and prepare for clinical education.
Prerequisite: Admission to technical study; and physical therapist assistant technology major.
Schedule Type: Seminar
Contact Hours: 2 lecture
Grade Mode: Standard Letter

PTST 11092  CLINICAL EDUCATION I (ELR)  1 Credit Hour
Observes and participate in providing selected physical therapy services under the direct supervision of a licensed PT or PTA.
Prerequisite: Admission to technical study; and PTST 11005; and physical therapist assistant technology major.
Schedule Type: Practicum or Internship
Contact Hours: 10 other
Grade Mode: Satisfactory/Unsatisfactory
Attributes: Experiential Learning Requirement

PTST 20001  THERAPEUTIC COMMUNICATIONS IN PHYSICAL THERAPY  1 Credit Hour
Focus on understanding human behavior. Emotional needs of individuals. Therapeutic use of self. Development of communication skills and interpersonal relationships.
Prerequisite: Admission to technical study; and physical therapist assistant technology major.
Schedule Type: Seminar
Contact Hours: 1 other
Grade Mode: Standard Letter

PTST 20003  CLINICAL CONDITIONS II  2 Credit Hours
Study of medical conditions commonly encountered in PTST 11005. The focus is on orthopedic, psychiatric, and geriatric illnesses, disorders and diseases. Pharmacology interventions are also covered.
Prerequisite: Admission to technical study; and physical therapist assistant technology.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

PTST 20004  PHYSICAL THERAPY PROCEDURES II  4 Credit Hours
Basic principles, therapeutic effects and techniques of therapeutic exercises used in Physical Therapy practice.
Prerequisite: Admission to technical study; and physical therapist assistant technology major; and AHS 22002 and AHS 22003.
Schedule Type: Combined Lecture and Lab
Contact Hours: 3 lecture, 3 lab
Grade Mode: Standard Letter

PTST 20006  PHYSICAL REHABILITATION PROCEDURES  4 Credit Hours
Principles and techniques of therapeutic interventions for rehabilitation in physical therapy practice.
Prerequisite: Admission to technical study; and PTST 20004 and BSCI 11020; and physical therapist assistant technology major.
Schedule Type: Combined Lecture and Lab
Contact Hours: 3 lecture, 3 lab
Grade Mode: Standard Letter

PTST 21095  SPECIAL TOPICS IN PHYSICAL THERAPIST ASSISTANT TECHNOLOGY  1-4 Credit Hours
(Repeatable maximum 6 times for credit) Special topics in Physical Therapist Assistant Technology; topics announced when scheduled.
Prerequisite: Physical therapist assistant technology major.
Schedule Type: Lecture
Contact Hours: 1-4 lecture
Grade Mode: Standard Letter

PTST 21096  INDIVIDUAL INVESTIGATION IN PHYSICAL THERAPIST ASSISTANT TECHNOLOGY  1-3 Credit Hours
(Repeatable maximum 6 times for credit) Individual study in physical therapist assistant technology and related fields; open to PTST majors.
Prerequisite: Physical therapist assistant technology major.
Schedule Type: Individual Investigation
Contact Hours: 1-3 other
Grade Mode: Standard Letter

PTST 22005  PHYSICAL THERAPY PRACTICE II  2 Credit Hours
Understand the current professional, legal, and regulatory implications in the provision of PT services.
Prerequisite: Admission to technical study; and PTST 11005; and physical therapist assistant technology major.
Schedule Type: Seminar
Contact Hours: 2 lecture
Grade Mode: Standard Letter

PTST 22007  PHYSICAL THERAPY PRACTICE III  2 Credit Hours
Preparation for licensure, employment and career development as a physical therapist assistant.
Prerequisite: Admission to technical study; and physical therapist assistant technology major.
Schedule Type: Seminar
Contact Hours: 2 lecture
Grade Mode: Standard Letter
PTST 22010  TRANSITIONS TO PHYSICAL THERAPY PRACTICE  2 Credit Hours
Athletic Trainers transitioning to physical therapy practice prepare for employment and licensure. Explores reimbursement regulations, evidence-based practice, and various topics related to health care systems, and discuss current topics in the practice of physical therapy.
Prerequisite: Special approval.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

PTST 22092  CLINICAL EDUCATION PRACTICUM II (ELR)  2 Credit Hours
Provide physical therapy services under the direct supervision of a licensed PT or PTA.
Prerequisite: Admission to technical study; and PTST 11005 with a minimum C grade; and PTST 11092 with a grade of satisfactory.
Schedule Type: Practicum or Internship
Contact Hours: 10 other
Grade Mode: Satisfactory/Unsatisfactory
Attributes: Experiential Learning Requirement

PTST 22392  ATHLETIC TRAINING PLUS PHYSICAL THERAPIST ASSISTANT CLINICAL EDUCATION PRACTICUM (ELR)  4 Credit Hours
Provide physical therapy services of an entry-level physical therapist assistant, under the supervision of a licensed PT or PTA.
Prerequisite: PTST 11005 with a minimum C grade; and PTST 11092; and special approval.
Corequisite: PTST 22010.
Schedule Type: Practicum or Internship
Contact Hours: 480 other
Grade Mode: Standard Letter
Attributes: Experiential Learning Requirement

PTST 23092  CLINICAL EDUCATION PRACTICUM III (ELR)  2 Credit Hours
Provide physical therapy services of an entry-level physical therapist assistant, under the supervision of a licensed PT or PTA.
Prerequisite: Admission to technical study; and PTST 11005 and PTST 22092; physical therapist assistant technology major.
Schedule Type: Practicum or Internship
Contact Hours: 10 other
Grade Mode: Satisfactory/Unsatisfactory
Attributes: Experiential Learning Requirement

Radiologic and Imaging Science (RIS)

RIS 34001  INTRODUCTION TO DIAGNOSTIC MEDICAL SONOGRAPHY  1 Credit Hour
Provides an introduction to diagnostic medical sonography. The course orients new students to the profession. Topics covered include basic sonographic principles, scanning technique, and introduction patient management techniques.
Prerequisite: Special approval.
Schedule Type: Lecture
Contact Hours: 1 lecture
Grade Mode: Standard Letter

RIS 34003  RADIATION THERAPY PRINCIPLES AND PRACTICE I  3 Credit Hours
An overview of cancer, radiation therapy and its physical and technical aspects. Includes the roles/responsibilities of the therapist, treatment parameters, documentation and delivery of patient care, education and procedures.
Prerequisite: Radiologic and imaging sciences major.
Corequisite: RIS 34030.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter-IP

RIS 34004  RADIATION THERAPY PATIENT MANAGEMENT  3 Credit Hours
Provides the basic concepts in patient assessment and evaluation. Includes communication skills, infection control, nutrition, medications, exams, emergencies, patient transfer techniques, medical ethics and law as applied to radiation therapy.
Prerequisite: Radiologic and imaging sciences major.
Corequisite: RIS 34030.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter-IP

RIS 34008  RADIATION THERAPY PHYSICS I  3 Credit Hours
Introduction to radiation therapy physics, including the fundamentals of atomic structure, radiation properties, radiation production, radiation quality, interactions of radiation with matter and principles of radiation detectors.
Prerequisite: Radiologic and imaging sciences major.
Corequisite: RIS 34030.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RIS 34030  RADIATION THERAPY CLINICAL EDUCATION I  1 Credit Hour
Observation and supervised clinical education with emphasis on administering radiation therapy treatments and patient care.
Prerequisite: Radiologic and imaging sciences major; and special approval.
Schedule Type: Clinic, Laboratory
Contact Hours: 2.5 lab, 5 other
Grade Mode: Standard Letter-IP

RIS 34040  PATIENT MANAGEMENT IN DIAGNOSTIC MEDICAL SONOGRAPHY  3 Credit Hours
Methods of patient management in diagnostic medical sonography are examined with emphasis on patient communication, clinical assessment, medical legal aspects, medical records, emergencies, pharmacology, safety issues, ethics and critical thinking.
Prerequisite: Radiologic and imaging sciences major.
Corequisite: RIS 34045.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
RIS 34042 ABDOMINAL SONOGRAPHY I 3 Credit Hours
Anatomy, physiology and pathology of the abdomen; instrumentation and scanning techniques; normal and abnormal sonographic appearances of abdominal structures will be presented.
Prerequisite: Radiologic and imaging sciences major.
Corequisite: RIS 34045.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RIS 34044 ULTRASOUND PHYSICS AND INSTRUMENTATION 3 Credit Hours
Ultrasound principles to include interaction of sound with matter, propagation of sound in tissue, physical units, transducer parameters, image storage and display, quality assurance, bioeffects, image artifacts and physical principles of doppler.
Prerequisite: Radiologic and imaging sciences major.
Corequisite: RIS 34045.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RIS 34045 ULTRASOUND CLINICAL EDUCATION I 2 Credit Hours
Provides clinical education and experience at a lab and clinical site to allow students the opportunity to practice skills necessary to obtain high quality sonographic images, to alter protocols on patients and to identify image quality problems. Content includes sonography of the liver, gallbladder, pancreas and spleen.
Prerequisite: Radiologic and imaging sciences major; and special approval.
Schedule Type: Clinic, Laboratory
Contact Hours: 3 lab, 1 other
Grade Mode: Standard Letter-IP

RIS 34052 ABDOMINAL SONOGRAPHY II 3 Credit Hours
Continuation of RIS 34042; anatomy, physiology and pathology of the abdomen; instrumentation and sonographic scanning techniques; normal and abnormal sonographic appearance of abdominal structures will be presented.
Prerequisite: RIS 34042; and radiologic and imaging sciences major.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RIS 34055 ULTRASOUND CLINICAL EDUCATION II 4 Credit Hours
Provides clinical education and experience at a clinical site to allow students the opportunity to practice skills necessary to obtain high quality sonographic images, to alter protocols based on patients and to identify image quality problems. Content includes sonography of the abdominal vessels, kidneys, adrenal glands, lymphatics and gynecologic pelvis.
Prerequisite: RIS 34045.
Corequisite: RIS 34052.
Schedule Type: Clinic, Laboratory
Contact Hours: 3 lab, 5 other
Grade Mode: Standard Letter-IP

RIS 34062 OBSTETRICS AND GYNECOLOGY SONOGRAPHY I 3 Credit Hours
Anatomy and pathophysiology of the non-pregnant female pelvis; instrumentation and scanning techniques; normal and abnormal sonographic appearances; and findings of the female reproductive tract are covered.
Prerequisite: RIS 34045; and radiologic and imaging sciences major.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RIS 34072 SUPERFICIAL STRUCTURES SONOGRAPHY 2 Credit Hours
Anatomy and pathophysiology of superficial structures; instrumentation and scanning techniques; normal and abnormal sonographic appearances of superficial structures; correlation with laboratory findings and other imaging modalities are presented. Introductory pediatric sonographic techniques and pathology are presented.
Prerequisite: RIS 34083.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter-IP

RIS 34075 ULTRASOUND CLINICAL EDUCATION III 2 Credit Hours
Provides clinical education and experience at clinical sites to allow students the opportunity to practice skills necessary to obtain high quality sonographic images, to alter protocols based on patients and to evaluate image quality. Content includes first, second and third trimester obstetric sonography and superficial structures sonography.
Prerequisite: RIS 34062.
Corequisite: RIS 44072.
Schedule Type: Clinic, Laboratory
Contact Hours: 2 lab, 12 other
Grade Mode: Standard Letter-IP

RIS 34083 SECTIONAL ANATOMY IN MEDICAL IMAGING 3 Credit Hours
Presentation of sectional anatomy of the body in the transverse (axial), sagittal and coronal planes as seen in medical images in CT, MRI and diagnostic medical sonography.
Prerequisite: BSCI 11010 and BSCI 11020; or BSCI 21010 and BSCI 21020; and radiologic and imaging sciences major.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RIS 34084 COMPUTED TOMOGRAPHY AND MAGNETIC RESONANCE IMAGING SECTIONAL ANATOMY I 2 Credit Hours
Presentation of sectional anatomy of the human body in computed tomography and magnetic resonance imaging. Includes orientation of organs and structures and pathological processes present in images.
Prerequisite: Radiologic and imaging sciences major; and special approval.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

Grade Mode: Standard Letter

Contact Hours: 3 lecture
Grade Mode: Standard Letter

Schedule Type: Clinic, Laboratory
Contact Hours: 2 lab, 12 other
Grade Mode: Standard Letter-IP

Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

Schedule Type: Clinic, Laboratory
Contact Hours: 2 lab, 5 other
Grade Mode: Standard Letter-IP
RIS 34086  COMPUTED TOMOGRAPHY AND MAGNETIC RESONANCE IMAGING SECTIONAL ANATOMY II  2 Credit Hours
Presentation of sectional anatomy of the human body in computed tomography and magnetic resonance imaging. Includes orientation of organs and structures and pathological processes present in images as seen in the extremities.
Prerequisite: RIS 34084; and radiologic and imaging sciences major.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

RIS 41095  SPECIAL TOPICS IN RADIOLOGIC AND IMAGING SCIENCES  
1-3 Credit Hours
(Repeatable for credit) Courses will consist of various topics in medical imaging designed to enhance learning outcomes.
Prerequisite: Radiologic and imaging sciences major.
Schedule Type: Lecture
Contact Hours: 1-3 lecture
Grade Mode: Standard Letter-IP

RIS 44000  INTRODUCTION TO RADIATION THERAPY  2 Credit Hours
An introduction to patient care techniques and clinical procedures for freshman entry students admitted to the RIS major in radiation therapy.
Prerequisite: Radiologic and imaging sciences major.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

RIS 44003  MAGNETIC RESONANCE IMAGING CLINICAL EDUCATION I  
2 Credit Hours
Students observe and become acquainted with MRI equipment and procedures at the clinical education setting and apply knowledge of physics, MRI safety and patient care. Students begin to perform some procedures under direct supervision of MRI technologists. Students attend clinicals 15 hours per week.
Prerequisite: Radiologic and imaging sciences major; and special approval.
Schedule Type: Clinic, Laboratory
Contact Hours: 5 lab, 10 other
Grade Mode: Standard Letter-IP

RIS 44004  COMPUTED TOMOGRAPHY CLINICAL EDUCATION I  2 Credit Hours
Provides clinical education and experience at a clinical setting to allow the student the opportunity to become proficient in skills necessary to obtain quality images, to alter protocols based on patient pathology or physical condition, and to identify image quality problems and to make appropriate corrections under direct supervision of a CT Technologist.
Prerequisite: Radiologic and imaging sciences major; and special approval.
Schedule Type: Clinic, Laboratory
Contact Hours: 5 lab, 10 other
Grade Mode: Standard Letter-IP

RIS 44009  RADIATION THERAPY PRINCIPLES AND PRACTICE II  2 Credit Hours
Examines the multidisciplinary treatment approaches. Consists of advanced topics in therapy, chemotherapy, immunotherapy, and surgery for combined modalities, for benign conditions, for emergencies and for managing side effects.
Prerequisite: RIS 34003.
Corequisite: RIS 44053.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

RIS 44018  RADIATION THERAPY PHYSICS II  3 Credit Hours
Continuation of the principles of radiation therapy physics and the study of photon beam dosimetry, electron beam dosimetry and treatment planning.
Prerequisite: RIS 34008.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter-IP

RIS 44021  PATIENT MANAGEMENT IN COMPUTED TOMOGRAPHY  2 Credit Hours
Provides knowledge about care-giving skills for patients undergoing CT exams. Information includes effective communication, problem-solving techniques, patient safety/comfort, patient preparation, monitoring, contrast agents and venipuncture.
Prerequisite: Radiologic and imaging sciences major.
Corequisite: RIS 44004.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

RIS 44028  RADIATION THERAPY RADIOBIOLOGY  3 Credit Hours
Establishes a foundation in radiation biology for radiation therapy. Cell biology and its response to radiation are reviewed as well as the effect of radiation on pathology and body systems.
Prerequisite: RIS 44018.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter-IP

RIS 44029  RADIATION THERAPY PATHOLOGY I  3 Credit Hours
General overview of various disease processes with emphasis on cancer types. Includes epidemiology, etiology, symptoms, metastases, histology, tumor grading, staging, detection, screening and diagnosis, treatment, side effects and prognosis of malignancies of the head and neck, central nervous, respiratory, digestive, and female reproductive systems.
Prerequisite: RIS 34003 and RIS 34083.
Corequisite: RIS 44053.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RIS 44030  COMPUTED TOMOGRAPHY IMAGE PRODUCTION I  2 Credit Hours
Computer fundamentals, operations and applications of CT equipment. Principles of CT system operation and components, image processing and display and image quality.
Prerequisite: Radiologic and imaging sciences major.
Corequisite: RIS 44004.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

RIS 44031  PATIENT MANAGEMENT IN MAGNETIC RESONANCE IMAGING  2 Credit Hours
Provides information on the role of the MRI technologist in maintaining patient safety and comfort as well as personal and co-worker safety. MR contrast agents and venipuncture will be studied. Includes problem solving with diverse patient types.
Prerequisite: Radiologic and imaging sciences major.
Corequisite: RIS 44003.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter
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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>RIS 44038</td>
<td>RADIATION THERAPY PHYSICS III</td>
<td>3</td>
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<td>Covers concepts of radioactivity and brachytherapy. Describes specialized treatment units. Discussion of human resource, therapy department budgets, and billing, accreditation, certification, professional societies.</td>
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<td>Prerequisite:</td>
<td>RIS 44018.</td>
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| RIS 44041   | RADIATION THERAPY QUALITY MANAGEMENT              | 2            |
|             | Provides overview of quality management programs and continuing quality improvement in radiation therapy. Topics include validity of quality assurance checks, chart checks, image checks, testing on simulators, linear accelerators, and brachytherapy sources. |
| Prerequisite: | RIS 44018.                                       |
| Schedule Type: | Lecture                                         |
| Contact Hours: | 2 lecture                                        |
| Grade Mode: | Standard Letter-IP                               |

| RIS 44042   | RADIATION THERAPY PATHOLOGY II                   | 3            |
|             | Continuation of Radiation Therapy Pathology I to include epidemiology, etiology, symptoms, metastases, histology, tumor grading, staging, detection, screening and diagnosis, treatment, side effects and prognosis of malignancies of the male reproductive, urinary, endocrine, circulatory, lymphatic, integumentary, and musculoskeletal systems as well as pediatric solid malignancies. |
| Prerequisite: | RIS 34083 and RIS 44029.                        |
| Corequisite: | RIS 44056.                                       |
| Schedule Type: | Lecture                                         |
| Contact Hours: | 3 lecture                                        |
| Grade Mode: | Standard Letter                                 |

| RIS 44043   | RADIATION THERAPY PRINCIPLES/PRACTICE III        | 3            |
|             | Review and testing of major subject areas from all radiation therapy courses to prepare students to successfully pass the national certification exam based on the content specifications from the American Registry of Radiologic Technologists (ARRT). |
| Prerequisite: | RIS 44009 and RIS 44018 and RIS 44028 and RIS 44042. |
| Schedule Type: | Lecture                                         |
| Contact Hours: | 3 lecture                                        |
| Grade Mode: | Standard Letter                                 |

| RIS 44044   | MAGNETIC RESONANCE IMAGING PROCEDURES I          | 2            |
|             | Provides the imaging techniques related to the body, special clinical applications, coil selection, scan sequences, protocols, positioning criteria, normal and abnormal anatomical and pathologic structures and signal characteristics for all areas of the body except extremities and vascular areas. |
| Prerequisite: | Radiologic and imaging science major.            |
| Corequisite: | RIS 44003.                                       |
| Schedule Type: | Lecture                                         |
| Contact Hours: | 2 lecture                                        |
| Grade Mode: | Standard Letter                                  |

| RIS 44045   | MAGNETIC RESONANCE IMAGING PROCEDURES II         | 2            |
|             | Provides the imaging techniques related to the body, special clinical applications, coil selection, scan sequences, protocols, positioning criteria, normal and abnormal anatomical and pathologic structures and signal characteristics for the extremities and vascular areas. |
| Prerequisite: | RIS 44044; and radiologic and imaging science major. |
| Corequisite: | RIS 44063.                                       |
| Schedule Type: | Lecture                                         |
| Contact Hours: | 2 lecture                                        |
| Grade Mode: | Standard Letter                                  |

| RIS 44047   | COMPUTED TOMOGRAPHY PROCEDURES I                  | 2            |
|             | Introduction to CT procedures with scanning protocols, positioning and non-contrast anatomy. |
| Prerequisite: | Radiologic and imaging science major.            |
| Corequisite: | RIS 44004.                                       |
| Schedule Type: | Lecture                                         |
| Contact Hours: | 2 lecture                                        |
| Grade Mode: | Standard Letter                                  |

| RIS 44048   | COMPUTED TOMOGRAPHY PROCEDURES II                 | 2            |
|             | Overview of the procedures presented in CT Procedures I course, anatomy as seen on scans both with and without contrast media, advanced processing, and advanced imaging procedures. |
| Prerequisite: | RIS 44047.                                       |
| Schedule Type: | Lecture                                         |
| Contact Hours: | 2 lecture                                        |
| Grade Mode: | Standard Letter                                  |

| RIS 44051   | MAGNETIC RESONANCE EQUIPMENT AND IMAGE ACQUISITION I | 2            |
|             | Develops and understanding of the physics of MR image acquisition and the hardware used. Provides information in the use and manipulation of the instrumentation and technical parameters used in the generation of images. Establishes safety procedures. |
| Prerequisite: | Radiologic and imaging science major.             |
| Corequisite: | RIS 44003.                                       |
| Schedule Type: | Lecture                                         |
| Contact Hours: | 2 lecture                                        |
| Grade Mode: | Standard Letter                                  |

| RIS 44052   | MAGNETIC RESONANCE EQUIPMENT AND IMAGE ACQUISITION II | 2            |
|             | Develops an understanding of MR image acquisition and the hardware used. Provides information in the use and manipulation of the hardware and technical parameters used in the generation of images. Reviews safety special applications such as advanced imaging techniques. Enables the student to maximize MR image quality. |
| Prerequisite: | RIS 44051; and radiologic and imaging science major. |
| Corequisite: | RIS 44063.                                       |
| Schedule Type: | Lecture                                         |
| Contact Hours: | 2 lecture                                        |
| Grade Mode: | Standard Letter                                  |

| RIS 44053   | RADIATION THERAPY CLINICAL EDUCATION II           | 3            |
|             | Continuation of Clinical Education I with emphasis on clinical practice of treatment techniques and planning. |
| Prerequisite: | RIS 34030.                                       |
| Schedule Type: | Clinic, Laboratory                              |
| Contact Hours: | 7.5 lab, 15 other                               |
| Grade Mode: | Standard Letter-IP                               |
RIS 44054  COMPUTED TOMOGRAPHY CLINICAL EDUCATION II  2 Credit Hours
Provides continued clinical education and experience at a clinical setting to allow the student the opportunity to become proficient in skills necessary to obtain quality images, to alter protocols based on patient pathology or physical condition, and to identify image quality problems and to make appropriate corrections under direct supervision of a CT Technologist. Student attends clinical education setting for 15 hours per week for 15 weeks.
Prerequisite: RIS 44004.
Schedule Type: Clinic, Laboratory
Contact Hours: 5 lab, 10 other
Grade Mode: Standard Letter-IP

RIS 44058  RADIATION THERAPY CLINICAL EDUCATION III  2 Credit Hours
Continuation of Clinical Education II with added emphasis on critical thinking, problem solving and clinical competency.
Prerequisite: RIS 44053.
Schedule Type: Clinic, Laboratory
Contact Hours: 5 lab, 10 other
Grade Mode: Standard Letter-IP

RIS 44062  COMPUTED TOMOGRAPHY IMAGE PRODUCTION II  2 Credit Hours
A continuation from Physical Principles of CT I, the course reviews basic CT components, operations and applications with advanced studies in post-processing techniques and image quality, while understanding the importance of radiation dose and quality control in CT.
Prerequisite: RIS 44030.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

RIS 44063  MAGNETIC RESONANCE IMAGING CLINICAL EDUCATION II  2 Credit Hours
Continuation of MRI Clinical Education I. Students apply knowledge of patient care, anatomy and pathology, equipment and image acquisition when observing and performing MRI procedures clinically. Students attend the clinical education setting for 15 hours per week.
Prerequisite: RIS 44003.
Schedule Type: Clinic, Laboratory
Contact Hours: 5 lab, 10 other
Grade Mode: Standard Letter-IP

RIS 44066  MAGNETIC RESONANCE IMAGING TECHNIQUES  2 Credit Hours
Integrates concepts of MRI including patient care, imaging procedures, data acquisition and processing as well as principles of image formation for review for the national certification exam in magnetic resonance imaging.
Prerequisite: RIS 44063; and special approval.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

RIS 44067  RADIATION THERAPY CLINICAL EDUCATION IV  3 Credit Hours
Continuation of Clinical Education II with added emphasis on critical thinking, problem solving and clinical competency.
Prerequisite: RIS 44053.
Schedule Type: Clinic, Laboratory
Contact Hours: 2 lecture, 7.5 lab, 15 other
Grade Mode: Satisfactory/Unsatisfactory-IP

RIS 44068  COMPUTED TOMOGRAPHY TECHNIQUES  2 Credit Hours
Students will review knowledge in each content area of the national certification exam in CT including patient management, imaging procedures, and physics and instrumentation.
Prerequisite: RIS 44054; and special approval.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

RIS 44069  COMPUTED TOMOGRAPHY CLINICAL EDUCATION III  1 Credit Hour
Allows students to advance clinical education skills and experiences at a clinical setting in order to obtain quality images, objectively alter protocols based on patient pathology or physical condition, and to identify image quality problems and to make appropriate corrections under the direct supervision of a CT Technologist. Student will attend a clinical education site for 10 days during the semester.
Prerequisite: RIS 44054.
Schedule Type: Clinic, Laboratory
Contact Hours: 2.5 lab, 5 other
Grade Mode: Standard Letter-IP

RIS 44072  OBSTETRICS AND GYNECOLOGY SONOGRAPHY II  3 Credit Hours
Embryonic and fetal development throughout gestation; fetal measurements, normal fetal anatomy and physiology; and abnormal sonographic appearances of the fetus will be covered as well as invasive obstetric procedures and antepartum testing.
Prerequisite: RIS 34062.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RIS 44073  MAGNETIC RESONANCE IMAGING CLINICAL EDUCATION III  1 Credit Hour
Continuation of Clinical Education II with student advancing skills and proficiency in performing MRI procedures in the clinical setting and are able to solve problems in a more independent manner. Students will complete 10 clinical days throughout the term.
Prerequisite: RIS 44063.
Schedule Type: Clinic, Laboratory
Contact Hours: 2.5 lab, 5 other
Grade Mode: Standard Letter-IP

RIS 44074  VASCULAR SONOGRAPHY  2 Credit Hours
Anatomy, physiology and hemodynamics of the cerebrovascular, abdominal and peripheral vascular systems; normal and abnormal sonographic vascular appearances; Doppler instrumentation and scanning techniques are covered.
Prerequisite: Radiologic and imaging science major.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

RIS 44076  ULTRASOUND CLINICAL EDUCATION IV  4 Credit Hours
Provides clinical education and experience at a clinical site to allow students the opportunity to practice skills necessary to obtain high quality sonographic images, to alter protocols based on patients and to identify image quality problems. Content includes abdominal, pelvic, obstetrical, superficial structure and vascular sonography.
Prerequisite: RIS 34075.
Corequisite: RIS 44074.
Schedule Type: Clinic, Laboratory
Contact Hours: 4 lab, 24 other
Grade Mode: Standard Letter-IP
RIS 44078  SONOGRAPHIC TECHNIQUES  3 Credit Hours
Course integrates diagnostic medical sonography concepts in preparation for certification exams.
Prerequisite: RIS 34044 and 34052 and 44072.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RIS 44083  PATHOPHYSIOLOGY FOR MEDICAL IMAGING  3 Credit Hours
Provides students with basic information on the causes of disease and the body’s response to disease, as well as the medical imaging modalities that will demonstrate them.
Prerequisite: RIS 34045 or RIS 44003 or RIS 44004; and radiologic and imaging science major.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RIS 44084  ULTRASOUND IMAGE EVALUATION  1 Credit Hour
Presentation of sonographic findings in specific disease processes, with evaluation of image quality and emphasis on diagnostic features of pathologic entities.
Prerequisite: Radiologic and imaging science major.
Schedule Type: Lecture
Contact Hours: 1 lecture
Grade Mode: Standard Letter

RIS 44088  LEADERSHIP IN MEDICAL IMAGING  1 Credit Hour
An introduction to the key strategies needed for success in health care leadership positions for both new and seasoned professionals. Includes supervision skills, competent communication, employment law, performance coaching, quality standards, accreditation and regulations, budgeting and finance, project management, leadership skills and health economics.
Prerequisite: Special approval.
Schedule Type: Lecture
Contact Hours: 1 lecture
Grade Mode: Standard Letter

RIS 44096  INDIVIDUAL INVESTIGATION IN MEDICAL IMAGING DIRECTED READINGS  3 Credit Hours
(Repeatable for credit) Students are assigned prescribed number of medical imaging journal articles, completes post test and submits a summary paper and online discussions.
Prerequisite: Radiologic and imaging science major; and special approval.
Schedule Type: Individual Investigation
Contact Hours: 3 other
Grade Mode: Standard Letter

RIS 44098  RESEARCH IN MEDICAL IMAGING (ELR) (WIC)  3 Credit Hours
Fundamental concepts and procedures for systematic collection, analysis critique and application of qualitative and quantitative data in medical imaging.
Prerequisite: RIS 34030 or RIS 34045 or RIS 44003 or RIS 44004; and radiologic and imaging science major.
Schedule Type: Research
Contact Hours: 3 other
Grade Mode: Standard Letter
Attributes: Experiential Learning Requirement, Writing Intensive Course

Radiologic Technology (RADT)

RADT 14003  INTRODUCTION TO RADIOLOGIC TECHNOLOGY  2 Credit Hours
Introduction to radiologic technology program, general anatomy, radiographic procedures, imaging equipment and techniques, radiation protection, professional organizations and clinical education.
Prerequisite: Admission to technical study; and radiologic technology major.
Schedule Type: Combined Lecture and Lab
Contact Hours: 1.5 lecture, .5 lab
Grade Mode: Standard Letter

RADT 14005  CLINICAL EDUCATION I  1 Credit Hour
Supervised observation and experience at the clinical education site with emphasis on clinical practice of basic skills of radiologic technology and the exams covered in Radiographic Procedures I (chest and abdomen). Student is assigned to the clinical education site for 15 hours per week for 7.5 weeks in summer.
Prerequisite: Radiologic technology major.
Corequisite: RADT 14003 and 14006 with a minimum C grade.
Schedule Type: Clinical, Laboratory
Contact Hours: 2.5 lab, 5 other
Grade Mode: Standard Letter-IP

RADT 14006  RADIOGRAPHIC PROCEDURES I  1 Credit Hour
Introduction to radiographic procedures and positioning of the chest and abdomen.
Prerequisite: Admission to technical study; and radiologic technology major.
Corequisite: RADT 14003 and RADT 14005.
Schedule Type: Laboratory
Contact Hours: 2 lab
Grade Mode: Standard Letter

RADT 14007  CLINICAL EDUCATION II  3 Credit Hours
Continuation of Clinical Education I with emphasis on skeletal radiography that includes upper and lower extremities, shoulder and pelvic girdles, vertebral spine and bony thorax. Student is assigned to the clinical site 22.5 hours per week.
Prerequisite: RADT 14005 and 14006.
Corequisite: RADT 14003 and 14005.
Schedule Type: Clinical, Laboratory
Contact Hours: 7.5 lab, 15 other
Grade Mode: Standard Letter-IP

RADT 14018  IMAGING EQUIPMENT  2 Credit Hours
A study of the equipment used in radiographic imaging including x-ray tubes, x-ray filters, beam restrictors, grids, image receptors, fluoroscopic and mobile equipment and methods of quality control.
Prerequisite: RADT 14003.
Corequisite: RADT 14015.
Schedule Type: Combined Lecture and Lab
Contact Hours: 1.8 lecture, .2 lab
Grade Mode: Standard Letter

RADT 14021  RADIOGRAPHIC PROCEDURES II  4 Credit Hours
Radiographic anatomy, positioning and image evaluation of the upper extremities, shoulder girdle, lower extremities, pelvic girdle, vertebral spine and bony thorax.
Prerequisite: RADT 14006.
Corequisite: RADT 14015.
Schedule Type: Combined Lecture and Lab
Contact Hours: 3 lecture, 2 lab
Grade Mode: Standard Letter
RADT 14024  RADIOPHGRAPHIC PROCEDURES III  4 Credit Hours
Radiographic anatomy, positioning, procedures and image evaluation of the gastrointestinal, biliary and urinary systems and skull and facial bone positioning.
Prerequisite: BSCI 11010 or ATTR 25057 or EXSC 25057; and RADT 14021.
Corequisite: RADT 14025.
Schedule Type: Combined Lecture and Lab
Contact Hours: 3 lecture, 2 lab
Grade Mode: Standard Letter

RADT 14025  CLINICAL EDUCATION III  3 Credit Hours
Continuation of Clinical Education II with emphasis on clinical practice of previous course content plus digestive, biliary and urinary procedures as well as skull and facial bone positioning. Student assigned to clinical education setting 22.5 hours per week.
Prerequisite: RADT 14024.
Corequisite: RADT 14025.
Schedule Type: Clinic, Laboratory
Contact Hours: 7.5 lab, 15 other
Grade Mode: Standard Letter

RADT 14034  IMAGE ACQUISITION AND PROCESSING  2 Credit Hours
Study of the technical factors and process of image acquisition, factors affecting image quality, processing of digital images and data management.
Prerequisite: RADT 14018.
Schedule Type: Combined Lecture and Lab
Contact Hours: 1 lecture, 2 lab
Grade Mode: Standard Letter

RADT 14085  CLINICAL EDUCATION IV  2 Credit Hours
Continuation of Clinical Education III with emphasis on clinical practice of content in previous clinical courses. More emphasis on independent clinical practice of procedures previously mastered. Clinical and lab time is equivalent to 262.5 hours.
Prerequisite: RADT 14025.
Schedule Type: Clinic, Laboratory
Contact Hours: 2.5 lab, 15 other
Grade Mode: Standard Letter-IP

RADT 14096  INDIVIDUAL INVESTIGATION IN DIRECTED READINGS IN RADILOGIC TECHNOLOGY  3 Credit Hours
(Repeatable for credit) Student selects prescribed number of medical journals, completes questions, paper and presentation.
Prerequisite: Special approval.
Schedule Type: Individual Investigation
Contact Hours: 3 other
Grade Mode: Standard Letter

RADT 21095  SPECIAL TOPICS IN RADILOGIC TECHNOLOGY  2-4 Credit Hours
(Repeated registration permitted) Student participation course on topics pertinent to radiologic technology. Topics are chosen by the instructor. Student may enroll in course more than once.
Prerequisite: Special approval from instructor.
Schedule Type: Lecture
Contact Hours: 2-4 lecture
Grade Mode: Standard Letter

RADT 24008  RADIOBIOLOGY AND RADIATION PROTECTION  3 Credit Hours
Biological aspects of radiation, radiation interaction with matter, minimizing patient radiation exposure, and personnel protection are topics covered.
Prerequisite: BSCI 11010 and BSCI 11020, or BSCI 21010 and BSCI 21020, or ATTR 25057 and ATTR 25058, or EXSC 25057 and EXSC 25058; and RADT 14003.
Corequisite: RADT 24015.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RADT 24015  CLINICAL EDUCATION V  3 Credit Hours
Continuation of Clinical Education IV with emphasis on clinical practice of content of previous clinical courses. More emphasis on independent clinical practice previously mastered. Students assigned to clinical education setting 22.5 hours per week and rotates to special medical imaging areas.
Prerequisite: None.
Corequisite: AHS 24014.
Schedule Type: Clinic, Laboratory
Contact Hours: 7.5 lab, 15 other
Grade Mode: Standard Letter-IP

RADT 24016  IMAGING PHYSICS  3 Credit Hours
Introduction to general physics, units and measurement, atomic structure, electromagnetic energy, x-ray production, electromagnetics, magnetism and electromagnetic devices, x-ray tube and x-ray circuitry.
Prerequisite: RADT 14018.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RADT 24025  CLINICAL EDUCATION VI  3 Credit Hours
Continuation of Clinical Education V with emphasis on mastery of clinical procedures. Students assigned to clinical education site 22.5 hours per week.
Prerequisite: RADT 24015.
Schedule Type: Clinic, Laboratory
Contact Hours: 7.5 lab, 15 other
Grade Mode: Standard Letter-IP

RADT 24048  RADIOPHGRAPHIC TECHNIQUES  3 Credit Hours
Review of radiologic technology to include patient care, anatomy and physiology, radiologic procedures, equipment and image production, radiologic physics, and radiation protection in preparation for the radiography certification exam.
Prerequisite: Minimum C grade in AHS 14016; and BSCI 11010 and BSCI 11020 or BSCI 21010 and BSCI 21020; and RADT 14024, RADT 14034, RADT 24008 and RADT 24016.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RADT 24058  DIVERSIFIED EMPLOYMENT SKILLS  3 Credit Hours
Course features multiple topics in medical imaging to prepare graduates for employment in healthcare.
Prerequisite: AHS 14016.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
RADT 24096  INDIVIDUAL INVESTIGATION IN RADIOLOGIC TECHNOLOGY  1 Credit Hour
Directed research of special interest or need in the student's program. A research paper will be written on an assigned topic in radiologic technology.
Prerequisite: Admission to technical study; and RADT 14003 with a minimum C grade; and radiologic technology major.
Schedule Type: Individual Investigation
Contact Hours: 3 other
Grade Mode: Standard Letter

RADT 24196  INDIVIDUAL INVESTIGATION IN ADVANCED READINGS IN RADIOLOGIC TECHNOLOGY  3 Credit Hours
(Repeatable for credit) Course permits scholarly activities for research, study and summary of medical journal articles. Information aids in understanding recent advancements in medical imaging.
Prerequisite: Admission to technical study; and radiologic technology major.
Schedule Type: Individual Investigation
Contact Hours: 3 other
Grade Mode: Standard Letter

Real Estate and Related Technologies (RERT)

RERT 11000  REAL ESTATE PRINCIPLES AND PRACTICES  3 Credit Hours
Introduction to listing, selling, real estate math, legal descriptions of property and contracts.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RERT 11001  REAL ESTATE LAW  3 Credit Hours
Review of basic Ohio laws covering the functions of an agency and the legal aspects of real estate transactions.
Prerequisite: RERT 11000.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RERT 11003  REAL ESTATE FINANCING  2 Credit Hours
Covers types of institutions, instruments and procedures involved in financing real estate transactions. Covers nature and characteristics of mortgage loans and nature of mortgage market.
Prerequisite: RERT 11000.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

RERT 21000  REAL ESTATE APPRAISAL  2 Credit Hours
Emphasizes methodology of appraising urban real property and appraisal techniques. Presents market approach to residential appraisal.
Prerequisite: RERT 11000.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

RERT 21003  SPECIAL TOPICS IN REAL ESTATE  2 Credit Hours
(Repeatable for credit) Seminar involving discussion of current issues and solutions to special problems in real estate investment, management and brokerage operations.
Prerequisite: RERT 11000 and RERT 11001 and RERT 11003 and RERT 21000.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

Regional College (RC)

RC 00003  CORE READING STRATEGIES FOR COLLEGE SUCCESS  3 Credit Hours
Development of reading strategies necessary for successful completion of college coursework. Emphasis on improving reading comprehension. The credit hours completed for this course do not count toward graduation.
Prerequisite: ACT Reading score of 0-13; or SAT Critical Reading or Verbal score of 0-350; or Compass score of 0-60 (required if student does not have ACT or SAT score).
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RC 00006  CRITICAL READING STRATEGIES FOR COLLEGE SUCCESS  3 Credit Hours
Development and application of content area reading and study strategies for successful completion of college coursework. Emphasis on application of study strategies. Credit hours for this course do not count toward graduation.
Prerequisite: ACT reading 14-19 score; or SAT writing 360-460 score (if taken before 2016); or SAT writing and language 20-24 score (if taken after 2016); or Accuplacer reading comprehension 51-79 score; or Compass 61-79 score (if student does not have ACT or SAT score).
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RC 00009  SWIFT KICK STUDY SKILLS  1 Credit Hour
Development of study strategies necessary for successful completion of college coursework. The credit hour completed for this course does not count toward graduation.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 1 lecture
Grade Mode: Standard Letter

RC 20195  SPECIAL TOPICS  1-3 Credit Hours
Subject varies depending on the need and faculty. Prerequisite: None
Schedule Type: Lecture
Contact Hours: 1-3 lecture
Grade Mode: Standard Letter
Respiratory Care (RSPC)

RSPC 30000  PROFESSIONAL PRACTICE IN RESPIRATORY CARE  3 Credit Hours
Course guides students in the area of professional practice and the importance of evidence-based practice; continuing professional development; using theory to inform practice; being reflective, ethical and organized; and proactively planning a career as an advanced practitioner.
Prerequisite: Respiratory care major.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RSPC 30002  LEADERSHIP AND MANAGEMENT IN RESPIRATORY CARE  3 Credit Hours
Course allows students to utilize their knowledge and experience in understanding leadership as a team leader or team member in the practice of respiratory care. Management in respiratory care is explored, including hospital organization; department structure; outcomes; staffing, billing, budgeting and staff development; decision-making; and effective communication.
Prerequisite: Respiratory care major.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RSPC 30004  EDUCATIONAL INSTRUCTION IN RESPIRATORY CARE  3 Credit Hours
Course guides students in perspectives on teaching and learning, characteristics of the learner and techniques and strategies for teaching and learning. Delivery of respiratory therapy education in various settings.
Prerequisite: Respiratory care major.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RSPC 30006  SLEEP MEDICINE AND POLYSOMNOGRAPHY  3 Credit Hours
A fundamental overview of a variety of sleep and breathing disorders that affect sleep. Topics include the identification of normal sleep and sleep disorders, methods of diagnosing sleep disorders, and treatment options. Practice in comparing and evaluating the indications and contraindications for sleep studies and evaluating sleep study results in relation to types of respiratory sleep disorders.
Prerequisite: Respiratory care major.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RSPC 31095  SPECIAL TOPICS IN RESPIRATORY CARE  1-3 Credit Hours
(Repeatable for credit) Scheduled topics of interest to students and faculty.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 1-3 lecture
Grade Mode: Standard Letter

RSPC 40000  DISEASE MANAGEMENT IN RESPIRATORY CARE  3 Credit Hours
Provides an advanced understanding of the pathophysiology and management of cardiopulmonary disease and comorbidities. Provides training in critical thinking in the management of chronic disease and utilization of patient-therapist participation principles; patient communication, evaluation, development of care plans and action plans utilizing evidence-based medicine; and protocols and clinical practice guidelines.
Prerequisite: Respiratory care major.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RSPC 40002  RESEARCH DEVELOPMENT IN RESPIRATORY CARE (WIC)  3 Credit Hours
Introduces the respiratory care practitioner to research methodology and design, their application to health science research and the application of research to everyday health care.
Prerequisite: MATH 10041 or MGMT 24056 or PH 30002 or PSYC 21621 or SOC 32220 and SOC 32221; and ENG 21011 or HONR 10297; and respiratory care major.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
Attributes: Writing Intensive Course

RSPC 40003  ADVANCED PRACTICE IN RESPIRATORY CARE  3 Credit Hours
Explores the traditional practice roles filled by respiratory therapists; the advanced practice roles that exist, as well as those that are emerging within the profession; and the career opportunities they represent for practitioners.
Prerequisite: Admission to professional study; and respiratory care major.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RSPC 40004  CONTEMPORARY ISSUES AND TRENDS IN RESPIRATORY CARE  3 Credit Hours
Analysis of contemporary issues and trends in respiratory care and their impact and influence on the profession.
Prerequisite: Admission to professional study; and respiratory care major.
Pre/corequisite: NURS 46000; and RSPC 40075.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RSPC 40008  CHRONIC DISEASE MANAGEMENT PRINCIPLES  3 Credit Hours
This course focuses on the application of critical thinking in the area of managing chronic disease and the impact healthcare professionals have on affecting positive patient population outcomes. Current practices, utilization of evidence-based medicine, protocols and current principles and trends in managing the impact of acute to chronic disease are discussed.
Prerequisite: Respiratory care major.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
RTT 10000 INTRODUCTION TO RESPIRATORY THERAPY 4 Credit Hours
Establishes a foundation in the profession of respiratory care. Topics include: patient assessment and monitoring, medical gas and humidity therapy, infection control, communication and diversity, clinical environment, patient education, disaster management, ethics and law, quality assurance and evidence based medicine, industry standards, healthcare reimbursement.
Prerequisite: Admission to technical study.
Schedule Type: Laboratory, Lecture
Contact Hours: 3 lecture, 2.5 lab
Grade Mode: Standard Letter

RTT 11001 RESPIRATORY CARE PHARMACOLOGY 2 Credit Hours
Basic principles in pharmacology, specific to respiratory care, covering the pharmacokinetic action of drugs, administration, calculations, and effects on the body systems.
Prerequisite: RTT 11003 with a minimum C grade.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

RTT 11002 CARDIOPULMONARY DISEASES 3 Credit Hours
A study of diseases and disorders affecting the cardiopulmonary system; etiology, pathophysiology, clinical manifestations, analyzing and interpreting data, constructing respiratory care plans and the role of the respiratory therapist in treatment.
Prerequisite: RTT 10000 and RTT 11003 with a minimum C grade.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

RTT 11003 APPLICATION AND MECHANISMS OF CARDIOPULMONARY ANATOMY AND PHYSIOLOGY 3 Credit Hours
Provides a solid foundation in cardiopulmonary anatomy and physiology with relevant applied physiology as it relates to the profession of respiratory care.
Prerequisite: Admission to technical study; and respiratory therapy major.
Schedule Type: Clinic, Laboratory, Lecture
Contact Hours: 4 lecture, 3 lab, 8 other
Grade Mode: Standard Letter

RTT 11004 THERAPEUTICS 6 Credit Hours
Introduction to inhaled medication administration, hyperinflation therapy, bronchopulmonary hygiene, and airway management. There is a laboratory and clinical component.
Prerequisite: RTT 10000 and RTT 11003 with a minimum C grade.
Schedule Type: Clinic, Laboratory, Lecture
Contact Hours: 4 lecture, 3 lab, 8 other
Grade Mode: Standard Letter

RTT 11006 INTRODUCTION TO CLINICAL RESPIRATORY CARE 3 Credit Hours
Introduction to patient assessment and monitoring, communication, infection control, medical records, medical gas and humidity therapy, and the clinical environment. There is a laboratory component.
Prerequisite: Admission to technical study; and respiratory therapy major.
Schedule Type: Laboratory, Lecture
Contact Hours: 2 lecture, 3 lab
Grade Mode: Standard Letter

RTT 21000 CRITICAL CARE 4 Credit Hours
An advanced-level course that provides a foundation for managing patients in critical care utilizing mechanical ventilation, pharmacology, and hemodynamic monitoring systems. Students perform, interpret and apply data, and learn advanced life support. There is a clinical component.
Prerequisite: RTT 21001 and RTT 21003 with a minimum C grade.
Schedule Type: Clinic, Lecture
Contact Hours: 3 lecture, 16 other
Grade Mode: Standard Letter

RTT 21001 MECHANICAL VENTILATION 5 Credit Hours
Establishes a foundation of mechanical ventilation and associated equipment; assessment, monitoring and modifying parameters. There is a laboratory and clinical component.
Prerequisite: RTT 11001 or AHS 12000 with a minimum C grade; and RTT 11002, RTT 11004, RTT 11008, and BSCI 11010 and BSCI 11020 or BSCI 21010 and BSCI 21020; and PHY 12111 or PHY 13001; and CHEM 10050 or CHEM 10055 or CHEM 10060; and ENG 11011 or ENG 21011 or HONR 10197 or HONR 10297.
Schedule Type: Clinic, Laboratory, Lecture
Contact Hours: 4 lecture, 4 lab, 16 other
Grade Mode: Standard Letter
RTT 21003 PERINATAL AND PEDIATRIC RESPIRATORY THERAPY 2 Credit Hours
An intense study of assessing, providing, and evaluating neonatal and pediatric respiratory care. Topics include: assessment of growth and development from conception to delivery, resuscitation, persistent illness, therapeutic interventions, and managing mechanical ventilation.
Prerequisite: RTT 11001 or AHS 12000 with a minimum grade of C; and minimum C grade in RTT 11002 and RTT 11004 and RTT 11008.
Schedule Type: Combined Lecture and Lab
Contact Hours: 1.5 lecture, 1.5 lab
Grade Mode: Standard Letter

RTT 21004 ADVANCED DIAGNOSTICS 3 Credit Hours
Provides knowledge and skills necessary to work effectively in a pulmonary function laboratory. Topics include: spirometry, testing standards and techniques, equipment set up and utilization, analyzing test results and applying them in the clinical setting.
Prerequisite: RTT 11003 and RTT 11008 with a minimum C grade.
Schedule Type: Laboratory, Lecture
Contact Hours: 2 lecture, 1 lab
Grade Mode: Standard Letter

RTT 21005 PULMONARY REHABILITATION AND CONTINUING CARE 2 Credit Hours
Roles and functions of respiratory therapists in cardiopulmonary rehabilitation and home care.
Prerequisite: RTT 21001 with a minimum C grade.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

RTT 21006 PULMONARY REHABILITATION AND CONTINUING CARE 1 Credit Hour
Roles and functions of respiratory therapists in cardiopulmonary rehabilitation and home care.
Prerequisite: RTT 21001 with a minimum C grade.
Schedule Type: Lecture
Contact Hours: 1 lecture
Grade Mode: Standard Letter

RTT 21010 RESPIRATORY THERAPY CAPSTONE COURSE 3 Credit Hours
Contemporary issues and trends in respiratory care; preparation for the CRT and RRT credentialing examinations; obtaining employment after graduation. There is a laboratory and clinical component.
Prerequisite: RTT 21000 with a minimum C grade.
Schedule Type: Clinic, Laboratory, Lecture
Contact Hours: 1 lecture, 3 lab, 16 other
Grade Mode: Standard Letter

RTT 21012 BASIC RESEARCH DEVELOPMENT AND ANALYSIS 2 Credit Hours
Survey of research problems, methods, and designs utilized in respiratory care with a focus on developing analytical and critiquing skills.
Prerequisite: RTT 21000 with a minimum C grade.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

RTT 21013 RESPIRATORY THERAPY CAPSTONE 2 Credit Hours
Contemporary issues and trends in respiratory care; preparation for the CRT and RRT credentialing examinations; obtaining employment after graduation.
Prerequisite: Minimum C (2.000) grade in RTT 21000.
Schedule Type: Clinic, Laboratory, Lecture
Contact Hours: 1 lecture, 1 lab, 16 other
Grade Mode: Standard Letter

RTT 21095 SPECIAL TOPICS IN RESPIRATORY THERAPY 1-3 Credit Hours
(Repeatable for credit) Scheduled topics of interest to students and faculty.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 1-3 lecture
Grade Mode: Standard Letter

RTT 21096 INDIVIDUAL INVESTIGATION IN RESPIRATORY THERAPY 1-3 Credit Hours
(Repeatable for a maximum of 6 credit hours) Readings and/or investigation of respiratory therapy topics supervised by respiratory therapy faculty.
Prerequisite: Respiratory therapy technology majors.
Schedule Type: Individual Investigation
Contact Hours: 1-3 other
Grade Mode: Satisfactory/Unsatisfactory

Technical and Applied Studies (TAS)

TAS 37900 TECHNICAL AND APPLIED STUDIES CORNERSTONE 3 Credit Hours
Cornerstone course instructs students about how the work role in industrial and information technology or engineering technology majors.
Prerequisite: Technical and applied studies, information technology or engineering technology major.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

TAS 47900 TECHNICAL AND APPLIED STUDIES CAPSTONE (ELR) 3 Credit Hours
Designed to help students articulate and integrate the competencies that are part of their bachelor’s degree program. In part, an electronic portfolio is used to help describe familiarity with the competencies.
Prerequisite: Technical and applied studies, information technology or engineering technology major.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
Attributes: Experiential Learning Requirement
Veterinary Technology (VTEC)

VTEC 10001  INTRODUCTION TO VETERINARY TECHNOLOGY  2 Credit Hours
Introduction to veterinary technician's career: medical terminology, career choices, occupational safety, human-animal bond, pet loss, euthanasia, animal husbandry and basic nutrition, breed identification, basic animal behavior.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

VTEC 10002  VETERINARY NURSING I  3 Credit Hours
Introduction to animal nursing: record keeping, kennel sanitation, animal restraint, syringe and needle identification/handling, injection techniques, physical exams, grooming and administration of medications. Lecture two hours, laboratory 3 hours weekly.
Prerequisite: Admission to technical study; and veterinary technology major.
Schedule Type: Laboratory, Lecture, Combined Lecture and Lab
Contact Hours: 2 lecture, 3 lab
Grade Mode: Standard Letter

VTEC 10204  CLINICAL LABORATORY I  3 Credit Hours
Introduction to clinical laboratory: equipment and equipment maintenance; internal and external parasites; urinalysis. Lecture 2 hours, laboratory 3 hours weekly.
Prerequisite: Veterinary technology major.
Schedule Type: Laboratory, Lecture, Combined Lecture and Lab
Contact Hours: 2 lecture, 3 lab
Grade Mode: Standard Letter

VTEC 10205  VETERINARY NURSING II  3 Credit Hours
Clinical application off-site. Emphasis on skills from VTEC 10002; physical exam, medications, blood vessels catheterization, venipuncture; fluid therapy, wound care, patient rehabilitation and physical therapy, first aid, bandaging and CPR.
Prerequisite: Minimum C grade in BSCI 10005 and CHEM 10050 and HED 14020 and VTEC 10002 and VTEC 10204.
Pre/corequisite: VTEC 10001.
Schedule Type: Laboratory, Lecture, Combined Lecture and Lab
Contact Hours: 2 lecture, 3 lab
Grade Mode: Standard Letter

VTEC 10206  PHARMACOLOGY  2 Credit Hours
Regulations controlling the use of drugs and biologicals, classifications and mechanisms of action of pharmaceuticals, dosage calculations, labeling, packaging and dispensing of veterinary products. Lecture 2 hours weekly.
Prerequisite: BSCI 10005 and BSCI 10110 and CHEM 10052 and CHEM 10053 and HED 14020 and VTEC 10001 and VTEC 10002 and VTEC 10204.
Pre/corequisite: VTEC 10205.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter

VTEC 20008  CLINICAL LABORATORY II  3 Credit Hours
Continuation and application of laboratory skills from Clinical Laboratory I; hematology, serology, cytology and other laboratory skills. Lecture 2 hours, laboratory 3 hours weekly.
Prerequisite: Minimum C grade in BSCI 10005 and CHEM 10050 and VTEC 10002 and VTEC 10204.
Pre/corequisite: VTEC 10001 and VTEC 10205.
Schedule Type: Laboratory, Lecture, Combined Lecture and Lab
Contact Hours: 2 lecture, 3 lab
Grade Mode: Standard Letter

VTEC 20009  VETERINARY NURSING III  3 Credit Hours
Continuing nursing skills/techniques emphasizing large animal species: restraint, venipuncture, behavior, breeds, feedstuffs, food safety, meds, preventive care, surgical procedures, lameness. Lecture 2 hours, laboratory 3 hours weekly. Pre.corequisite: VTEC 10206.
Prerequisite: BSCI 10110 and CHEM 10052 and CHEM 10053 and VTEC 10001 and VTEC 10002 and VTEC 10204 and VTEC 10205 and VTEC 20008.
Schedule Type: Laboratory, Lecture, Combined Lecture and Lab
Contact Hours: 2 lecture, 3 lab
Grade Mode: Standard Letter

VTEC 20010  IMAGING TECHNIQUES  3 Credit Hours
Principles and application of the production of X-rays, processing, radiation safety, storage, patient positioning and other imaging techniques. Lecture 2 hours, laboratory 3 hours weekly.
Prerequisite: BSCI 10005 and BSCI 10110 and CHEM 10052 and CHEM 10053 and VTEC 10001 and VTEC 10002 and VTEC 10204 and VTEC 10205 and VTEC 20008.
Pre/corequisite: VTEC 10206.
Schedule Type: Laboratory, Lecture, Combined Lecture and Lab
Contact Hours: 2 lecture, 3 lab
Grade Mode: Standard Letter

VTEC 20212  SURGERY AND ANESTHESIA  3 Credit Hours
Principles and application of the use of anesthetics, patient monitoring, dental prophylaxis, pre-surgery preparation, post-surgical patient care, sterilization, surgical preparation and assisting and equipment maintenance. Lecture 2 hours, laboratory 3 hours weekly.
Prerequisite: Minimum C grade in BSCI 10005 and BSCI 10110 and CHEM 10052 and CHEM 10053 and VTEC 10001 and VTEC 10002 and VTEC 10204 and VTEC 10205 and VTEC 20008.
Pre/corequisite: VTEC 10206.
Schedule Type: Laboratory, Lecture, Combined Lecture and Lab
Contact Hours: 2 lecture, 3 lab
Grade Mode: Standard Letter

VTEC 20213  NUTRITION AND DISEASE  2 Credit Hours
Principles of the disease process, disease control and prevention of common diseases of domestic animals. Nutrition principles especially for clinical diseases will be covered. Lecture 2 hours weekly.
Prerequisite: BSCI 20021 and VTEC 20009 and VTEC 20010 and VTEC 20212.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter
VTEC 20214  VETERINARY NURSING AND HOSPITAL PROCEDURES  3 Credit Hours
Nursing procedures for laboratory and animal exotic procedures; procedures by a veterinary technician in a hospital environment including office and computer application. Lecture 1 hour, laboratory 6 hours weekly including computer applications.
Prerequisite: BSCI 20021 and VTEC 20009 and VTEC 20010 and VTEC 20212.
Schedule Type: Laboratory, Lecture, Combined Lecture and Lab
Contact Hours: 1 lecture, 6 lab
Grade Mode: Standard Letter

VTEC 20215  VETERINARY OFFICE APPLICATIONS  1 Credit Hour
Overview of veterinary practice management including veterinary medical record keeping, marketing, staff responsibilities, interoffice communications and public relation techniques. Automated veterinary office processing and record-keeping. Computer hardware and software commonly found in small to mid-sized veterinary practices described along with office procedures and work flow.
Prerequisite: VTEC 10005, VTEC 10001, VTEC 10002, VTEC 10204.
Schedule Type: Laboratory
Contact Hours: 3 lab
Grade Mode: Standard Letter

VTEC 20216  LABORATORY AND EXOTIC ANIMAL MEDICINE  2 Credit Hours
Introduction to laboratory medicine and management, including basic husbandry, common diseases, and treatment protocols for various laboratory animal species, pocket pets, avian and exotic species. The student will learn scientific names and primary use of common laboratory animals and will practice restraint, sexing, appropriate methods of venipuncture, administration of medications, and anesthetic techniques.
Prerequisite: VTEC 10001, VTEC 10205, VTEC 10206, VTEC 20008, VTEC 20010, VTEC 20212.
Schedule Type: Combined Lecture and Lab
Contact Hours: 1 lecture, 3 lab
Grade Mode: Standard Letter

VTEC 20392  PRACTICUM IN VETERINARY HOSPITAL (ELR)  5 Credit Hours
(Repeatable for credit) Students gain practical experience in veterinary clinic or approved clinical site to focus on mastery of all clinical skills needed for this career.
Prerequisite: BSCI 20021 and VTEC 20009 and VTEC 20010 and VTEC 20212.
Corequisite: VTEC 20213 and VTEC 20214.
Schedule Type: Practicum or Internship
Contact Hours: 5 other
Grade Mode: Standard Letter
Attributes: Experiential Learning Requirement

VITICULTURE (VIN)

VIN 10500  MOLECULAR PRINCIPLES IN GRAPE AND WINE  4 Credit Hours
Covers the basic chemistry involved in the wine and winemaking process. Includes basic understanding of the chemistry involved in the fermentation process, flavor, aroma and color of wine.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 4 lecture
Grade Mode: Standard Letter-IP

VIN 11100  INTRODUCTION TO VITICULTURE AND VINEYARD ESTABLISHMENT  3 Credit Hours
Introduces students to current practices for establishing a commercial vineyard and maintaining its health and productivity once established. Topics covered include varietal selection, site preparation, equipment, site selection, first season establishment, vine growth development and training, trellis systems, vine propagation, weed control and vine disease control. Field work sessions consisting of 16 hours of hands-on experience is scheduled in area vineyards.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter-IP

VIN 11200  BOTANICAL VITICULTURE  4 Credit Hours
Provides students with an overview of the plant kingdom and an examination of grapevine form and function from a botanical perspective.
Prerequisite: None.
Schedule Type: Field Experience, Lecture
Contact Hours: 1.5 lecture, 2.5 other
Grade Mode: Standard Letter-IP
Attributes: Experiential Learning Requirement

VIN 11392  WINTER VITICULTURE FIELDWORK (ELR)  2 Credit Hours
(Repeatable for credit) Provides students initiated in the field of viticulture practical experience in winter vineyard operations. Students are required to partner with an approved vineyard to participate in the required fieldwork portion of the course, which serves as experience for those seeking employment in commercial viticulture.
Prerequisite: VIN 11100.
Schedule Type: Field Experience, Lecture
Contact Hours: 1.5 lecture, 2.5 other
Grade Mode: Standard Letter-IP
Attributes: Experiential Learning Requirement

VIN 11492  SPRING VITICULTURE FIELDWORK (ELR)  2 Credit Hours
(Repeatable for credit) Provides students initiated in the field of viticulture practical experience in spring vineyard operations. Students are required to partner with an approved vineyard to participate in the required fieldwork experience portion of the course, which serves as experience for those seeking employment in commercial viticulture.
Prerequisite: VIN 11100.
Schedule Type: Field Experience, Lecture
Contact Hours: 1.5 lecture, 2.5 other
Grade Mode: Standard Letter-IP
Attributes: Experiential Learning Requirement

VIN 11592  SUMMER/FALL VITICULTURE FIELDWORK (ELR)  2 Credit Hours
(Repeatable for credit) Provides viticulture students practical experience in summer and fall vineyard operations. Students are required to partner with an approved vineyard to participate in the required fieldwork portion of the course, which serves as experience for those seeking employment in commercial viticulture.
Prerequisite: VIN 11100.
Schedule Type: Field Experience, Lecture
Contact Hours: 1.5 lecture, 2.5 other
Grade Mode: Standard Letter-IP
Attributes: Experiential Learning Requirement
VIN 20095  SPECIAL TOPICS IN VITICULTURE AND ENOLOGY  1-3 Credit Hours
(Repeatable for a maximum of 9 credit hours) Various special topics to be announced in the Schedule of Classes, offering current topics in viticulture and enology.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 1-3 lecture
Grade Mode: Standard Letter

VIN 21100  INTEGRATED PEST MANAGEMENT  2 Credit Hours
Effective grape production depends on the grower developing a system of grape management that is appropriate for each vineyard. Decisions need to be made for how to manage all of the normal cultural practices such as planting, fertility, harvesting and pruning, as well as managing the insect, disease and weed problems that occur either regularly or sporadically. Course addresses management issues related to common, expected pest problems, as well as the occasional appearance of minor pest problems.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter-IP

VIN 21300  REGIONAL VINEYARD MANAGEMENT  2 Credit Hours
A general study of vineyard management in the general wine growing regions in the Continental United States. Covers management of the mature vineyard from region to region and builds on the topics covered in prerequisite course.
Prerequisite: VIN 11100.
Schedule Type: Lecture
Contact Hours: 2 lecture
Grade Mode: Standard Letter-IP

VIN 29300  SOILS FOR VITICULTURE  3 Credit Hours
Explores soil properties and behavior and their influence on wines. Focuses not only on growth and production, but on the long-term effects of viticulture on soil quality and the wider environment.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter-IP