School of Technology

School Dean

Dr. Tia M. Strait
Justice Center 126, 417.625.3155

Degrees and Majors

Bachelor of Science

- Computer Information Science
  - •Information Systems
  - •Computer Science
  - •Computational Mathematics
  - •Information Technology
  - •Computer Technology
- Criminal Justice
- Industrial Technology Education
- Manufacturing Information Management Systems
- Medical Technology
- Nursing

Associate of Science

- Computer Aided Drafting and Design Engineering Technology
- Computer Aided Drafting and Design Computer Graphics Design
- Computer Assisted Manufacturing Technology
- Computer Information Science
  - •Network System Administration
  - •Information Systems
  - •Website Administration
- Dental Hygiene
- Law Enforcement
- Pre-Engineering
- Radiologic Technology
- Respiratory Therapy

Associate of Arts (Preprofessional)

- Paramedic
- Prepharmacy

Certificate (one year)

- Manufacturing Applications

Certificate (less than 30 hours)

- Emergency Medical Technician
- Emergency Medical Technician - Paramedic
- Network System Administration
- Missouri Peace Officer Training

Certificate of Competency

- Computer Aided Drafting and Design Operator
- CNC Operator
- Reverse Engineering Technician
- Quality Technician

Options and Emphases

- Advanced Level Respiratory Therapy (after completion Respiratory Therapy Associate of Science Degree)
- Aviation
- Land Surveyor in Training

Minors

- Computer Information Systems
- Computer Science
- Criminal Justice Administration Corrections and/or Juvenile
- Network Systems Administration
- Website Administration

Role

The School of Technology is one of the four major instructional entities of Missouri Southern. As such, it offers quality instruction by and under, the leadership of professional educators who also have the advantage of actual work experience in business, industry, health care and government. Instruction is further enhanced by the utilization of qualified individuals from business and professionals in the community as guest lecturers and part-time instructors.

Courses offered by individual departments within the School of Technology are specifically career oriented toward a specialized field. The faculty in these departments recognize the necessity of providing an understanding of the relationships between careers and society; therefore, courses from the fine arts, humanities and natural sciences, as well as courses to refine a student's ability to read, write, speak and think are a required part of each departments curriculum. As a result, the students majoring in the various curricula in the School of Technology are an integral part of the entire student body.

All courses offered in the School of Technology are designed to provide students with the experience, skills or expertise that enable them to enter their employment field and meet requirements imposed by any certifying and licensing examination that may be required.

The School of Technology also recognizes that in many respects the community is also a classroom. Therefore, a number of curricula include courses that are offered by other educational agencies. In some courses, area facilities are used as laboratory resources with students utilizing them under the direct supervision of regular college instructional personnel.

The School of Technology offers curricula leading to a Bachelor of Science, Associate of Science, and Associate of Arts degrees and one-year certificates. Programs of shorter duration required for licensure or certification also are offered, often in conjunction with the Division of Continuing Education. Numerous courses and workshops are offered to meet specific and often rapidly emerging demands of business, industry and public services.

All departments work closely with advisory boards composed of professionals from area business, industry, government and health care. The advisory board assists the faculty of the various departments in maintaining relevancy of curriculum content and identifying special needs that can be addressed through continuing education programs.

Goals

The goals of the School of Technology are:

1. To provide opportunities for students to prepare for a broad range of established and emerging careers;
2. To maintain and develop curricula which provide the opportunity for students to obtain the background in liberal arts and sciences so they may appreciate their heritage and contemporary society and become a contributing member of their society;
3. To provide programs in the most cost effective method possible, that are cognizant of contemporary requirements of career fields and which provide best available preparation for emerging requirements;
4. To provide opportunities and encouragement for faculty and staff to remain current and conduct research in their respective disciplines;

5. To provide instructional facilities and equipment essential to the maintenance of academically excellent instruction;
6. To provide a variety of supportive functions that serve a variety of area needs;
7. To offer quality programs and in areas where required, maintain program content necessary for special accreditation;
8. To offer a variety of continuing education programs to meet special needs and demands;
9. To encourage faculty to provide consultation services and otherwise serve as resources for the area;
10. To advise people, including students and potential students, regarding knowledge, skills and abilities required to enter and succeed in various career fields;
11. To assist faculty to meet and maintain eligibility for special certification required in numerous programs.

Aviation

Justice Center, 417.625.9328

The Aviation Program is offered in affiliation with the Mizzou Aviation Company of Joplin, Missouri.

For additional information contact:
Dr. Tia M. Strait
Office: Justice Center 126
Phone: 417.625.3155
E-mail: strait-t@mail.mssc.edu

Course Descriptions

Av 200 5 hrs. cr.
Basic Pilot Training
An integrated course designed to meet ground school and flight training requirements for eligibility to take the Federal Aviation Administration examination for a Private Pilot Certificate. In addition to scheduled ground school classes, the course requires approximately 45 hours of dual and solo flight and check flight. Credit is awarded when the FAA certificate is obtained. Special fees and a third class medical certificate are required. Special fees for this course include plane rental and examiners test fee. Course grade is recorded as Pass or Fail.

Design Manufacturing Information Technologies

Ummel Technology Building 112-B, 417.625.9757 or 417.625.9328

Faculty Bartholet, Duggal, Howe, Schultz, Scorse

The department offers programs, which prepare students for manufacturing and design related floor level industrial positions. The programs offered are:

Associate of Science in Computer Aided Drafting and Design Engineering Technology
Associate of Science in Computer Aided Drafting and Design Computer Graphics Design
Associate of Science in Computer Assisted Manufacturing Technology
Bachelor of Science in Industrial Technology Education
Bachelor of Science in Manufacturing Information Management Systems
One Year Certificate in Manufacturing Applications
Certificates of Competency
- CADD Operator
- CNC Operator
- Reverse Engineering Technician
- Quality Technician

Computer Aided Drafting & Design Engineering Technology (CADD)

Ummel Technology Building 153, 417.625.9305

Faculty Duggal-Head, Bartholet, Scorse

Computer Aided Drafting and Design Engineering Technology curriculum leads to an associate of science degree in CADDET. The curriculum prepares individuals to enter employment as drafters/designers in the fields of manufacturing, civil, architecture, or construction.

The requirements for the associate of science degree in CADDET provide a broad base of analytical, technical and Core Curriculum courses. Computer Aided Drafting and Design hardware and software are used to enhance traditional instruction methods in all courses. Built into the curriculum is an emphasis on both on the study and application of engineering design technology. The documents and drawings produced by the CADDET graduate would be based upon sketches, specifications, and calculations made by scientists, engineers, architects, and designers. Material specification is an essential part of the CADDET program of study.

The department also functions as an internationally recognized authorized training center for AUTODESK software. This allows each student to be exposed to the latest CAD technology and the application of international standard systems such as A.N.S.I. and I.S.O.

Professional faculty maintain close ties with area industries to assure that high quality and currently used technology is taught.

Accredited by the Technology Accreditation Commission (TAC) of the Accreditation Board for Engineering and Technology (ABET), 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, Telephone: 410.347.7700

Baccalaureate Options

Students who complete the A.S. degree in CADDET may continue their education by pursuing a baccalaureate degree in the following areas :

- Manufacturing Information Management Systems (MIMS)
- Computer Information Science
- Management Technology
- Industrial Technical Education

Associate of Science Degree

Major Code 5303

Computer Aided Drafting and Design Engineering Technology Major

		Semester Hours
Core Requirements (p. 34)		**24**
CADD Requirements		**50**
CADD 110	Engineering Graphics I	3
CADD 115	Intro to 3D Computer Aided Drafting	3
CADD 120	Descriptive Geometry	
CADD 130	Engineering Graphics II	3
CADD 204	Industrial Statics and Strength of Material	
CADD 210	Technical Illustration**	3
CADD 220	Architectural Drafting	3
CADD 230	Elementary Surveying	3
CADD 260	Engineering Graphics III	3
CAMT 100	Intro to Machine Tool Processes	3
CAMT 150	Materials & Processes	3
Phys	Elem. Phys 151	5
Phys	Elem. Phys 152	4
CORE	Math 140 Algebra/Trig	5
Math 302	Applied Calculus	3

**Offered only in the summer.

Suggested Order of Study

Associate of Science Degree

Major Code 5303

Computer Aided Drafting and Design Engineering Technology Major

Freshman Year

1st Semester

Course		Hours
CADD 110	Engineering Graphics I	3
CAMT 100	Intro Mach Tool Processes	3
CAMT 150	Materials & Processes	3
CORE	[Math 30 or higher]	3
CORE	[Psy 120 College Orient]	1
CORE	[Humanities/Fine Arts]	3
		16

2nd Semester

CADD 115	Intro to 3D Computer Aided Drafting	3
Math 140	Trigonometry	5
Phys 151	Elem. Phys	5
CORE	[Eng 101 Comp I]	3
CORE	[Oral Comm]	3
		19

Summer

CADD 210	Technical Illustration	3
CORE	[Kine 103 Lifetime Wellness]	2
		5

Sophomore Year

1st Semester

CADD 120	Descriptive Geometry	3
CADD 130	Engineering Graphics II	3
CADD 204	Statics/Strength of Materials	3
Math 302	Applied Calculus	3
CORE	[Hist 110/120 U.S. History]	3
CORE	[Econ 201 Economics-Macro]	3
		18

2nd Semester

CADD 220	Architectural Drafting	3
CADD 230	Elementary Surveying	3
CADD 260	Engineering Graphics III	3
Phys 152	Elem. Phys	4
CORE	[Kine 101-Phys Activity]	1
* MO Const. Test or PSc 120		3
		14-17

[Department Recommendation]

For additional information contact:
Dr. J. S. Duggal
Office: Ummel Technology Building 153
Phone: 417.625.9305 or 417.625.9757
E-mail: duggal-j@mail.mssc.edu

Course Descriptions

CADD 110 (F, S) 3 hrs. cr.

Engineering Graphics I

Preparation of drawings by using state-of-the-art CADD. Spreadsheet, word-processing are incorporated along with geometric construction, lettering, orthographic projection, dimensioning, sections, pictorial drawing, graphs, and diagrams. One hr. lecture, 4 hrs. lab per week. Corequisite: Math 30.

CADD 115 (S) 3 hrs. cr.

Introduction to 3D Computer Aided Drafting

Computer aided drafting and the design of basic 3D wireframe and 3D models. Individuals who have a background in CADD should take the course for personal or professional improvement. One hr. lecture, 4 hrs. lab per week. Prerequisite: CADD 110 & Math 30.

CADD 120 (F) 3 hrs. cr.

Descriptive Geometry

Practical applications of advanced projection techniques to problems in civil, structural, mechanical and architectural engineering. Manual and computer assisted projects on methods are introduced. One hr. lecture, 4 hrs. lab per week. Prerequisite: CADD 115, Math 140 and Phys 151.

CADD 130 (F) 3 hrs. cr.

Engineering Graphics II

Detail and assembly drawings of machines and machine elements. Survey of the use of machine tools, processes and materials in the design and fabrication of machine parts. The use of 3D and parametric design software enhance the industrial applications within this course. One hr. lecture, 4 hrs. lab per week. Prerequisite: CADD 115, Math 140, and Phys 151.

CADD 204 (F) 3 hrs. cr.

Industrial Statics and Strength of Material

Introductory survey of selected topics of statics and strength of materials, with emphasis on equilibrium friction, summation of forces and moments. The strength of materials will concentrate on simple stress and strain, basic beam relationships and torsional load carrying members. Two hrs. lecture, 3 hrs. lab per week. Prerequisites: CADD 115, Math 140, Phys 151.

CADD 210 (S,S) 3 hrs. cr.

Technical Illustration

Pictorial drawing with an emphasis on mechanical and architectural applications. Major topics include mechanical illustrations, exploded views and perspectives drawn with a computer aided drafting system. Drawings will involve 2D and 3D illustration, lettering styles and computer generated rendering and animation. One hr. lecture, 4 hrs. lab per week. Prerequisite CADD 115, Math 140, Phys 151.

CADD 220 (S) 3 hrs. cr.

Architectural Drafting

Principles of architectural design, preparing sets of working drawings, building details and use of modern construction materials for residential building. Manual and computer aided design techniques used throughout the course. One hr. lecture, 4 hrs. lab per week. Prerequisite: CADD 110, Math 140 and Phys 151.

CADD 230 (S) 3 hrs. cr.

Elementary Surveying

Use and care of surveying instruments, fundamental surveying methods, traverse measurements, area computations, precise equipment and topographic mapping. 1 hour lecture-problems, 4 hour laboratories. Required background or experience: Math 140, CADD 115, Phys 151.

CADD 231 (S,S) 3 hrs. cr.

Advanced Surveying

Precise equipment, astronomical observations. Theory of hydrographic, geodetic and control surveys. City and land surveys. Route location

and layout. Simple, transition and vertical curves. Earthwork computation. Introduction to electronic and photogrammetric methods. 1 hour lecture-problems, 4 hour laboratories. Required background or experience: Prerequisite: CADD 230, Elementary Surveying.

CADD 232 (F) 3 hrs. cr.
Surveying Computations
Introduction to the theory of measurements in surveying. Error propaation in horizontal and vertical position. The analysis of surveying measurement error. Error propogation in rectangular coordinate systems. Introduction to the techniques of compass rule adjustment and least squares for the adjustment of surveying data. Least squares adjustment of triangulation, trilateration and traverse network. Least squares adjustment of level networks. The use of surveying software will be utilized. Three one-hour lectures. Required background or experience: Prerequisite: Math 140

CADD 233 (F) 3 hrs. cr.
Boundary Control and Legal Principles
Boundary retracement principles based on common laws. Emphasis on simultaneous conveyances, rancho lands, resurvey problems, and legal descriptions. Three one-hour lectures. Required background or experience: CADD 230.

CADD 234 (S,S) 3 hrs. cr.
Land and Survey Descriptions
History of land ownership and transfer of title; types of document of land conveyance; forms of legal descriptions of public and private lands; the bureau of land management; interpretation of maps and documents for the physical survey location of land boundaries; principles of writing precise land boundary descriptions; study of easements; value of monuments rectangular surveys; monumentation, restoration of lost corners, subdivision of sections, special surveys, plats and patents, meander lines, and riparian rights. Three one hour lecture-problem sessions per week. Required background or experience. Pre-requisite CADD 230.

CADD 260 (S) 3 hrs. cr.
Engineering Graphics III
Topics not covered in lower CADDET courses, including Vector Graphics and CADD Applications pertaining to Descriptive Geometry. Geometric Dimensioning and Tolerancing and working drawings and CAM Design will be reemphasized. Engineering design and problem solving will be an essential aspect of this course. Special topics in CADDET. Finite elements will be introduced. Drafting facility management concepts will also be covered. Three hours lecture per week, open labs as required. Prerequisites: CADD 120, 130, 204, Math 140, Math 302, Phys 151.

CADD 298 (Demand) 1-8 hrs. cr.
Special Topics Draft/Design Engineering Technology
A special topic or topics not normally included in another drafting/design course. Prerequisites determined by the department and stipulated in a course syllabus.

CADD 330 (Demand) 3 hrs. cr.
Computer Machine Design Engineering Technology
Principles, theory and applications of machine design utilizing the CAD workstation. Special emphasis on solid modeling FEM and design analysis. Three hrs. lecture labs are arranged. Prerequisite: CADD 115, Math 140 or above.

CADD 490 (Demand) 1-8 hrs. cr.
Internship in Drafting and Design Engineering Technology
A structured work experience in drafting/design at an institution, facility or industry not directly related to Missouri Southern. The work experience will be a practical application of the students major field of study under the direct supervision of an on-site professional who is not a Southern faculty or staff member. The on-site professionals will supervise the students activity in the field. A faculty member will be responsible for approving the placement site and supervising the overall activities of the internship. Prerequisite: 15 hrs. of CADD.

CADD 498 (Demand) 1-3 hrs. cr.
Seminar in Drafting & Design Engineering Technology
Specialized knowledge and skills related to new developments in drafting and design. Topics will vary by the semester and situation. Prerequisite: An associate degree in drafting & design or senior standing in management-technology or industrial technology.

CADD 499 (Demand) 1-3 hrs. cr.
Independent Study in Drafting & Design Engineering Technology
Individually directed reading, research and discussions in selected areas of drafting and design for advanced majors. Scope, depth, area of concentration and credit hours will be arranged when registering for the course. Offered by arrangement. Prerequisite: 15 hrs. of CADD with a 3.0 GPA and permission of instructor, department head and school dean.

Computer Aided Drafting & Design
Computer Graphics Design (Option)

Ummel Technology Building 112, 417.625.9567

Faculty Bartholet, Duggal, Schultz, Scorse

This program is a blend between technical computer animation and art. The perspective graduate will develop skills in 2D and 3D animation coupled with color theory, material applications, and other art relevant principles. Individuals working in this area can become involved with filmmaking, video game development, accident reconstruction, and multimedia. Other fields include advertising, publishing and business.

Associate of Science Degree
Major Code 5304
Computer Aided Drafting and Design
Computer Graphics Design (Option)

		Semester Hours
Core Requirements (p. 34)		**25-26**
CADD Core		**24**
Art Core		**15**
CADD Requirements		
CADD 110	Engineering Graphics I	3
CADD 115	Intro to 3D CADD	3
CADD 270	2D Computer Animation	3
CADD 271	Graphic Information Tech I	3
CADD 272	3D Computer Animation	3
CADD 274	Digital Animation App.	3
CADD 276	Computer Animation Studio	3
CADD 450	Graphic Information Tech II	3
		24
Art Core		
Art 101	Basic Design	3
Art 240	Typography	3
Art 310	Water Color	3
Art 325	Graphic Communications	3
Art 350	Graphic Communications II	3
		15

Suggested Order of Study

Associate of Science Degree
Major Code 5304
CADD-Computer Graphics Design Option

Freshman Year
1st Semester

Course		Hours
CADD 110	Engineering Graphics I	3
CADD 270	2D Computer Animation	3
Art 101	Basic Design	3
CORE	[English 101]	3
CORE	[Comm 100]	3
		15

2nd Semester

CADD 115	Intro to 3D CAD	3
CADD 271	Graphic Information Tech I	3
Art 240	Typography	3
CORE	[Math 30 or higher]	3
CORE	[Hist 110/120]	3
CORE	[Psy 100, Soc 110, Econ 180]	3
		18

Sophomore Year

1st Semester

CADD 272	3D Computer Animation	3
CADD 450	Graphic Info Tech II	3
Art 325	Graphic Communications I	3
Art 310	Water Color	3
CORE	[Biology/Physics]	4-5
CORE	[Humanities/Fine Art]	3
		19-20

2nd Semester

CADD 274	Digital Animation App.	3
CADD 276	Computer Animation Studio	3
ART 350	Graphic Communication II	3
CORE	[Kine 103 Lifetime Wellness]	2
CORE	[Kine 101 Physical Activity]	1
* MO Const. Test or PSc 120		3
		15-18

[Department Recommendation]

For additional information contact:
Mr. Francis Bartholet
Office: Ummel Technology Building 112
Phone: 417.625.9567
E-mail: bartholet-f@mail.mssc.edu

Course Descriptions

CADD 270 (F) 3hrs. cr.

2D Computer Animation

Fundamentals of computer animation. Develop skills with technology in 2D Animation, sound editing, and general computer movie making. One hr. lecture, 4 hrs. of lab. Corequisites: CADD 110 or permission of the department.

CADD 271 (S) 3 hrs. cr.

Graphic Information Technology I

Basic applications of data transfer and manipulations within industrial environments. Topics could include basic Internet applications, basic Web page design, introduction to data formatting for the Internet, and other topics as the technology changes. One hr. lecture, 4 hrs. of lab.

CADD 272 (F) 3 hrs. cr.

3D Computer Animation

Fundamentals of computer animation on a personal computer focusing on industrial applications, such as product promotion and marketing, motion simulation of machine elements and mechanisms, and its use in presentation, training and instruction. This involves imparting movement and photo-realistic appearance to geometric shapes and models. One hr. lecture, 4 hrs. of lab. Prerequisites: CADD 270 or permission of the department.

CADD 274 (S) 3 hrs. cr.

Digital Animation Applications

Integration of real life forms with computer generated images, using state of the art scanning, digital touch probe, and motion capturing systems. One hr. lecture, 4 hrs. of lab. Prerequisites: CADD 272 or permission of the department.

CADD 276 (S) 3 hrs. cr.

Computer Animation Studio

Capstone course to enable students to develop professional material for their portfolio. Using the latest, state of the art computer animation tools to complete their studio requirements. One hr. lecture, 4 hrs. of lab. Prerequisites: CADD 274 or permission of the department.

CADD 450 (F) 3 hrs. cr.

Graphical Information Technology II

A seminar class applying the advanced applications of data transfer and manipulations within industrial environments. Topics could include advanced Internet applications, advanced Web page design, data formatting, and other topics as the technology changes. One hr. lecture, 4 hrs. of lab. Prerequisite: CADD 271

Land Surveyor in Training Program of Study

Completion of the following classes will allow a person who has the necessary field experience and work related hours to sit for the Land Surveyor in Training licensing test in the State of Missouri. The Missouri Board of Architecture, Professional Engineering and Land Surveyors has approved this sequence of courses to meet statute Section 327.312.1(3) RSMo.

Suggested Order of Study

Land Surveyor in Training Program of Study

Course		Hours
CADD	**Core Requirements**	**15**
Spring		
1st Semester		
CADD 230	Elementary Surveying*	3
		3
Summer		
2nd Semester		
CADD 231	Advanced Surveying	3
CADD 234	Land & Survey Descriptions	3
		6
Fall		
3rd Semester		
CADD 232	Surveying Computations	3
CADD 233	Boundary Control and Legal Principles	3
		6

*Trigonometry (Math 135) is a pre-requisite to CADD 230. Course descriptions page 182.

Computer Assisted Manufacturing Technology (CAMT)

Ummel Technology Building 119, 417.625.9327
E-mail: schultz-d@mail.mssc.edu

Faculty Duggal, Howe, Schultz, Scorse

The department offers an associate of science degree in Computer Assisted Manufacturing Technology. The requirements of this degree will provide a progressive and flexible technical education, which will assist in securing employment in rapidly changing technological fields.

A variety of courses in this program emphasize the use of computers and various software, which enrich the skills acquired by the students to compete in this ever-changing age of modern technology. These include: Computer Numerical Control, Introduction to 3D CADD, Fundamentals of Robotics, Computer Animation in Industry, Computer Assisted Manufacturing and Computerized Production Planning and Control Systems. General education course work in Mathematics, Physical Science, English, History and Communications will give the student the additional knowledge and skills employers are seeking.

The courses in the Computer Assisted Manufacturing Technology curriculum are designed to provide the students with applications-oriented training in both basic and advanced aspects of technology. Lectures followed by Lab training on equipment such as a computer numerical control machining center and an industrial robot enable the student to apply information learned in lecture and also allow for individual innovation. Students have received recognition in world-class competition for innovative developments in robotics.

Professional faculty interact with local industry to insure that instruction is current with the latest technological developments. This interaction of faculty and involvement of an individual in the Society of Manufacturing Engineers Student Chapter provides students with excellent contacts for internships and employment.

The program holds national certification with the National Institute of Metalworking Skills (NIMS).

Baccalaureate Options

Students who complete the A.S. degree in CAMT may continue their education by pursuing a baccalaureate degree in one of three areas:

- Manufacturing Information Management Systems (MIMS)
- Computer Information Science
- Management Technology
- Industrial Technology Education

The first option is designed to equip the manufacturing technologist with vital management skills in areas such as TQM, SQC/SPC, EDI and Computerized Manufacturing Applications. The second option is a BS degree with a background in LAN management, data structures and data base operation. The third option would provide management and marketing skills that would lead to an entry level management position in manufacturing. The fourth option is offered in conjunction with the Education department to prepare students for middle or secondary certification in Industrial Technology teaching field.

We also offer a one-year certificate program in Manufacturing Applications. For additional information contact the CAMT department.

Associate of Science Degree
Major Code 5399
Computer Assisted Manufacturing Technology

		Semester Hours
Core Requirements (p. 34)		**26**
Computer Assisted Manufacturing Technology Requirements		**15**
CAMT 100	Intro to Machine Tool Processes	3
CAMT 105	Precision Machining	3
CAMT 160	Inspect & Gaging	3
CAMT 200	Computer Numerical Control	3
CAMT 250	Computer Assisted Manufacturing	3
Manufacturing Technology Electives		**24**
CAMT 110	Fundamentals of Cutting Tools	1
CAMT 150	Materials and Processes	3
CAMT 202	Tool Design for Manufacturing	3
CAMT 240	Industrial Materials	3
CAMT 220	Fundamentals of Robotics	1
CAMT 298	Selected Topics in Manufacturing	1-8
CAMT 330	Quality Control and Reliability	3
CAMT 490	Internship in Manufacturing Tech	3
CAMT 498	Seminar in Manufacturing Tech	3
CAMT 499	Independent Study in Manufacturing Tech	1-3
CADD 260	Engineering Graphics III	3
CADD 298	Selected Topics Drafting & Design Engineering Technology	1-8
CADD 498	Seminar in Drafting & Design Engineering Technology	1-3
CADD 499	Independent Study in Drafting & Design Engineering Tech	1-3
MIMS 305	Basic Electricity & Electronics	3
MIMS 310	Computer Production/ Planning Control	3
MIMS 315	Statics for Engineering Techology	3
MIMS 320	Applied Statistical Quality Control	3
MIMS 325	Dynamics and Kinomatics for Engineering Tech	3
MIMS 350	Industrial Supervision (WI)	3
MIMS 410	International Trends in Manufacturing (WI)	3
MIMS 425	CAD/CAM Systems	3
MIMS 435	Professional Internship	3

Suggested Order of Study

Associate of Science Degree
Major Code 5399
Computer Assisted Manufacturing Technology Major

Freshman Year

1st Semester

Course		Hours
CAMT 100	Intro Mach Tool Processes	3
CAMT 160	Inspect & Gaging	3
CORE	[Math 30 or Math 114 or Math 130]	3
CORE	[Psy 120 College Orient]	1
Manufacturing Technical Elective		6
		16

2nd Semester

CAMT 105	Precision Machining	3
CORE	[Eng 101 Comp I]	3
CORE	[Comm 100 Oral Comm]	3
CORE	[Kine 101 Physical Activity]	1
Manufacturing Technical Electives		6
		16

Sophomore Year

1st Semester

CAMT 200	Comp Numeric Control	3
CORE	(Phys 100 Fund of Phys Sci)	5
CORE	(Hist 110/Hist 120)	3
Manufacturing	Technical Elective	6
		17

2nd Semester

CORE	[Econ 201Econ-Macro]	3
CAMT 250	Comp Assisted Manu	3
CORE	[Humanities/Fine Arts]	3
CORE	[Kine 103 Lifetime Wellness]	2
Manufacturing	Technical Elective	6
* MO Const. Test or PSc 120		3
		17-20

See department faculty for information on college credit for work experience through the development of an employment portfolio.

For additional information contact:
Mr. Don Schultz
Office: Ummel Technology Building 115
Phone: 417.625.9327
E-mail: schultz-d@mail.mssc.edu

Course Descriptions

CAMT 100 (F, S) 3 hrs. cr.

Intro to Machine Tool Processes

The theory and safe operation of basic machine tools. Fundamental practices include: safety, basic mathematics, blueprint reading, benchwork, precision measurement, metal sawing, drills and drilling, pedestal bench grinding, engine lathes, mills. One hr. lecture, 4 hrs. lab.

CAMT 105 (S) 3 hrs. cr.

Precision Machining

An introduction to the operation of surface, cylindrical, tool and cutter grinders. Principles of inspection and gaging, applied trigonometry, tooling geometry and advanced lathe and milling practices will be covered. One hr. lecture, 4 hrs. of lab. Prerequisites: CAMT 100, CADD 110, Math 130 or consent of instructor.

CAMT 110 (F, S) 1 hr. cr.

Fundamentals of Cutting Tools

Introduction to tool geometry, chip formation and effects of coolants and tool design on tool life. Instruction on the sharpening of standard cutting tools for drilling, formed relieved end mills and

mill cutters, and the applications of various factors on machinability. The use of carbides and ceramics as cutting tools. One hr. lecture, 4 hrs. of lab. Prerequisite: It is also recommended that students take CAMT 100 as a prerequisite or concurrently.

CAMT 150 (F, S) 3 hrs. cr.
Materials and Processes
A survey of manufacturing materials and processes. Properties of ferrous metals and nonferrous metals and plastics. Introduction and application of the principles of casting, welding, molding, hot working, cold working, stamping, forming and material removal processes. One hr. lecture, 4 hrs. of lab. Prerequisite: It is also recommended that students take CAMT 100 as a prerequisite or concurrently.

CAMT 160 (F) 3 hrs. cr.
Inspection and Gaging
Inspection, gaging and precision measurement procedures utilizing mechanical, electronic and optical measuring equipment and related math. Geometric dimensioning and tolerancing emphasized. Computer assisted process control methods are introduced and applied to specific inspection procedures. One hr. lecture, 4 hrs. of lab.

CAMT 200 (F, S) 3 hrs. cr.
Computer Numerical Control
Basic numerical control concepts and applications, the operation and setup of numerical control machines including Vertical machining centers and turning centers, numerical control programming as applied to machining applications using MDI. One hr. lecture, 4 hrs. of lab. Prerequisites: CAMT 100, CADD 110, Math 30 or 135 or consent of instructor.

CAMT 202 (S) 3 hrs. cr.
Tool Design
Tool design and manufacturing is an advanced course on the designing, machining, and manufacturing of production tools, dies, jigs and fixtures. Prerequisites: CAMT 105 and CADD 110. One hour lecture and four hours lab.

CAMT 210 (Demand) 3 hrs. cr.
Computer Animation For Industry
Fundamentals of computer animation on a personal computer focusing on industrial applications, such as product promotion and marketing, motion simulation of machine elements and mechanisms, and its use in presentation, training and instruction. Involves imparting movement and photorealistic appearance to geometric shapes and models. One hr. lecture, 4 hrs. of lab. Prerequisites: CADD 115 or COMP 105 or permission of the department.

CAMT 220 (Demand) 1 hr. cr.
Fundamentals of Robotics
Fundamental concepts underlying robot programming and its applications in the manufacturing industry. Covers operation of an industrial robot arm, both lead through and textual programming, end effector design, interfacing with computers and CNC machines and control systems. Class meets for five weeks. One hr. lecture, 4 hrs. of lab. Prerequisite: Take concurrently with CAMT 110 and CAMT 150 as a 3 hr. block. It is also recommended that students take CAMT 100 as a prerequisite or concurrently.

CAMT 240 (S) 3 hrs. cr.
Industrial Materials
Introduction to metallurgy and nonmetallic materials currently used in todayÕs manufacturing settings. Theory and application of principles for identifying, producing, conditioning and testing materials. Laboratory activities involve both manual and computer assisted testing. One hr. lecture, 4 hrs. of lab. Prerequisite: CAMT 150.

CAMT 250 (S) 3 hrs. cr.
Computer Assisted Manufacturing
Advanced techniques of CNC & N/C programming using a completely integrated environment. Concepts of manufacturing programs being an integral part of a dynamic environment as compared to being in an isolated system. One hr. lecture, 4 hr. laboratory per week. Prerequisites: CAMT 200 or consent of instructor.

CAMT 298 (Demand) 1-8 hrs. cr.
Selected Topics in Manufacturing Technology
Special topics in new or emerging manufacturing technology not normally included in another course. Prerequisites specified by the department in a course syllabus.

CAMT 310 (Demand) 4 hrs. cr.
Manufacturing Data Processing
Designed to teach overall data processing techniques as relating to the manufacturing environment. A solid foundation of manufacturing processes and departmental structuring is required in addition to knowledge of microcomputer usage. Two hrs. lecture, 6 hrs. lab. Prerequisites: CAMT 100, Comp 105 or PC DOS, CADD 115, Acct 201 or consent of instructor.

CAMT 330 (Demand) 3 hrs. cr.
Quality Control and Reliability
The concept of quality control and its applications. The importance of quality control, tools and techniques of SPC/SQC covering control charts used in quality control analysis, inspection and testing for quality control, process variability, product reliability and maintainability. Two hrs. lecture, 4 hrs. lab. Prerequisites: CAMT 100 & 160, Comp 105 or PC DOS, Math 310 or GB 321 or GB 405 or consent of instructor.

CAMT 490 (Demand) 1-8 hrs. cr.
Internship in Manufacturing Technology
A structured work experience in manufacturing technology at an institution, facility or industry not directly related to Missouri Southern. Practical application of the students' majors under the direct supervision of an on-site professional who is not an MSSC faculty or staff member. A faculty member will be responsible for approving the placement site and supervising the overall activities of the internship. Prerequisite: 15 hrs. of CAMT courses and permission of a committee.

CAMT 498 (Demand) 1-3 hrs. cr.
Seminar in Manufacturing Technology
Covers specialized knowledge and skills related to new developments in manufacturing technology. Topics will vary by the semester and situation. Prerequisite: Senior standing in management-technology or an associate degree in manufacturing technology.

CAMT 499 (Demand) 1-3 hrs. cr.
Independent Study in Manufacturing Technology
Individually directed reading, research and report preparation in selected areas of contemporary manufacturing technology, for advanced majors. Scope, depth and area of concentration and credit will be arranged when enrolling in the course. Offered by arrangement. Prerequisite: Completion of required manufacturing technology courses with minimum 3.0 GPA and permission of instructor, department head and school dean.

Industrial Technology Education

Ummel Technology Building Room 148, 417.625.9834

Faculty Bartholet, Scorse

The Industrial Technology Education degree has certifications for both middle school (grades 5-9) and Secondary (grades 9-12). The middle school certification in Industrial Technology is one of two areas of concentration that a student may select from to complete their education degree. The student who desires to teach in a secondary school will have a single teaching field. Technology education is an applied discipline designed to promote technological literacy at all levels. It is the intent of such study to provide students with an understanding of their technological culture so they can become intelligent consumers of their technology. Therefore, the program is designed to produce individuals who can solve problems involving the technical means humans' use for their survival. Technology education capitalizes on the needs humans have for expressing themselves with tools and materials. Technology lit-

eracy is considered a basic and fundamental study for all persons regardless of educational or career goals. As a result of these goals, the discipline is both academic and laboratory oriented.

Bachelor of Science in Education Middle School Education

Grades 5-9 Certification in
Industrial Technology
(This degree is 1/2 of a dual degree for Middle School Certification)

Bachelor of Science in Education with a major in Industrial Technology

Grades 5-9 Certification
One of Two Teaching Fields

		Semester Hours
Core Requirements (p.33) [51*]		**48***
Education Certification Requirements		**51**
Educ 330	Industrial Technology Methods	3
Industrial Technology Requirements:		**21**
Communications		**6**
CADD 110	Engineering Graphics	3
CADD 271	Graphic Eng. Tech.	3
Energy & Power		**3**
MIMS 381	Basic Energy & Power	3
Materials & Process		**9**
CAMT 100	Intro Machine Tool Proc	3
CAMT 150	Materials and Process	3
MIMS 391	Wood Working & Plastic	3
Organization and Administration		**3**
MIMS 350	Industrial Supervision	3
Second Teaching Field		**25-28**
TOTAL		**148-151**

*Required course in psychology satisfies the requirement for three hours of the core curriculum.

Bachelor of Science in Education – Middle School Education

Candidates who elect middle school (grades 5-9) as their major must complete two areas of concentration consisting of 22-32 hours in each area. The curriculum for these areas is a joint effort by the departments of teacher education and the teaching specialty. Students who desire to teach in a middle school may choose to become qualified in any two of the following seven areas: Language Arts (English), Math, Science, Social Studies, Business, Industrial Technology, Speech/Theatre.

Middle School Professional Education sequence Grades 5-9

		Semester Hours
Math 119	Math Elem I	3
Math 120	Math Elem II	3
Psy 305	Child/Adolescent Dev	4
Psy 310	Educ Psychology	2
Psy 412	Meas. & Eval.	2
Educ 100	Intro to Tchr Educ I	1
Educ 200	Intro to Tchr Edu II	1
Educ 301	Use of Cmptr. Sftwre	3
Educ 302	Exceptional Child	2
Two content area Methods Courses (Educ 311,312, 322,336,340,344,330)		4-6
Educ 321	Microteaching	2
Educ 329	Pedagogical Theory	4
Educ 423	Classroom Management	2
Educ 342	Development Reading	3
Educ 343	Content Area Lit: MS	3
Educ 402	Foundations of Educ.	2
Educ 412	Phil, Org. & Curr.	2
Educ 413	Mthds Tchg in Mid. Grds.	2
Educ 432	Critical Issues	2
Educ 452	Student Teaching	8

The core and department of education requirements for the middle school program total 100 hours. The number of hours added to this core depends on the two content areas chosen. The possible choices and hours are listed below:

IT/SS = 35
IT/S-T = 50
IT/LA = 41
B/IT = 47
Sci/IT = 43
Math/IT = 43

Suggested Order of Study

Bachelor of Science in Education Middle School Education with Industrial Technology Concentration

Candidates will need to check with their advisers for additional courses that must be taken in each of two chosen areas of concentration Language Arts, Social Science, Science, Industrial Technology, Business, Speech/Theatre, or Math.

Freshman Year
1st Semester

Course		Hours
Educ 100	Intro to Tchr Educ I	1
CORE	[Eng 101 Comp I] (WI)	3
CORE	[Math 119 Math Elem I]	3
CORE	[Econ 180 Amer Econ]	3
Psy 120	College Orientation	1
CORE	[Comm 100 Oral Comm] *	3
CORE	[Kine 101 PE Activity]	1
		15

2nd Semester

CORE	[Math 120 Math Elem II]	3
CORE	[Eng 102 (Eng 101)] (WI)	3
CORE	[Hist 110 U.S. 1492-1877]	3
Psy 100	General Psychology	3
CORE	[Bio 101 Gen Biology]	4
		16

Summer-Freshman Year

Concentration Area		4-8
		4-8

Sophomore Year
1st Semester

CORE	[Phys 101]	5
CORE	[Hist 120 U.S. 1877-present]	3
CORE	[Kine 103 Lifetime Wellness]	2
Educ 301	Comp Software Clsrm**	3
Educ 200	Intro to Tchr Educ II	1
CORE	[Humanities/Fine Arts (2B)]	3
MIMS 381	Basic Energy & Power	3
		19

2nd Semester
Pass C-Base test for admission. Verify that ACT score is 20+. Have a 2.5 GPA in the teaching specialty area and a 2.75 cumulative GPA. Apply for admission to the Teacher Education Program. Get faculty recommendation, write autobiography, and file admission papers for tentative admission. If ACT is less than 20, candidate should retake the ACT.

Psy 305	Child/Adolescent Dev	4
CORE	[Humanities/Fine Arts (2C)]	3
CORE	[Humanities/Fine Arts (2A)]	3
CAMT 100	Intro Machine Tool Proc	3
CADD 110	Engineering Graphics	3
Concentration 2nd Area		3
		19

Summer-Sophomore Year

Concentration 2nd Area		4-8
		4-8

Junior Year
1st Semester
Candidate must be tentatively admitted to the Teacher Education Program before courses with an "Educ" prefix can be taken. (Exceptions: Educ 100, Educ 200, Educ 301 and Educ 302).

Educ 329	Ped Theory Methds Prac	4
Educ 321	Microteaching	2
Educ 423	Classroom Management	2
Educ 342	Dev Reading: Elementary	3
Concentration 2nd Area		3
MIMS 391	Wood Working & Plastics	3
		17

2nd Semester
Must be fully admitted to the Teacher Education Program

Educ 343	Content Area Lit: M.S. (WI)	3
Educ 302	Exceptional Child	2
Psy 310	Educational Psychology	2

CORE 5a	[IB 310 International Bus.]	3
CADD 271	Graphics Info. Tech.	3
CAMT 150	Materials and Process	3
Concentration 2nd Area		2-3
		18-19

Summer-Junior Year

Concentration 2nd Area		2-8
		2-8

Senior Year

1st Semester

Educ 412	Middle School Curr	2
Psy 412	Measurement & Eval	2
Educ	2nd Certification Area	2-3
MIMS 350	Industrial Supervision	3
Concentration 2nd Area		4-5
CORE	[PSc 120 Gov't: US/St/Loc]	3
		16-18

2nd Semester

Educ 402	Foundations of Educ (WI)	2
Educ 413	Methods of Tchng M.S.	2
Educ 432	Critical Issues	2
Educ 452	Student Teaching	8
Educ 330	Industrial Tech Methods	3
		17

(Prerequisites)
[Department Recommendations]
*Candidate must have speech evaluation filed in the Educations Dean's office.
** This is a certification requirement and must be taken by all teacher education candidates prior to Junior Block or concurrently.

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Bachelor of Science in Industrial Technology

Major Code: 9040
Grades 9-12 Certification

Core Requirements (p.35) [51]	**48***
Education Certification Requirements (p. 162)	**43-45**
Industrial Technology Requirements	**36**
Communications: *(minimum 7)*	**9**
CADD 110 Engineering Graphics	3
CADD 220 Architectural Drafting	3
CADD 271 Graphic Info. Tech.	3
Energy & Power: *(minimum 7)*	**9**
MIMS 381 Basic Energy & Power	3
MIMS 305 Basic Elect & Electronics	3
MIMS 383 Power Generation Pneumatics & Hydraulics	3
Materials & Process: *(minimum 7)*	**9**
CAMT 100 Intro Machine Tool Proc.	3
CAMT 150 Materials and Process	3
MIMS 391 Woodworking & Plastics	3
Organization/Administration: *(min. 5)*	**6**
MIMS 350 Industrial Supervision	3
MIMS 310 Prod. Planning & Control	3
Additional related: *(for a total of 36)*	**3**
MIMS 393 Wood & Plastics Science	3
Total	**127/129**

* Required course in psychology satisfies the requirements for three hours of the core curriculum.

Suggested Order of Study

Bachelor of Science in Education Secondary Education (9-12) Industrial Technology Emphasis

Major Code 9040

Freshman Year

1st Semester

Course		Hours
Educ 100	Intro to Tchr Educ I	1
Psy 100	General Psychology	3
CORE 1a	[Eng 101 Comp I] (WI)	3
CORE 1c	[Math 130 Math]	3
Psy 120	College Orientation	1
CORE 1b	[Comm 100 Oral Comm]*	3
CORE 1d	[Kine 101 PE Activity]	1
		15

2nd Semester

CADD 110	Engineering Graphics	3
CAMT 100	Intro to Machine Tool Proc	3
CORE 1d	[Kine 103 Lifetime Wellness]	2
CORE 1a	[Eng 102 (Eng 101)] (WI)	3
CORE 4a	[Hist 110 US 1492-1877]	3
CORE 3a	[Bio 101 Gen Biology]	4
		18

Sophomore Year

1st Semester

Follow teaching specialty department recommendations for core courses and teaching specialty courses.

Educ 200	Intro to Tchr Educ II	1
Educ 302	Exceptional Child	2
CORE 3b	[Phys 100]	5
CORE 4a	[Hist 120 US 1877-present]	3
MIMS 391	Wood Working & Plastics	3
MIMS 381	Basic Energy & Power	3
		17

Pass first available C-Base test.
Verify that ACT score is 20. Have a 2.5 GPA in the teaching specialty area and a 2.75 cumulative GPA. Get faculty recommendation, write autobiography, and file admission papers for tentative admission.

2nd Semester

Follow teaching specialty department recommendations for core courses and teaching specialty courses.

Educ 301	Comp Software Clsrm**	3
Psy 301	Adolescent Development	3
CADD 220	Architectural Drafting	3
CAMT 150	Materials and Process	3
CORE 2c	[Humanities/Fine Arts (2C)]	3
CORE 2a	[Humanities/Fine Arts (2A)	3
		18

Junior Year

1st Semester

Candidate must be tentatively admitted to the Teacher Education Program before courses with an "Educ" prefix can be taken. (Exceptions: Educ 100, Educ 200, Educ 301, and Educ 302).

Educ 329	Ped Theo Meth & Prac	4
Educ 321	Microteaching	2
Educ 423	Classroom Management	2
CORE 4a	[PSc 120 Gov't: US/St/Loc]	3
MIMS 350	Industrial Supervision	3
CORE 2b	[Humanities/Fine Arts (2B)]	3
		17

Follow departmental recommendations for teaching specialty courses. If recommended by Junior Block instructors, and by the teacher education faculty, receive full admission to teacher education.

2nd Semester

Follow departmental recommendations for teaching specialty courses.

Psy 310	Educational Psychology	3
CADD 271	Graphics Info. Tech.	3
MIMS 305	Basic Electricity & Electronics	3
MIMS 393	Woods & Plastic Science	3
MIMS 383	Power Generation Pneumatics And Hydraulics	3
		15

Senior Year
1st Semester
Follow the departmental recommendations for teaching specialty courses. Apply for student teaching during the second week of the semester.

Educ 422	Content Area Lit: Sec. (WI)	2
Psy 412	Measurement & Eval.	
OR		
Educ 412	Mid School Curr	
OR		
Educ 420	Intro to Counseling	2-3
MIMS 310	Prod Planning & Cntl	3
CORE 5a	[IB 310 Internt'l Bus]	3
CORE 4a	[Econ 180 Amer Econ]	3
		13-14

2nd Semester

Educ 402	Foundations of Educ (WI)	2
Educ 432	Critical Issues	2
Educ 330	Industrial Technology Meth.	3
Educ 462	Student Teaching Sec	8
		15

(Prerequisite)
[Department Recommendations]
*Candidate must have speech evaluation filed in the Education Dean's office.
** This is a certification requirement and must be taken by all teacher education candidates prior to Junior Block or concurrently.

For additional information contact:
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Course descriptions for course requirements in Industrial Technology are located on pages 182-191.

EDUC 330 (S) 3 hrs. cr.
Industrial Technology Methods
This is a required education course, which is an introduction to the instructional planning, materials, philosophy, rationale, and methods of teaching Industrial Technology. It is a part of the professional semester. Prerequisites: Advanced standing in major field: admission to teacher education program. (Junior Block)

Manufacturing Information Management Systems (MIMS)

Ummel Technology Building 153
417.625.9305 or 417.625.9757

Faculty Bartholet, Duggal, Howe, Schultz, Scorse

This degree program blends the management, design and manufacturing application aspects in a unique way to produce a graduate that is functional at floor level manufacturing and management environment. Students must have completed an associate degree in a technical field in order to complete the Manufacturing Information Management Systems (MIMS) program.

Management Information Management Systems (MIMS)

		Semester Hours
Core Requirements (p. 34)		**45**
(6 hours core included in major)		
Associate of Science in Technical Field		**36**
Required MIMS Curriculum		**45**
MIMS 310	Comp Prod Plan/Control	3
MIMS 350	Industrial Supervision (WI)	3
MIMS 305	Basic Electricity & Elec	3
MIMS 420	Manufacturing Computer Applications	3
CAMT 240	Industrial Materials	3
CIS 305	Microcomp App's	3
MIMS 320	Applied Stat Quality Control	3
MIMS 450	Graphics Info Tec II	3
MIMS 415	Mechanical Design	3
MIMS 425	Manuf Info Systems	3
IB 310	International Business (core requirement Area 5)	3
GB 321	Business Statistics I	3
GB 405	Statistical Quality Control	3
MM 350	Principal of Marketing (WI)	3
Econ 202	Economics-Micro (core requirement Area 4)	3
		126

Suggested Order of Study

Bachelor of Science
Major Code 4997
Management Technology with an emphasis in Manufacturing Information Management Systems (MIMS)

Junior Year
1st Semester

Course		Hours
MIMS 310	Comp Prod Plan/Control	3
MIMS 350	Industrial Supervision (WI)	3
GB 321	Business Stats I	3
MM 350	Prin of Management (WI)	3
CORE	[Eng 102 Comp II]	3
CORE	[Area 3C]	3
		18

2nd Semester

MIMS 305	Basic Electricity & Elec	3
GB 405	Statist Quality Control	3
MIMS 420	Mfg Computer Appl	3
CAMT 240	Industrial Materials	3
Econ 202	Economics (Micro)	3
CORE	[Bio 101 Gen Biology]	4
		19

Senior Year
1st Semester

CIS 305	Microcomp App's	3
CORE	[Area 2C] (WI)	3
MIMS 320	Applied Stat Quality Cntl	3
MIMS 450	Graphics Info Tec II	3
CORE	[PSc 120 Gov't: U.S., State, Local]	3
		15

2nd Semester

MIMS 415	Mechanical Design	3
MIMS 425	Manuf Info Systems	3
CORE	[Area 2B]	3
CORE	[IB 310] (Area 5)	3
CORE	[Hist 120/320]	3
		15

*Students in the MIMS program will need Math 125 or higher to meet Core requirements for a Bachelors degree.
Students should consult the department faculty in the Design Manufacturing Information Technologies at the earliest possible date in order to incorporate the correct sequence into the appropriate associate of science degree program.

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Course Descriptions

MIMS 305 (S) 3 hrs. cr.
Basic Electricity and Electronics
An integrated study of DC and AC circuits in which the sinusoidal system is introduced and safety with the use of lockout and tagout procedures and methodology. Topics covering the concepts of Ohm's Law, Kirchoff's Laws and DC circuits such as series circuits, parallel circuits, and series-parallel circuits. The study of capacitors and inductors serves as an introduction to the sinusoidal system and the behavior of R, L, and C in a sinusoidal system. The laboratory component includes the use of test instruments dealing with Ohm's Law, series circuits. Lab also includes a study of internal resistance and loading as well as basic circuit design including single and three phase circuits as well as control voltage circuits. Two hrs. lecture, 2 hrs. lab. Prerequisite: Phys 100 or higher and Math 125 or above or consent of the instructor.

MIMS 310 (F) 3 hrs. cr.
Computer Production/Planning Control
Theory and application of production and inventory management philosophies and techniques as they relate to the study of computer-integrated manufacturing (CIM). Students will address such areas as material handling, scheduling, MRP, JIT, inventory control models, lean manufacturing, flexible manufacturing systems, shop-floor control, etc. Two hrs. lecture, 2 hrs. lab. Prerequisites: Math 130, Comp 105 or CIS 305 or consent of instructor.

MIMS 315 (Demand) 3 hrs. cr.
Statics for Engineering Technology
Practical aspects of statics and strength of materials with emphasis on comprehension of underlying principles and their applications. Topics include: vector algebra, force equilibria, moments, trusses, static and kinetic friction, mechanical properties of materials, stress and strain, thin-walled vessels, beams, shear and bending moment and torsion.Two hrs. lecture, 2 hrs. lab. Prerequisites: Phys 100 or higher and Math 125 or higher.

MIMS 320 (F) 3 hrs. cr.
Applied Statistical Quality Control
The concept of quality and its applications. Importance and impact of Total Quality Control for manufacturing and service industries in today's age of global competition. Tools and techniques of Statistical Quality/Process Control including control charts, capability analysis, and problem solving tools will be discussed. Aspects of inspection, testing, sampling plan as they relate to interface with quality control and automated data collection will be covered. Two hrs. lecture, 2 hrs. lab. Prerequisites: GB 321, GB 405 or permission of the instructor.

MIMS 325 (Demand) 3 hrs. cr.
Dynamics and Kinematics for Engineering Technology
Second part of a two semester course in mechanics. Includes: Kinematics, rectilinear and angular motion, plane motion, principles of work, energy and power, impulse and momentum with practical applications to engineering technology., basic motion analysis, rotary motion, cams, gears and introduction to automation devices. Two hrs. lecture, 2 hrs. lab. Prerequisites: Phys. 100 or higher and Math 125 or higher.

MIMS 350 (F) 3 hrs. cr.
Industrial Supervision *(Writing Intensive)*
A dynamic look at the interrelationship between work assignments, work performance, and performance outcomes within an industrial work environment. Skills focused introduction to supervision. The job of supervisor is explained and examples of how supervisors operate in real situations are discussed. The focus is on key skills needed for effective supervision – e.g., goal-setting, delegating, budgeting, interviewing, motivating, counseling and coaching. An examination of group dynamics, presentations, and basic interpersonal skills will be combined to establish an understanding and develop a sense of commitment to a positive and progressive work ethic. Prerequisite: Junior standing, 6 hours English Comp or permission of department.

MIMS 381 (F) 3 hrs. cr.
Introduction to Power and Energy
This is a required technology course which is an introduction to the methods used in industry for the use of creating force / power and the generation of this energy / power. Emphasis is placed on the investigation and conceptual understanding of methods of power generation as well as the distribution and use of the energy developed. Two-hours lecture and two-hours lab per week.

MIMS 383 (F) 3 hrs. cr.
Power Generation including Pneumatic and Hydraulics
This is a required technology course which is an advanced study in the methods used in industry for the use of creating force/power and the generation of power. Emphasis is placed on the advanced investigation and conceptual understanding of the methods of power generation as well as the distribution as it relates to pneumatics and hydraulics. Two-hours lecture and two-hours lab per week.

MIMS 391 (S) 3 hrs. cr.
Wood Working and Plastics for Shop
This is a required technology course which is an introduction to the methods used in industry in the processing and production of wood and plastic products. The student will develop an appreciation for and knowledge of materials, products, tools and process. Emphasis is placed on the proper and safe use of wood and plastic machines, tools, and chemicals as well as pride in workmanship. Students will be given an opportunity to design and build wood and plastic products throughout the course. Two-hours lecture and two-hours lab per week.

MIMS 393 (F) 3 hrs. cr.
Wood and Plastic Science
This is a required technology course, which is an introduction to the science of wood and plastic and the processing and production of wood or plastic components as well as basic cabinet construction. The student will develop an appreciation for and knowledge of materials, products, tools and process as required in shop and industrial applications. Emphasis is placed on the proper and safe use of wood and plastic machines, tools, and chemicals in the processing or production of wood and plastic components. Students will be given an opportunity to investigate their knowledge of design and building of wood and plastic products throughout the course. Prerequisite of technical math or equivalent and MIMS 391. Two-hours lecture and two-hours lab per week.

MIMS 405 (Demand) 3 hrs. cr.
Mechanics of Materials
Calculations of material strength and deformation are complemented with principles and practice of mechanical testing including instrumentation and measurement in the areas of loads, stresses, deformations, thermal stresses, and other quantities. Two hours lecture and two hours lab a week. Prerequisite: MIMS 315, MIMS 325.

MIMS 410 (Demand) 3 hrs. cr.
International Trends in Manufacturing *(Writing Intensive)*
Discussion of issues and trends in U.S. manufacturing and technology with special emphasis on the causes and consequences of its internationalization in the face of global competition.

Course content may vary to ensure that contemporary or latest developments are highlighted. Prerequisites: Junior standing, 6 hrs. of English Comp. or permission of the department.

MIMS 415 (S) 3 hrs. cr.
Mechanical Design
Machine elements in mechanical design, design for different modes of failure, tolerances and fits, shaft design, keys and couplings, springs, spur gears, belts and chains, clutches and brakes, and rolling contact bearing. Two hrs. lecture, 2 hrs. lab. Prerequisite: Phys 100 or higher and Math 125 or above.

MIMS 420 (S) 3 hrs. cr.
Manufacturing Computer Applications
Introduces problem solving and analysis in the application of integrated manufacturing information systems software. Includes: design, production routing, project planning and tracking, material handling and inventory control, coding and classification using current integrated manufacturing software.

MIMS 425 (S) 3 hrs. cr.
Manufacturing Information Systems
Principles taught in the course apply in all phases of engineering work, including new product design and development, process development, and manufacturing process improvement. Applications from various fields of engineering will be illustrated throughout the course. Computer software packages to implement the methods presented will be illustrated extensively and used for homework assignments and term projects. Two hours lecture, 2 hrs. lab. Prerequisite: Senior standing.

MIMS 435 (F,S,S) 3 hrs. cr.
Professional Internship
An eight week supervised industrial training experience in a design manufacturing engineering environment. The intern will be placed with a cooperating company to work under the guidance of the college and the company on various product design manufacturing activities. This experience should greatly expand and support the educational experience provided to the student. Prerequisite: Completion of junior year coursework CIS 305, MIMS 310.

MIMS 450 (F) 3 hrs. cr.
Graphical Information Technology II
A seminar class designed to apply the advanced applications of data transfer and manipulations within industrial environments. Topics could include advanced Internet applications, advanced Web page design, data formatting, and other topics as the technology changes. One hr. lecture 4 hrs. lab. Prerequisite: CADD 271.

MIMS 490 (S) 3 hrs. cr.
Manufacturing Applications (Capstone)
Allows the student to build on all the skills and knowledge gained in prior coursework and creative implementation of the concepts learned through projects or internships pertaining to various manufacturing applications. Will work in teams on project(s) that will take them from ideas through various aspects of design, development and manufacturing to conclusion. Prerequisites: Senior standing.

One Year Certificate In Manufacturing Applications

One year certificate program in Manufacturing Applications is offered through Computer Aided Drafting and Design (CADD) and Computer Assisted Manufacturing Technology (CAMT). Refer to the individual departments CADD (page 181) and CAMT (page 184) for course descriptions.

Suggested Order of Study

Certificate Manufacturing Applications

1st Semester

Course		Hours
CAMT 100	Intro to Machine Tools	3
CAMT 110	Fund of Cutting Tools	1
CAMT 160	Inspection & Gaging	3
CADD 115	Intro to CAD	3
CADD 110	Engineering Graphics I	3
CAMT 150	Materials & Processes	1
Technical Elective		3
		17

2nd Semester

CAMT 105	Precision Machining	3
CADD 130	Engineering Graphics II	3
CADD 202/CAMT 202	Tool Design and Manufacturing	3
CAMT 200	Computer Num. Control	3
Math 30	Intermediate Algebra	3
OR		
Math 114		3
Technical Elective		3
		18

Certificates of Competencies

The competency certificate programs in Manufacturing Applications are offered through Computer Aided Drafting and Design Engineering Technologies (CADD) and Computer Assisted Manufacturing Technology (CAMT) programs. These certificates can be earned by completing four course sequences.

The student has four options to choose from:

- CADD Operator
- CNC Operator
- Reverse Engineering Technician
- Quality Technician

CADD Operator

The program is structured to prepare individuals to perform Computer Aided Drafting and Design work in CADD laboratories. The trained individual will have the skills to prepare drawings for manufacture and make design amendments to existing drawings using CADD programs. The program will prepare the individual to work as a CADD operator, as well as a drafting technician and a detailer.

Suggested Order of Study

Certificate of Competency
CADD Operator

Course		Hours
CAMT 100	Introduction to Machine Tool Processes	3
CADD 110	Engineering Graphics I	3
CADD 115	Introduction to 3D Computer Aided Drafting	3
CADD 130	Engineering Graphics II	
OR		
CADD 220	Architectural Drafting	
OR		
CADD 230	Mapping & Surveying	3
		12

CNC Operator

The program is designed to provide skills in the operation of Computer Numerical Controlled (CNC) lathe and milling machines. The student will be equipped to be a CNC Technician upon completion of the program.

Suggested Order of Study

CNC Operator

Course		Hours
CAMT 100	Introduction to Machine Tool Processes	3
CADD 110	Engineering Graphics I	3
CAMT 160	Inspection and Gaging	3
CAMT 200	Computer Numerical Control	3
		12

Reverse Engineering Technician

The program is structured to prepare individuals to perform work related to re-creating drawings from parts in existence and modifying the drawings for retooling for manufacture. The trained individual will have skills to operate equipment such as a 3D Scanner, CMM. and Faro Arm in recreating 2D and 3D drawings. The individual will also transform the drawings to meet the needed specifications for manufacture. The program will prepare the individual to work as a Reverse Engineering Technician, Coordinate Measuring Technician and a CADD Interface Technician.

Suggested Order of Study

Reverse Engineering Technician

Course		Hours
CAMT 100	Introduction to Machine Tool Processes	3
CADD 110	Engineering Graphics I	3
CAMT 160	Inspection and Gaging	3
CAMT 298	Reverse Engineering Tools and Practices	3
		12

Quality Technician

The program is structured to prepare individuals to perform inspection techniques and assure quality in manufacturing and service industries. The trained individual will have the skills to assist a Quality Engineer in inspecting, gathering and analyzing data pertinent to products and services to maintain the desired quality. The program will prepare the individual to work as a Quality Technician, Quality Inspector, and Quality Analyst.

Suggested Order of Study

Quality Technician

Course		Hours
Math 030	Intermediate Algebra*	3
Math 130	College Algebra	3
CAMT 160	Inspection and Gaging	3
GB 321	Business Statistics I	3
MIMS 320	Applied Quality Control	3
		15

* or Placement Test or Acceptable ACT Score

For additional information contact:
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Computer Information Science

Matthews Hall 223, 417.625.9383

Faculty Oakes - Head, Collins, Earney, Herr, Mays, Pinet, Schiavo, Tunnell

The Computer Information Science (CIS) department provides opportunities for a broad undergraduate education in the many aspects of computer hardware and software. The faculty's main objective is to offer courses of instruction that develop a thorough understanding of methods for utilizing computer technology in the design and implementation of solutions to complex management, scientific, and engineering problems. Within this context, the department offers the following curricula options:

- Bachelor of Science in CIS - Information Systems
- Bachelor of Science in CIS - Computer Science
- Bachelor of Science in CIS - Computational Mathematics
- Bachelor of Science in CIS - Information Technology
- Bachelor of Science in CIS - Computer Technology
- Minor in CIS - Network Systems Administration
- Minor in CIS - Information Systems
- Minor in CIS - Website Administration
- Associate of Science in CIS - Network Systems Administration
- Associate of Science in CIS - Information Systems
- Associate of Science in CIS - Website Administration
- Certificate of Achievement in Network Systems Administration

The bachelor of science alternatives prepare the student for graduate school or entry level positions such as systems programmer, systems analyst, applications programmer, database administrator, user support specialist, network administrator, or website administrator. A minor or associate of science provides the student pursuing some other major with a credential and expertise in computing, an enhancement that is becoming increasingly important in almost every area of science, education, business, and the arts.

Selected CIS and business classes that develop the student's understanding of an organization's information requirements and procedures for designing an information system that will facilitate its management distinguish the information systems/technology major. The computer science major requires that the student take CIS and mathematics classes that develop an expertise in applied mathematics and the theoretical foundations of computer science. Such knowledge is required to design and implement computer solutions for a wide range of problems encountered in science and engineering.

The computational mathematics curriculum meets the requirements for a double major in computer information science and mathematics. Computer technology qualifies the student for an associate of science degree in computer aided drafting and design (CADD) or computer assisted manufacturing technology (CAMT), as well as a major in CIS.

The network systems administration alternatives are designed to provide the student with the knowledge base necessary for managing local/wide area computer networks, as well as being able to provide user support and training in the area of personal computer hardware and application software. Website administration classes prepare the student to design, implement, and manage a World Wide Web based client/server environment.

The nature of computer information science is such that a student selecting this major should enjoy and have a talent for solving problems. The effectiveness of the CIS curricula is measured by the success of our graduates. Their average starting salaries are among the highest when compared to other majors, and placement records indicate that they have enjoyed an excellent placement rate. Many hold positions as middle and upper-level managers for a wide range of organizations, and several have earned graduate degrees.

Only courses in which a student has earned a grade of "C" or above will satisfy departmental requirements for the major or minor in computer information science.

Bachelor of Science in Computer Information Science

CIS Core		**33**
CIS 110	Programming I	3
CIS 210	Programming II	3
CIS 302	Information Systems I (WI)	3
CIS 310	Database Mgmt. Sys. I	3
CIS 315	Computer Networks	3
CIS 345	UNIX System Admin.	3
CIS 350	Data Structures	3
CIS 370	Adv. Object Oriented Prog.	
OR		
CIS 430	Intro to Artificial Intelligence	3
CIS 410	Information Systems II	3
CIS 425	Database Mgmt. Sys. I (WI)	3
CIS 450	Operating Systems (WI)	3
CIS Professional Electives for Bachelor of Science Options (Select 2 Groups)		**12**
CIS 230	RPG	6
AND		
CIS 321	Advanced RPG	
CIS 234	COBOL	6
AND		
CIS 334	Advanced COBOL	
CIS 308	Website Admin. I	6
AND		
CIS 340	Website Admin. II	

Bachelor of Science in CIS - Information Systems Major

Major Code 5105

Core Requirements (51*)		**45**
CIS Core		**33**
CIS Professional Electives		**12**
Business Core		**21**
Acct 201	Principles of Accounting I	3
Acct 202	Principles of Accounting II	3
Acct 325	Managerial Accounting	3
Econ 201	Prin. of Economics (Macro)	3
Econ 202	Prin. of Economics (Micro)	3
MM 300	Prin. of Marketing	3
MM 350	Prin. of Management	3
Mathematics Core		**3**
Math 130	College Algebra	3
General Electives		**10**
Total		**124**

*Mathematics and economics courses in major requirements satisfy six hours of the core curriculum.

Only computer information science and mathematics courses in which a student has earned a grade of "C" or above will satisfy departmental requirements.

Bachelor of Science in CIS - Computer Science Major

Major Code 5106

Core Requirements (p. 33) (51*)		**45**
CIS Core		**33**
CIS Professional Electives		**12**
Mathematics Core		**21**
Math 150	Calculus I	5
Math 250	Calculus II	5
Math 260	Calculus III	5
Math 300	Fund. of Math Thought	3
Math Elective numbered above 320		3
Physics Core		**5**
Phys 151	Elementary College Physics I	5
General Electives		**8**
Total		**124**

*Mathematics and physics courses in major requirements satisfy eight hours of the core curriculum.

Only computer information science and mathematics courses in which a student has earned a grade of "C" or above will satisfy departmental requirements.

Bachelor of Science in CIS - Computational Mathematics Major

Major Code 5107

Core Requirements (p. 33) (51*)		**43**
CIS Core		**33**
Mathematics Core		**33**
Math 150	Calculus I	5
Math 250	Calculus II	5
Math 260	Calculus III	5
Math 300	Fund. of Math Thought	3
Math 350	Intro. to Num. Analysis	3
Math 351	Linear Algebra	3
Math 371	Operations Research (WI)	3
Math Electives numbered above 320		6
Supporting Requirements		**13**
Physics and Chemistry Electives**		13
General Electives		**2**
Total		**124**

*Mathematics, chemistry, and physics courses in major requirements satisfy eight hours of the core curriculum.
**Must include one from each (excluding Chem 100, Phys 100, Phys 120, Phys 140, Phys 180, and Phys 300).

Only computer information science and mathematics courses in which a student has earned a grade of "C" or above will satisfy departmental requirements.

Bachelor of Science in CIS - Information Technology Major

Major Code 5110

Core Requirements (p. 33) (51*)		**48**
CIS Core		**33**
CIS Professional Electives		**12**
Supporting Concentration**		**12**
Business Core (p. 139)		**6**
Acct 201	Principles of Accounting I	3
Acct 202	Principles of Accounting II	3
Mathematics Core		**3**
Math 130	College Algebra	3
General Electives		**10**
Total		**124**

*Mathematics course in major requirements satisfies three hours of the core curriculum.
**Must be approved by the student's adviser and the CIS department head.

Only computer information science courses in which a student has earned a grade of "C" or above will satisfy departmental requirements.

Bachelor of Science in CIS – Computer Technology Major (CADD)*

Major Code 5108

Core Requirements (p. 33) (51)**		**48**
CIS Core		**33**
CADD/CAMT/MIMS Core		**30**
CADD 110	Engineering Graphics I	3
CADD 115	Intro. to CADD	3
CADD 120	Descriptive Geometry	3
CADD 130	Engineering Graphics II	3
CADD 204	Industrial Statics	3
CADD 210	Technical Illustration	3
CADD 260	Engineering Graphics III	3
MIMS 310	Computerized Production, Planning, & Control Systems	3
CAMT 100	Intro. to Machine Tools	3
CAMT 150	Materials and Processes	3
Mathematics Core		**3**
Math 135	Trigonometry	3
General Electives		**10**
Total		**124**

*This option also qualifies for an associate of science in computer aided drafting and design.

**Mathematics course in major requirements satisfies three hours of the core curriculum.

Only computer information science and mathematics courses in which a student has earned a grade of "C" or above will satisfy departmental requirements.

Bachelor of Science in CIS - Computer Technology Major (CAMT)*

Major Code 5109

Core Requirements (p. 33) (51)**		**48**
CIS Core		**33**
CAMT/CADD/MIMS Core		**30**
CAMT 100	Intro. to Machine Tools	3
CAMT 105	Precision Machining	3
CAMT 150	Materials and Processes	3
CAMT 160	Inspections and Gaging	3
CAMT 200	Computer Numerical Control	3
CAMT 250	Computer Assisted Manufacturing	3
CADD 110	Engineering Graphics I	3
CADD 115	Intro. to CADD	3
CADD 130	Engineering Graphics II	3
MIMS 310	Computerized Production, Planning, & Contol Systems	3
Mathematics Core		**3**
Math 135	Trigonometry	3
General Electives		**10**
Total		**124**

*This option also qualifies for an associate of science in computer assisted manufacturing technology.
**Mathematics course in major requirements satisfies three hours of the core curriculum.

Only computer information science and mathematics courses in which a student has earned a grade of "C" or above will satisfy departmental requirements.

Minor in CIS - Network Systems Administration

CIS Core		**21**
CIS 110	Programming I	3
CIS 210	Programming II	3
CIS 315	Computer Networks	3
CIS 320	NetWare LAN Admin.	3
CIS 325	Windows LAN Admin.	3
CIS 345	UNIX System Admin.	3
CIS 355	Enterprise Network Admin.	3
Total		**21**

Only computer information science courses in which a student has earned a grade of "C" or above will satisfy departmental requirements.

Minor in CIS – Information Systems

CIS Core		**24**
CIS 110	Programming I	3
CIS 210	Programming II	3
CIS 230	RPG	
OR		
CIS 234	COBOL	3
CIS 302	Information Systems I	3
CIS 310	Database Mgmt. Sys. I	3
CIS 321	Advanced RPG	
OR		
CIS 334	Advanced COBOL	3
CIS 410	Information Systems II	3
CIS 425	Database Mgmt. Sys. II	3
Total		**24**

Only computer information science courses in which a student has earned a grade of "C" or above will satisfy departmental requirements.

Minor in CIS - Website Administration

CIS Core		**21**
CIS 110	Programming I	3
CIS 210	Programming II	3
CIS 308	Website Administration I	3
CIS 310	Database Mgmt. Sys. I	3
CIS 340	Website Administration II	3
CIS 345	UNIX System Admin.	3
CIS 370	Adv. Object Oriented Prog.	3
Total		**21**

Only computer information science courses in which a student has earned a grade of "C" or above will satisfy departmental requirements.

Associate of Science in CIS - Network Systems Administration Major

Major Code 5102

Core Requirements (34*)		**22-23**
CIS Core		**27**
CIS 110	Programming I	3
CIS 210	Programming II	3
CIS 310	Database Mgmt. Sys. I	3
CIS 315	Computer Networks	3
CIS 320	NetWare LAN Admin.	3
CIS 325	Windows LAN Admin.	3
CIS 345	UNIX System Admin.	3
CIS 355	Enterprise Network Admin.	3
CIS 370	Adv. Object Oriented Prog.	3
Mathematics Core		**3**
Math 130	College Algebra	3
General Electives		**11-12**
Total		**64**

*Mathematics course in major requirements satisfies three hours of the core curriculum.

Only computer information science and mathematics courses in which a student has earned a grade of "C" or above will satisfy departmental requirements.

Associate of Science in CIS - Information Systems Major

Major Code 5103

Core Requirements (34*)		**22-23**
CIS Core		**27**
CIS 110	Programming I	3
CIS 210	Programming II	3
CIS 230	RPG	
OR		
CIS 234	COBOL	3
CIS 302	Information Systems I	3
CIS 310	Database Mgmt. Sys. I	3
CIS 321	Advanced RPG	
OR		
CIS 334	Advanced COBOL	3
CIS 370	Adv. Object Oriented Prog.	3
CIS 410	Information Systems II	3
CIS 425	Database Mgmt. Sys. II	3
Business Core		**6**
Acct 201	Principles of Accounting I	3
Acct 202	Principles of Accounting II	3
Mathematics Core		**3**
Math 130	College Algebra	3
General Electives		**5-6**
Total		**64**

*Mathematics course in major requirements satisfies three hours of the core curriculum.

Only computer information science and mathematics courses in which a student has earned a grade of "C" or above will satisfy departmental requirements.

Associate of Science in CIS - Website Administration Major

Major Code 5104

Core Requirements (34*)		**22-23**
CIS Core		**27**
CIS 110	Programming I	3
CIS 210	Programming II	3
CIS 308	Website Administration I	3
CIS 310	Database Mgmt. Sys. I	3

CIS 315	Computer Networks	3
CIS 325	Windows LAN Admin.	3
CIS 340	Website Administration II	3
CIS 345	UNIX System Admin.	3
CIS 370	Adv. Object Oriented Prog.	3
Mathematics Core		**3**
Math 130	College Algebra	3
General Electives		**11-12**
Total		**64**

*Mathematics course in major requirements satisfies three hours of the core curriculum.

Only computer information science and mathematics courses in which a student has earned a grade of "C" or above will satisfy departmental requirements.

Suggested Order of Study

Bachelor of Science in CIS -
Major Code 5105
Information Systems Major

Freshman Year
1st Semester

Course		Hours
CIS 110	Programming I	3
Math 130	College Algebra	3
CORE	[Eng 101 Eng Comp I (WI)]	3
CORE	[Psy 100 Gen Psychology]	3
CORE	[Kine 101 Physical Activity]	1
CORE	[Kine 103 Lifetime Wellness]	2
Psy 120	College Orientation	1
		16

2nd Semester

CIS 210	Programming II	3
Econ 201	Principles of Econ (Macro)	3
CORE	[Eng 102 Eng Comp II (WI)]	3
CORE	[Bio 101 Gen Biology]	4
General Elective		3
		16

Sophomore Year
1st Semester

CIS 310	Database Mgmt Sys I	3
CIS	Professional Elective (1A)	3
Acct 201	Principles of Accounting I	3
Econ 202	Principles of Econ (Micro)	3
CORE	[Phys 100 Phys Sci]	5
		17

2nd Semester

CIS 302	Information Systems I (WI)	3
CIS 350	Data Structures	3
CIS	Professional Elective (1B)	3
Acct 202	Principles of Accounting II	3
General Elective		3
		15

Junior Year
1st Semester

CIS 345	UNIX System Admin	3
CIS 370	Adv Object Oriented Prog	3
CORE	[Comm 100 Oral Comm]	3
CORE	[Area 2C. Lit/Humanity]	3
CORE	[Hist 110 U.S. History]	3
		15

2nd Semester

CIS 315	Computer Networks	3
CIS	Professional Elective (2A)	3
MM 300	Principles of Marketing	3
Acct 325	Managerial Accounting	3
CORE	[PSc 120 Govt:US/St/Loc]	3
		15

Senior Year
1st Semester

CIS 410	Information Systems II	3
CIS 450	Operating Systems (WI)	3
CIS	Professional Elective (2B)	3
CORE	[Hist 120 U.S. History]	3
General Elective		3
		15

2nd Semester

CIS 425	Database Mgmt Sys II (WI)	3
CORE	[Area 5A. International]	3
CORE	[Area 2A. Fine Art]	3
CORE	[Area 2B. Literature]	3
MM 350	Principles of Management	3
		15

Bachelor of Science in CIS -
Major Code 5106
Computer Science Major

Freshman Year
1st Semester

Course		Hours
CIS 110	Programming I	3
Math 150	Calculus I	5
CORE	[Eng 101 Eng Comp I (WI)]	3
CORE	[Psy 100 Gen Psychology]	3
Psy 120	College Orientation	1
		15

2nd Semester

CIS 210	Programming II	3
Math 250	Calculus II	5
CORE	[Eng 102 Eng Comp II (WI)]	3
CORE	[Bio 101 General Biology]	4
CORE	[Kine 103 Lifetime Wellness]	2
		17

Sophomore Year
1st Semester

CIS	Professional Elective (1A)	3
Math 260	Calculus III	5
CORE	[Comm 100 Oral Comm]	3
CORE	[Hist 110 U.S. History]	3
CORE	[Kine 101 Physical Activity]	1
		15

2nd Semester

CIS 310	Database Mgmt Sys I	3
CIS 350	Data Structures	3
CIS	Professional Elective (1B)	3
Math 300	Fund of Math Thought	3
CORE	[Area 2A. Fine Art]	3
		15

Junior Year
1st Semester

CIS 345	UNIX System Admin	3
CIS 370	Adv Object Oriented Prog	3
Phys 151	Elem Coll Physics I	5
CORE	[Area 5A. International]	3
General Elective		3
		17

2nd Semester

CIS 302	Information Systems I (WI)	3
CIS 315	Computer Networks	3
CIS	Professional Elective (2A)	3
CORE	[PSc 120 Govt: US/St/Loc]	3
CORE	[Area 2C. Lit/Humanity]	3
		15

Senior Year
1st Semester

CIS 410	Information Systems II	3
CIS 450	Operating Systems (WI)	3
CIS	Professional Elective (2B)	3
CORE	[Econ 180 Amer Econ Sys]	3
General Elective		3
		15

2nd Semester

CIS 425	Database Mgmt Sys II (WI)	3
Math Elective (Numbered above 320)		3
CORE	[Area 2B. Literature]	3
CORE	[Hist 120 U.S. History]	3
General Elective		3
		15

Bachelor of Science in CIS -
Major Code 5107
Computational Mathematics Major

Freshman Year
1st Semester

Course		Hours
CIS 110	Programming I	3
Math 150	Calculus I	5
CORE	[Psy 100 Gen Psychology]	3
CORE	[Eng 101 Eng Comp I (WI)]	3
Psy 120	College Orientation	1
		15

2nd Semester

CIS 210	Programming II	3
Math 250	Calculus II	5
Phys 151	Elem College Physics I	5
CORE	[Eng 102 Eng Comp II (WI)]	3
		16

Sophomore Year

1st Semester

CIS 310	Database Mgmt Sys I	3
Math 260	Calculus III	5
Chem 101	General Chemistry I	5
CORE	[Comm 100 Oral Comm]	3
		16

2nd Semester

CIS 315	Computer Networks	3
CIS 350	Data Structures	3
Math 300	Fund of Math Thought	3
CORE	[Kine 103 Lifetime Wellness]	2
CORE	[Kine 101 Physical Activity]	1
CORE	[Area 2A. Fine Art]	3
		15

Junior Year

1st Semester

CIS 345	UNIX System Admin	3
CIS 370	Adv Object Oriented Prog	3
Math 371	Intro to Oper Research (WI)	3
CORE	[Bio 101 General Biology]	4
CORE	[Hist 110 U.S. History]	3
		16

2nd Semester

CIS 302	Information Systems I (WI)	3
Math 350	Intro to Numerical Analysis	3
Math Elective (Numbered above 320)		3
CORE	[Area 5A. International]	3
CORE	[PSc 120 Govt: US/St/Loc]	3
		15

Senior Year

1st Semester

CIS 410	Information Systems II	3
CIS 450	Operating Systems (WI)	3
Math 351	Linear Algebra	3
CORE	[Econ 180 Amer Econ Sys]	3
CORE	[Hist 120 U.S. History]	3
General Elective		1
		16

2nd Semester

CIS 425	Database Mgmt Sys II (WI)	3
Math Elective (Numbered above 320)		3
Chem or Phys Elective		3
CORE	[Area 2B. Literature]	3
CORE	[Area 2C. Lit/Humanity]	3
		15

Bachelor of Science in CIS -

Major Code 5110

Information Technology Major

Freshman Year

1st Semester

Course		Hours
CIS 110	Programming I	3
Math 130	College Algebra	3
CORE	[Eng 101 Eng Comp I (WI)]	3
CORE	[Psy 100 Gen Psychology]	3
CORE	[Kine 101 Physical Activity]	1
CORE	[Kine 103 Lifetime Wellness]	2
Psy 120	College Orientation	1
		16

2nd Semester

CIS 210	Programming II	3
CORE	[Area 2A. Fine Art]	3
CORE	[Eng 102 Eng Comp II (WI)]	3
CORE	[Bio 101 General Biology]	4
Supporting Concentration		3
		16

Sophomore Year

1st Semester

CIS 310	Database Mgmt Sys I	3
CIS	Professional Elective (1A)	3
Acct 201	Principles of Accounting I	3
CORE	[Phys 100 Phys Sci]	5
Supporting Concentration		3
		17

2nd Semester

CIS 350	Data Structures	3
CIS	Professional Elective (1B)	3
CIS	Professional Elective (2A)	3
Acct 202	Principles of Accounting II	3
General Elective		3
		15

Junior Year

1st Semester

CIS 370	Adv Object Oriented Prog	3
CIS	Professional Elective (2B)	3
CORE	[Comm 100 Oral Comm]	3
CORE	[Area 2C. Lit/Humanity]	3
CORE	[Hist 110 U.S. History]	3
		15

2nd Semester

CIS 302	Information Systems I (WI)	3
CIS 315	Computer Networks	3
CORE	[Econ 180 Amer Econ Sys]	3
CORE	[PSc 120 Govt:US/St/Loc]	3
Supporting Concentration		3
		15

Senior Year

1st Semester

CIS 345	UNIX System Admin	3
CIS 410	Information Systems II	3
CIS 450	Operating Systems (WI)	3
CORE	[Hist 120 U.S. History]	3
General Elective		3
		15

2nd Semester

CIS 425	Database Mgmt Sys II (WI)	3
CORE	[Area 5A. International]	3
CORE	[Area 2B. Literature]	3
Supporting Concentration		3
General Elective		3
		15

Bachelor of Science in CIS -

Major Code 5108

Computer Technology Major (CADD)

Freshman Year

1st Semester

Course		Hours
CIS 110	Programming I	3
Math 135	Trigonometry	3
CADD 110	Eng. Graphics I	3
CORE	[Comm 100 Oral Comm]	3
CORE	[Eng 101 Eng Comp I (WI)]	3
Psy 120	College Orientation	1
		16

2nd Semester

CIS 210	Programming II	3
CADD 115	Introduction to CADD	3
CORE	[Area 2A. Fine Art]	3
CORE	[Eng 102 Eng Comp II (WI)]	3
CORE	[Bio 101 General Biology]	4
		16

Sophomore Year

1st Semester

CIS 310	Database Mgmt Sys I	3
CADD 120	Descriptive Geometry	3
CADD 130	Eng. Graphics II	3
CORE	[Kine 101 Physical Activity]	1
CORE	[Kine 103 Lifetime Wellness]	2
General Elective		3
		15

2nd Semester

CIS 315	Computer Networks	3
CIS 350	Data Structures	3
CADD 210	Technical Illustration	3
CAMT 100	Intro to Mach Tool Proc	3
CORE	[Econ 180 Amer Econ Sys]	3
		15

Junior Year

1st Semester

CIS 345	UNIX Sys Admin	3
CADD 204	Industrial Statics	3
CIS 370	Adv Object Oriented Prog	3
CAMT 150	Modern Manufacturing Proc	3
CORE	[Area 2C. Lit/Humanity]	3
		15

2nd Semester

CIS 302	Information Systems I (WI)	3
CADD 260	Computer Aided Drafting	3
CORE	[Phys 100 Fund of Phys Sci]	5
CORE	[Hist 110 U.S. Hist]	3
General Elective		3
		17

Senior Year

1st Semester

CIS 450	Operating Systems (WI)	3
CIS 410	Information Systems II	3
MIMS 310	Comp Prod/Planning Control	3
CORE	[Hist 120 U.S. History]	3
CORE	[Area 2B. Literature]	3
		15

2nd Semester

CIS 425	Database Mgmt Sys II (WI)	3
CORE	[Psy 100 Gen Psychology]	3
CORE	[Area 5A. International]	3
CORE	[PSc 120 Gov't:US/St/Loc]	3
General Elective		4
		16

Bachelor of Science in CIS -

Major Code 5109

Computer Technology Major (CAMT)

Freshman Year

1st Semester

Course		Hours
CIS 110	Programming I	3
Math 135	Trigonometry	3
CAMT 100	Intro to Mach Tool Pro	3
CADD 110	Eng Graphics I	3
CORE	[Eng 101 Eng Comp I (WI)]	3
Psy 120	College Orientation	1
		16

2nd Semester

CIS 210	Programming II	3
CADD 115	Introduction to CADD	3
CAMT 105	Precision Machining	3
CAMT 160	Inspect & Gage	3
CORE	[Eng 102 Eng Comp II (WI)]	3
		15

Sophomore Year

1st Semester

CIS 310	Database Mgmt Sys I	3
CADD 130	Eng Graphics II	3
CORE	[Comm 100 Oral Comm]	3
CORE	[Kine 101 Physical Activity]	1
CORE	[Kine 103 Lifetime Wellness]	2
CORE	[Bio 101 General Biology]	4
		16

2nd Semester

CIS 315	Computer Networks	3
CIS 350	Data Structures	3
CAMT 150	Materials and Processes	3
CORE	[Econ 180 Amer Econ Sys]	3
CORE	[Area 2A. Fine Art]	3
		15

Junior Year

1st Semester

CIS 345	UNIX System Admin	3
CIS 370	Adv Object Oriented Prog	3
CAMT 200	Computer Numerical Control	3
CORE	[Area 2C. Lit/Humanity]	3
CORE	[Area 2B. Literature]	3
General Elective		1
		16

2nd Semester

CIS 302	Information Systems I (WI)	3
CAMT 250	Computer Assisted Mftg	3
CORE	[Phys 100 Phys Sci]	5
CORE	[Hist 110 U.S. History]	3
General Elective		3
		17

Senior Year

1st Semester

CIS 410	Information Systems II	3
CIS 450	Operating Systems (WI)	3
MIMS 310	Comp Prod/Plan Control	3
CORE	[Hist 120 U.S. History]	3
General Elective		3
		15

2nd Semester

CIS 425	Database Mgmt Sys II (WI)	3
CORE	[Psy 100 Gen Psychology]	3
CORE	[Area 5A. International]	3
CORE	[PSc 120 Gov't:US/St/Loc]	3
General Elective		3
		15

Associate of Science in CIS -

Major Code 5102

Network Systems Administration

Freshman Year

1st Semester

Course		Hours
CIS 110	Programming I	3
Math 130	College Algebra	3
CORE	[Eng 101 Eng Comp I (WI)]	3
CORE	[Comm 100 Oral Comm]	3
CORE	[Area 4A. U.S. History]	3
Psy 120	College Orientation	1
		16

2nd Semester

CIS 210	Programming II	3
CIS 315	Computer Networks	3
CORE	[Area 2A. Hum/Fine Art]	3
CORE	[Phys 100 or Bio 101	4-5
General Elective		3
		16-17

Sophmore Year

1st Semester

CIS 320	NetWare LAN Admin	3
CIS 345	UNIX System Admin	3
CIS 370	Adv Object Oriented Prog	3
CORE	[PSc 120 Gov't:US/St/Loc]	3
CORE	[Area 4C.]	3
		15

2nd Semester

CIS 310	Database Mgmt Sys I	3
CIS 325	Windows LAN Admin	3
CIS 355	Computer Networks II	3
CORE	[Kine 101 Physical Activity]	1
CORE	[Kine 103 Lifetime Wellness]	2
General Elective		4-5
		16-17

Associate of Science in CIS -

Major Code 5103

Information Systems Major

Freshman Year

1st Semester

Course		Hours
CIS 110	Programming I	3
Math 130	College Algebra	3
CORE	[Eng 101 Eng Comp I (WI)]	3
CORE	[PSc 120 Gov't:US/St/Loc]	3
CORE	[Area 4C.]	3
Psy 120	College Orientation	1
		16

2nd Semester

CIS 210	Programming II	3
CIS 302	Information Systems I (WI)	3
Acct 201	Principles of Accounting I	3
CORE	[Area 2A. Hum/Fine Art]	3
CORE	[Phys 100 or Bio 101]	4-5
		16-17

Sophomore Year

1st Semester

CIS 230	RPG	
OR		
CIS 234	COBOL	3
CIS 310	Database Mgmt Sys I	3
CIS 370	Adv Object Oriented Prog	3
CIS 410	Information Systems II	3
Acct 202	Principles of Accounting II	3
CORE	[Kine 101 Physical Activity]	1
		16

2nd Semester

CIS 321	Advanced RPG	
OR		
CIS 334	Advanced COBOL	3
CIS 425	Database Mgmt Sys II (WI)	3
CORE	[Comm 100 Oral Comm]	3
CORE	[Area 4A. U.S. History]	3
CORE	[Kine 103 Lifetime Wellness]	2
General Elective		1-2
		15-16

Associate of Science in CIS -

Major Code 5104

Website Administration

Freshman Year

1st Semester

Course		Hours
CIS 110	Programming I	3
Math 130	College Algebra	3
CORE	[Area 4A. U.S. History]	3
CORE	[Eng 101 Eng Comp I (WI)]	3
CORE	[Comm 100 Oral Comm]	3
Psy 120	College Orientation	1
		16

2nd Semester

CIS 210	Programming II	3
CIS 308	Website Administration I	3
CIS 315	Computer Networks	3
CORE	[Phys 100 or Bio 101	4-5
CORE	[Area 2A. Hum/Fine Art]	3
		16-17

Sophmore Year

1st Semester

CIS 340	Website Administration II	3
CIS 345	UNIX System Admin	3
CIS 370	Adv Object Oriented Prog	3
CORE	[Area 4C.]	3
General Elective		3
		15

2nd Semester

CIS 310	Database Mgmt Sys I	3
CIS 325	Windows LAN Admin	3
CORE	[Kine 101 Physical Activity]	1
CORE	[Kine 103 Lifetime Wellness]	2
CORE	[PSc 120 Gov't:US/St/Loc]	3
General Electives		4-5
		16-17

For additional information contact:
Dr. Jack L. Oakes
Office: Matthews Hall 223E
Phone: 417.625.9683
E-mail: oakes-j@mail.mssc.edu

Course Descriptions

CIS 105 (F, S) 3 hrs. cr.

Introduction to Microcomputer Use

Instruction in the fundamental use of microcomputers through packaged software and operating systems. The student is introduced to word processing, spreadsheets, and presentation tools to aid in productivity and to develop a degree of confidence in the use of microcomputers.

CIS 110 (F, S) 3 hrs. cr.

Programming I

Introduces programming in a personal computer based environment. The student will learn the fundamentals of PC hardware, operating systems, and programming. Special emphasis is placed on proper program style, including modularity and structured design. The language of implementation is C++. Corequisite: Math 130 or above.

CIS 210 (F, S) 3 hrs. cr.

Programming II

Continued development of the programming and problem solving skills introduced in CIS 110. Structured programming and the object-oriented paradigm are emphasized. Includes an in-depth coverage of pointers, strings, arrays, structures, and files. Introduces linked lists, stacks, and queues. The language of implementation is C++. Prerequisite: CIS 110 with a grade of "C" or above.

CIS 230 (S) 3 hrs. cr.

Report Program Generation (RPG)

Introduces the programming language RPG in an OS/400 environment. Includes language syntax and practice in preparing, compiling, and executing applications of increasing complexity. Prerequisite: CIS 210 with a grade of "C" or above.

CIS 234 (F) 3 hrs. cr.

Business Data Processing Techniques (COBOL)

Methods and techniques for solving business related problems using the business oriented language COBOL. Applications may include payroll processing, inventory control, billing systems. Syntax of the language, report production using both sequential and indexed files, and structured methodologies are major topics. Prerequisite: CIS 210 with a grade of "C" or above.

CIS 298 (Demand) 1-3 hrs. cr.

Selected Topics in Computer Information Science

Addresses emerging topics in computer science and management information systems. Each offering will be on a subject not normally included in another course. Prerequisites may be specified in each course syllabus.

CIS 302 (S) 3 hrs. cr.

Information Systems I *(Writing Intensive)*

Introduces students to the art of solving business problems with information. Develops an understanding of an organization's information requirements, and how information systems facilitate the management of the enterprise. Emphasizes the student's ability to clarify problem statements and define specific objectives, while introducing standard systems analysis methodologies. Prerequisite: (Eng 102 or 111 with a grade of "C" or above) and (CIS 110 or CIS 305 or MM 237 with a grade of "C" or above).

CIS 305 (F, S) 3 hrs. cr.

Microcomputer Applications

Provides an overview of the most common environment and software tools for the serious user of microcomputers. Hardware topics are included to allow the student to compare and select from system configurations according to their application's requirements. An introduction to the basic elements of an operating system and a graphic user interface is followed by intensive practice with the major components of an integrated software suite of applications; word processing, spreadsheets, graphics, and presentation software. A variety of data communications topics are included from the use of a local area network through connections to a world-wide system. Prerequisite: CIS 105 (or higher) or MM237 or CADD 115 or consent of the department head.

CIS 308 (S) 3 hrs. cr.

Website Administration I

Provides an introduction to the administration of a World Wide Web site. Includes Internet concepts, design strategies, graphic and multimedia construction, legal and ethical implications, dynamic HTML, and client side scripting. Prerequisite: CIS 110 with a grade of "C" or above.

CIS 310 (F, S) 3 hrs. cr.

Database Management Systems I

Introduces the fundamentals of database management, relational database management systems, and programming for GUI. Database topics covered include entities, attributes, relationships, transactions, queries, and integrity rules. Server side database concepts are illustrated with MS Access. The client side user interface and business logic is implemented in Visual Basic. Prerequisite: CIS 210 with a grade of "C" or above.

CIS 315 (S) 3 hrs. cr.

Computer Networks

Introduces the hardware and software that are integrated to form a computer network. Topics include an in depth look at TCP/IP, data communication hardware, public networks such as the Internet, and LAN and WAN network standards. Co-requisite: CIS 110 or CIS 305 or CADD 115 or MM 237.

CIS 320 (F) 3 hrs. cr.

NetWare LAN Administration

Provides a thorough introduction to the design, installation, and management of Novell local area networks. Network configuration, security, backup, and recovery are major topics. User rights and privileges, file and device sharing, and printing are also covered. Prerequisite: CIS 110 or CIS 315, with a grade of "C" or above.

CIS 321 (F) 3 hrs. cr.

Advanced RPG

Emphasizes on-line programming of business applications. Major topics include file creation and maintenance, structured methodologies, advanced features of RPG 4/ILE, IBM OS/400 environment, CL programming, Queries, DB2/400 and Internet application connectivity. Prerequisite: CIS 230 with a grade of "C" or above.

CIS 325 (S) 3 hrs. cr.

Windows LAN Administration

Provides a thorough introduction to the design, installation, and management of Microsoft Server local area networks. Network configuration, security, backup, and recovery are major topics. User rights and privileges, file and device sharing, and Web applications are also covered. Prerequisite: CIS 110 or CIS 315, with a grade of "C" or above.

CIS 330 (Demand) 3 hrs. cr.

Assembly Language

Provides an introduction to low-level machine architecture and assembly language programming in the microcomputer. The topics include data representation, instruction set, program logic, and problem solving. In addition to the assembly, linking, and execution of programs; debugging, optimization, and interfacing to high-level languages will be practiced. Prerequisite: CIS 210 with a grade of "C" or above.

CIS 334 (S) 3 hrs. cr.
Advanced Structured COBOL
On-line programming and special considerations implicit in real time business applications are studied. Creation and maintenance of indexed and sequential files and advanced features of COBOL are major topics. CICS and mainframe environments are introduced. Prerequisite: CIS 234 with a grade of "C" or above.

CIS 340 (F) 3 hrs. cr.
Website Administration II
Continued development of subjects related to the administration of a World Wide Web site. Emphasizes server-side programming issues. Particularly concerned with the creation and maintenance of a commercial site. Includes syntax and practice in ASP, CSS, CGI/Perl, VBScript, JavaScript, and XML. Prerequisite: CIS 308 and CIS 310, with a grade of "C" or above.

CIS 345 (F) 3 hrs. cr.
UNIX System Administration
Introduces the UNIX operating system. Topics covered include basic UNIX commands, system configuration, the file system, process control, shell programming, the network file system, CGI programming, and system security. Prerequisite: CIS 210 with a grade of "C" or above.

CIS 350 (S) 3 hrs. cr.
Data Structures
Provides for the continued development of the student's knowledge of data structures and object-oriented programming. Includes an in-depth coverage of pointers, linked lists, stacks, queues, trees, and graphs. Special emphasis is placed on the coverage of algorithms that are designed to efficiently manipulate these structures and techniques for selecting the most appropriate data structures for a given application. The language of implementation is C++. Prerequisite: CIS 210 with a grade of "C" or above.

CIS 355 (S) 3 hrs. cr.
Enterprise Network Administration
Covers enterprise inter-networking. Major topics include server and workstation platforms, network operating systems and clients, client/server computing, interconnecting LANs, routing, firewalls and security, performance analysis, communication hardware, and troubleshooting of hardware components. Prerequisite: CIS 315 and CIS 345 with a grade of "C" or above. Corequisite: CIS 320 or CIS 325.

CIS 360 (Demand) 3 hrs. cr.
Computer Graphics
Introduces interactive computer graphics programming including windowing, clipping, two and three dimensional transformations, perspective projections, curved surface modeling, light, and color. The functional capabilities of computer graphics systems and their applications will be covered. Prerequisite: Math 150 and CIS 210, with a grade of "C" or above.

CIS 370 (F) 3 hrs. cr.
Advanced Object Oriented Programming
Continued development of the object paradigm introduced in CIS 210. Applications and problems considered include graphical user interfaces, exception handling, Internet programming, and multimedia. The language of implementation is Java. Prerequisite: CIS 210 with a grade of "C" or above.

CIS 401 (F, S) 1-3 hrs. cr.
Internship in Computer Information Science
A limited number of computer information science students may serve an internship of 15 to 20 hours per week for up to 16 weeks. Credit hours will be arranged through the coordinator of the internship program. The intern will work for a local-cooperating firm in a production data processing environment gaining valuable experience in programming and/or systems analysis and design. The on-site work will be supervised by a professional employee of the firm and overseen by an MSSC faculty member. Prerequisite: Upper division standing, department head approval, and an overall GPA of 3.00.

CIS 410 (F) 3 hrs. cr.
Information Systems II
Continued development of the ability to analyze and design computer-based information systems. Includes coverage of analysis and design methodologies, computer-aided software engineering tools, and project management techniques. Topics are illustrated with in-depth case studies. Emphasizes teamwork. Prerequisite: CIS 302 with a grade of "C" or above.

CIS 425 (S) 3 hrs. cr.
Database Management Systems II *(Writing Intensive)*
Includes a survey of database management theories with experience in the application of database technology. An emphasis will be placed on the relational model. Functions of database management systems, data modeling, and database systems design and implementation in a client/server environment are stressed through case studies. Prerequisite: CIS 310 and CIS 410, with a grade of "C" or above.

CIS 430 (Demand) 3 hrs. cr.
Introduction to Artificial Intelligence
Introduces the process of developing intelligent computer software. Topics covered include knowledge abstraction and representation, heuristic search techniques, game playing, expert systems, and meta-programming. Prerequisite: CIS 350 with a grade of "C" or above.

CIS 450 (F) 3 hrs. cr.
Operating Systems *(Writing Intensive)*
Fundamental concepts of operating system design. Emphasis is placed on identifying the problems an operating system must solve and considering the range of alternative solutions that may be implemented. Topics include process management, memory management, processor management, auxiliary storage management, and security. The Linux operating system is highlighted. Prerequisite: CIS 345 and CIS 350, with a grade of "C" or above.

CIS 498 (Demand) 1-3 hrs. cr.
Seminar in Computer Information Science
Addresses emerging topics in computer science and management information systems. Each offering will be on a subject not normally included in another course. Prerequisite: May be specified in each course syllabus.

CIS 499 (Demand) 1-3 hrs. cr.
Independent Study
The adviser, with approval of the department head, structures an independent study course. Prerequisite: Upper division standing with an overall GPA of 3.0 or above. The adviser, the department head, and the dean of the school must approve registration in the course.

Criminal Justice Administration

Justice Center 109, 417.625.9302

Faculty Wolf-Director, Hamlin, Hulderman, Scott, Spencer, Spurlin, Thomason

"Justice Through Education" is the motto of the Criminal Justice Administration Department at Missouri Southern State College. The Criminal Justice Administration program offers academic training coupled with "real world" practical training for students pursuing careers as criminal justice professionals. The Criminal Justice program provides a varied and flexible curriculum, small classes, faculty who provide individual academic attention, international educational opportunities and a unique learning environment.

The Criminal Justice Administration Department offers two degrees, the bachelor of science in criminal justice administration and the associate of science in law enforcement. Additionally, the department offers three minors: criminal justice administration, juvenile justice and corrections.

The Criminal Justice Administration program offers a varied curriculum to meet the needs of a diverse student body. The program prepares students for a wide vari-

ety of careers as criminal justice professionals as well as graduate programs in law, criminal justice and other related fields. The Criminal Justice program prepares students for careers in traditional fields such as law enforcement, juvenile justice, corrections, probation and parole, and private or industrial security. The program also prepares students for investigative positions with federal agencies, state and local agencies, insurance companies and other private enterprises. In addition, a criminal justice administration degree will prepare students for the many new opportunities in the areas of safety and security.

The Criminal Justice Department offers a flexible curriculum to serve the needs of the student body. In addition to day, evening and weekend courses, students can obtain the bachelor of science degree and the associate of science degree over the Internet. The many hybrid courses combine the benefits of the classroom experience with the flexibility of the Internet courses by meeting on campus weekly, monthly or at other intervals, but conducting much of the course via the Internet. The Department offers criminal justice professionals who have experience in the field college credit for work experience through the portfolio process. The Department also recommends that all students participate in the internship program, where students receive college credit for working side by side with practicing criminal justice professionals.

The small classes, current technology and experienced faculty provide for a unique learning environment. Our faculty members are attentive to student needs, and strive to prepare students for challenging criminal justice careers. They have over 125 years of combined practical experience in criminal justice fields, including experience as law enforcement officers, juvenile officers, assistant prosecutors, legal advisers, criminal investigators, child abuse investigators, corrections administrators and security administrators.

The Criminal Justice Department emphasizes the international mission and provides students with opportunities to study and travel abroad to view firsthand other criminal justice systems around the globe. Our faculty and students have explored the justice systems in England, France, Australia, New Zealand, Morocco, Italy, Israel and Spain. In the first five years since the international mission was implemented, more than 200 criminal justice students have studied abroad.

The state-of-the-art Mills Anderson Justice Center is the busy home of the Criminal Justice Administration Department at Missouri Southern State College. The facility features a modern indoor "live-fire" firearms range and two computerized shooting systems. The auditorium provides a forum for lectures and meetings as well as for advanced training seminars for practicing criminal justice professionals. These seminars are taught by nationally recognized criminal justice professionals, allowing students to learn from the experts and mingle with potential employers.

The Criminal Justice Department at Missouri Southern State College also operates the 600 hour Basic Law Enforcement Training Academy**.** (See Law Enforcement page 205)

The Criminal Justice Administration degree will allow students to take advantage of the many current career opportunities as well as the multitude of new opportunities in criminal justice, especially in the areas of homeland and global safety and security.

Bachelor of Science in Criminal Justice Administration

		Semester Hours
Core Requirements (p. 33)		**51**
Criminal Justice Requirements		**24**
LE 100	Introduction to Criminal Justice	3
LE 210	Criminal Procedure	3
LE 250	Criminal Law	3
CJAd 275	The Juvenile Justice System	3
LE 280	Interview and Report Writing (WI)	3
LE 232	Ethics In Criminal Justice	3
		18
Select one from the following:		
CJAd 230	Introduction to Security	3
CJAd 325	Physical Security	3
CJAd 330	Loss Prevention Techniques	3
		3
Select one from the following:		
CJAd 320	Probation and Parole	3
CJAd 412	Correctional Practices (WI)	3
		3
		24

The student must also select a minimum of 23 credit hours from the following list of major course electives: (Students may not count classes that were selected in the above area.)

LE 180	Basic Law Enforcement Academy*#	13
LE 181	Basic Law Enforcement Academy II*#	13
LE 190	First Responder	2
LE 200	Criminal Investigation I	3
LE 225	Patrol Procedures	3
LE 260	Legal/Tech. Aspects of Firearms	3
LE 290	Police Supervision and Management	3
LE 298	Special Topics*	1-8
CJAd 210	Basic Photography	3
CJAd 230	Introduction to Security	3
LE 230	Community Policing	3
CJAd 300	Criminal Invest. II (WI)	3
CJAd 301	International Justice Systems	3
CJAd 310	Traffic Accident Invest and Control	3
CJAd 320	Probation and Parole*	3
CJAd 325	Physical Security	3
CJAd 330	Loss Prevention Techniques	3
CJAd 331	Administration of Security Systems*	3
CJAd 350	Fish/Game Enforcement	3
CJAd 360	Professional Development	2
CJAd 370	International Terrorism	3
CJAd 390	Crime Analysis	3
CJAd 400	Homicide Investigation	3
CJAd 410	Juvenile Procedures	3
CJAd 411	Juvenile Corrections* (WI)	3
CJAd 412	Correctional Practices (WI)	3
CJAd 430	Family Violence	3
CJAd 440	Victims and the Criminal Justice System	3
CJAd 450	Criminal Evidence*	3
CJAd 460	Cultural Diversity	3
CJAd 490	Internship in Criminal Justice Administration*	4-8
CJAd 498	Seminar in Criminal Justice Administration*	1-3
CJAd 499	Independent Study*	1-3
		23

*See course descriptions for prerequisites.
#Only 13 hours of the Basic Law Enforcement Academy will be applied to the 26 hour elective requirement.

General electives selected with adviser approval among which must be sufficient upper division courses (courses numbered at the 300 or 400 level) to complete the College requirement for a minimum 40 upper-division hours. A minor is highly recommended.

Electives	**26**
Total	**124**

Minor in Criminal Justice Administration

The minor consists of 21 hours of course work which includes: LE 100 Introduction to Criminal Justice, LE 210 Criminal Procedure, LE 250 Criminal Law and 12 additional hours of LE or CJAd courses, nine of which must be upper division.

Suggested Order of Study

Bachelor of Science Degree
Major Code 2105
Criminal Justice Administration Major

Freshman Year
1st Semester

Course		Hours
LE 100	Intro. to Criminal Justice	3
CORE	[Kine 103 Lifetime Wellness]	2
CORE	[Eng 101 Comp I]	3
Computer Literacy Requirement		3
CORE	[Comm 100 Oral Comm]	3
CORE	[Psy 120 College Orient]	1
CORE	[Kine 101 Physical Activity]	1
		16

2nd Semester

LE 275	The Juvenile Justice System	3
CORE	[Eng 102 Comp]	3
LE 232	Ethics in Criminal Justice	3
Math	Intro College Math or higher	3
CORE	[Bio 101 General Biology]	4
		16

Sophomore Year
1st Semester

LE 250	Criminal Law	3
CORE	[Hist 110 U.S. History]	3
CORE	[Phys 100 Fund of Phys Sci]	5
LE 280	Interview and Report Writing	3
CJAd	Required Course	3
		17

2nd Semester

LE 210	Criminal Procedure	3
CJAd	Required Course	3
Psy 100	[General Psychology]	3
CORE	[Econ 180 Amer Econ Sys]	3
CORE	[Literature]	3
		15

Junior Year
1st Semester

CJAd	Elective	3
CORE	Elective [Internl] Study	3
Elective	[A minor is suggested]	3
CORE	[PSc 120 Gov't: U.S/Sta/Loc]	3
CORE	[Elective-Fine Art]	3
		15

2nd Semester

CJAd	Elective	3
CORE	[Fine Art]	3
Elective	[A minor is suggested]	3
CORE	[Hist 120 U.S. History]	3
Elective	[A minor is suggested]	3
		15

Senior Year
1st Semester

CJAd	Elective	3
CJAd	Elective	3
CJAd	Elective	3
Elective	[A minor is suggested]	3
Elective	[A minor is suggested]	3
		15

2nd Semester

CJAd	Elective	3
CJAd	Elective	3
CJAd	Elective	3
Elective	[A minor is suggested]	3
Elective	[A minor is suggested]	3
		15

[Department Recommendations]
All electives must be approved by a CJAd adviser prior to enrollment.

For additional information contact:
Criminal Justice Department
Dr. C. Blake Wolf
Office: Justice Center 109
Phone: 417.625.9302
E-mail: wolf-b@mail.mssc.edu

Corrections

Justice Center 109, 417.625.9302

Faculty Wolf - Head, Scott, Spencer, Gubera

A minor in Corrections is designed to prepare students who are seeking careers in the field of adult or juvenile corrections. Corrections offers students a variety of employment possibilities in local, state, and federal agencies. These employment opportunities include juvenile or adult probation and parole officer, pretrial or post-trial investigator, detention officer, corrections specialist, or corrections caseworker. Students majoring in criminal justice, psychology, sociology or other related fields who have a desire to work in the field of corrections will find this minor beneficial.

A minor in Corrections consists of 24 credit hours. Students must a have a faculty adviser for a minor in Corrections.

Minor in Corrections

		Semester Hours
LE 210	Criminal Procedure	3
CJAd 320	Probation and Parole	3
CJAd 411	Juvenile Corrections	3
CJAd 412	Correctional Practices	3
Soc 351	Criminology	3
Soc 362	Deviant Behavior	3
Soc 391	Penology and Corrections	3
Psy 221	Psychology of Personal Adjustment	3
		24

For additional information contact:
Dr. C. Blake Wolf
Office: Justice Center 109
Phone: 417.625.9302
E-mail: wolf-b@mail.mssc.edu

Juvenile Justice

Justice Center 109, 417.625.9302

Faculty Wolf - Head, Scott, Spencer, Gubera

A minor in Juvenile Justice is designed to prepare students who are seeking careers in the Juvenile Justice System. Adjudication and aftercare of the juvenile offender as well as child protection are the primary emphases of a minor in Juvenile Justice.

Students majoring in criminal justice, psychology, sociology or other related fields who have a desire to work in the Juvenile Justice system will find this minor beneficial. Juvenile officer, child abuse investigator, and group home counselor, are just a few of the employment options available to a graduate with a Juvenile Justice minor.

A minor in Juvenile Justice consists of 24 credit hours. Students must a have a faculty adviser for a minor in Juvenile Justice.

Minor in Juvenile Justice

		Semester Hours
LE 250	Criminal Law	3
CJAd 275	Juvenile Justice System	3
CJAd 320	Probation and Parole	3
CJAd 410	Juvenile Procedures	3
CJAd 411	Juvenile Corrections	3
CJAD 430	Family Violence	3
Soc 312	Juvenile Delinquency	3

Select one from the following:

Psy 300	Child Development	3
Psy 301	Adolescent Development	3

24

For additional information contact:
Dr. C. Blake Wolf
Office: Justice Center 109
Phone: 417.625.9302
E-mail: wolf-b@mail.mssc.edu

Course Descriptions

CJAd 210 (Demand) 3 hrs. cr.
Basic Photography
Lecture and laboratory procedures for use of cameras, lenses, developing negatives and prints. No credit if LE 245 has been completed. Lab fee and additional lab time arranged.

CJAd 230 (S) 3 hrs. cr.
Introduction to Security
Overview of the security industry and its role in loss prevention. Public versus private security roles for retail business, industrial and governmental protection. Basic principles such as target hardening and current problems.

CJAD 275 (F,S) 3 hrs. cr.
The Juvenile Justice System
The Juvenile Justice System is a survey course that is designed to introduce the student to the organizations, processes and actors that comprise the Juvenile Justice System. The course emphasizes the history of the juvenile justice system, the agency interactions and interrelationships, the concepts of prevention and diversion, the development of juvenile gangs, the roles of criminal justice professionals, and the future of the Juvenile Justice System.

CJAd 298 (Demand) 1-8 hrs. cr.
Special Topics in Criminal Justice Administration
Course content varies and is designed to meet current needs and interests in the rapidly changing field of criminal justice administration. Precise topics are announced with prerequisites stipulated in the course syllabus.

CJAd 300 (S) 3 hrs. cr.
Criminal Investigation II *(Writing Intensive)*
Major case investigative methods, sources of information, development of leads, methods applicable to organized crime and specific offenses. Prerequisite: Eng. 102 or 111

CJAd 301 (F,S) 3 hrs. cr.
International Justice Systems
A study of justice systems around the world, comparing them to America's justice system. Course considers the three important components of a justice system: police, courts, and corrections. Includes cultural differences of the countries studied as they relate to their justice systems.

CJAd 310 (F) 3 hrs. cr.
Traffic Accident Investigation and Control
Theory and techniques for investigating and reducing occurrence of motor vehicle accidents. Includes collection and evaluation of physical evidence reporting.

CJAd 320 (S) 3 hrs. cr.
Probation and Parole
Study of the entire system of probation and parole internationally, nationally, and locally. Prepares students for the state merit exam in probation and parole. Study of pre-sentence investigation methods, predicting parole behavior, supervisory practices, legal aspects, the use of amnesty and pardons. Prerequisites: LE 100

CJAd 325 (S) 3 hrs. cr.
Physical Security
Physical aspects of the security industry and its role in loss prevention for retail business, industrial and governmental protection. Consideration of barriers and perimeter protection, alarm systems, computer and hazardous materials protection and survey techniques.

CJAd 330 (Demand) 3 hrs. cr.
Loss Prevention Techniques
Security techniques in loss prevention for retail business, industry, governmental protection, hotel and motel, hospital, school, transit systems and utilities.

CJAd 331 (Demand) 3 hrs. cr.
Administration of Security Systems
The security administrator's role in business, industrial and governmental protection. Organizing, training, managing and designing security programs. Prerequisites: CJAd 230, CJAd 325 or CJAd 330 or instructor's permission.

CJAd 350 (Demand) 3 hrs. cr.
Fish and Game Enforcement
Problems and procedures encountered and used by conservation enforcement officers. Laws and enforcement procedures.

CJAd 360 (Demand) 2 hrs. cr.
Professional Development
Development of employability and career skills will be emphasized focusing on tools necessary for employment, communication skills, corporate etiquette, business dress, adjusting to the corporate environment and the professional image.

CJAD 370 (Demand) 3 hrs. cr.
International Terrorism *(Writing Intensive)*
International Terrorism examines the known facets of contemporary terrorism. Analyzes the laws and special forces/law enforcement agencies which nations within the international community have created to meet the challenge of international terrorism. Examines anticipated patterns of terrorism in the new century. Emphasis on legal and security measures designed to prevent terrorism. Prerequisites: Junior standing or above or permission of instructor.

CJAd 390 (F) 3 hrs. cr.
Crime Analysis
A study of the patterns of crime. The course will emphasize the analysis of crime patterns and criminal behavior. The course will consider the identification of evolving or existent crime patterns and series crime, the forecasting of future crime occurrences and the initiation of target profile analysis. Prerequisites: Upperclass standing.

CJAd 400 (Demand) 3 hrs. cr.
Homicide Investigation
Legal and criminalistic concepts and procedures for the medico-legal investigation of death due to natural, accidental, suicidal or criminal cause.

CJAd 410 (F) 3 hrs. cr.
Juvenile Procedures
Examines the evolution of the juvenile justice system as well as current practice and procedure in juvenile and family courts. Focus on law, jurisdiction, constitutional requirements and court rules. Also considers topics such as juvenile gangs, child abuse and neglect, child custody and status offenders.

CJAd 411 (S) 3 hrs. cr.
Juvenile Corrections *(Writing Intensive)*
Overview of the design and legal requirements of juvenile correctional institutions including an analysis of the juvenile interstate compact laws and management principles of juvenile correctional institutions. Prerequisite: Eng 102 or 111.

CJAd 412 (F) 3 hrs. cr.
Correctional Practices *(Writing Intensive)*
History of corrections as it relates to correctional practices. In-depth study of the rights of the incarcerated inmate as well as the powers and duties of the correctional officer. Prerequisites: LE 100 and Eng 102 or 111 or permission.

CJAd 430 (Demand) 3 hrs. cr.
Family Violence
Introduces the dynamics of family violence from the perspective of law enforcement. Examines the relationships between victims, offenders and other family members. Focuses on these relationships and the challenge they pose to the criminal justice system.

CJAd 440 (Demand) 3 hrs. cr.
Victims and the Criminal Justice System
Introduces the study of victimization. Examines the relationship between victims and the criminal justice system.

CJAd 450 (S) 3 hrs. cr.
Criminal Evidence
Rules of evidence, admissibility, presumptions, inferences, burden of proof and exceptions to the hearsay rule. Prerequisite: LE 210, LE 250 or permission.

CJAd 460 (Demand) 3 hrs. cr.
Cultural Diversity
Students seeking cross-cultural knowledge and sensitivity in criminal justice; learn practical methods for dealing with diverse cultures, ethnic groups, and those who are physically, mentally, and emotionally challenged.

CJAd 490 (Arr) 4-8 hrs. cr.
Internship in Criminal Justice
Extensive practical experience with an area criminal justice agency, subject to individual committee approval. Not open to those who have taken LE 180. Prerequisite: Junior or senior standing, CJAd major, department approval, overall GPA 2.5 and a CJAd GPA 3.2.

CJAd 498 (Demand) 1-3 hrs. cr.
Seminar in Criminal Justice
A survey of current advances in the field. Precise topics to be announced, for upper division majors in CJAd or those who have completed the A.S. degree in law enforcement. Prerequisite: permission of instructor.

CJAd 499 (Arr) 1-3 hrs. cr.
Independent Study in Criminal Justice
Individually directed study for advanced majors in area of criminal justice selected with adviser approval. Proposal must be approved by program director and school dean. Prerequisite: 3.5 GPA in major area or permission.

Dental Hygiene

Ummel Technology Building 101, 417.625.9709

Faculty Scorse DeTar - Head, Carlton, Moore, Rogers, Strait, White

The dental hygienist is a dynamic health care professional who is the only member of the dental health team, other than the dentist, licensed to provide direct care to the patient. The diverse duties of the dental hygienist are rewarding and include oral prophylaxis (cleaning); exposing, processing and mounting radiographs; collecting and evaluating medical history information; performing head and neck examinations; periodontal assessment and therapy; applying agents for the prevention of decay; applying desensitizing and antimicrobial agents and administering local anesthesia and nitrous oxide analgesia. The dental hygienist also acts as a dental health educator and is responsible for teaching patients prevention of dental disease and providing nutritional counseling.

Dental hygiene employment opportunities are numerous and vary greatly. They include general practice and specialty dental offices; federal, state, county and city health clinics; public schools; hospitals; long-term care facilities; dental schools; industrial clinics; the armed services; and research institutions.

Missouri Southern offers an associate of science degree in dental hygiene. Upon satisfactory completion, graduates are eligible to take the National Board Examination and practical examinations required for licensure in Missouri and other states. This program is accredited by the American Dental Association.

Admission to Missouri Southern does not automatically grant admission to the Dental Hygiene Program. In addition to meeting admission requirements for the College, candidates must apply for admission to the department of Dental Hygiene. Applications are reviewed by the Selection Committee for Dental Hygiene. Applicants must submit the necessary information by January 31. Applicants must have an overall GPA of 2.75 to apply, or a GPA of 2.50 with an ACT composite score of 25 or better.

Evidence of satisfactory completion of the following prerequisites with a "C" or better must be presented:

Bio 121	Human Anatomy & Physiology I
Eng 101	English Composition
Math 030	Intermediate Algebra (or higher)
Chem 100	Introductory Chemistry
Bio 231	General & Medical Microbiology
Bio 221	Human Anatomy & Physiology II
Comm 100	Oral Communications
Kine 103	Lifetime Wellness

Enrollment is limited and applicants are admitted contingent upon a criminal record check, the completion of physical and dental examinations and the rendering of an acceptable health status. Students are admitted to the dental hygiene program only in the fall of each year.

Interested individuals are encouraged to contact the Director of Dental Hygiene for more specific information regarding admissions criteria.

In addition to established fees for all college students, the following are minimum costs incurred by dental hygiene students, $500 to $1000 per semester for laboratory fees. Various expenses for transportation to off campus clinical sites and professional meetings will occur. In addition, approximately $1000 for licensure exams, which will vary depending on state(s) in which license is desired.

The associate of science in dental hygiene requires a minimum of 89 credit hours, including the prerequisite courses. All courses in the Suggested Order of Study must be completed in the prescribed sequence. Course grades of "C" or above in dental hygiene and supporting science courses are necessary for retention in the dental hygiene program. (The successful dental hygiene applicants tend to be the ones who have completed the majority or all of the science and Core Curriculum courses with the exception of the dental hygiene courses.)

Associate of Science Degree in Dental Hygiene

		Semester Hours
Core Requirements (p. 34)		**25**
Dental Hygiene Requirements		**64**
DH 101	Fundamentals of Dental Hygiene I	4
DH 102	Fundamentals of Dental Hygiene II*	4

DH 140	Dental Morphology	1
DH 150	Oral Histology and Embryology	3
DH 160	Dental Radiology	2
DH 190	Clinical Dental Hygiene I*	2
DH 200	Dental Health Education	3
DH 210	Perio-Pathology	4
DH 220	Dental Materials	3
DH 290	Clinical Dental Hygiene II*	5
DH 310	Nutrition	2
DH 320	Pharmacology	2
DH 330	Ethics and Community Dentistry*	3
DH 390	Clinical Dental Hygiene III*	5
Bio 231	Medical Microbiology*	5
Bio 240	Radiation Biology*	3
Bio 221	Human Physiology and Anatomy*	5
Chem 100	Introductory Chemistry*	5
Soc 110	Intro to Sociology	3
Psy 100	General Psychology	3
		89

*See course descriptions for prerequisites

Suggested Order of Study

Associate of Science - over three years
Major Code 5203
Dental Hygiene Major

Fall Semester	**Prerequisites**	**Hours**
Bio 121	Hum Anatomy/Physiology I	4
CORE	[Eng 101 Comp I]	3
Math 030	Inter Algebra (or higher)	3
Chem 100	Intro Chemistry (w/lab)	5
		15

Spring Semester	**Prerequisites**	
Bio 231	Gen & Med Microbio (w/lab)	5
Bio 221	Hum Anatomy/Physiology II	5
CORE	[Comm 100 Oral Comm]	3
CORE	[Kine 103 Lifetime Wellness]	2
		15

Fall Semester	**1st Year Dental Hygiene**	
DH 101	Fund of Dental Hygiene I	4
DH 140	Dental Morphology	1
DH 150	Oral Histology & Embr	3
Psy 100	General Psychology	3
CORE	[Kine 101 Physical Activity]	1
CORE	[PSc 120 or MO Const Test]*	3
		12-15

Spring Semester	**1st Year Dental Hygiene**	
DH 102	Fund of Dental Hygiene II	4
DH 160	Dental Radiology	2
DH 220	Dental Materials	3
DH 310	Nutrition	2
Bio 240	Radiation Biology	3
		14

Summer Session	**1st Year Dental Hygiene**	
DH 190	Clinical Dental Hygiene I	2
DH 210	Perio-Pathology	4
		6

Fall Semester	**2nd Year Dental Hygiene**	
DH 200	Dental Health Education	3
DH 290	Clinical Dental Hygiene II	5
DH 320	Pharmacology	2
CORE	[Hist 110 or 120]	3
		13

Spring Semester	**2nd Year Dental Hygiene**	
DH 330	Ethics & Comm Dentistry	3
DH 390	Clinical Dental Hygiene III	5
CORE	[Humanities or Fine Arts]	3
Soc 110	Intro to Sociology	3
		14

*12 hours if Missouri Constitution Test is passed. [Department Recommendation]

For additional information contact:
Sandra A. Scorse DeTar, D.D.S.
Office: Technology Building 111-E
Phone: 417.625.9709 / 417.625.9600 / 417.625.9711
E-mail: scorse-s@mail.mssc.edu

Course Descriptions

DH 101 (F) 4 hrs. cr.
Fundamentals of Dental Hygiene I
Introduction to fundamental theories, principles and procedures necessary to provide dental hygiene services. Theories and principles are applied in clinical laboratory setting. Two hrs. lecture, 6 hrs. lab per week.

DH 102 (S) 4 hrs. cr.
Fundamentals of Dental Hygiene II
Continuation of DH 101 with further enrichment of skills necessary to perform preventive oral health services. Theories and principles are applied in clinical laboratory setting. Two hrs. lecture, 6 hrs. lab per week. Prerequisites: DH 101 with minimum grade of "C" or instructor's permission.

DH 140 (F) 1 hr. cr.
Dental Morphology
Detailed study of morphology of deciduous and permanent teeth in relation to fossal cusps, grooves, ridges, roots and the relationship of form and function. Occlusion and malocclusion are studied according to their relationship to dental health. A self-instructional program supplemented by one hr. lecture per week.

DH 150 (F) 3 hrs. cr.
Oral Histology and Embryology
Study of the gross and microscopic development of the teeth, supportive structures of the teeth and embryology and anatomy of head and neck region. Two hrs. lecture, 3 hrs. lab per week.

DH 160 (S) 2 hrs. cr.
Dental Radiology
Theory and technique of exposing, developing, mounting and care of dental radiographs. Interpretation of radiograph findings is discussed, principles of radiation safety are emphasized. One hr. lecture, 4 hrs. lab per week.

DH 190 (Summer) 2 hrs. cr.
Clinical Dental Hygiene I
Introduction to clinical practice of dental hygiene. Experience in providing patient services through performing oral prophylaxis, periodontal assessment, exposing and processing radiographs, presenting patient education, preventive applications, and charting the oral cavity. 16 hours lab per week, 1 hour of lab will be used per week for content and organizational review of course. Prerequisite: DH 102 with minimum grade of "C" and CPR Certification course C.

DH 200 (F) 3 hrs. cr.
Dental Health Education
Fundamentals of teaching and learning theories. Development of teaching units and lesson plans for various public groups and/or organizations, practical experience in public schools and community groups and experience in providing dental health education to mentally and physically handicapped and geriatric patients. Three hrs. lecture per week.

DH 210 (Summer) 4 hrs. cr.
Perio-Pathology
Lecture periods are devoted to the study of oral pathological conditions, including etiology, degenerative process, inflammation and immunity. Etiology, assessment, treatment and prevention of periodontal disease is stressed. Four hrs. lecture per week.

DH 220 (S) 3 hrs. cr.
Dental Materials
Information about various dental materials. Students learn to make alginate impressions, plaster models and manipulate other materials. Required course for dental hygiene curriculum. Prerequisite: DH 101 Fundamentals of Dental Hygiene I with a "C" or above or instructor's permission. Two hrs. lecture, 2 hrs. lab per week.

DH 290 (F) 5 hrs. cr.
Clinical Dental Hygiene II/Local Anthesia
Continuation of DH 190 with added responsibilities as skills develop. Lecture information on advanced dental hygiene techniques and techniques for local anesthesia and pain control. Practical experience in infiltration anesthesia during the laboratory session. Multicultural experience is gained through rotations in extended campus facilities. One hr. lecture, 16 hrs. clinical lab per week. Prerequisites: DH 190 with minimum grade of "C" or instructor's permission.

DH 310 (S) 2 hrs. cr.
Nutrition
Nutrition and diet as related to dental health, biochemistry of digestion and the utilization of nutrients. Special emphasis on dietary analysis as part of total health care and the role of the dental hygienist in providing nutritional counseling. Two hrs. lecture per week.

DH 320 (F) 2 hrs. cr.
Pharmacology
Principles of drug actions and characteristics of major drug groups including sources of drugs, methods of their administration, classification, dosage, therapeutic action and drug interactions. Emphasis on drugs affecting oral health and drugs used in dentistry. Two hrs. lecture per week.

DH 330 (S) 3 hrs. cr.
Ethics and Community Dentistry
Professional ethics and commitment, professional organizations, state practice acts and practical consideration of methods and problems associated with operating and maintaining a dental practice. Definition and identification of the scope of public and dental public health. Consideration of philosophy; health legislation; federal, state and local health programs; needs and demands for dental care; and mechanisms for financing dental care. Three hrs. lecture per week. Prerequisites: DH 200 with minimum grade of "C."

DH 390 (S) 5 hrs. cr.
Clinical Dental Hygiene III
Continuation of DH 290. Clinical experience in advanced clinical procedures and dental assisting procedures, including experience in extended campus facilities. Principles of four-handed dentistry in the lecture portion and discussion of the eight recognized dental specialties including their relationship to preventive dentistry. One hr. lecture, 16 hrs. lab week. Prerequisite: DH 290 with minimum grade of "C" or instructor's permission.

Law Enforcement

Justice Center 109, 417.625.9302

Faculty Wolf - Head, Hamlin, Hulderman, Scott, Spencer, Spurlin, Thomason

The associate of science degree in law enforcement helps prepare students for entrance into police work, a field which has become highly specialized and complex at the local, state, and national levels. The College also offers the four-year bachelor of science degree in criminal justice administration. See page 199.

Associate of Science in Law Enforcement
Option A **Major Code 5505**

Core Requirements (p. 34)		**25-26**
Law Enforcement Requirements		**39**
Required Courses 21 hours		
Computer Literacy Requirement		3
LE 100	Introduction to Criminal Justice Administration	3
LE 210	Criminal Procedure	3
LE 230	Community Policing	3
LE 232	Ethics in Criminal Justice	3
LE 250	Criminal Law	3
LE 280	Interview & Report Writing (WI)	3
		21

Electives: Select 9 hours from the list below:

LE 190	First Responder	2
LE 200	Criminal investigation I	3
LE 225	Patrol Procedures	3
LE 269	Legal/Tech. Aspects Of Firearms	3
LE 290	Police Supervision & Management	3
LE 298	Special Topics	1-3
CJAd 210	Basic Photography	3
		9
Electives	(adviser approved)	**9**
		39

Option B
(For Basic Law Enforcement Academy)
Major Code 5506

Required Courses		
Computer Literacy Requirement		3
LE 100	Introduction to Criminal Justice	3
LE 250	Criminal Law	3
LE 180	Basic Law Enforcement Academy	13
LE 181	Basic Law Enforcement Academy II	13

Select 4 hours from the list below

LE 200	Criminal Investigation I	3
LE 210	Criminal Procedure	3
LE 225	Patrol Procedures	3
LE 230	Community Policing	3
LE 290	Police Supervision & Management	3
LE 298	Special Topics	1-3
		39

Suggested Order of Study

Associate of Science Degree
Major Code 5505 (Option A)
Law Enforcement Major

Freshman Year
1st Semester

Course		Hours
CORE	[Eng 101 Comp I]	3
CORE	[Intro to College Math]	3
Comp 105	Intro to Micro Comp Use	3
LE 100	Intro to Criminal Justice	3
CORE	[Psy 120 College Orient]	1
CORE	[Kine 101 Physical Activity]	1
		16

2nd Semester

Elective		2
CORE	[Phys 100 Fund of Phys Sci]	5
CORE		3
LE 280	Interview & Rprt Wrtng (WI)	3
LE 210	Criminal Procedure	3
		16

Sophomore Year
1st Semester

CORE	[Comm 100 Oral Comm]	3
CORE	[Kine 103 Lifetime Wellness]	2
CORE	[Hist 110 or 120]	3
LE	Elective	3
LE	Elective	3
Elective	Fine Arts Elective	3
		17

2nd Semester

LE 250	Criminal Law	3
LE	Elective	3
Electives	(Adviser Approved)	10
		16

[Department Recommendations]

For additional information contact:
Criminal Justice Department
Dr. C. Blake wolf
Office: Justice Center 109
Phone: 417.625.9302
E-mail: wolf-b@mail.mssc.edu

Associate of Science Degree
Major Code 5506 (Option B)
Law Enforcement Major
(Law Enforcement Academy)

Freshman Year
1st Semester

Course		Hours
CORE	[Eng 101 Comp]	3
CORE	[Intro to College Math]	3
Comp 105	Intro to Micro Comp Use	3
LE 100	Intro to Criminal Justice	3
CORE	[Psy 120 College Orientation]	1
CORE	[Kine 101 Physical Activity]	1
		14

2nd Semester

CORE	[Bio 101 General Biology]	4
CORE		3
LE	Elective	3
LE 250	Criminal Law	3
CORE	Humanities and Fine Arts	3
		16

Sophomore Year
1st Semester

CORE	[Comm 100 Oral Comm]	3
CORE	[Kine 103 Lifetime Wellness]	2
CORE	[Hist 110 or 120]	3
LE	Elective	4
		12

2nd Semester

LE 180	Basic Law Enforc Acad	13
LE 181	Basic Law Enforc Acad II	13
		26

[Department Recommendations]

For additional information contact:
Criminal Justice Department
Dr. C. Blake Wolf
Office: Justice Center 109
Phone: 417.625.9302
Fax: 417.625.9796
E-mail: wolf-b@mail.mssc.edu

Course Descriptions

E 100 (F, S) 3 hrs. cr.
Introduction to Criminal Justice Administration
Municipal, county, state and federal police organizations. History and administration of justice. Responsibilities and opportunities in the field of criminal justice.

LE 180 (F, S) 13 hrs. cr.
Basic Law Enforcement Academy
The pre-certification training course for new law enforcement officers in Missouri, approved by P.O.S.T. (Peace Officer Standards and Training) Office of the State Department of Public Safety. The broad range of topics includes Missouri Criminal Law, traffic law, criminal investigation, reports, defensive tactics, firearms, legal subjects and human relations. The topics are designed and required by P.O.S.T. under Section 590.100 et. seq. RSMo. Prerequisites: Permission of Training Director. (Additional lab fee for course.)

LE 181 (F, S) 13 hrs. cr.
Basic Law Enforcement Academy II
The pre-certification training course for new law enforcement officers in Missouri, approved by P.O.S.T. (Peace Officer Standards and Training) Office of the State Department of Public Safety. The broad range of topics includes Missouri Criminal Law, traffic law, criminal investigation, reports, defensive tactics, firearms, legal subjects and human relations. The topics are designed and required by P.O.S.T. under Section 590.100 et. seq. RSMo. Prerequisites: Permission of Training Director and LE 180 (Additional lab fee for course.)

LE 190 (Demand) 2 hrs. cr.
First Responder
Provides basic emergency care knowledge and skills to the student. Designed to prepare students to recognize traumatic injuries, and deliver quality emergency medical care to victims.

LE 200 (F) 3 hrs. cr.
Criminal Investigation I
An introduction to the basic protocol of crime scene investigation to include first response, diagramming, photography, fingerprinting, and the preservation and collection of physical evidence.

LE 210 (F, S) 3 hrs. cr.
Criminal Procedure
Overview of criminal justice process and procedure from first contact with law enforcement through the criminal trial. Topics include "stop and frisk", arrest, search and seizure, interrogation, identification, and the criminal trial.

LE 225 (S) 3 hrs. cr.
Patrol Procedures
Covers numerous areas confronting today's law enforcement officer during tours of duty and the proper techniques and procedures used in handling each area.

LE 230 (F,S) 3 hrs. cr.
Community Policing
An introduction to and analysis of theories, techniques, and programs involving police image and public response. Special attention will be paid to problems of crime prevention, community oriented problem solving policing, police-public interaction and public safety.

LE 232 (F,S) 3 hrs. cr.
Ethics in Criminal Justice
A comprehensive investigation of ethical problems confronting criminal justice professionals. Focus is placed on the philosophical and practical dilemmas surrounding the modern criminal justice system, in the United States and foreign countries, to include the police, courts, and correctional subsystems. Examines various value systems and historical theories as well as promotes discussions of moral and ethical behavior from personal, social, and criminal justice perspectives.

LE 250 (F) 3 hrs. cr.
Criminal Law
Criminal law purposes and functions; rights and duties of officers and citizens in relation to local, state and federal laws. The development, application and enforcement of laws.

LE 260 (Demand) 3 hrs. cr.
Legal and Technical Aspects of Firearms
History and development of firearms. The nomenclature of the most commonly used police firearms and the duties and requirements of a rangemaster. The laws concerning firearms acquisitions, ownership and use. Three hrs. lecture per week. Lab fee and additional lab time arranged.

LE 280 (F, S) 3 hrs. cr.
Interview and Report Writing *(Writing Intensive)*
Introduces the professional writing style utilized in reports and other written communication in the criminal justice fields. Emphasizes on-the-job writing for criminal justice professionals. Also explores various interviewing techniques. Prerequisites: Eng 101.

LE 290 (Demand) 3 hrs. cr.
Police Supervision and Management
Principles of personnel management as applied to law enforcement agencies: evaluation, promotion, discipline, training, employee welfare and problem-solving leadership.

LE 298 (Demand) 1-8 hrs. cr.
Special Topics in Law Enforcement
Course content varies and is designed to meet current needs and interests in the rapidly changing field of law enforcement. Precise topics to be announced and prerequisites stipulated in course syllabus.

Missouri Peace Officer Certification

The 600-hour Missouri Peace Officer Certification is offered through Criminal Justice Administration (CJAd) and the Missouri POST (Peace Officer Standards & Training) Certified Law Enforcement Academy. Students who successfully complete the Academy and meet certification requirements become eligible for employment as a Missouri peace officer. Refer to the Law Enforcement section for course description.

Application/Admission/ Certification

The State of Missouri requires applicants at the time of certification to be 21 years of age, a United States citizen, have a high school diploma or its equivalent, and pass the Missouri State Police Officer Certification examination. An applicant with a criminal history must receive Missouri POST clearance before being accepted to the program. An interview with the Training Director is required for admittance to the program.

For additional information contact:
The Law Enforcement Academy
Mr. Wayne Thomason
Missouri Southern State College
3950 E. Newman Road
Joplin, Missouri 64801-1595
Phone: 417.625.9684
Fax: 417.625.9796
E-mail: thomason-w@mail.mssc.edu

Medical Technology

Reynolds Hall 210, 417.625.9376

Faculty Garoutte, Mosher

The bachelor of science degree in medical technology is granted to students who complete the required program of study satisfactorily. These requirements include the basic requirements for all bachelor of science degree programs, required science and other supportive courses plus 32 hours of professional course credits. The completion of this degree is required before an individual is eligible to take the certifying examination.

Missouri Southern has affiliation agreements with the Schools of Medical Technology at St. John's Regional Medical Center, Joplin, Mo., and Lester E. Cox Medical Center, Springfield, Mo. If a student wishes to attend an accredited school of medical technology with which the College has no formal agreement, the Vice President for Academic Affairs can negotiate an agreement for the individual student. Students should be aware that enrollment in professional schools is limited. Each of the professional schools has its own admission criteria and selects those students to be admitted to a class from the applicants for that class. In general, this selection is based on the academic record or demonstrated aptitude for the medical field. Students are responsible for filing their own application for admission with the professional schools. Application should be made to the professional school during the early fall of the junior year or approximately 10 months prior to the expected entrance date. It is strongly suggested that the student contact the Director of the Medical Technology Program at the desired hospital early in their sophomore year to determine the exact application procedure.

A student may enroll in the professional courses either at the hospital-based school or through Missouri Southern, depending on the policies of the hospital-based school. Students enrolled at the hospital-based school are not considered members of the Missouri Southern student body, since the hospital-based school in such cases is considered as any other accredited institution of higher education. A student enrolling through Missouri Southern is considered a member of the College student body and is therefore eligible for benefits offered all students. The weekly time requirements for the professional medical technology courses *(400 level)* listed are based on the minimum requirements for a course meeting for a normal academic term for a minimum of 16 weeks. Actual scheduling of classes may vary according to custom of the individual professional school to meet these minimum total hour requirements.

Students whose career goals change or are unsuccessful in gaining admission to a professional training program are ideally suited to complete another science major with virtually no loss of academic credits.

Bachelor of Science With a Major in Medical Technology

		Semester Hours
Core Requirements (p. 33) 51**		**39**
Biology Requirements		**26**
Bio 121	Human Anatomy and Physiology I	4
Bio 221	Human Physiology and Anatomy II*	5
Bio 231	General & Medical Microbiology*	5
Bio 305	Genetics*	4
Bio 456	Immunology*	4
EITHER		
Bio 362	Virology*	4
OR		
Bio 442	Pathogenic Bacteriology*	5
OR		
Bio 308	Pathophysiology*	4
Chemistry Requirements		**25**
Chem 101	General Chemistry I*	5
Chem 102	General Chemistry II*	5
Chem 201	Analytical Chemistry I*	5
Chem 300	Introduction to Modern Organic Chemistry*	5
Chem 351	Biochemistry*	5
Other Requirements		**12**
Phys 151	Elementary College Physics I*	5
Math 140	Algebra & Trigonometry	5
EITHER		
Bio 303	Computer Applications in Biology	2
OR		
Chem 320	Computer Applications in Chemistry	2
400 Level	Medical Technology Courses (at Hospital)	**32**
		134

*See course descriptions for prerequisites.
**Required biology, physics and mathematics courses simultaneously satisfy Core Curriculum and major requirements.

Suggested Order of Study

Bachelor of Science Degree
Major Code 1223
Medical Technology Major

It is strongly suggested that the student take courses in the summer to reduce the semester hour loads.

Freshman Year
1st Semester

Course		Hours
Chem 101	Gen Chem I (Algebra & Trig)	5
Math 140	Algebra and Trig	5
Bio 121	Human Anatomy and Physiology I	4
CORE	[Eng 101 Comp I]	3
CORE	[Psy 120 College Orientation]	1
		18

2nd Semester

Chem 102	Gen Chem II (Chem 101)	5
Bio 231	General and Medical Microbiology	5
Chem 320	Computer Applications in Chemistry	
OR		
Bio 303	Computer Applications in Biology	2
CORE	[History 110 U.S. History]	3
CORE	[Eng 102 Comp II]	3
		18

Sophomore Year
1st Semester

Chem 201	Analy Chem I (Chem 102)	5
Bio 305	Genetics	4
CORE	[Psy 100 or Soc 110]	3
CORE	[Humanities & Fine Arts]	3
CORE	[Econ 180 Amer Econ Sys]	3
		18

2nd Semester

Chem 300	Intro Org Chem (Chem 102)	5
Bio 456	Immunology	4
CORE	[Comm 100 Oral Comm]	3
CORE	[Humanities & Fine Arts]	3
CORE	[Hist 120 or 320 U.S. History]	3
		18

Junior Year
1st Semester

Chem 351	Biochemistry (Chem 300)	5
Phys 151	Elem Col Phys I (Math 140)	5
Bio 308	Pathophysiology (Bio 301 or 306) (4)	
OR		
Bio 362	Virology (Bio 231 and 305) (4)	
OR		
Bio 442	Pathogenic Bacteriology (Bio 231) (5)	4-5
CORE	[Kine 103 Lifetime Wellness]	2
		16-17

2nd Semester

Bio 221	Human Anatomy and Physiology II	5
CORE	[Humanities & Fine Arts]	3
CORE	[Kine 101 Physical Activity]	1
CORE	[PSc 120 Gov't: U.S./St/Loc]	3
CORE	[International Cultural Studies]	3
		15

Senior Year
1st Semester
(At an approved School of Medical Technology)

MT 401	Clinical Chemistry	10
MT 403	Clinical Hematology	6
		16

2nd Semester
(At an approved School of Medical Technology)

MT 402	Clinical Microscopy	1
MT 404	Clinical Serology/Immunology	3
MT 405	Clinical Microbiology	7
MT 406	Clinical Immunohematology	3
MT 407	Special Topics in Med Tech	2
		16

(Prerequisites)
[Department Recommendations]

For additional information contact:
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OR
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Office: Reynolds Hall 241
Phone: 417.625.9579
E-mail: garoutte-m@mail.mssc.edu

Course Descriptions

MT 401 (F) 10 hrs. cr.
Clinical Chemistry
Analytical and theoretical aspects of the clinical biochemistry of body fluid constituents utilizing both manual and instrumental techniques, including automation and special procedures. Five hrs. lecture, 20 hrs. clinic/lab per week.

MT 402 (S) 1 hr. cr.
Clinical Microscopy
Principles and techniques of the physical, chemical and microscopic examination of urine and other excrete as related to disease processes. One hr. lecture, clinic by arrangement.

MT 403 (F) 6 hrs. cr.
Clinical Hematology
The cellular elements of blood and bone marrow; theory of cell production, release and survival; morphological characteristics of normal and abnormal cells; quantitative and qualitative abnormalities. Principles and techniques involved in the study of hemostasis, blood coagulation and hemorrhagic disorders. Three hrs. lecture, 12 hrs. clinic/lab per week.

MT 404 (S) 3 hrs. cr.
Clinical Serology-Immunology
The science of immunity including antibody development, principles of antigen-antibody interactions and techniques of serological testing for various disease states. Three hrs. lecture, 12 hrs. clinic/lab per week.

MT 405 (S) 7 hrs. cr.
Clinical Microbiology
Sterile technique, methods of handling and inoculating specimens containing pathogenic micro-organisms, isolation and identification of pathogenic micro-organisms, laboratory tests in chemotherapy, and diagnostic bacteriology, mycology and parasitology. Four hrs. lecture, 12 hrs. clinic/lab per week.

MT 406 (S) 3 hrs. cr.
Clinical Immunohematology-Blood Bank
Blood group systems and the immune response. Methods of crossmatching, antibody screening and phenotyping. Administrative safeguards and legal aspects of blood banking. Proper clinical utilization of blood components. One hr. lecture, 8 hrs. clinic/lab per week.

MT 407 (S) 2 hrs. cr.
Special Topics in Medical Technology
Lecture and/or clinical practice in the areas of in-service education, management and supervision, research and development, and principles and techniques of the instructional process. Lecture and labs to be arranged.

Nursing

Kuhn Hall 210, 417.625.9322

Faculty Box - Head, Ayton, Baker, Barr, Cole, Eller

The bachelor of science degree nursing program provides intensive preparation for the first-time entering student and licensed practical nurse seeking licensure as a registered nurse and the registered nurse pursuing baccalaureate education in the nursing discipline.

The program is based on systems emphasizing person, nursing, health and environment. Core Curriculum and required support courses augment the nursing courses in preparing a professional nurse for the 21st century who is able to function at the client's side in a diverse health care delivery system.

Upon successful completion of the program, the graduate is eligible to apply to take the examination for licensure as a Registered Nurse (RN) barring restrictions stated in the Nursing Practice Act 335.066,1,2 (1)-(14) of the state of Missouri. "The applicant shall be at least nineteen years of age . . ." according to the Nursing Practice Act 335.046 of the Missouri Statutes. Contact nursing department or Missouri State Board of Nursing for further information.

The program is accredited by the National League for Nursing Accrediting Commission and the Missouri State Board of Nursing.

Graduate Outcomes

Upon completion of the program the graduate will:

- Apply the Neuman systems model in the promotion of the person's optimal systems stability.
- Promote health by empowering the person through health education.
- Provide contemporary health care through application of the nursing process.
- Practice within the professional standards of care.
- Use current technologies in providing culturally sensitive care through primary, secondary, and tertiary prevention.
- Manage health care delivery through coordination, collaboration, and delegation.
- Integrate communication strategies in interacting with the person and information systems.
- Apply nursing and health related research to nursing practice.

Admission Criteria

1. Continuous enrollment, readmission or admission to College as a transfer student.
2. Cumulative grade point average of 2.5 minimum based upon completion of freshman and sophomore courses listed in the suggested order of study.
3. Completion of the following five natural and physical science courses with a grade of "C" or higher:
   Bio 121 Anatomy and Physiology I
   Bio 221 Anatomy and Physiology II
   Bio 231 General and Medical Microbiology
   Chem 100 Introductory Chemistry
   Bio 308 Pathophysiology
4. Criminal Record Check
5. Drug/Alcohol Screen
6. Credit hours from the Suggested Order of Study must be completed prior to entering the nursing major courses.

Admission to the program is competitive.

Applications, readmission and transfer criteria are available in the Department of Nursing in Kuhn Hall. The applicant is responsible for requesting and verifying that the transcript evaluation and MSSC transcript are part of their applicant profile prior to application deadline.

Deadline for application and transcript/s is **January 31**.

Students who meet all admission criteria and have completed the Suggested Order of Study for the bachelor of science degree nursing at Missouri Southern State College will be given preference in admission.

Missouri House Bill 1362 prohibits a hospital from knowingly allowing those guilty of Class A and B felonies as defined in three chapters of state law to give care to clients in their agency. Students entering MSSC are assigned to do clinical practice in cooperating hospitals and the department is in agreement that students must meet these requirements. Results of a personal criminal history record check must be on file prior to the Fall semester of the junior year of nursing courses. Students who have been found guilty of Class A and B felonies will be ineligible to enter the program.

Freshman Option: Direct Provisional Admission (DPA)

Students entering as first time freshmen will have the opportunity to receive direct provisional admission to the nursing program based upon the following criteria.

1. Meet all requirements for regular admission to Missouri Southern State College as a first-time freshman.
2. ACT composite score of 25 or higher.
3. Maintain a 3.0 grade point average in required courses each semester with a grade of C or above (refer to catalog for required courses).
4. Meet all other requirements for admission to nursing major prior to matriculation.

Admission of Baccalaureate Degree applicants

Applicants holding a baccalaureate degree are considered by the College as having completed the Core Curriculum requirements.

Degreed nursing applicants must meet all stated admission requirements.

The cumulative grade point average will apply for degreed nursing applicants.

Required support courses for admission into the nursing major are as follows:

Bio 121	Anatomy and Physiology I	4
Bio 221	Anatomy and Physiology II	5
Bio 231	General and Medical Microbiology	5
Chem 100	Introductory Chemistry	5
Bio 308	Pathophysiology	4
Kine 385	Nutrition for Human Development	3
Total		**26**

Admission of Registered Nurses (RNs)

Registered nurses are admitted to the College as graduates of Southern's Associate Degree Nursing Program or as transfer students. In addition to the program admission requirements, registered nurses must also meet the following requirements:

1. Graduated from a state-approved and National League for Nursing (NLNAC) accredited associate degree or diploma nursing program.
2. Current registered nurse licensure or eligibility in the state of Missouri.
3. Upon successful completion of Nurs 301 Transitions in Nursing, 3 credit hours, validation of 31 credit hours of nursing knowledge will be transcribed for credit as follows:

Nurs 310	Assessment and Technologies	5 cr
Nurs 320	Adult Nursing	7 cr
Nurs 350	Family Nursing	9 cr
Nurs 360	Mental Health Nursing	4 cr
Nurs 400	Complex Nursing	6 cr

Admission of Licensed Practical Nurses (LPNs)

Licensed Practical Nurses (LPN) are admitted to the College as first-time (generic) or transfer students. LPN applicants must meet all college and program requirements for admission. The LPN has the option to challenge 5 credit hours for Nurs 310 Health Assessment and Technologies through departmental examination. An assessment fee per credit hour will be charged to the student's account.

Transfer Policy for Nursing Students and Registered Nurses

1 All program admission criteria must be met.

2. A letter of reference is required from the Dean or Director of the nursing program previously attended stating the student left in good standing and is eligible for readmission.
3. Transfer courses will be evaluated for course equivalency at Missouri Southern on an individual basis.
4. Nursing courses with a clinical component must be fully met.
5. Transfer is based on space availability.

Special Fees

In addition to all established fees for college students, a special laboratory fee of $200.00 is assessed for each of the following courses:

Nurs 310 Health Assessment and Technologies
Nurs 430 Advanced Health Assessment

Other costs incurred during the program include, but are not limited to: required equipped nurse bag, uniforms, pins, standardized examination fees, graduation fees, licensing examination fees, hepatitis series, current immunizations, etc. A detailed list of items and costs is available in the Nursing Department.

Bachelor of Science Degree Nursing

		Semester Hours
Core Requirements (p. 33)		**42**
Nursing Major Requirements		**91**
(See course descriptions for prerequisites)		
Nurs 301	Transitions in Nursing (RNs)	3
Nurs 305	Pharmacology in Nursing	3
Nurs 310	Health Assessment and Technologies	5
Nurs 320	Adult Nursing	7
Nurs 350	Family Nursing	9
Nurs 360	Mental Health Nursing	4
Nurs 370	Gerontologic Nursing (WI)	3
Nurs 400	Complex Nursing	6
Nurs 420	Nursing Ethics (WI)	3
Nurs 430	Advanced Health Assessment	3
Nurs 450	Community Health Nursing	5
Nurs 460	Nursing Research (WI)	3
Nurs 470	Nursing Management and Leadership	5
Bio 121	Anatomy and Physiology I*	4
Bio 221	Anatomy and Physiology II	5
Bio 231	General and Medical Microbiology	5
Bio 308	Pathophysiology	4
Chem 100	Introductory Chemistry*	5
Comp 105	Introduction to Microcomputers	3
Kine 385	Nutrition for Human Development	3
Psy 320	Statistics	3
Total		**133**

*Satisfies the Core requirements

Suggested Order of Study

Bachelor of Science Nursing - Four Year
Major Code 3200

Freshman Year
Fall Semester

Course		Hours
Bio 121	Hum Anatomy/Physiology I	4
Eng 101	English Comp I (WI)	3
Math 130	College Algebra	3
Comm 100	Oral Communication	3
Kine 103	Lifetime Wellness	2
Comp 105	Intro to Microcomputers@	3
Psy 120	College Orientation	1
		19

Freshman Year
Spring Semester

Bio 221	Hum Anatomy/Physiology II*	5
Eng 102	English Comp II (WI)	3
Chem 100	Intro Chemistry*	5
Econ 180	Amer Econ System	3
Psy 100	General Psychology	3
		19

Sophomore Year
Fall Semester

Bio 231	General and Medical Microbiology*	5
CORE	Area 2.a (Fine Art)	3
CORE	Area 2.b (Literature)	3
Kine 385	Nutrition for Human Development	3
Hist 110	U.S. History 1492-1877	3
		17

Sophomore Year
Spring Semester

Bio 308	Pathophysiology*	4
CORE	Area 2.c (Fine Art or Literature)	3
CORE	Area 5 (International Culture Studies	3
PSc 120	Gov't: U.S., St, Local	3
Kine 101	Physical Activity	1
Hist 120	U.S. Hist 1877 - Pres	3
		17

Junior Year
Fall Semester

Nurs 301	Transitions in Nursing (RNs)	3
Nurs 305	Pharmacology in Nursing	3
Nurs 310	Health Assessment and Technologies+^	5
Nurs 320	Adult Nursing+	7
		15

Junior Year
Spring Semester

Nurs 350	Family Nursing+	9
Nurs 360	Mental Health Nursing+	4
Nurs 370	Gerontologic Nursing (WI)	3
		16

Senior Year
Fall Semester

Nurs 400	Complex Nursing*+	6
Nurs 420	Nursing Ethics (WI)	3
Nurs 430	Adv Health Assessment	3
Psy 320	Statistics*	3
		15

Senior Year
Spring Semester

Nurs 450	Community Health Nursing	5
Nurs 460	Nursing Research (WI)	3
Nurs 470	Nursing Mgmt & Leadership	5
		13

*See course descriptions for prerequisites.
+Complete Nurs 301 Transitions in Nursing with a grade of "C"
receive credit for Nurs 310, Nurs 320, Nurs 350, Nurs 360, Nurs 400
@Department waiver as outlined in Nursing Student Handbook.
^Credit by departmental examination for Licensed Practical Nurses.

Minors

Minors in supportive disciplines are available to nursing students. See requirements for the following suggested (but not exclusive) minors: Informatics, Business, Spanish, etc.

Americans with Disabilities Act implications

Students are required to have a completed physical examination/health verification after admission to the nursing program. Students will be required to demonstrate physical and/or emotional fitness to meet the essential requirements of each course in the program. Such essential requirements include freedom from communicable diseases, the ability to perform certain physical tasks and suitable emotional fitness. Any appraisal measures used to determine such physical and/or emotional fitness will be in compliance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. Core performance standards for admission and progression which comply with the Americans with Disabilities Act of 1990 are available in the office of the Department of Nursing.

For additional information contact:
Dr. Barbara Box
Office: Kuhn Hall 210-B
Phone: 417.625.9322
E-mail: box-b@mail.mssc.edu

Course Descriptions

Nurs 301 (F) 3 hrs cr.
Transitions in Nursing
This course will assist the Registered Nurse student to examine the role of a baccalaureate degree prepared nurse in a changing healthcare environment. The student will have the opportunity to integrate current nursing practice, philosophy, concepts and theories into his/her professional practice. Offered on line only. Prerequisite: Admission to the nursing program and registered nurse licensure.

Nurs 302 (F) (Demand) 3 hrs cr.
Herbal and Complementary Therapies
Herbal and Complementary Therapies is a course designed to enhance the learner's understanding and appreciation of universal alternative and holistic approaches to health. "Nontraditional" treatment methods that comprise complementary therapies include herbal medicine, homeopathy, naturopathy, therapeutic massage, and acupuncture. One three hour lecture per week. Prerequisite: Bio 101 General Biology.

Nurs 305 (F) 3 hrs cr.
Pharmacology in Nursing
This course is designed to introduce the nursing student to essentials of basic and clinical pharmacology in preparation for application with patient populations in a clinical setting. The student will focus on the commonalities of drug classifications related to the physiologic systems of clients during the life span. Prerequisite: Admission to the nursing program and concurrent with Nurs 310 and Nurs 320. (RN's: Concurrent enrollment in Transitions (Nurs 301) is required.)

Nurs 310 (F) 5 hrs cr.
Health Assessment and Technologies
Incorporates a systematic approach to basic health assessment and application of basic nursing interventions for the person with limited variances in health. Three hrs. lecture and 6 hrs. lab per week. Prerequisite: Admission to the nursing program and concurrent with Nurs 305 and Nurs 320.

Nurs 320 (F) 7 hrs cr.
Adult Nursing
Focuses on variances in health of adults with common health problems. Emphasis is on application of the nursing process in secondary prevention. Four hrs. lecture and 9 hrs. clinical per week. Prerequisite: Admission to the nursing program and concurrent with Nurs 305 and Nurs 310.

Nurs 350 (S) 9 hrs cr.
Family Nursing
Focuses on health promotion of the developing family and nursing care of the maternity and pediatric client with variances of health. Five hrs. lecture and 12 hrs. clinical per week. Prerequisites: Nurs 305, Nurs 310, and Nurs 320 with a minimum grade of "C" and concurrent with Nurs 360 and Nurs 370.

Nurs 360 (S) 4 hrs cr.
Mental Health Nursing
Focuses on assessment, promotion of mental health and care of the person with variances in mental health. Use of therapeutic communication and the nurse-client relationship are emphasized. Two hrs. lecture and 6 hrs. of clinical per week. Prerequisites: Nurs 305, Nurs 310, and Nurs 320 with a minimum grade of "C" and concurrent with Nurs 350 and Nurs 370.

Nurs 370 (S) 3 hrs cr.
Gerontologic Nursing *(Writing Intensive)*
Focuses on the normal aging process and common health variances of the older person. Three hrs. lecture per week. Prerequisites: Nurs 305, Nurs 310, and Nurs 320 with a minimum grade of "C" and concurrent with Nurs 350 and Nurs 360 or RN status with permission of instructor.

Nurs 400 (F) 6 hrs cr.
Complex Nursing
Focuses on the nursing care of persons with complex variances in health in acute care and rehabilitation settings. Three hrs. lecture and 9 hrs of clinical per week. Prerequisites: Nurs 350, Nurs 360 and Nurs 370 with a minimum grade of "C" and concurrent with Nurs 420 and Nurs 430.

Nurs 420 (F) 3 hrs cr.
Nursing Ethics *(Writing Intensive)*
Focuses on the process of ethical decision making. Ethical issues confronting the professional nurse are explored. Three hrs. lecture per week. Prerequisites: Nurs 350, Nurs 360 and Nurs 370 with a minimum grade of "C" and concurrent with Nurs 400 and Nurs 430.

Nurs 430 (F) 3 hrs cr.
Advanced Health Assessment
The emphasis of advanced health assessment will be refining abilities to utilize techniques to assess, identify and describe variances from normal. Two hrs. lecture and 3 hrs. of lab per week. Prerequisites: Nurs 350, Nurs 360 and Nurs 370 with a minimum grade of "C" and concurrent with Nurs 400 and Nurs 420.

Nurs 450 (S) 5 hrs cr.
Community Health Nursing
Concepts and methods for assessment of community strengths and health needs will be analyzed to improve the overall health status of the person and aggregates. Three hrs. of lecture and 6 hrs. of clinical. Prerequisites: Nurs 400, Nurs 420 and Nurs 430 with a minimum grade of "C" and concurrent with Nurs 460, and Nurs 470.

Nurs 460 (S) 3 hrs cr.
Nursing Research *(Writing Intensive)*
Emphasizes evaluation of nursing research, utilization of research findings in the clinical setting and assisting in the conduct of research. Three hrs. of lecture per week. Prerequisites: Psy 320, Nurs 400, Nurs 420 and Nurs 430 with a minimum grade of "C" and concurrent with Nurs 450, and Nurs 470.

Nurs 470 (S) 5 hrs cr.
Nursing Management and Leadership
Emphasis is on nursing management and organization, nursing leadership skills and resource allocation. Three hrs. lecture and 6 hrs. clinical per week. Prerequisites: Nurs 400, Nurs 420 and Nurs 430 with a minimum grade of "C" and concurrent with Nurs 450, and Nurs 460.

Nurs 498 (Demand) 1-3 hrs cr.
Seminar in Nursing
Special topic or topics not normally included in another course. Prerequisites: Upper division standing, additional requirements will be stipulated in the syllabus of the course.

Nurs 499 (Demand) 1-3 hrs cr.
Independent Study
Independent study course structured by adviser with approval of department head. Prerequisite: Advanced standing in major field. Registration in the course must be approved by adviser, department head and school dean. Minimum of 3.0 GPA required.

Paramedic

Justice Center 155, 417.625.3020

Faculty Krtek

The School of Technology and the Emergency Medical Training Department offer certificate programs preparing students to take the National Registry examinations as Emergency Medical Technicians or as Paramedics. This is closely integrated with area Emergency Medical Services and area Trauma Centers. Students seeking information about these programs should check with the Director of EMS programs for details about scheduling of the courses. The courses offered meet all requirements of the National Curriculum. The Department of Emergency Medical Training is an Accredited Training Entity for the Missouri Department of Health and the Missouri Bureau of Emergency Medical Services.

Classroom instruction is supplemented by clinical observation and experience. The program meets through three semester periods beginning each Fall semester. The clinical training is arranged through area hospitals and ALS ambulance services. Applicants must be at least 18 years of age, hold a high school diploma or equivalent and possess a current Missouri State EMT ambulance license. A minimum of one-year experience is preferred. Out-of-state students should contact the E.M.S. Training office no later than May to begin reciprocity application. Applications and pretest information should be obtained from the office before the end of the Spring semester. Special book and equipment fees are assessed for this course.

Associate of Arts
Major Code 7008

Core Requirements [42*]		**38**
Bio 221	Human Physiology and Anatomy*	5
Para-250	EMT - Paramedic	12
Para-270	EMT - Paramedic	12
Para-290	EMT - Paramedic	9
		76

*Satisfies 4 hours of Core requirements

Admission Criteria
1. Must be 18 years of age before first class.
2. High school graduation diploma or its equivalent.
3. Evidence of successful completion and certification of a course of training for EMT-Basic.
4. Must submit a complete record of immunizations.
5. Have a current State of Missouri EMT-Basic license.
6. Maturity of judgment, sound moral character and health status, which provide reasonable assurance that the student will meet the physical and mental demands of the occupation.
7. We will require **proof of current health insurance.**
8. Have a State Highway Patrol background check completed and sent to E.M.S. training department at MSSC.

OUT OF STATE STUDENTS:
You must apply for and receive a Missouri E.M.T.-Basic license before the first day of class. Write: Missouri Bureau of E.M.S., Attn: Greg Natsch, Box 570, Jefferson City, MO 65102 for details 573.751.6356.

Final selection of students by the admissions committee shall be based on the following factors:

1. **Oral interview** to determine career goals, communication skills, background, and orientation toward the paramedic educational program.
2. **Written and practical exam** which will include EMT-Basic as well as math questions.
3. **Letters of recommendation** from employers, professional personnel and/or past instructors.

You must complete and submit an Application by June 1 for Admission to M.S.S.C. prior setting for the Pre-test and interview.

Course Descriptions

Paramedic I
Para 250 12 hrs. cr.
EMT - Paramedic
This training course is organized to cover the Preparatory, Airway Management, Patient Assessment and Trauma portion of the National Curriculum. The classes will meet for three, four-hour classes each week of the semester. The class time will include both didactic and hands-on training of the skills needed. These will include medication administration, airway maintenance, IV access and monitoring. There will be no clinical hours included in this semester. Prerequisites include a current National Registry or Missouri EMT-Basic license and a CPR card. Para 250 is a prerequisite for Para 270.

Paramedic 2
Para 270 12 hrs. cr.
EMT - Paramedic
This training course is organized to provide the student with knowledge about the acute, critical differences in physiology, pathophysiology, or clinical symptoms, as they pertain to the prehospital emergency medical care of the infant, child, adolescent, adult and geriatric patient. The student will have an opportunity to acquire clinical experience and practical skills related to the emergency medical care of these patients both during class time and during hospital based clinical rotations. Prerequisites include completion of Para 250 and a current EMT-Basic license. Para 270 is a prerequisite for Para 290.

Paramedic 3
Para 290 9 hrs. cr.
EMT - Paramedic
This is the final portion of the Paramedic Program. During Paramedic 3, the student will meet for one class a week for the didactic portion covering special considerations in emergency medicine, assessment based management and operations of the Emergency Medical Services. During the remaining part of the week, the student will be assigned specific hours with Advanced Life Support Ambulance Services and specified Preceptors to complete the Field Internship portion of the training. Prerequisites include completion of Para 270.

For additional information contact:
Mr. Michael G. Krtek
Office: Justice Center 155
Phone: 417.625.3020
E-mail: krtek-m@mail.mssc.edu
Visit our web site at: http//www.mssc.edu/schtech/ems/home.htm

Pre-Engineering

Reynolds Hall 213, 417.625.9616

Faculty Sloan-Head, Chelf, Knapp, Marsh

The physical science department at Missouri Southern, in cooperation with the engineering staff at the University of Missouri-Rolla and the University of Missouri-Columbia have prepared booklets describing the Cooperative Engineering Program between these schools and MSSC. These booklets list the course sequence for a student taking the first two or two and one-half years of an engineering science curriculum at Southern and planning to transfer to UMR or UMC. The plan also includes the courses the student will take at UMR or UMC to complete a B.S. degree in various engineering disciplines.

Although most of the engineering programs are standard for the first two years, there are a few differences and thus the student should meet with a pre-engineering adviser during the first semester. If a student wishes to transfer to a school other than UMR or UMC, it is suggested that the catalog of that school be reviewed for any differences in its program and the UMR or UMC outline. College catalogs are available in the Reserve area of Spiva Library. Any adviser who desires a copy of the booklet should contact the physical science department.

		Semester Hours
Core Requirements (p. 34) 26 **		**15**
Pre-engineering Requirements		**54**
Phys 160	General Physics I*	3
Phys 270	General Physics II*	5
Phys 280	General Physics III*	5
Phys 312	Statics*	3
Chem 101	General Chemistry I*	5
Math 150	Calculus with Analytical Geometry I*	5
Math 250	Calculus with Analytical Geometry II*	5
Math 260	Calculus with Analytical Geometry III*	5
Comp 110	Programming I	3
Econ 201	Principles of Economics (Macro)	3
Elective	(Math or Physics)***	7-8
Electives	(Humanities/Social Science/ Drafting/Chemistry)***	4
		68-69

*See course descriptions for prerequisites.
**Required math and physics courses simulatneously satisfy eleven hours of Core Curriculum and major requirements.
***The student should meet with a pre-engineering adviser for the proper selection depending on the field of engineering.

Suggested Order of Study

Associate of Science Degree
Major Code 5499
Pre-engineering Major

Freshman Year
1st Semester

Course		Hours
CORE	[Eng 101 Comp I]	3
Math 150	Calculus I	5
Phys 160	General Physics I	3
Chem 101	General Chemistry I	5
CORE	[Psy 120 College Orient]	1
		17

2nd Semester

Math 250	Calculus II	5
Phys 270	General Physics II	5
Econ 201	Prin of Economics	3
CORE	[Fine Arts/Humanities]	3
CORE	[Kine 101 Physical Activity]	1
		17

Sophomore Year
1st Semester

Math 260	Calculus III	5
Phys 280	General Physics III	5
Comp 110	Programming I	3
CORE	[Hist 110/120 U.S. Hist]	3
CORE	[Kine 103 Lifetime Wellness]	2
		18

2nd Semester

Math 322	Differential Eq.*	3
Phys 372	Electronic Circuits*	4
Phys 312	Statics	3
Phys 341	Thermal Physics*	4
OR		
Phys 322	Classical Mechanics*	3
CORE	[Comm 100 Oral Comm]	3
		16-17

*Suggested elective, not required for A.S. degree

For additional information contact:
Mr. Marion Sloan
Office: Reynolds Hall 213
Phone: 417.625.9616
E-mail: sloan-m@mail.mssc.edu

Preprofessional

Justice Center 126, 417.625.3155

Associate of Arts Degree
This curriculum is designated for Missouri Southern students to complete admission requirements for professional schools that will accept applicants who have completed approximately 60 hours.

Also, students who are completing certification requirements for paramedic programs and desire a college degree may choose this degree program.

For additional information contact:
Dr. Tia Strait
Office: Justice Center 126
Phone: 417.625.3155
E-mail: strait-t@mail.mssc.edu

Dr. John Messick
Office: Hearnes Hall 318
Phone: 417.625.9385
E-mail: messick-j@mail.mssc.edu

Radiologic Technology

Kuhn Hall 304, 417.625.3118

Faculty Schiska

The associate of science degree in radiologic technology combines Core Curriculum courses, supportive courses in the behavioral sciences and natural sciences and special courses in the field of radiology including extensive clinical laboratory ex-

periences. The clinical laboratory experiences are provided through agreements between Missouri Southern and St. John's Regional Medical Center or other accredited facilities. The student successfully completing the curriculum is eligible to write the National Registry Examinations to become a Registered Technologist.

Completion of the degree requires the completion of Core Curriculum requirements for the associate of science degree, all radiologic technology courses, Bio 221, Bio 240, Chem 100 or Phys 100 and Psy 221. Applicants whose backgrounds have not prepared them for Bio 221 must meet these prerequisites before being admitted to the program as well as the prerequisites listed below (see suggested order of study).

Special admissions procedures are required for admittance into this program, in addition to admission to Missouri Southern State College. A special Radiologic Technology application must be turned in to the Director of the Radiology Program before February 1st of the year the student would enter the program. Students may begin the program only at the beginning of the fall semester.

In addition to established fees for all college students, special fees of $15 for the first semester and $125 for the last summer semester, are required for enrollment in radiology courses.

Students who are already registered technologists may also enter the program.

Radiological course credit will be granted to the Registered Radiologic Technologist, equal to that granted to the graduating associate of science student, at the time the Registered Radiologic Technologist starts the program. A minimum of 30 additional academic semester hours is required. This credit must include the general education requirements for the associate of science degree plus a concentration of courses in one of the subject matter areas of business (accounting and secretarial procedures or business management), behavioral sciences or natural science (concentration in either biology, chemistry or physics).

Associate of Science in Radiologic Technology

		Semester Hours
Core Requirements (p. 34)		**26**
Radiology Requirements		**55**
Rad 101	Introduction to Radiology*	3
Rad 111	Medical Terminology	3
Rad 121	Patient Care and Special Procedures in Radiology	3
Rad 132	Prin of Radiographic Exposure	3
Rad 142	Radiographic Pos I	3
Rad 160	Film Critique	2
Rad 170	Radiologic Physics	3
Rad 180	Practicum in Radiology	4
Rad 241	Radiographic Pos II	3
Rad 252	Radiographic Pos III	3
Rad 282	Practicum in Radiology II	2
Rad 290	Practicum in Radiology III	4
Rad 299	Advanced Radiology	3
Bio 221	Human Anatomy & Physiology II*	5
Chem 100	Elementary Chemistry**	
OR		
Phys 100	Fundamentals of Physical Science	5
Psy 221	Personal Adjustment	3
Bio 240	Radiation Biology*	3
		81

*See course descriptions for prerequisites.
**Satisfies Core Curriculum Requirement.

Suggested Order of Study

Associate of Science Degree
Major Code 5207
Radiologic Technology Major

Prerequisites:

Eng 101	English Comp I	3
Math 30	Inter. Algebra (or higher)	3
Bio 121	Human Anatomy/Phys I	4
Rad 111	Medical Terminology****	3
Psy 120	College Orientation	1
		14

Freshman Year
Fall Semester

Course		Hours
Bio 221	Human Anatomy & Phys II**	5
Rad 101	Intro to Radiology	3
Rad 170	Radiologic Physics	3
Rad 142	Radiographic Pos I	3
		14

Spring Semester

Psy 100	General Psychology	3
Bio 240	Radiation Biology	3
Rad 132	Prin of Radiographic Exp	3
Rad 241	Radiographic Pos II	3
CORE	[Kine 103 Lifetime Wellness]	2
		14

Summer Semester*

Rad 160	Film Critique	2
Rad 180	Practicum in Radiology I	4
		6

Sophomore Year
Fall Semester

Chem 100	Intro Chemistry	
OR		
Phys 100	Fund of Phys Science	5
Psy 221	Personal Adjustment	3
Rad 252	Radiographic Pos III	3
CORE	[Kine 101 Physical Activity]	1
		12

Spring Semester

CORE	[Hits 110 or Hits 120]***	3
CORE	[Comm. 100 Oral Comm]	3
Rad 121	Pat Care & Spec Proc.	3
Rad 282	Practicum in Radiology II	2
CORE	[Literature or Fine Arts]	3
		14

Summer Semester

Rad 290	Practicum in Radiology III	4
Rad 299	Advanced Radiology	3
		7

[Department Recommendations]
*Summer classes meet a minimum of 10 weeks.
**Placement in Bio 221 will depend on pre-entrance Introduction to Human Biology test scores or completion of Bio 121.
***Missouri Constitution Exam or PSc 120 Gov't: U.S., State, Local
****(may be taken during the fall semester of the Freshman year with special permission from the program director)

For additional information contact:
Mr. Alan Schiska, Program Director
Office: Kuhn Hall 304
Phone: 417.625.3118
E-mail: schiska-a@mail.mssc.edu
OR
Dr. Tia Strait
Office: Justice Center 126
Phone: 417.625.9328
E-mail: strait-t@mail.mssc.edu

Course Descriptions

Rad 101 3 hrs. cr.
Introduction to Radiology
Basic procedures and equipment in the radiology department. Includes organization, function and supervision of a radiology department with a history of radiology, terminology specific to radiology, ethical principles and legal aspect of technology and radiation protection. Three hrs. lecture per week. Prerequisite Bio 221.

Rad 111 3 hrs. cr.
Medical Terminology
The language of medicine, especially as related to radiology, through a comprehensive study of the more common medical roots, prefixes and suffixes. Relates medical roots to everyday English words. A survey of medical and surgical diseases is included. Three hrs. lecture per week.

Rad 121 3 hrs. cr.
Patient Care and Special Procedures in Radiology
Routine and special care of the patient. Includes sterile techniques, preparation of contrast media. Special attention to visualization of digestive, urinary, and reproductive organs and review of pathology. In addition, students are exposed to the basics of mammography and principles of digital and computed radiography. Three hrs. lecture per week.

Rad 132 3 hrs. cr.
Principles of Radiographic Exposure
Fundamental principles of technique and technique conversion with particular emphasis on the factors that directly and indirectly affect radiographic exposure. Emphasis on radiation protection and darkroom chemistry and techniques. Three hrs. lecture per week.

Rad 142 3 hrs. cr.
Radiographic Positioning I
Basic radiographic positioning including both standard and specialized position of the chest, extremities and spine. Film critique and radiation protection are included. Two hrs. lecture, 3 hrs. lab and 15 hrs. clinic per week.

Rad 160 2 hrs. cr.
Film Critique
Develops student's problem-solving ability to evaluate X-ray films as to technical quality and diagnostic interpretation. Includes an introduction to quality assurance and pathology review. One hr. lecture, 2 hrs. lab per week.

Rad 170 3 hrs. cr.
Radiologic Physics
The physics of radiology. The physical principles of X-ray production. Including theory in electricity, rectification, circuitry and basic equipment maintenance. Three hrs. lecture per week.

Rad 180 4 hrs. cr.
Practicum in Radiology I
Intensified clinical training in the areas of urology, surgery, special procedures, fluoroscopy and general radiography. Course meets for 10 weeks summer sessions. Twenty-five hrs. clinic per week.

Rad 241 3 hrs. cr.
Radiographic Positioning II
In-depth study of routine and special views of the skull and facial bones. Film critique, radiation protection and skull anatomy review included. Two hrs. lecture, 3 hrs. lab, 20 hrs. clinic per week.

Rad 252 3 hrs. cr.
Radiographic Positioning III
Procedures and techniques for examination of various organs, including vascular studies, CT and special procedures. Course includes film critique, radiation protection and review of vascular anatomy. Three hrs. lecture, 20 hrs. clinic per week.

Rad 282 2 hrs. cr.
Practicum in Radiology II
Advanced clinical training. Includes an introduction to CT an increased responsibility in special procedures. Twenty hrs. clinic per week.

Rad 290 4 hrs. cr.
Practicum in Radiology III
Professional clinical training with special attention given to final training in special procedures and surgery. Includes float rotations that may include radiation therapy, ultrasound, MRI and CT. Course meets 10 weeks during the summer session. Twenty-five hrs. clinic per week.

Rad 299 3 hrs. cr.
Advanced Radiology
Comprehensive review of the field of radiology including innovations and trends in the field with special emphasis on preparation for the national registry examination. Three hrs. lecture per week.

Respiratory Therapy

Justice Center 144, 417.625.9848

Faculty Pippin-Head, Hudson, Erwin

A career in the medical field can be a dynamic and rewarding opportunity. The changing nature of the medical profession is creating a demand for multi skilled health professionals with communication, interpersonal, and excellent clinical skills such as the respiratory care practitioner. The Respiratory Care Programs are designed to prepare students to be employed in the hospital, clinic, laboratory, and alternate care settings such as the patient's home. Respiratory Therapist perform a variety of clinical, diagnostic and management functions in these settings.

The Respiratory Therapy Department offers these career tracts:

(1) an Entry-Level Associate of Science degree for applicants entering the field,
(2) an Upper Division, Advanced-Level Certificate tract for graduates of an associate of science entry-level respiratory therapy program and
(3) a Career Ladder Baccalaureate Degree Program, for graduates of the advanced level program.

The curriculum offers the following options:

- Entry Level Associate of Science in Respiratory Therapy, designed for those entering the respiratory therapy field, requires 64 semester hours of general education and professional courses.
- Advanced Level, Upper Division Certificate Program in Respiratory Therapy designed for graduates of an entry-level, associate degree respiratory therapy program, who have passed the NBRC Certification examination or who have applied to take the CRT exam. Successful completion of the CRT exam must occur before completion of the Advanced level curriculum. Graduates from a certificate entry level program without an Associate of Science degree must complete core requirements as well as the advanced level respiratory therapy course requirements.
- For those students interested in a Bachelor degree, there are two options. A Bachelor of Science in Management Technology with an Emphasis in General Business or a Bachelor of General Studies designed for graduates of the Advanced Level Respiratory Therapy program.

The Entry Level, Associate of Science Degree Program in Respiratory Therapy prepares students for a position as a certified respiratory therapist. The program is provided by Missouri Southern State College and Franklin Technology Center, through a consortium for respiratory therapy

education. The Associate of Science, entry-level program consists of a core academic component and a major concentration component. The academic section consists of the MSSC associate of science degree core requirements, including courses in the Humanities and Fine Arts, Natural Science, Social and Behavioral Sciences, Mathematics, English, Communication, and Physical Education concentration areas. The respiratory therapy major concentration components comprise both the didactic and respiratory therapy clinical instructional areas.

The Advanced Level, Upper Division, Certificate Program builds upon the entry-level associate of science degree program. It consists of an advanced level respiratory therapy major concentration component. The concentration component comprises respiratory therapy education in the didactic and clinical competencies required of an advanced level trained respiratory care practitioner. All students must successfully complete the NBRC Entry Level (Certification) Examination prior to graduation from the advanced level program and must agree to sit for the Advanced Level (Registry) examination immediately upon graduation. Currently the advanced level program is offered as an on-line program.

Registered respiratory therapist function in a wide variety of settings. As clinicians they work in adult intensive care units, pediatric and neonatal intensive care units, emergency and trauma units, operation and recovery rooms, rehabilitation programs, home health agencies, and a variety of cardiopulmonary diagnostic laboratories. Some graduates pursue advanced degrees in management, education, public health, or the biomedical sciences. Graduate degrees lead to positions in educational institutions in teaching or research capacities. Senior respiratory care practitioners may be responsible for the management and operation of respiratory care departments.

Respiratory Therapy Students must demonstrate numerous competencies representing all three learning domains: the cognitive, psychomotor and affective domains. Students learn, practice, and verify these competencies in a number of settings including the classroom, laboratory and clinic. To achieve the required competencies in the classroom setting, respiratory therapy students must perceive, assimilate and integrate information from a variety of sources. These sources include oral instruction, printed material, visual media, and live demonstrations. Students must participate in classroom discussion, give oral reports, and pass written and/or computer-based examinations of various formats. Completion of these tasks requires cognitive sills, such as reading, writing and problem-solving. To be physically capable of the classroom work, students must, with assistance, be able to: hear, see, speak, sit and touch. Respiratory therapy laboratories provide students with the opportunity to view demonstrations, evaluate and practice with medical devices and perform simulated clinical procedures. In addition to the cognitive skills required in the classroom, students must demonstrate psychomotor skills in manipulation of patients and equipment, as well as general professional behaviors, like team-building and interpersonal communications. To satisfy laboratory and clinic requirements, students must perform all procedures without critical error.

Admission to Missouri Southern or Franklin Technology Center does not automatically grant admission to the respiratory therapy program. In addition to meeting admission requirements to the College, candidates must apply for admission to the department of respiratory therapy.

Enrollment is competitive; Applicants must submit the necessary information to the department office by the designated deadline to be considered for acceptance. Evidence of computer literacy and satisfactory completion of the following prerequisites with a "C" or better must be presented: Math 030 Intermediate Algebra or higher. Department Recommendation; High school or college course work in Physical Science and Chemistry. Interested individuals are encouraged to contact the Program Director of Respiratory Therapy for more specific information regarding admissions criteria.

In addition to established fees for all college students, other costs are incurred by respiratory therapy students such as: uniforms, books, self assessment examinations, graduation pins, AARC student membership dues, liability insurance, and various expense for transportation to off campus clinical sites and professional meetings.

The advanced level, upper division program is for the graduate of an accredited entry-level associate degree respiratory therapy program. Previous respiratory care education and practice are recognized and valued throughout the curriculum. The advanced level curriculum expands respiratory therapy knowledge and practice gained in the entry-level program to meet the changing health care needs of the community and region. Graduates of Missouri Southern's Associate degree entry-level certification program are eligible for direct admission to Southern's Advanced Level Respiratory Therapy program. Recent graduates must pass the CRT exam prior to completion of the advanced level curriculum. Graduates of other accredited entry-level programs are eligible for admission upon meeting transfer requirements and current certification from the National Board for Respiratory Care.

Graduate outcomes

Graduates of the program will:

- Demonstrate the ability to comprehend, apply, and evaluate clinical information relevant to their role as respiratory therapist.
- Demonstrate the technical proficiency in all skills necessary to fulfill the role as a respiratory therapist.
- Demonstrate personal behavior consistent with professional and employer expectations for the respiratory therapist.

Admission Criteria

(Entry Level, Associate of Science in Respiratory Therapy)

Application for the entry-level program should be made **directly to the Respiratory Therapy Department Office** on the Missouri Southern State College campus (special admissions procedures are required for admittance into this program in addition to admission to MSSC).

1. Continuous enrollment, readmission or admission to Missouri Southern and Franklin Technology Center as a transfer student.
2. Completion of an approved college level math course.
3. Provide documentation of computer literacy.
4. Minimum percentile score on the Health Occupations Entrance Test administered by the Department.

Admission to the program is competitive. Applicants who meet all admission criteria, have completed math and biology courses, and/or have healthcare experience will be given preference in admission.

Admission Criteria

(Upper Division, Advanced Level Program)

1. Graduation from an Associate of Science degree entry-level program accredited by the Commission on Accreditation of Allied Health Education programs (CAAHEP) for entry level respiratory care or graduate from a certificate entry level program who concurrently completes the Associate of Science degree with the advanced level curriculum.
2. Continuous enrollment, readmission or admission to Missouri Southern as a transfer student.
3. Preference given to persons currently holding certification from the National Board for Respiratory Care, Inc. and/or a graduate of Missouri Southern's entry-level respiratory therapy program.

Entry-Level Associate of Science in Respiratory Therapy

Major code 5600

Associate Degree		
Core Requirements		**25**
Respiratory Therapy		
Major Requirements		**39**
Resp 101	Respiratory Therapy Foundations	3
Resp 102	Cardiopulmonary Sciences	3
Resp 105	Cardiopulmonary Anatomy & Physiology	3
Resp 107	Respiratory Therapy Procedures	3
Resp 108	Respiratory Procedures Lab	3
Resp 120	Cardiopulmonary Pathology	3
Resp 125	Respiratory Therapy Clinical I	3
Resp 129	Cardiopulmonary Pharmacology	3
Resp 222	Introduction to Mechanical Ventilation	4
Resp 226	Cardiopulmonary Diagnostic	3
Resp 239	Respiratory Therapy Clinical II	5
Resp 311	Neonatal/Pediatric Care	3
CORE	[Bio 121 Human Anatomy & Physiology I]	4
CORE	[Math 030 or higher]	3
Total		**64**

Advanced Level, Upper Division Certificate in Respiratory Therapy

Associate of Science in Respiratory Therapy (entry-level program)		**64**
Respiratory Therapy		
Major Requirements		**18**
Resp 307	Cardiopulmonary Assessment	6
Resp 312	Mechanical Ventilation	3
Resp 313	Alternate Site Respiratory Care (WI)	3
Resp 340	Advanced Level Clinical Practice	5
Resp 341	Research Issues, Methods	1
Total		**82**

Suggested Order of Study

Associated of Science Degree
Major code 5600
Respiratory Therapy (Entry-level)

Prerequisite

Math 030	Intermed Algebra or Higher	3
CORE*	[Eng 101 English Comp] WI	3
Respiratory Therapy Orientation		**6**

Freshman Year
(Missouri Southern/Franklin Technology Center)
Fall Semester

CORE	[Hum Anatomy/Physiology I]	4
CORE*	[Comm 100 Oral Comm]	3
Resp 101	Resp Therapy Foundations	3
Resp 102	Cardiopulmonary Sciences	3
Resp 107	Resp Ther Procedures	3
Resp 108	Resp Ther Procedures Lab	3
		19

Spring Semester

CORE*	[Humanities and Fine Arts]	3
CORE*	[Kine 101 Physical Activity]	1
Resp 105	Cardio Anatomy & Phys	3
Resp 120	Cardiopulmonary Pathology	3
Resp 125	Clinical Resp Therapy Exp I	3
Resp 129	Cardio Pharmacology	3
		16

Summer Semester

CORE*	Psy 100 or Soc 100	3
CORE*	Kine 103 Lifetime Wellness	2
		5

Sophomore Year
(Missouri Southern/Franklin Technology Center)
Fall Semester

CORE*	Hist 110 or Hist 120	3
Resp 222	Intro to Mech Ventilation	4
Resp 226	Cardio Diagnostics	3
Resp 239	Clinical Resp Therapy Exp II	5
Resp 311	Neonate/Pediatric Resp Care	3
		18
		64

[Entry Level Program Department Recommendations]

*Identified Core courses may not necessarily be taken in this order, however all Major courses must be taken in sequence and in the order presented in this catalog. Associate of science degree students must meet the Missouri Constitution Requirement by completing PSc 120 or the Missouri Constitution Test.

Suggested Order of Study

Advanced-Level
Junior Year *(Missouri Southern State College)*
Spring Semester

Resp 307	Cardiopulmonary Assessment	6
Resp 312	Mechanical Ventilation	3
Resp 313	Alternate Site Resp Care (WI)	3

Summer Semester
(Missouri Southern State College)

Resp 340	Advanced Level Respiratory Therapy Clinical Experience	5
Resp 341	Research Issues, Methods & Problems in Respiratory Care	1
Advanced Level		18
Entry level and Advanced Level Major		**82**

[Advanced Level Program Department Recommendations]

These graduates must have passed the National Board for Respiratory Care certification examination prior to earning an advanced level certificate in respiratory therapy from Missouri Southern State College. The entry-level core, of students entering the advanced level curriculum, should include Fundamentals of Physical Science or Introduction to Chemistry, Intermediate Algebra, Introduction to Computers and a total of seven semester credits of Human Anatomy and Physiology I and Cardiopulmonary Anatomy and Physiology.

For additional information contact:
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Consortium for Respiratory Therapy Education
Justice Center, MSSC Campus
3950 East Newman Road
Joplin MO 64801
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E-mail: pippin-g@mail.mssc.edu

Course Descriptions

Resp 101 (F) 3 hrs. cr.

Respiratory Therapy Foundations

Entry level information is presented regarding respiratory therapy history from its conception to its current goals and standing. Topics covered include medical terminology, hospital and respiratory therapy department structure and management, psychosocial aspects of patient care, and medical ethics. A clinical session, allows the student an orientation rotation at the program's clinical sites. Prerequisite: Admission to the respiratory therapy program and completion of a College Level Math course.

Resp 102 (F) 3 hrs. cr.

Cardiopulmonary Sciences

Focuses on the sciences used in the practice of respiratory therapy. Emphasis will be placed upon physics, chemistry, and microbiology as related to the cardiopulmonary sciences. Prerequisite: Admission to the respiratory therapy program.

Resp 105 (S) 3 hrs. cr.

Cardiopulmonary Anatomy and Physiology

An in-depth presentation of the cardiopulmonary system, its abnormalities and corrective techniques as related to respiratory therapy. Included are the concepts of the cardiovascular system, ventilation, diffusion of pulmonary gases, hemodynamic measurements, ventilation perfusion relationships, oxygen and carbon dioxide transport, acid base balance and arterial blood gas analysis. Prerequisite: Admission to the respiratory therapy program, college level math course and completion of Bio 121.

Resp 107 (F) 3 hrs. cr.

Respiratory Therapy Procedures

Theory and practice of basic respiratory therapy procedures as outlined in the National Board for Respiratory Care (NBRC) entry level examination content outline. Including cardiopulmonary assessment, medical gas administration, oxygen therapy, infection control, equipment maintenance, chest physiotherapy, chest expansion therapy, airway management, bedside pulmonary function testing, arterial puncture and administering medicated aerosol therapy. Prerequisites: Admission to the respiratory therapy program and concurrent enrollment or completion of the Respiratory Therapy Procedures Laboratory course.

Resp 108 (F) 3 hrs. cr.

Respiratory Therapy Procedures Laboratory

Students practice entry level respiratory care procedures, using state-of-the-art equipment, in the clinical laboratory under simulated patient situations. The student will address the three difficulty levels of learning, in the laboratory environment (Recall, Application, and Analysis). Prerequisites: Admission to the respiratory therapy program and concurrent enrollment or completion of Resp 107.

Resp 120 (S) 3 hrs. cr.

Cardiopulmonary Pathology

Study of concepts and theory of selected cardiopulmonary diseases, to include: definition, clinical manifestations, etiology, pathologic, radiological and laboratory findings; prevention, prognosis and treatment. Prerequisite: Admission to the respiratory therapy program and completion of Bio 121.

Resp 125 (S) 3 hrs. cr.

Clinical Respiratory Therapy Experience I

Clinical instruction supplemented by clinical conferences that allow the student to apply the classroom and laboratory respiratory therapy competencies mastered in specific respiratory therapy courses. Prerequisites: Resp 107 & Resp 108.

Resp 129 (S) 3 hrs. cr.

Cardiopulmonary Pharmacology

Comprehensive overview of the general principles of pharmacology. Focuses on the drugs and drug groups that are either administered by respiratory therapy personnel, or those that play a role in the care of cardiopulmonary patients. Prerequisite: Bio 121 and admission to the respiratory therapy program.

Resp 222 (F) 4 hrs. cr.

Introduction to Mechanical Ventilation (Life Support Technology)

Emphasis on the technical components of mechanical ventilators, their classification, principles of operation, attachments, and the flow/pressure/volume curves generated by various ventilators, compliance and resistance. An introduction to the management of patients receiving mechanical ventilation will be presented. Prerequisite: Admission to the respiratory therapy program.

Resp 226 (F) 3 hrs. cr.

Cardiopulmonary Diagnostics

Theory, application and equipment for diagnosing respiratory pathologies through the diagnostic concepts used in respiratory therapy. Include techniques utilized for measurement of lung gas volumes, capacities, flows, and cardiopulmonary status during exercise testing. Prerequisite: Admission to the respiratory therapy program.

Resp 239 (F) 5 hrs. cr.

Clinical and Laboratory Experience II

Clinical instruction supplemented by clinical conferences that allow the student to apply the knowledge and respiratory care skills mastered in the Respiratory Care courses; Cardiopulmonary Diagnostics, Introduction to Mechanical Ventilation, and Neonatal and Pediatric Respiratory care in the laboratory and clinical setting. The course will emphasize ventilator care, diagnostic procedures, and alternate site care (home care). Prerequisite: Resp 125.

Resp 307 (F, S) 6 hrs. cr.

Cardiopulmonary Assessment

A systematic approach to advanced cardiopulmonary patient assessment. Emphasis is on evaluation of the respiratory care plan based upon laboratory data, electrocardiogram interpretation, fluid and electrolyte balance, acid base balance and oxygen transport, pulmonary function testing, exercise testing, interpretation of chest x-rays, bronchoscopy, and hemodynamic monitoring. Prerequisite: Admission to the advanced level respiratory therapy program. Graduates of an advanced level respiratory therapy program may use this course as a review for their national board examinations.

Resp 311 (F) 3 hrs. cr.

Neonatal and Pediatric Respiratory Care

Respiratory care of the neonatal and pediatric population beginning with fetal development and continuing through assessments of infants including, gestational age, APGAR scoring and Silverman scoring. Various heart/lung deficiencies will also be discussed as well as treatment modalities. Prerequisite: Admission to the respiratory therapy program.

Resp 312 (F, S) 3 hrs. cr.

Advanced Mechanical Ventilation (Advanced Life Support)

A continuation of the Introduction to Mechanical Ventilation (Life Support Technology) course. In-depth study of ventilator management in critical care, long-term care, and the home environment utilizing case studies and clinical problem based learning sessions. In addition the course addresses ACLS (Advanced Cardiac Life Support). Prerequisite: Resp 222 and admission to advanced level respiratory therapy program.

Resp 313 (F, S) 3 hrs. cr.

Alternate Site Respiratory Care *(Writing Intensive)*

Theoretical aspects of providing respiratory therapy at alternate sites. Includes components of home respiratory therapy, extended care units, long term care facilities, ventilator rehabilitation centers, physician offices, land/air transport, outpatient diagnostic clinics. Introduces the fundamentals of teaching and learning theories. Prerequisite: Admission to the advanced level respiratory therapy program.

Resp 340 (F, S, Summer) 5 hrs. cr.

Advanced Level Respiratory Therapy Clinical Experience

Progressive process of developing cognitive levels at the recall, application, and analysis levels as a respiratory care practitioner. Correlates directly with the Advanced Mechanical Ventilation (Advanced Life Support) course, Cardiopulmonary Assessment, Neonate/Pediatric, and the Alternate Site (Management/Pulmonary Rehabilitation/Home Care) courses, to provide the student a clinical environment to demonstrate these learned advanced level respiratory care competencies. Prerequisite: Admission to the advanced level respiratory therapy program and concurrent enrollment or completion of the advanced level theory coursework.

Resp 341 (F, S, Summer) 1 hr. cr.

Research Issues, Methods and Problems in Respiratory Care

Directed research and discussion in selected areas of respiratory care for advanced level respiratory therapist. Course work includes independent literature search under the supervision of a respiratory care instructor that utilizes the student's program acquired respiratory care critical thinking, writing, and oral presentation skills. Research scope, depth, and area of concentration to be approved by the program director. Prerequisite: Students must be in their final semester of the advanced level program to enroll in this course.