



Department of Business/Technology

Mission Statement

The Department of Business strives to enable individuals to achieve personal and professional goals in business and related fields, which contribute to a well-educated and trained workforce.

A.S. Degree Business

This two-year degree program in business is designed to prepare students who wish to continue a major in business in pursuit of a Bachelor's Degree in Business. Courses will prepare students to understand the components of a successful business plan, the steps involved in starting a business, and the various types and sources of funding for businesses.

Term I		Semester Hours
ENG 1013	English Composition I.....	3
MTH 1113	College Algebra.....	3
BUS 1603	Computer Fundamentals.....	3
BIO 1014	General Biology.....	4
SOC 1013	Introduction to Sociology.....	3
		16

Term II		Semester Hours
ENG 1023	English Composition II.....	3
MTH 2114	Survey of Calculus.....	4
BUS 2213	Macroeconomics.....	3
PHS 1214	Physical Science.....	4
	Social Science Elective.....	3
PSC 2003	American Government -or-	
HIS 2033	U.S. History Before 1865 -or-	
HIS 2043	U.S. History After 1865	
		17

Term III		Semester Hours
BUS 2113	Principles of Accounting I.....	3
BUS 2223	Microeconomics.....	3
HIS 1013	Western Civilization I -or-	
HIS 1023	Western Civilization II	3
SPE 1003	Intro to Oral Communications.....	3
	Literature Elective.....	3
	ENG 2073 World Literature I -or-	
	ENG 2083 World Literature II	
		15

Term IV		Semester Hours
BUS 2123	Principles of Accounting II.....	3
BUS 2033	Legal Environment of Business.....	3
BUS 2073	Business Statistics.....	3
	Fine Arts Elective.....	3

ART 1003	Art Appreciation	-or-
MUS 1003	Music Appreciation	-or-
DRA 1003	Theater Appreciation	
	Directed Elective.....	3
		15

Total Hours.....63

A.A.S. Degree

General Technology

This two-year program is designed for students who wish to prepare for jobs in the area of General Technology. The program consists of 15 hours of general education courses, 24 to 39 hours of major emphasis, and 12 to 21 hours of courses in support areas. A minimum of 60 total hours is required for the degree.

General Education Core:

ENG 1013	English Composition I.....	3
MTH 1083	Technical Math -or-	
MTH 1113	College Algebra.....	3
BUS 1603	Computer Fundamentals.....	3
BUS 2013	Technical Communications	3
	Social Science Elective.....	3

Major Technical Discipline (24-39 Hours):

- I. Applied Engineering
- II. Drafting & Design
- III. Electronics
- IV. Environmental/Health and Safety Technology
- V. Computer Information Systems
- V. Diesel Technology

Support Area Curriculum (9-21 Hours):

Total Hours for degree (60-65)

The following describes the curriculum associated with each major area of emphasis.

I. Applied Engineering Emphasis

This two-year program is designed for students who wish to enter the Applied Engineering Technology field. The program consists of courses that are designed to prepare students to become skilled engineering technology professionals in the manufacturing and industrial fields. Students can take a wide selection of Applied Engineering Technology courses or choose one of the five specialties (Drafting & Design, Industrial Maintenance Technology, Electronics, Geographic Information Systems (GIS) and Engineering Design Technology). A minimum of 12 credit hours must be completed in a specialty area.

Major Technical Discipline Courses

DFT 1023	Intro to Computer Aided Drafting	3
EGR 1004	Fundamentals of Engineering I.....	4

EGR 1024 Fundamentals of Engineering II.....	3
EGR 1013 Blueprint Reading.....	3
EGR 2003 Geo. Dimensioning & Tolerancing.....	3
EGR 2062 Statistical Process Control.....	2
EGR 2923 Engineering Technology Internship.....	3
EGR 2053 Precision Measurements.....	3
Technical Electives.....	12

Support Area Courses

PHS 1214 Physical Science -or-	
PHY 2114 General Physics I.....	4
SFT 2073 Industrial Safety and OSHA.....	3
DFT 2313 Electrical/Electronics Drafting w/CADD.....	3
BUS 2863 Continuous Quality Improvement -or-	
LNT 1004 Intro to Lean Technology.....	3-4

Total.....64-65

Drafting & Design Specialty Electives:

CET 1013 Elementary Surveying	
CET 2203 Mapping and Topography	
DFT 1013 Fundamentals of Drafting	
DFT 1123 Intermediate CADD	
DFT 2303 Mechanical Drafting	
DFT 2203 Arch. Drafting I w/ CADD	
DFT 2233 Structural Drafting	
DFT 2113 Tool and Die Drafting	
DFT 2023 Advanced CADD	

Engineering Design Specialty Electives:

EGR 2004 Engineering Design I	
EGR 2024 Engineering Design II	
EGR 2034 Engineering Product Development I	
EGR 2054 Engineering Product Development II	
EGR 2033 Engineering and Design Project	
Industrial Maintenance Technology	

Specialty Electives:

ELE 1054 Electronics I	
ELE 2004 Electronics II	
ELE 2154 Digital Electronics	
MCH 2043 Mechanical Devices	
MCH 2073 Hydraulics/Pneumatics	
MCH 2213 Maintenance Welding	
MCH 2204 Basic Machine Shop	
MNT 1003 Maintenance Management	

Electronics Specialty Electives:

ELE 1054 Electronics I	
ELE 2004 Electronics II	
ELE 2154 Digital Electronics	
ELE 1004 Electrical Technology I	
ELE 1024 Electrical Technology II	
ELE 1114 Electrical – Electronic Technology	
ELE 1124 Solid State and Digital Electronics	
ELE 2144 Programmable Logic Controllers	

Geographic Information Systems Specialty Electives:

GIS 1003 Introduction to GIS	
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GIS 1303 Cartography for GIS	
GIS 2003 Remote Sensing and Data Acquisition	
GIS 2203 Advanced GIS	
GIS 2303 Spatial Analysis and Modeling	

**II. Computer Information Systems
Emphasis**

Designed for students who wish to enter the computer information systems field. The program consists of courses that are designed to prepare students to become skilled computer professionals. Students can choose to take a wide selection of computer information systems courses or choose one of four specialties (Business Systems Networking Cisco, Microcomputer Maintenance/Repair, Internet Technology/Webpage Design, or Microcomputer Systems Administration).

Courses in the computer information systems specialties will prepare students to take industry-recognized certification exams related to their specific area.

Major Technical Discipline Courses

CIS 1003 Microcomputer Operating Systems.....	3
CIS 1013 Microcomputer Hardware Concepts.....	3
CIS 1203 Programming Logic and Design.....	3
CIS 2123 Visual BASIC Programming.....	3
CIS 2203 Database Management Concepts and Applications.....	3
CIS 2613 Systems Analysis and Design.....	3
CIS 2991 Internship in CIS* -or-	
CIS 2992 Internship in CIS* -or-	
CIS 2993 Internship in CIS*.....	1- 3
CIS Electives (listed below)	

12-18

Support Area Courses

BUS 2813 Basic Management.....	3
BUS 2113 Principles of Accounting I.....	3
BUS 2013 Technical Communications.....	3

Total.....63-65

* This course (CIS 2991, CIS 2992 or CIS 2993) may be taken for , 2, or 3 semester hours. If taken as a or 2 hour course, 24 semester hours of CIS electives will be required (instead of 2 hours).

Computer Information Systems Electives:

BUS 2183 Electronic Spreadsheet Applications	
CIS 1103 Information Technology Project Tools	
CIS 2103 Java Programming	
CIS 2023 Advanced PC Diagnosis & Configuration	
CIS 2013 A+ Certification Review	
CIS 2113 COBOL Programming	
CIS 2133 C++ Programming	
CIS 2174 Advanced Programming	
CIS 2213 Data Communications & Networks	
CIS 2514 Database and Queries	
CGR 1003 Introduction to Multimedia	
MSA 1113 Microsoft Server Operating Systems I	
MSA 2123 Microsoft Server Operating Systems II	
MSA 2243 Microsoft Workstation Operating Systems	

NET 1016 Cisco Internetworking I
 NET 1026 Cisco Internetworking II
 WEB 1003 Internet Business Foundations
 WEB 1013 Introduction to Web Page Design
 WEB 1023 Network Technology Foundations
 WEB 2266 Adv. Web Page Design & Methodology

Business Systems Networking Specialty

NET 1016 Cisco Internetworking I
 NET 1026 Cisco Internetworking II

Internet Technology/Web Page Design Specialty

CGR 1003 Introduction to Multimedia
 WEB 1003 Internet Business Foundations
 WEB 1013 Introduction to Web Page Design
 WEB 1023 Network Technology Foundations
 WEB 2266 Adv. Web Page Design & Methodology

Microcomputer Systems Administration Specialty

CIS 2213 Data Communications & Networks
 MSA 1113 Microsoft Server Operating Systems I
 MSA 2123 Microsoft Server Operating Systems II
 MSA 2243 Microsoft Workstation Operating Systems
 CIS 2023 Advanced PC Diagnostics & Configuration
 Microcomputer Maintenance/Repair Specialty
 CIS 2213 Data Communications and Networks
 CIS 2023 Advanced PC Diagnostics & Configuration

CIS 2013 A+ Certification Review

III. Drafting and Design Emphasis

This program is designed to develop the knowledge and skills necessary to become an effective drafter. Students develop the skills necessary to be competent in today's ever changing job market and the abilities necessary to utilize state of the art computer equipment in all aspects of the drafting field.

Major Technical Discipline Courses

DFT 1013 Fundamentals of Drafting.....3
 DFT 1023 Intro to Computer Aided Drafting.....3
 SFT 1081 Intro to Industrial Safety1
 DFT 1123 Intermed. Computer Aided Drafting.....3
 DFT 2113 Tool & Die Drafting w/CADD.....3
 DFT 2203 Architectural Drafting I w/CADD.....3
 DFT 2303 Mechanical Drafting w/CADD.....3
 DFT 1113 Construction Materials.....3
 DFT 2233 Structural Drafting.....3
 CET 1013 Elementary Surveying.....3
 DFT 2023 Advanced CADD.....3

Support Area Courses

PHY 2114 General Physics I -or-
 PHS 2114 Physical Science.....4
 Drafting Elective3
 General Elective.....3
 DFT 23 3 Electrical/Electronics Drafting w/CADD -or-
 CET 2203 Mapping and Topography.....3
 DFT 2323 Mechanical Drafting II w/CADD.....3
 DFT 2923 Drafting and Design Internship.....3

Total.....65

NOTE: Program options and electives should be selected in consultation with a faculty advisor. All electives must be approved by the department chairperson.

IV. Electronics Emphasis

This two-year program is designed to develop the knowledge and skills necessary to succeed in an electronics oriented profession. The program emphasizes basic concepts and functionality of resistors, capacitors, transistors, and linear and digital integrated circuits and related mathematical principles.

Major Technical Discipline Courses

ELE 1004 Electrical Tech I.....4
 ELE 1024 Electrical Tech II.....4
 ELE 1054 Electronics I.....4
 ELE 2004 Electronics II.....4
 ELE 2154 Digital Electronics.....4
 Technical Elective.....12

Support Area Courses

PHS 1214 Physical Science.....4
 SFT 2073 Industrial Safety and OSHA.....3
 SFT 1071 CPR and First-Aid.....1
 MNT 1003 Maintenance Management.....3
 BUS 2863 Continuous Quality Improvement.....3

Total.....61

V. Environmental/Health and Safety Emphasis

This two year program provides students with the knowledge and skills required for success in an environmental technology field. Additionally, this program provides personnel working within the environmental field an opportunity to update and broaden their knowledge and enhance their opportunities for career advancement. Emphasis is on environmental regulations, sampling and analysis procedures, and safety protocols and requirements.

Major Technical Discipline Courses

EHS 1003 Intro to Environmental Tech.....3
 EHS 1113 Environmental Regulations.....3
 EHS 2233 Chemistry of Hazardous Materials.....3
 EHS 1134 Environ. Sampling and Analysis I.....4
 EHS 2493 EHS Internship.....3
 EHS 2223 Hazardous Waste Operations
 (HAZWOPER).....3
 EHS 2134 Environmental Sampling and Analysis II....4
 EHS 2331 Current Issues in Environmental Technology
1

Support Area Courses

CHE 1024 Gen Ed Chemistry.....4
 MTH 1032 Measurements and Calculations.....2
 BIO 1014 General Biology -or-
 BIO 1614 General Zoology.....4
 SPE 1003 Introduction to Oral Communication.....3
 GIS 1003 Introduction to GIS.....3

SFT 1081	Introduction to Industrial Safety.....	1
SFT 1071	CPR and First Aid.....	1
SFT 2073	Industrial Safety and OSHA.....	3

Total.....60

VI. Diesel Technology

This A.A.S. degree is designed for students who wish to enter the Diesel Technology field. This program consists of courses that are designed to prepare students to become knowledgeable and highly-skilled technicians in the farming and transportation field. Students will take a core selection of Diesel Technology courses as well as courses in the basic skills of communication, computers, mathematics, and electrical technology.

Major Technical Discipline Courses

DST 1003	Intro to Diesel Engines	3
RET 1023	Biofuels	3
DST 1013	Intro to Fuel Systems	3
RET 1103	Fuels & Lubricants	3
DST 2004	Diesel Engine Diag. & Repair	4
DST 2124	Adv. Diesel Engine Diag. & Repair	4
	Technical Elective	12

Support Area Courses

ELE 1054	Electronics	4
ELE 2154	Digital Electronics	4
ELE 2004	Electronics II	4
MCH 2083	Hydraulics & Pneumatics	3
	Total.....	62

A.A.S Degree

Advanced Manufacturing Technology

This two-year program is designed for students who wish to enter the Advanced Manufacturing Technology field. The program consists of courses that are designed to prepare students to become skilled manufacturing technicians in the manufacturing and industrial fields. Students will take a core selection of Advanced Manufacturing Technology courses and choose one of the five specialties (Plastic Injection Molding, Applied Engineering, Industrial Maintenance Technology, Electronics, or Lean Technology.)

Term I		Semester Hours
ENG 1013	English Composition I	3
MTH 1083	Technical Math -or-	
MTH 1113	College Algebra.....	3
MFG 1023	Design for Manufacturing.....	3
MFG 1033	Manufacturing Production Processes.....	3
MFG 1043	Manufacturing Power & Equipment Systems.....	3
		15

Term II		Semester Hours
BUS 1603	Computer Fundamentals.....	3
MFG 2023	The Manufacturing Enterprise.....	3
ELE 1114	Electrical-Electronic Technology.....	4

ELE 2144	Programmable Logic Controllers.....	4
	Technical Specialty Electives (1).....	3
		17

Term III		Semester Hours
ENG 1023	English Composition II -or-	
BUS 2013	Technical Communications.....	3
MFG 2013	Manufacturing Materials.....	3
MCH 2043	Mechanical Devices.....	3
	Technical Specialty Electives (2).....	6
		15

Term IV		Semester Hours
PSY 1003	General Psychology -or-	
SOC 1013	Introduction to Sociology.....	3
MFG 2033	Manufacturing Equipment Maintenance & Operation.....	3
MFG 2923	Manufacturing Capstone Course.....	3
MCH 2083	Hydraulics/Pneumatics.....	3
	Technical Specialty Elective (1).....	3
		15
	Total Hours.....	62

Advanced Manufacturing Technology Electives

Plastic Injection Molding Specialty Electives:

PIM 1313	Plastic Injection Molding I
PIM 2323	Plastic Injection Molding II
PIM 2213	Tooling for Plastic Injection Molding
PIM 2023	Properties of Plastics

Applied Engineering Specialty Electives:

EGR 1004	Fundamentals of Engineering I
EGR 1024	Fundamentals of Engineering II
EGR 1013	Blue Print Reading
EGR 2004	Engineering Design I
EGR 2024	Engineering Design II
EGR 2034	Engineering Product Development I
EGR 2054	Engineering Product Development II
EGR 2053	Precision Measurement
EGR 2003	Geometric Dimensioning and Tolerancing
EGR 2033	Engineering and Design Project

Industrial Technology Specialty Electives:

MNT 1003	Maintenance Management
MCH 2213	Maintenance Welding
MCH 2204	Basic Machine Shop

Electronics Specialty Electives:

ELE 1004	Electrical Technology I
ELE 1124	Solid State and Digital Electronics
ELE 1054	Electronics I
ELE 2004	Electronics II
ELE 2154	Digital Electronics

Lean Technology Specialty Electives:

LNT 1004	Intro to Lean Technology
LNT 1014	Inventory Control
LNT 1023	Quick Changeovers
LNT 1033	Lean Maintenance
LNT 1043	Value Stream Development
LNT 1053	Total Productive Maintenance

Technical Certificate

Advanced Manufacturing Technology

This certificate is designed to prepare students with the knowledge and skills necessary for entry level jobs in Advanced Manufacturing Technology. The program consists of courses that are designed to prepare students to become skilled manufacturing technicians in the manufacturing and industrial fields. Students will take a core selection of Advanced Manufacturing Technology courses as well as courses in the basic skills of communication, computers, and mathematics.

Term I		Semester Hours
ENG 1013	English Composition I.....	3
MTH 1083	Technical Math -or-	
MTH 1113	College Algebra.....	3
BUS 1603	Computer Fundamentals.....	3
MFG 1033	Manufacturing Production Processes.....	3
MFG 1043	Manufacturing Power & Equipment Systems.....	3
		15
Term II		Semester Hours
BUS 2013	Technical Communications -or-	
ENG 1023	English Composition II.....	3
MFG 1023	Design for Manufacturing.....	3
MFG 2013	Manufacturing Materials.....	3
MFG 2023	The Manufacturing Enterprise.....	3
MFG 2033	Manufacturing Equipment Maintenance & Operation.....	3
		15
Total Hours.....		30

Certificate of Proficiency

Advanced Manufacturing Technology

This certificate is designed to prepare students with the knowledge and skills necessary for entry level jobs in Advanced Manufacturing Technology. The program consists of courses that are designed to prepare students to become skilled manufacturing technicians in the manufacturing and industrial fields. Students will take a core selection of Advanced Manufacturing Technology courses as well as courses in the basic skills of communication, computers, and mathematics.

Term I		Semester Hours
MFG 1033	Manufacturing Production Process.....	3
MFG 1023	Design for Manufacturing.....	3
Term II		Semester Hours
MFG 1043	Manufacturing Power and Equipment Systems.....	3
MFG 2013	Manufacturing Materials.....	3
		6
Total Hours.....		12

A.A.S. Degree

Management

This two-year degree program in management is designed to meet the needs of students who wish to enter one of several fields of management. Students may select one of four management options-Business, Entrepreneurship, Hospitality, or Lodging.

Term I		Semester Hours
ENG 1013	English Composition I.....	3
BUS 1603	Computer Fundamentals.....	3
PSY 1003	General Psychology.....	3
SPE 1003	Introduction Oral Communication.....	3
Program Option.....		3
		15

Term II		Semester Hours
BUS 2553	Business Communications.....	3
BUS 1023	College Business Math.....	3
BUS 2033	Legal Environment of Business.....	3
BUS 2813	Basic Management.....	3
Program Option.....		3
		15

Term III		Semester Hours
BUS 2113	Principles of Accounting I.....	3
BUS 2863	Continuous Quality Improvement	3
BUS 2183	Electronic Spreadsheet Applications.....	3
Program Options.....		6
		15

Term IV		Semester Hours
BUS 2123	Principles of Accounting II.....	3
BUS 2513	Fundamentals of Marketing.....	3
BUS 2013	Technical Communications.....	3
Program Options.....		6-9
		15-18
Total.....		60-63

Business Management Options

BUS 1003	Introduction to Business.....	3
BUS 1203	Consumer Finance.....	3
BUS 2213	Principles of Macroeconomics.....	3
BUS 2903	Internship in Business Management.....	3
		6

Business Management Electives

BUS 1803	Contemporary Issues in Supervision.....	3
BUS 2043	Business Law II.....	3
BUS 2073	Business Statistics.....	3
BUS 2223	Principles of Microeconomics.....	3
BUS 2843	Group Dynamics and Teambuilding.....	3
BUS 2933	Leadership Skills and Ethics.....	3

Entrepreneurship Option

ETR 1003	Introduction to Entrepreneurship.....	3
ETR 2013	Opportunity/Feasibility/Analysis.....	3

ETR 2003	Professional Selling/Advertising.....3
ETR 2023	Funding Acquisitions for Entrepreneurs.....3
Business Management Electives	

Hospitality Management Option

HOS 1003	Introduction to Hospitality.....3
HOS 1013	Introduction to Travel and Tourism...3
HOS 2023	International Travel.....3
HOS 2033	Travel Operations.....3
HOS 2993	Internship in Hospitality/Lodging....3
	Hospitality/Lodging Electives.....6
	21

Lodging Management Option

HOS 1113	Introduction to Lodging Industry.....3
HOS 1123	Lodging Fundamentals.....3
HOS 2133	Lodging Concepts.....3
HOS 2143	Advanced Lodging Concepts.....3
HOS 2993	Internship in Hospitality/Lodging....3
	Hospitality/Lodging Electives.....6
	21

Hospitality/Lodging Electives

HOS 1003	Introduction to Hospitality.....3
HOS 1013	Introduction to Travel and Tourism...3
HOS 1113	Introduction to Lodging Industry.....3
HOS 1123	Lodging Fundamentals.....3

A.A.S. Degree Entrepreneurship

This two-year degree program in management is designed to prepare students who wish to enter the field of entrepreneurship. This program is specifically designed to help someone start and successfully operate a small business. Courses will prepare students to understand the components of a successful business plan, the steps involved in starting a business, and the various types and sources of funding for businesses.

Term I	Semester Hours
ENG 1013	English Composition.....3
MTH 1113	College Algebra.....3
BUS 1603	Computer Fundamentals.....3
BUS 2013	Technical Communication.....3
	Social Science Elective.....3
	15

Term II	Semester Hours
BUS 2033	Legal Environment of Business I.....3
BUS 2213	Macroeconomics.....3
BUS 2833	Human Resource Development.....3
BUS 2553	Business Communications.....3
BUS 2183	Electronic Spreadsheet Applications..3
	15

Term III	Semester Hours
BUS 2113	Principles of Accounting I.....3
BUS 2813	Business Management.....3

BUS 2933	Leadership Skills and Ethics.....3
BUS 2043	Legal Environment of Business II.....3
ETR 1003	Introduction to Entrepreneurship.....3
	Business Management Elective.....3
	18

Term IV

	Semester Hours
BUS 2123	Principles of Accounting II.....3
ETR 2013	Opportunity/Feasibility/Analysis.....3
ETR 2003	Professional Selling/Advertising.....3
ETR 2023	Funding Acquisitions for Entrepreneurs.....3
BUS 2903	Internship in Business Management..3

	Business Management Elective.....3
	18

Total.....66

Technical Certificate Entrepreneurship

This certificate program provides an introduction to the management field of entrepreneurship and to the role of entrepreneurial business in the U.S. Emphasis is on various entrepreneurial aspects of a small business.

Term I	Semester Hours
ENG 1013	English Composition I.....3

BUS 1603	Computer Fundamentals.....3
BUS 2113	Principles of Accounting I3
BUS 2033	Legal Environment of Business I.....3
ETR 1003	Introduction to Entrepreneurship.....3
	15

Term II	Semester Hours
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BUS 2553	Business Communications.....3
ETR 2023	Funding Acquisitions for Entrepreneurs.....3
ETR 2013	Opportunity/Feasibility/Analysis.....3
BUS 2833	Human Resource Development.....3
BUS 2903	Internship in Business Management..3
	15

Total.....30

Technical Certificate Engineering Design Technology

This certificate program provides an introduction to the field of engineering, the engineering process and the design process. The program emphasizes problem-solving skills utilized in the engineering profession.

Term I	Semester Hours
DFT 1013	Fundamentals of Drafting.....3
DFT 1023	Introduction to Computer Aided Drafting.....3

EGR 1004	Fundamentals of Engineering I.....4
ELE 1114	Electrical/Electronic Technology.....4
	14

Term II	Semester Hours
ENG 1013	English Composition I.....3
EGR 1024	Fundamentals of Engineering II.....4

ELE 1124	Solid State Digital Electronics.....	4
MTH 1083	Technical Math -or-	
MTH 1113	College Algebra.....	3
		14

Term III	Semester Hours	
EGR 2004	Engineering Design I.....	4
BUS 2013	Technical Communications.....	3

Term IV	Semester Hours	
EGR 2024	Engineering Design II.....	4
EGR 2033	Engineering and Design Project.....	3
		7
	Total.....	42

Technical Certificate

Computer Information Systems

This certificate is particularly suitable for individuals working in a business environment who want to acquire computer expertise. It also provides specialized training for students desiring a position using computer technology in a business setting.

Term I	Semester Hours	
ENG 1013	English Composition I.....	3
BUS 1603	Computer Fundamentals.....	3
BUS 2113	Principles of Accounting I.....	3
BUS 2453	Word Processing Concepts and App.....	3
WEB 1003	Internet Business Foundations.....	3
BUS 1343	Computer Keyboarding I -or-.....	3
	Keyboarding Proficiency	
		15-18

Term II	Semester Hours	
CIS 1003	Microcomputer Operating Systems.....	3
BUS 2183	Electronic Spreadsheet Appl.....	3
BUS 2553	Business Communications.....	3
CIS 2203	Database Mgmt. Concepts & Appl.....	3
CIS 2123	Visual BASIC Programming.....	3
		15
	Total.....	30-33

Technical Certificate

Business Systems Networking: Cisco

The Technical Certificate in Business Systems Networking Cisco prepares students with knowledge and skills that are necessary for entry-level jobs in Cisco computing networks. In addition, the curriculum includes English composition, oral communication, and mathematics, which are highly desired skills for gainful employment. Emphasis is on the installation, configuration, and administration of a network system. Completion of the program prepares students to take the A+ certification and Cisco Certified Networking Associate exams.

Program Prerequisite: BUS 1603 Computer Fundamentals (must be completed within the past 5 years with Grade \geq C or permission).

Term I	Semester Hours	
ENG 1013	English Composition I.....	3
NET 1016	Cisco Internetworking I.....	6

CIS 1003	Microcomputer Operating Systems.....	3
CIS 1013	Microcomputer Hardware Concepts and Application.....	3
		15

Term II	Semester Hours	
MTH 7053	Intermediate Algebra -or-	
BUS 1023	College Business Math.....	3
BUS 2013	Technical Communication.....	3
NET 1026	Cisco Internetworking II.....	6
CIS 2023	Advanced PC Diagnostics and Configuration.....	3
		15
	Total.....	30

Certificate of Proficiency

Business Systems Networking Cisco

This program, which includes practical applications in a lab setting, is designed to meet current and future demands in an ever-changing workplace. Completion of the certificate prepares students to take the Cisco Certified Networking Associate exam.

Program Prerequisite: BUS 1603 Computer Fundamentals (must be completed within the past 5 years with Grade \geq C or permission).

Term I	Semester Hours	
NET 1016	Cisco Internetworking I.....	6
Term II	Semester Hours	
NET 1026	Cisco Internetworking II.....	6
		12

Technical Certificate

Internet Technology/Web Page Design

The Technical Certificate in Internet Technology/Web Page Design combines general knowledge in computer technology with specific skills in web page authoring. Students learn concepts of Internet technologies, operating systems, multimedia, and networks. In addition, the curriculum includes English composition, oral communication, and mathematics, which are highly desired skills for gainful employment. Completion of the certificate prepares students for Certified Internet Webmaster Professional certification.

Program Prerequisite: BUS 1603 Computer Fundamentals (must be completed within the past 5 years with Grade \geq C or permission).

Term I	Semester Hours	
ENG 1013	English Composition I.....	3
MTH 1053	Intermediate Algebra -or-	
BUS 1023	College Business Math.....	3
WEB 1023	Network Technology Foundations.....	3
WEB 1013	Introduction to Web Page Design.....	3
WEB 1003	Internet Business Foundations.....	3
		15

Term II	Semester Hrs	
BUS 2013	Technical Communications.....	3
CIS 1003	Microcomputer Operating Systems.....	3

CGR 1003	Introduction to Multimedia.....	3
WEB 2266	Advanced Web Page Design and Methodology.....	6
		15
	Total.....	30

Certificate of Proficiency

Internet Technology/Web Page Design

This Certificate of Proficiency in Internet Technology/ Web Page Design prepares students in the knowledge and skills necessary for employment in web page authoring and other positions associated with Internet technology. Completion of the certificate prepares students for Certified Internet Webmaster Professional certification.

Program Prerequisite: BUS 1603 Computer Fundamentals (must be completed within the past 5 years with Grade \geq C or permission.)

Term I		Semester Hours
WEB 1023	Network Technology Foundations.....	3
WEB 1013	Intro to Web Page Design.....	3
WEB 1003	Internet Business Foundations.....	3
		9

Term II		Semester Hours
WEB 2266	Advanced Web Page Design and Methodology.....	6
		Total.....15

Technical Certificate

Microcomputer Systems

Administration

The Technical Certificate in Microcomputer Systems Administration is designed to prepare students in the design, management, and maintenance of a Microsoft network computing environment. This certificate prepares students to take the Network+ and Microsoft Certified Systems Administrator certification exams. Completion of the program and certification exams will enable graduates to compete for employment with companies that possess both small and enterprise-level computer network systems.

Program Prerequisite: BUS 1603 Computer Fundamentals (must be completed within the past 5 years with Grade \geq C or permission.)

Term I		Semester Hours
ENG 1013	English Composition I.....	3
CIS 1003	Microcomputer Operating Systems...	3
CIS 1013	Microcomputer Hardware Concepts & Applications.....	3
CIS 2213	Data Communications & Networks...	3
MSA 1113	Microsoft Server Operating Sys I.....	3
		15

Term II		Semester Hours
MTH 1053	Intermediate Algebra -or-	
BUS 1023	College Business Math.....	3
BUS 2013	Technical Communications.....	3
MSA 2123	Microsoft Server Operating Systems II.....	3
MSA 2243	Microsoft Workstation Operating	

	Systems.....	3
CIS 2023	Advanced PC Diagnostics & Configuration.....	3
		15
	Total.....	30

Certificate of Proficiency

Microcomputer Systems

Administration

The Certificate of Proficiency in Microcomputer Systems Administration is designed to prepare students in the design, management, and maintenance of a Microsoft network computing environment. Emphasis of the certificate is to equip students for placement in entry-level positions relating to computer network operations. Completion of the certificate prepares students to take the Network+ and Microsoft Certified Professional certification exams.

Program Prerequisite: BUS 1603 Computer Fundamentals (must be completed within the past 5 years with Grade \geq C or permission.)

Term I		Semester Hours
CIS 1013	Microcomputer Hardware Concepts & Applications.....	3
CIS 2213	Data Communications & Networks...	3
MSA 1113	Microsoft Server Operating Systems I	3
		9

Term II		Semester Hours
MSA 2123	Microsoft Server Operating Systems II	3
MSA 2243	Microsoft Workstation Operating Systems	3
		6
	Total.....	15

Technical Certificate

Microcomputer Maintenance/Repair

This program prepares students for employment in the information technology fields as a computer support technician. Emphasis is on troubleshooting computer hardware and software related issues, maintaining computer systems, and network support. Completion of the certificate prepares students to take the A+ and Network+ certification exams.

Program Prerequisite: BUS 1603 Computer Fundamentals (must be completed within the past 5 years with Grade \geq C or permission.)

Term I		Semester Hours
ENG 1013	English Composition I.....	3
CIS 1003	Microcomputer Operating Systems...	3
CIS 1013	Microcomputer Hardware Concepts and Applications.....	3
CIS 2213	Data Communications & Networks...	3
		12

Term II		Semester Hours
BUS 2013	Technical Communications.....	3
MTH 1053	Intermediate Algebra -or-	
BUS 1023	College Business Math.....	3

CIS 2023	Advanced PC Diagnostics and Configuration.....	3
CIS 2013	A+ Certification Review.....	3
		12
	Total.....	24

Certificate of Proficiency

Microcomputer Maintenance/Repair

This program prepares students for employment as a computer technician and gives them background for A+ Certification. Emphasis is on computer hardware, maintenance, operating systems, and troubleshooting.

Program Prerequisite: BUS 1603 Computer Fundamentals (must be completed within the past 5 years with Grade \geq C or permission.)

Term I		Semester Hours
CIS 1003	Microcomputer Operating Systems...	3
CIS 1013	Microcomputer Hardware Concepts and Applications.....	3

Term II		Semester Hours
CIS 2023	Advanced PC Diagnostics and Configuration.....	3
CIS 2013	A+ Certification Review.....	3
		6
	Total.....	12

A.A.S. Degree

Administrative Office Technology

This two-year program is designed to prepare students for administrative office positions in general, medical, and legal office settings. Integrated software covered in computer-based courses includes word processing, spreadsheets, publication and database programs. In addition to these skill courses, business lecture courses provide valuable information necessary for students to associate and communicate successfully with other office professionals.

Term I		Semester Hours
ENG 1013	English Composition I.....	3
BUS 1343	Computer Keyboarding I.....	3
S PE 1003	Introduction to Oral Communication.	3

BUS 1003	Introduction to Business.....	3
BUS 1603	Computer Fundamentals*.....	3
		15

Term II		Semester Hours
BUS 1373	Computer Keyboarding II.....	3
BUS 1353	Basic Filing/Records Management....	3
BUS 2453	Word Processing Concepts/Applic....	3
BUS 2553	Business Communication.....	3
PSY 1003	General Psychology.....	3
		15

Term III		Semester Hours
BUS 1133	Introduction to Accounting -or-	
BUS 2113	Principles of Accounting I.....	3
BUS 2033	Legal Environment of Business.....	3

BUS 2473	Desktop Publishing.....	3
BUS 1023	College Business Math	3
BUS 2183	Electronic Spreadsheet Applications.	3
		15

Term IV		Semester Hours
BUS 2463	Advanced Word Processing Applications.....	3
BUS 2303	Integrated Business Projects.....	3
BUS 2493	Admin. Office Tech Internship.....	3
	Admin. Office Technology Electives.	6
		15
	Total.....	60

*Prerequisite-Keyboarding Skills

CGR 1003	Introduction to Multimedia.....	3
BUS 2423	Machine Transcription.....	3
WEB 1003	Internet Business Foundations.....	3
HSC 1003	Medical Terminology -or-	
6 BUS 1113	Legal Terminology.....	3
BUS 2483	Medical Office Management -or-	
BUS 2043	Business Law II.....	3

NOTE: The 6 hours of required program options should be selected in consultation with a faculty advisor.

Technical Certificate

Office Technology

This is a program designed to equip students for entry-level office positions in business. Skills in computer keyboarding, word processing, and the use of related office machines are stressed.

Term I		Semester Hours
ENG 1013	English Composition I.....	3
BUS 1343	Computer Keyboarding I.....	3
BUS 1603	Computer Fundamentals*.....	3

BUS 1133	Introduction to Accounting.....	3
BUS 2453	Word Processing Concepts and Applications.....	3
		15

Term II		Semester Hours
BUS 1373	Computer Keyboarding II.....	3
BUS 2423	Machine Transcription -or-	
BUS 2463	Advanced Word Processing Applications.....	3
BUS 2553	Business Communication.....	3
BUS 1023	College Business Math.....	3
SPE 1003	Introduction to Oral Communication.	3
		15
	Total.....	30

* Prerequisite- Keyboarding Skills

Technical Certificate

Word Proc./Desktop Publishing

This is a program designed to equip students for entry-

level office positions in business. Both computer keyboarding and word processing training are stressed as well as related business subjects.

Term I		Semester Hours
ENG 1013	English Composition I.....	3
BUS 1603	Computer Fundamentals.....	3
BUS 2453	Word Processing Concepts/Applic.....	3
BUS 2423	Machine Transcription.....	3
BUS 1343	Computer Keyboarding I.....	3
		15
Term II		Semester Hours
BUS 1373	Computer Keyboarding II.....	3
BUS 2553	Business Communication.....	3
BUS 2463	Adv. Word Processing Applications...	3
BUS 2473	Desktop Publishing.....	3
BUS 2493	Administrative Office Technology	
	Internship.....	3
		15
	Total.....	30

Technical Certificate

Drafting and Design

This one-year program is designed for individuals in entry level drafting and design positions. An emphasis is placed on Computer Aided Drafting in various drafting disciplines. The program consists of 35 semester hours of instruction.

Term I (Fall)		Semester Hours
ENG 1013	English Composition I.....	3
MTH 1083	Technical Math -or-	
MTH 1053	Intermediate Algebra.....	3
DFT 1013	Fundamentals of Drafting.....	3
BUS 1603	Computer Fundamentals.....	3
DFT 1023	Intro to Computer Aided Drafting.....	3
SFT 1081	Introduction to Industrial Safety.....	1
		16

Term II (Spring)		Semester Hours
DFT 2303	Mechanical Drafting w/CADD.....	3
DFT 2313	Electrical/Electronics	
	Drafting w/ CADD.....	3
DFT 2203	Architectural Drafting I w/CADD.....	3
BUS 2013	Technical Communications.....	3
		12

Term III (Summer)		Semester Hours
SPE 1003	Introduction to Communication.....	3
PHS 1214	Physical Science -or-	
PHY 2114	General Physics I.....	4
		7
	Total.....	35

NOTE: Program options should be selected in consultation with a faculty advisor.

Certificate of Proficiency Industrial Maintenance Technology

This certificate is designed to prepare students with the knowledge and skills necessary for entry level jobs in Industrial Maintenance Technology. This program consists of courses that are designed to prepare students to become skilled technicians in the manufacturing and industry field. Students will have the option to take traditional 3-credit hour introductory courses in the basic skills of mechanics and industrial safety or to take a series of 1-credit hour courses that cover the same material. Every course will be taught in a lab setting so the students will get theory and hands on experience with each topic.

Term	Semester Hours
MCH 2213 Maintenance Welding.....	3
MCH 2043 Mechanical Devices.....	3
MCH 2083 Hydraulics and Pneumatics.....	3
	Total.....
	9

New Modular Courses that Equate to Traditional (Existing) Courses

MCH 2213 Maintenance Welding	(2-2-3)
MCH 1001 Reading Blueprints	(1-0-1)
MCH 1061 Welding Principles	(1-0-1)
MCH 1071 Welding Operations	(1-0-1)
MCH 1081 Purging, Piping and Safety	(1-0-1)
MCH 2043 Mechanical Devices	(2-2-3)
MCH 1011 Reading Schematics and Symbols	(1-0-1)
MCH 1051 Selecting and Maintaining Bearings	(1-0-1)
MFG 1001 Developing Trouble Shooting Skills	(1-0-1)
MFG 1031 Mechanical and Fluid Drive Systems	(1-0-1)
MCH 2083 Hydraulics and Pneumatics	(2-2-3)
MFG 1011 Understanding Basic Hydraulics	(1-0-1)
MFG 1021 Hydraulic Troubleshooting Skills	(1-0-1)
MFG 1041 Understanding Basic Pneumatics	(1-0-1)
MFG 1051 Pneumatic Troubleshooting Skills	(1-0-1)
	Total.....
	12 1-hour classes

Technical Certificate Electronics

This three semester program is designed to provide students with the essential skills necessary for employment in an electronics oriented position.

Term I	Semester Hours
ENG 1013	English Composition I.....
MTH 1083	Technical Math -or-
MTH 1053	Intermediate Algebra.....
BUS 1603	Computer Fundamentals.....
ELE 1004	Electrical Technology I.....
	13

Term II	Semester Hours
BUS 2013	Technical Communications.....
ELE 1024	Electrical Technology II.....
ELE 1054	Electronics I.....
SFT 1071	CPR and First Aid.....
	12

Term III		Semester Hours
SFT 2073	Industrial Safety and OSHA.....	3
ELE 2004	Electronics II.....	4
ELE 2154	Digital Electronics.....	4
		11
	Total.....	36

Certificate of Proficiency Electrical Maintenance Technology

This certificate consists of courses that are designed to enhance the skills of current workers and to prepare entry level electrical maintenance technicians in the manufacturing field. The curriculum provides students the option of taking two courses that are 4 credit and 3 credit hours or of taking several modular 1 credit hour courses that equate to the traditional courses. Every course will be taught in a lab setting so the students will get theory and hands on experience with each topic

Term		Semester Hours
ELE 1004	Electrical Technology I.....	4
ELE 1023	Motor Controls.....	3
	Total.....	7

New Modular Courses that Equate to Traditional (Existing) Courses;

ELE 1004	Electrical Technology I	(3-2-4)
ELE 1001	Understanding Basic Electricity & Electronics	(1-0-1)
ELE 1021	Electrical Measuring Instruments	(1-0-1)
ELE 1031	Electrical Safety and Protection	(1-0-1)
ELE 1071	Developing Electrical Troubleshooting Skills	(0-2-1)
ELE 1023	Motor Controls	(2-2-3)
ELE 1011	Using and Maintaining Transformers and AC Circuits	(1-0-1)
ELE 1041	Operating/Maintaining DC Equipment and Controls	(1-0-1)
ELE 1051	Operating/Maintaining Single Phase Motors	(1-0-1)
ELE 1061	Operating/Maintaining Three Phase Motors	(1-0-1)
	Total.....	8

Technical Certificate Industrial Supervision and Safety

This one-year program is designed for individuals involved in supervision and/or safety in an industrial setting. The program consists of 31 semester hours of instruction.

Term I		Semester Hours
ENG 1013	English Composition I.....	3
BUS 1803	Contemporary Issues/Supervision.....	3
BUS 1603	Computer Fundamentals.....	3
SFT 1071	CPR/First Aid.....	3
SPE 1003	Introduction to Oral Communication.	3
SFT 1063	Industrial Loss Prevention.....	3
		16

Term II		Semester Hours
BUS 2013	Technical Communications.....	3
BUS 2813	Basic Management.....	3
SFT 2073	Industrial Safety and OSHA.....	3
MTH 1083	Technical Math -or-	
MTH 1053	Intermediate Algebra.....	3
	General Elective.....	3
		15
	Total.....	31

NOTE: Program options and electives should be selected in consultation with a faculty advisor. All electives must be approved by the department chairperson.

Certificate of Proficiency Lean Technology

This program is designed to provide an introduction into the world of efficient process understanding. Methods learned can be applied to manufacturing, service, agriculture, business, medical, and financial institutions. Students may choose an Industrial or Service emphasis.

Term I		Semester Hours
LNT 1004	Introduction to Lean Technology.....	4
		4

Term II		Semester Hours
LNT 1014	Inventory Control.....	4
	Industrial/Service Electives.....	6
		10
	Total	14

Industrial Option:

LNT 1023	Quick Changeovers
LNT 1033	Lean Maintenance

Service Option:

LNT 1043	Value Stream Development
LNT 1053	Total Productive Maintenance

Technical Certificate Environmental/Health and Safety Technology

This program provides students with no previous experience with the knowledge and skills required for employment as an environmental technician. Additionally, this program provides personnel working within the environmental field an opportunity to update and broaden their knowledge and enhance their opportunities for career advancement. Emphasis is on a programmatic understanding of environmental regulations, sampling and analysis procedures, and safety protocols and requirements.

Term I		Semester Hours
BUS 1603	Computer Fundamentals.....	3
MTH 1083	Technical Math.....	3
EHS 1003	Introduction to Environmental Technology.....	3
EHS 1113	Environmental Regulations.....	3
CHE 1024	General Education Chemistry.....	4
		16

Term II		Semester Hours
MTH 1032	Measurements and Calculations.....	2
ENG 1013	English Composition I.....	3
EHS 2233	Chemistry of Hazardous Materials.....	3
SFT 2073	Industrial Safety and OSHA.....	3
EHS 2223	Hazardous Waste Operations (HAZWOPER).....	3
		14
Term III		Semester Hours
EHS 1134	Environmental Sampling and Analysis I.....	4
	Total	34

Certificate of Proficiency Environmental/Health and Safety Technology

This program provides students with the basic knowledge and skills required for entry-level employment as an environmental technician. Emphasis is on environmental safety regulations and sampling and analysis procedures.

Term I		Semester Hours
EHS 1003	Introduction to Environmental Technology.....	3
EHS 1113	Environmental Regulations.....	3
SFT 1081	Introduction to Industrial Safety.....	1
SFT 1071	CPR and First Aid.....	1
		8

Term II		Semester Hours
EHS 2223	Hazardous Waste Operations (HAZWOPER).....	3
SFT 2073	Industrial Safety and OSHA.....	3
EHS 2331	Current Issues in Environmental Technology.....	1
		7
	Total.....	15

Certificate of Proficiency Lodging

This program is designed to equip students to enter the lodging industry. The physical aspects of various lodging facilities, management skills, and food services are explored. Students gain a basic understanding of the lodging industry.

Term I		Semester Hours
HOS 1113	Introduction to Lodging Industry.....	3
HOS 1123	Lodging Fundamentals.....	3
Term II		Semester Hours
HOS 2133	Lodging Concepts.....	3
HOS 2143	Advanced Lodging Concepts.....	3
	Total.....	12

Certificate of Proficiency Hospitality

This program is designed to equip students to enter the hospitality and travel industry. Emphasis is on destinations, modes of travel, and the importance of hospitality. Stu-

dents gain a fundamental understanding of the hospitality industry.

Term I		Semester Hours
HOS 1003	Introduction to Hospitality.....	3
HOS 1013	Introduction to Travel and Tourism.....	3

Term II		Semester Hours
HOS 2023	International Travel.....	3
HOS 2033	Travel Operations.....	3
	Total.....	12

Associate of Applied Science Renewable Energy Technology

This A.A.S. degree is designed for students who wish to enter the Renewable Energy Technology field. This program consists of courses that are designed to prepare students to become knowledgeable and highly-skilled technicians in the renewable energy field. Students will take a core selection of Renewable Energy Technology courses as well as courses in the basic skills of communications, computers, mathematics, and electrical technology.

Term I		Semester Hours
ENG 1013	English Composition I.....	3
MTH 1113	College Algebra -or-	
MTH 1083	Technical Math.....	3
SPE 1003	Intro. to Oral Communication -or-	
	Social Science Elective.....	3
RET 1003	Intro. to Renewable Energy Technology.....	3
ELE 1004	Electrical Technology I.....	4
		16

Term II		Semester Hours
CHE 1024	Intro. to Chemistry -or-	
CHE 1214	College Chemistry I.....	4
RET 1014	Biomass and Feedstocks.....	4
SFT 1063	Industrial Loss Prevention.....	3
EHS 1003	Intro. to Environmental Technology -or-	
	Approved Technical Specialty Elective.....	3-4
		14-15

Term III		Semester Hours
ENG 1023	English Composition II.....	3
BUS 1603	Computer Fundamentals.....	3
RET 1024	Biofuels.....	4
RET 2034	Bioprocess Practices and Lab.....	4
		14

Term IV		Semester Hours
RET 2024	Process Instrumentation.....	4
MCH 2043	Mechanical Devices.....	3
RET 2923	Internship.....	3
	Technical Specialty Elective (2)....	6-8
		16-18
	Total.....	60-63

Technical Certificate Renewable Energy Technology

This certificate is designed to prepare students with the knowledge and skills necessary for entry level jobs in Renewable Energy Technology. This program consists of courses that are designed to prepare students to become skilled technicians in the renewable energy field. Students will take a core selection of Renewable Energy Technology courses as well as courses in the basic skills of communications, computers, mathematics, and electrical technology.

Term I	Semester Hours
ENG 1013 English Composition I.....	3
BUS 1603 Computer Fundamentals.....	3
RET 1003 Introduction to Renewable Energy Technology.....	3
RET 1024 Biofuels.....	4
ELE 1004 Electrical Technology.....	4
	17

Term II	Semester Hours
EHS 1003 Introduction to Environmental Technology -or- Approved Technical Specialty Elective.....	3-4
MTH 1113 College Algebra -or-	
MTH 1083 Technical Math.....	3
SFT 1063 Industrial Loss Prevention.....	3
RET 2024 Process Instrumentation.....	4
MCH 2043 Mechanical Devices.....	3
	16-17
Total.....	33-34

Certificate of Proficiency Renewable Energy Technology

This certificate is designed to prepare students with the knowledge and skills necessary for entry level jobs in Renewable Energy Technology. This program consists of courses that are designed to prepare students to become skilled technicians in the renewable energy field. Students will take introductory courses in Renewable Energy Technology and Environmental Technology, as well as courses in the basic skills of mechanics and industrial safety.

Term	Semester Hours
RET 1003 Introduction to Renewable Energy Technology.....	3
EHS 1003 Introduction to Environmental Technology.....	3
SFT 1063 Industrial Loss Prevention.....	3
RET 1024 Biofuels.....	4
MCH 2043 Mechanical Devices.....	3
	3
Total.....	16

Technical Certificate Diesel Technology

This certificate is designed to prepare students with the knowledge and skills necessary for entry level jobs in Diesel Technology. This program consists of courses that are

designed to prepare students to become skilled technicians in the farming and transportation fields. Students will take a core selection of Diesel Technology courses as well as courses in the basic skills of communication, computers, mathematics, and electrical technology.

Term I	Semester Hours
ENG 1013 English Composition I.....	3
BUS 1603 Computer Fundamentals.....	3
DST 1003 Intro to Diesel Engines.....	3
DST 1013 Intro to Fuel Systems.....	3
DST 2004 Diesel Engine Diag. & Repair.....	4
	16

Term II	Semester Hours
ELE 1054 Electronics I.....	4
RET 1103 Fuels and Lubricants.....	3
DST 2124 Adv. Diesel Engine Diag. & Repair.....	4
ELE 2154 Digital Electronics.....	4
	15
Total.....	31

Certificate of Proficiency Diesel Technology

This certificate is designed to prepare students with the knowledge and skills necessary for entry level jobs in Diesel Technology.

Term I	Semester Hours
DST 1003 Intro to Diesel Engines.....	3
DST 2004 Diesel Engine Diag. & Repair.....	4
	7
Term II	Semester Hours
DST 1013 Intro to Fuel Systems.....	3
DST 2124 Adv. Diesel Engine Diag. & Repair.....	4

Total.....14

Course Descriptions Business

BUS 0111 Keyboarding (1-0-1)

This course teaches basic keyboarding skills. Emphasis on correct techniques necessary to keyboard by touch on a computer is taught.

BUS 0121 Introduction to Computers (1-0-1)

A basic course for beginners, this computer course includes an overview of Windows operating systems, and an introduction to word processing, databases, spreadsheets, and more.

BUS 0131 Windows (1-0-1)

This course provides hands-on experience using Windows. Students become familiar with icons, menus, windows, and dialog boxes. Creating and editing word-processing documents, creating shortcuts, managing files, formatting, copying, and other Windows tasks are covered.

BUS 0141 Internet (1-0-1)

This course introduces students to the Internet. Students search for stock quotes, airline schedules, news, weather, online newspapers, etc. The use of search engines, downloading, sending attachments, and e-mail are covered.

BUS 0151 Word Processing (1-0-1)

This class provides an introduction to Microsoft Word and familiarizes students with the features of the word processing application. Each session provides a follow-up activity to reinforce the skills learned.

Prerequisite: BUS 0121

BUS 0161 Spreadsheets (1-0-1)

This course introduces students to spreadsheet software. Students receive instruction for basic spreadsheet operations such as entering data, creating formulas, and formatting. Budgets and other financial reports for personal use are covered.

BUS 0171 Publisher (1-0-1)

This class familiarizes students with the basic features of Microsoft Publisher. Students learn to create calendars, cards, postcards, and business cards using creativity to design and decorate their publications.

BUS 0181 Windows Intermediate (1-0-1)

This course is a continuation of BUS 0131. Topics covered include working with toolbars and file management.

Prerequisite: BUS 0131

BUS 0191 Digital Photography (1-0-1)

This class provides an introduction to digital photography. Students will learn how to take quality digital photographs and to share and store images. Sessions provide activities to reinforce the skills learned.

BUS 0241 Internet Intermediate (1-0-1)

This course is a continuation of BUS 0141. Students receive instruction in designing and creating web pages.

Prerequisite: BUS 0141

BUS 0271 Publisher Intermediate (1-0-1)

This course is a continuation of BUS 0171. Students will create more advanced projects such as a family history biography, newsletters, certificates, etc. **Prerequisite: BUS 0171**

BUS 0281 Windows Advanced (1-0-1)

This course is a continuation of BUS 0181. Students learn how the World Wide Web and Windows XP work together and how to initiate and refine searching skills.

Prerequisite: BUS 0181

BUS 0341 Internet Advanced (1-0-1)

This course is a continuation of BUS 0241. Students receive instruction in how the World Wide Web operates, designing Web pages, and enhancing user experience.

Prerequisite: BUS 0241**BUS 1003 Introduction to Business (3-0-3)**

This course provides an introduction to the operation of the business segment of society, including the free enterprise system, management, marketing, finance, and government regulation. Designed to give the student a survey of the field of business, including terminology and career opportunities.

BUS 1023 College Business Math (3-0-3)

This course is designed to teach basic math operations, decimals, percentages, bank statements, payroll, interest, finance charges, and discounts. The display calculator is used to perform computations. **Prerequisite: MTH 0953 or appropriate placement score.**

BUS 1113 Legal Terminology (3-0-3)

This course provides students with basic knowledge of legal language to allow them to recognize and understand legal terms and to work efficiently in a legal environment. It also provides a basic understanding of the administrative office duties and responsibilities relevant to the legal profession.

BUS 1133 Introduction to Accounting (3-0-3)

Designed for students who expect to work in a secretarial or clerical position, this course emphasizes book-keeping procedures of the basic accounting cycle with an orientation toward small service or merchandising businesses. Students will not be given credit in Introduction to Accounting if taken at the same time or after completing BUS 2113.

BUS 1203 Consumer Finance (3-0-3)

This course is designed to give insight into the effective handling of financial matters of the family unit. Such topics as budgeting, insurance, home ownership versus renting, borrowing, saving and investing, taxes, and family financial planning are discussed. Students are introduced to a popular financial software package.

BUS 1343 Computer Keyboarding I (3-0-3)

This course is designed to teach basic keyboarding skills emphasizing correct techniques necessary to keyboard by touch on a microcomputer. In addition to keyboard mastery, learning experiences include basic word processing applications (letters, reports, memos, tables, etc.)

BUS 1353 Basic Filing/Records Management (3-0-3)

This course introduces the alphabetic, numeric, subject, and geographic filing systems and provides sufficient practice to develop skill in the operation of these systems. Projects include hands-on practice in manual filing and electronic data base management. Some data entry is required. **Prerequisite: BUS 1603 (Grade \geq C)**

BUS 1373 Computer Keyboarding II (3-0-3)

This course emphasizes skill development at a higher level and strengthens techniques in production problems, speed and accuracy. Emphasis is also placed on the production of business letters, statistical tables, manuscripts, business forms, and related projects. **Prerequisite: BUS 1343 (Grade ≥ C)**

BUS 1603 Computer Fundamentals (3-0-3)

This course provides an introduction to computer systems. The course stresses computer system hardware, software, data storage, terminology and procedures. Additionally, the course provides the student with beginning skills required to use a microcomputer system, operating system software and an integrated software package. On the first day of class, students will be expected to key a minimum of 25 correct word per minute.

BUS 1621 Microsoft® Excel (1-0-1)

This short course is designed to present the knowledge and skills required to perform common spreadsheet tasks and to serve as preparation for the Core certification in Microsoft Office XP. **Prerequisite: BUS 1603 or equivalent**

BUS 1623 Microcomputer Software Applications (3-0-3)

This course extends students' knowledge of electronic spreadsheet, database management and presentation software. Realistic business and personal applications are emphasized. **Prerequisite: BUS 1603**

BUS 1631 Microsoft® Access (1-0-1)

This short course is designed to present the knowledge and skills required to perform common database tasks and to serve as preparation for the Core certification in Microsoft Office XP. **Prerequisite: BUS 1603 or equivalent**

BUS 1633 Personal Software Applications (3-0-3)

This course is designed to introduce the non-business student to the personal computer. Students will gain a general understanding of computer terminology, operating systems and application software. Students will utilize various personal-use software programs.

BUS 1641 Microsoft® PowerPoint (1-0-1)

This short course is designed to present the knowledge and skills required to produce professional-looking presentations and to serve as preparation for the Core certification in Microsoft Office XP. **Prerequisite: BUS 1603 or equivalent**

BUS 1651 Microsoft® Windows (1-0-1)

This one-hour course presents the beginning concepts of Windows operating system. Students are introduced to Windows terminology and gain hands-on experience using the desktop, My Computer, and Windows Explorer.

Students also work with folders, files, shortcuts, and other file maintenance functions

BUS 1661 Microsoft® Word (1-0-1)

This one-hour course provides hands-on experience using Word to create and save documents, edit documents, and format text and paragraphs. Students also learn how to create tables and how to use other features to help enhance document appearance. **Prerequisite: BUS 1343 or equivalent**

BUS 1671 Internet Basics (1-0-1)

This one-hour beginning course is designed to teach basic Internet features including how to use search engines for research, how to use email, and how to make a simple web page.

BUS 1703 Income Tax Preparation (3-0-3)

A survey course to provide basic knowledge in the preparation of Federal Income Tax returns for individuals and unincorporated businesses. Included will be a review of various forms used in Federal Income Tax returns and their application.

BUS 1733 Principles of Banking (3-0-3)

This course is designed to provide an overview of the nature of commercial banking activities. Such topics as negotiable instruments, commercial bank and its depositors, bank accounting, loans and investments, trust services, internal control, and external regulation of banks are discussed.

BUS 1803 Contemporary Issues in Supervision (3-0-3)

This course is designed to help students acquire supervisory skills they can use in the workplace. While learning important supervisory management concepts, students learn how to be supervisors. Many of the contemporary issues and problems that supervisors face are studied. Topics discussed include workplace violence, discipline, sexual harassment, drug/substance abuse, and employee appraisal, among others.

BUS 1904 Principles of Real Estate (4-0-4)

This course covers the basic theories and practices that have a significant influence on the real estate market. It is designed to complete the new requirements by the Arkansas Real Estate Commission of sixty classroom hours (i.e., four college credit hours) for a Real Estate License for salespersons in the state of Arkansas. Subjects covered include land descriptions, deeds, real estate law, real estate ethics, and real estate marketing.

BUS 2013 Technical Communication (3-0-3)

In this course, students learn correct writing and oral presentation techniques. Topics include electronic communication, informal and formal reports, proposals and feasibility studies, page design, graphics, oral communi-

cation and research. This course utilizes computers and requires keyboarding skills of 25 words per minute or better. **Prerequisite: ENG 1013**

BUS 2023 Community Leadership Development (3-0-3)

This course is designed to provide a foundation for leaders who desire to improve their community. Topics include: community history, measuring quality of life indicators, knowing the sector of their community, developing a vision for the future, trusteeship and responsibility of board members, and economic developments.

BUS 2033 Legal Environment of Business (3-0-3)

This course provides an introduction to the legal system and its common law origin emphasizing its application to business situations. Such areas as the development and operations of the court system, government's regulation of American businesses and business disputes and remedies will be covered.

BUS 2043 Business Law II (3-0-3)

This course provides a study of various legal aspects and how they relate to different business situations. Such concepts as contracts, law sales, agency and employment and bankruptcy will be presented. **Prerequisite: BUS 2033 or permission.**

BUS 2073 Business Statistics (3-0-3)

This course covers statistical methods used in business. Topics covered include sampling, probabilities, hypothesis testing and linear regression. **Prerequisite: MTH 1113 or permission.**

BUS 2081 Special Topics In Business (1-0-1)

BUS 2082 (2-0-2)

BUS 2083 (3-0-3)

Various topics offered are based on student need/interest. Topics offered will be approved by the Department Chair and the Vice President of Academic Affairs.

BUS 2113 Principles of Accounting I (3-0-3)

This course provides an introductory study of the financial accounting cycle with emphasis on service and merchandising businesses and the proprietorship form of business organization. Fundamental accounting principles are emphasized as they apply to the accounting cycle.

BUS 2123 Principles of Accounting II (3-0-3)

This course is a continuation of BUS 2113 emphasizing the corporate form of business organization. Accounting for manufacturing businesses and an introduction to managerial accounting and financial statement analysis is included. **Prerequisite: BUS 2113 (Grade \geq C) .**

BUS 2173 Computerized Accounting (3-0-3)

This course enables students to become more knowledgeable about the computer and how it is used in

handling accounting information. Accounting software packages are used by students to process data through the accounting cycle and the preparation of financial statements. Integrated general ledger software is used. **Prerequisite: BUS 1603 must be completed within the past 5 years with Grade \geq C or permission.**

BUS 2183 Electronic Spreadsheet Applications(3-0-3)

This course provides an introduction to the use of electronic spreadsheets in everyday applications. Students are exposed to the fundamental concepts of spreadsheet technology as they advance through a modern software package used extensively in the business world. "What if" and "goal seeking" analysis are performed throughout the course. Worksheets, formulas, graphics, and other key facets of the spreadsheet package are used heavily. Macros and other advanced features are introduced. **Prerequisite: BUS 1603 must be completed within the past 5 years with Grade \geq C or permission.**

BUS 2213 Principles of Macroeconomics (3-0-3)

This course provides a general introduction to basic concepts in economics, including national income, money and banking, fiscal policy, and economic growth. Emphasis is placed on macroeconomics as applied to the world of today.

BUS 2223 Principles of Microeconomics (3-0-3)

This course provides a general introduction to the area of microeconomics, emphasizing price theory, income distribution, employment of resources, and international economics, relating them to the fundamentals of supply and demand. Students develop an understanding of the different types of market systems including pure competition, monopoly, oligopoly, and monopolistic competition and their implications.

BUS 2303 Integrated Business Projects (3-0-3)

This course provides a series of integrated projects for simulating real-world business activities. Students will develop information technology solutions to meet the needs of the business community and demonstrate critical-thinking skills while deciding between alternative approaches. This course will allow students to integrate and reinforce skills and knowledge acquired in previous courses. **Prerequisites: BUS 2453, BUS 2183, and BUS 1353 (Grade \geq C)**

BUS 2393 Administrative Office Procedures (3-0-3)

This course provides training in the techniques of managing the electronic office, workstation and software. Special emphasis is also given to techniques involving human relations, time management, travel arrangements, written communications, telephone communications and information management. **Prerequisite: BUS 1373 or permission**

BUS 2423 Machine Transcription (3-0-3)

This course is designed to include instruction and practice in the operation of a transcription machine using a microcomputer. By using commercially prepared tapes in one of the following business areas: general, medical, or legal, basic language skills will be reviewed and documents will be prepared according to the student's chosen area. **Prerequisite:** ENG 1013 and BUS 1343

BUS 2453 Word Processing Concepts and Applications (3-0-3)

This course provides an introduction to word processing concepts and hands-on experience in training students to input, edit, save, retrieve, and print documents using the microcomputer. A knowledge of the underlying communication skills—grammar, punctuation, and capitalization is an essential part of this course. Students may be expected to spend time on the word processing equipment outside of scheduled class time. **Prerequisite:** BUS 1343 (Grade \geq C) or keyboarding skills. **Prerequisite or Corequisite:** BUS 1603 completed within the past 5 years with Grade \geq C or permission

BUS 2463 Advanced Word Processing Applications (3-0-3)

This course presents a hand-on approach to processing business and office correspondence by using computers. Students are taught to use word processing software to do advanced operations: merge, macros, sort, forms, graphics, etc. **Prerequisite:** BUS 2453 (Grade \geq C) **Corequisite:** BUS 2493, \$70 MOS testing fee required

BUS 2473 Desktop Publishing (3-0-3)

This course introduces basic concepts of desktop publishing and provides training in producing in-house publications such as brochures, newsletters, flyers, advertisements, letterheads, business cards, resumes, and programs, etc. **Prerequisite:** BUS 2453

BUS 2483 Medical Office Management (3-0-3)

This course is designed to familiarize one with computerized account management and to enable one to understand and perform the duties necessary to manage a medical office electronically.

BUS 2493 Internship in Administrative Office Technology (0-10-3)

This course provides administrative office technology majors practical experience in a business environment. Students work with their faculty advisor and internship employer to develop an education plan with meaningful learning objectives based on their program of study. A minimum of 136 contact hours required.

Prerequisite: 45 credit hours toward graduation in the Administrative Office Technology program, registration for the internship during the preregistration period prior to the semester of enrollment, and completion of an Internship Agreement.

BUS 2513 Fundamentals of Marketing (3-0-3)

A study of the various aspects of marketing, especially the marketing of consumer goods. Topics discussed include consumer behavior, market segmentation, marketing research, new product development, pricing, marketing channels, retailing, advertising, sales promotion, and the marketing of services.

BUS 2523 Salesmanship (3-0-3)

This course discusses the principles and techniques of selling as they apply to business situations involving both final consumers and business firms as buyers. Such topics as planning and preparation for selling, the role of a salesman, and the process of selling are investigated. Lecture, case and project methods of teaching are used.

BUS 2533 Advertising (3-0-3)

This course provides an introduction to the fundamental principles, practices, and media used in modern advertising. Strong emphasis is placed on retail advertising. The marketing, communication, and consumer viewpoints are discussed. **Prerequisite:** BUS 2513 or permission

BUS 2553 Business Communication (3-0-3)

This course is designed to create an understanding of business correspondence of various forms. Business letters and reports of various types are investigated. A knowledge of the importance of communication is stressed as well as the various means used in business communication. **Prerequisite:** ENG 1013 or permission.

BUS 2813 Basic Management (3-0-3)

This course provides a study of the various principles and functions of management. Topics discussed include social responsibility, decision making, planning, organizational structure, human resource management, employee behavior, team building, motivation, and communication. Emphasis is placed on the practical application of course material.

BUS 2833 Human Resource Development (3-0-3)

This course provides a study of the policies and practices involved in personnel administration to build an effective work force. Staff planning, recruiting, selecting, orientating, educating, job training, compensating, performance management and labor relations are discussed. Offered on request. **Prerequisites:** PSY 1003, BUS 2813, or permission.

BUS 2843 Group Dynamics & Teambuilding (3-0-3)

Students will learn how to organize, lead, and participate as members of project teams in improving quality and productivity while using data based methods. Team dynamics and growth will be examined including team building activities, handling disruptive behavior, and overcoming obstacles to quality improvement. Motivation, leadership, attitudes, perception, and communications will be major topics of concern. **Prerequisites:** PSY 1003, BUS 2813, or permission.

BUS 2863 Continuous Quality Improvement (3-0-3)

The course is designed to provide a comprehensive foundation for the implementation of quality management in both manufacturing and service organizations. The basic philosophy of quality management, improvement process and tools for quality management are stressed.

BUS 2903 Internship in Business Management (0-10-3)

This course is designed to give students an opportunity to enhance their knowledge by applying what they have learned in a work situation. Students work with their faculty advisor and internship employer to develop an education program with meaningful learning objectives based on their program of study. A minimum of 136 contact hours required. **Prerequisite: 45 credit hours toward graduation in the A.A.S. Management degree program, registration for the internship during the pre-registration period prior to the semester of enrollment, and completion of an Internship Agreement.**

BUS 2933 Leadership Skills and Ethics (3-0-3)

This course is designed to help students acquire the leadership skills necessary to become successful leaders in the workplace. Discussion will include conflict resolution, motivational theory, administrative responsibilities, and personality styles. Emphasis is placed on the impact of ethics in modern organizations and the positive impact and benefits of ethical conduct for a business.

Surveying

CET 1013 Elementary Surveying (1-4-3)

This course covers the principles of geometry, theory and use of instruments, mathematical calculations, and the control and reduction of errors. Included are topics on tape measurement, differential leveling, traversing, contours, computations, and land surveys.

CET 2013 Civil Drafting (1-4-3)

This course introduces the student to drafting practices pertinent to the field of Civil Engineering Technology. Work is done on topographic drawings, land layout, utilities, plan and profile and earthwork cross-sections, including calculations. Construction and fabrication drawings are covered. **Prerequisite: DFT 1013, CET 1013**

CET 2103 Highway Drafting (2-2-3)

This course provides a study of basic information to highway drafting. Horizontal alignment of route surveys in the plan view, vertical alignment of route surveys in the profile view, typical sections, cross sections and area calculations and estimation of quantities are covered. **Prerequisite: DFT 1013**

CET 2203 Mapping & Topography (2-2-3)

This course includes instruction on selected drafting techniques that are applied to the problem of making maps,

traverses, plot plans, plan and profile drawings using maps, field survey data, aerial photographs and related references. Materials including symbols, notations, and other applicable standardized materials are also covered. **Prerequisite: CET 1013 Corequisite: DFT 1123**

Multimedia

CGR 1003 Introduction to Multimedia (3-0-3)

This course introduces the student to the basic skills of multimedia. Multimedia concepts and literacy will be covered as well as how to choose the appropriate software to design and produce effective presentations. Students receive hands-on experience working with digital cameras, images, presentation software, and audio and video software. **Prerequisite: BUS 1603 must be completed within the past 5 years with Grade \geq C or permission.**

Computer Information Systems

CIS 1003 Microcomputer Operating Systems(3-0-3)

The course extends the student's knowledge of microcomputer operating systems. Students gain thorough knowledge of, and skill in, using the standard single-user, multi-tasking disk operating system. Attention is given to installation, customization, and modification of the operating environment. **Prerequisite: BUS 1603 must be completed within the past 5 years with Grade \geq C or permission.**

CIS 1013 Microcomputer Hardware Concepts and Applications (3-0-3)

An overview of the hardware of the personal computer is presented. Students are given the opportunity to assemble and configure a microcomputer. The motherboard, microprocessors, floppy drives, hard drives, CD-ROM, power supplies, modems, terminals, and printers are examined. Essential utilities necessary to upgrade and troubleshoot a PC are utilized. **Prerequisite: BUS 1603 must be completed within the past 5 years with Grade \geq C or permission.**

CIS 1103 Information Technology Tools (3-0-3)

This course provides the basic knowledge and skills to be an active member of an information technology project team. Students are assigned to project teams with a related information technology task. They are responsible for planning, researching, tracking, documenting, and reporting activities related to the team's efforts using standard office software utilities, project management software and technical graphics software. The primary intent of this course is to develop basic skill sets for the software tools and for team building. **Prerequisite: BUS 1603 or permission**

CIS 1203 Programming Logic and Design (3-0-3)

Introduces students to programming concepts, structured and object styles, logical thinking, and problem solving. General programming topics, design tools, and algorithms are introduced through pseudo code with

structured modular design, object, and event-driven programming paradigms. Students will be able to plan and design the logic for information technology systems. **Prerequisite: BUS 1603**

CIS 2013 A+ Certification Review (3-0-3)

A complete analysis and comprehensive review in preparation for the A+ Certification Exams. Students are given extensive opportunities to practice for both the Core/Hardware Technologies exam and the Windows/Operating Systems Exam. Test taking strategies and research in a wide variety of topics are covered. This course integrates concepts learned in past and current microcomputer hardware and operating system classes. **Prerequisites: CIS 1003, CIS 1013 A+ Certification Exam Fee payment required**

CIS 2023 Advanced PC Diagnostics/Configuration (3-0-3)

This course is one of a set of courses to prepare a student for A+ Computer Certification. The course covers advanced PC configuration and troubleshooting of peripherals, resolving resource conflicts, and optimizing system performance. Additional topics include networking, Internet technologies, printers, portables, maintenance and recovery. **Prerequisites: CIS 1003, CIS 1013**

CIS 2103 Java Programming (3-0-3)

This course introduces the Java Language. It covers the writing, compiling, executing, and debugging of Java Programs. Topics include the basic Java programming instructions, Java classes, and Java applets. Object-oriented programming with an emphasis on structured and top-down methods is an integral part of this class. **Prerequisite: CIS 1203**

CIS 2113 COBOL Programming (3-0-3)

Common Business Oriented Language (COBOL) is a high-level programming language used extensively in programming business applications. In this course students learn to design and write structured programs using COBOL. A problem-oriented approach is used as students are introduced to structured design and programming through a series of programs illustrating typical business applications. **Prerequisite: BUS 1603 must be completed within the past 5 years with Grade \geq C or permission.**

CIS 2123 Visual BASIC Programming (3-0-3)

Windows programming is introduced in this course, with windows programming conventions and user interface objects stressed. Graphics user interface (GUI) is emphasized with the goal of allowing students to be creative in developing programs. Linking files, module definition files, and operational considerations are an integral part of developing complete Visual BASIC programs. Structured programming techniques and standard logic techniques are taught. **Prerequisite: CIS 1203 or permission**

CIS 2133 C++ Programming (3-0-3)

This course introduces object-oriented programming with continued emphasis on structured and top-down methods. Students design, write, test and maintain programs in the C++ language. If-then-else, for-loops, arrays, and basic input/output operations are an important part of programming projects. Programs will be written requirements. **Prerequisite: CIS 1203 OR permission**

CIS 2174 Advanced Programming (4-0-4)

Advanced programming techniques and concepts are presented using Java Programming. These techniques and concepts include inheritance, polymorphism, graphical user interfaces, event handling, exception handling, files and streams. **Prerequisite course: CIS 2103**

CIS 2203 Database Management Concepts and Applications (3-0-3)

This course introduces the student to database programming and applications. Relational databases and database management systems and their properties are studied. The relational database software is utilized within the Windows operating system environment. Students create files, reports, forms, and queries using this package. The use of objects in the database software package is discussed and implemented. Macros, menus, and toolbars are introduced as part of the development of an effective database management system (DBMS).

Prerequisite: BUS 1603 must be completed within the past 5 years with Grade \geq C or permission.

CIS 2213 Data Communications and Networks (3-0-3)

In this course data communications fundamentals are introduced with emphasis on vocabulary, concepts, and practical applications. Hardware and software interfaces, protocol terminology, and networks are explored. Numerous types of networks are discussed. Various methods of data movement are studied. Basic knowledge of networking skills is introduced in a Windows environment. Skills are developed to familiarize students with proper techniques and utilities to set up and operate a network.

Pre or Corequisite: CIS 1003 with Grade \geq C or permission

CIS 2514 Database and Queries (4-0-4)

This course will introduce the students to Structured Query Language (SQL) and how to utilize SQL to retrieve information from a database. It develops skills to build a database by creating tables, indexes, views, users, and sequences as well as populating and manipulating the data within tables. **Prerequisites: CIS 2203, CIS 1203**

CIS 2613 Systems Analysis and Design (3-0-3)

The systems development life cycle is introduced to enable students to understand and appreciate the requirements of designing and implementing a computer information system. Time management and human resource

requirements are explored. Students are prepared to use systems analysis and design techniques to take a problem and create a solution using the latest hardware and software development tools. A real-world problem is assigned and a solution proposed using SDLC techniques. This course integrates concepts learned in previous Computer Information Systems classes. **Prerequisites: 45 semester hours in the CIS degree program and one of the following: CIS 1203, CIS 2113, CIS 2123, CIS 2133**

CIS 2991 Internship in Computer Information Systems (A minimum of 50 contact hours is required)
(0-4-1)

\$70 MOS Testing Fee required

CIS 2992 Internship in Computer Information Systems (A minimum of 100 contact hours is required)
(0-7-2)

\$70 MOS Testing Fee Required

CIS 2993 Internship in Computer Information Systems **(0-10-3)**

These courses are designed to give students an opportunity to enhance their knowledge by applying what they have learned in a work situation. Students work with their faculty advisor and internship employer to develop an education plan with meaningful learning objectives based on their program of study. A minimum of 136 contact hours required. **Prerequisite: 45 credit hours toward graduation in the AAS Computer Information Systems program, registration for the internship during the preregistration period prior to the semester of enrollment, and completion of an Internship Agreement.**

\$70 MOS Testing Fee required.

Drafting and Design

DFT 1013 Fundamentals of Drafting **(1-3-3)**

This course is designed to provide basic knowledge relating to mechanical drawing on the technical level. Topics covered include basic drafting techniques, lettering, geometric construction, multi-view and pictorial sketching, auxiliary views, sectioning, and dimensioning plus a laboratory activity to assist the student in obtaining necessary graphic skills.

DFT 1023 Introduction to Computer Aided Drafting **(1-3-3)**

This course is designed to provide a basic knowledge of computer aided drafting systems and their application to the drafting field. The student will become knowledgeable in using the computer as a drafting tool to create detail drawings. **Pre or Corequisites: DFT 1013**

DFT 1113 Construction Materials **(2-2-3)**

A course designed to familiarize the student with the physical properties of the materials generally used in the erection of a structure, with a brief description of their manufacture.

DFT 1123 Intermediate CADD **(1-4-3)**

This course is designed to be a continuation of Introduction to Computer Aided Drafting (DFT 1023). Subject areas will include plotting, dimensioning, sectional views, and pictorials. The lab component is designed to expand the information and number of drawings in the subject area being covered in Intermediate CADD. Emphasis is placed on dimensioning and sectional views.

Prerequisites: DFT 1013, DFT 1023

DFT 1213 Construction Techniques/Methods **(3-3-3)**

This course introduces the student to building construction methods used in light and heavy framed structures.

DFT 1313 Estimating **(2-2-3)**

This course acquaints the student with the basic principles and current practices employed in estimating construction costs. The student prepares material and labor quantity surveys from working drawings and specifications for residential and commercial buildings. The principles of bid procedures and requirements of construction projects are introduced.

DFT 2023 Advanced CADD **(1-4-3)**

This course is designed as a continuation of Intermediate CADD. Emphasis is placed on attributes, slide shows, the user coordinate system, 3-D faces, and solid modeling. **Prerequisite: DFT 1123**

DFT 2113 Tool & Die Drafting **(2-2-3)**

This course provides knowledge of the metal working industry and the design of tools necessary in the metal removal processes used in production. Covered is a study of the basics in drawing and designing simple blanking, piercing, and forming dies used in the metal working industry. Using the computer as a drafting/design tool in creating drawings of jigs, fixtures, and gauges as well as in creating drawings of die sets for metal parts will be stressed.

DFT 2203 Architectural Drafting I W/CADD **(1-3-3)**

This course provides knowledge of architectural drawing with emphasis on residential design. Skills development using the computer as a drafting/design tool in making drawings for residential design will be stressed.

Prerequisite: DFT 1023

DFT 2223 Architectural Drafting II **(1-3-3)**

This course covers drawing concepts used in commercial construction. Special emphasis will be placed on pre-stressed, pre-cast, and structural steel members. Zoning and parking will be studied. Includes a laboratory activity to assist the student in obtaining the necessary graphic skills introduced. **Prerequisite: DFT 2203**

DFT 2233 Structural Drafting **(1-4-3)**

This course introduces the student to structural sections, terms and conventional abbreviations. Symbols used by

structural fabricators and erectors are studied also. Knowledge is gained in the use of A.I.S.C. Handbook. Problems are studied that involve structural designing and drawing of beams, columns, connections, trusses, and bracing.

Prerequisite: DFT 1013

DFT 2303 Mechanical Drafting I W/CADD (1-3-3)

This course extends the student's knowledge of the drafting field relating to mechanical components used in industry. This course allows the student to develop additional skills in using the computer as a drafting/design tool. **Prerequisite: DFT 1023**

DFT 2313 Electrical/Electronic Drafting with CADD (1-3-3)

This course extends the student's knowledge of the drafting field to the electrical/electronics industry. The use of the computer as a drafting/design tool in creating schematic, wiring diagram, and printed wiring drawings will be emphasized. **Prerequisite: DFT 1023**

DFT 2323 Mechanical Drafting II W/CADD (2-2-3)

This course is a continuation of Mechanical Drafting I with CADD with emphasis on advanced techniques and knowledge employed in the planning of mechanical objects. Includes instruction in pipe drafting and the use of tolerancing and dimensioning techniques.

Prerequisite: DFT 2303

DFT 2413 Codes and Regulations (3-0-3)

This course provides a study of basic codes directly affecting Architectural, Structural and Mechanical drafting. Topics covered include but not be limited to the Southern Building Code (SBC), the National Electric Code (NEC) as established by the National Fire Protection Association (NFPA), local building codes (County and City, and other codes that may be deemed essential to the development of effective drafters). **Prerequisite: DFT 2203, DFT 2303**

DFT 2901 Special Projects in Drafting and Design (0-2-1)

DFT 2902 (0-4-2)

DFT 2903 (0-6-3)

This course is designed to provide the student with the practical application of skills and knowledge gained in other drafting courses. The instructor works closely with the student to insure that the selection of a project will enhance the student's learning experience.

DFT 2923 Drafting and Design Internship (0-10-3)

DFT 2926 Drafting and Design Internship (0-20-6)

This course is a cooperative internship between industry and education and is designed to integrate the student's technical studies with industrial experience. Students work with their faculty advisor and internship employer to develop an education plan with meaningful learning objectives based on their program of study. A

minimum of 136 contact hours required for DFT 2923, a minimum of 272 contact hours required for DFT 2926.

Prerequisites: 45 credit hours toward graduation in the A.A.S. Drafting and Design program, registration for the internship during the preregistration period prior to the semester of enrollment, and completion of an Internship Agreement.

Engineering

EGR 1004 Fundamentals of Engineering I (3-2-4)

This course provides an introduction to the field of engineering, the engineering process and possible career opportunities. Students use a hands-on approach to explore the engineering system and manufacturing procedures. Students develop problem solving skills utilized in the engineering profession. **Students will be required to demonstrate keyboarding skills, computer aided drafting skills as well as basic computer knowledge and capabilities.**

EGR 1013 Blueprint Reading (2-2-3)

This course provides students with the knowledge and skills required to interpret a variety of blueprints, schematics and technical drawings. Topics include engineering drawings in the machine, electrical and manufacturing fields. Construction drawings are examined from architectural schematics to structural fabrication and erection drawings.

EGR 1024 Fundamentals of Engineering II (3-2-4)

This course is a continuation of Fundamentals of Engineering I. Students will use state of the art computers and software to complete complex engineering projects. Students will continue to develop problem solving skills utilized in the engineering profession. The purpose of the course is to give students experience in the field of engineering and to determine if engineering could be a possible career choice. **Prerequisite: EGR 1004**

EGR 2003 Geometric Dimensioning and Tolerancing (2-2-3)

This course introduces students to the quality control techniques utilized in various precision measurement applications. The coordinate system, ANSI standards and ASME Y14.5m will be reviewed and practical applications explored. Students will study form controls, orientation controls, run out controls and the tolerance of position.

EGR 2004 Engineering Design I (3-2-4)

This course is an introduction to engineering design. Problem solving skills will be used in conjunction with computer aided drafting and design to create 3-D models and photorealistic renderings of solid models. The course will explore all phases of design from conceptualization to design development and product manufacturing. The purpose of this course is to give students experience in the field of engineering and to determine if engineering could

be a possible career choice. **Prerequisites: EGR 1024 and ELE 1124**

EGR 2024 Engineering Design II (3-2-4)

This course is a continuation of Engineering Design I. Students will utilize various case studies to explore engineering systems and manufacturing processes. The course will emphasize the design development process of a product from model to manufacturing. Computer aided drafting and design will be used to analyze and evaluate all aspects of product development. **Prerequisite: EGR 2004**

EGR 2033 Engineering and Design Project (2-2-3)

Students apply the principles learned in the preceding engineering courses. Computer aided drafting and design will be used to analyze and evaluate all aspects of the engineering problem. The purpose of this capstone course is to give pre-engineering students a platform to display their knowledge of engineering design and development. **Prerequisites: EGR 1024 and ELE 1124.**

EGR 2034 Engineering Project Development I (3-2-4)

A team approach to solving engineering problems will place students in teams of two to four to analyze, design and construct a solution to engineering problems. Students will apply the principles learned in the preceding engineering courses. Computer aided drafting and design will be used to analyze and evaluate all aspects of the engineering problem. The purpose of this capstone course is to give pre-engineering students a platform to display their knowledge of engineering design and development. **Prerequisites: EGR 1024 and ELE 1124**

EGR 2053 Precision Measurement (2-2-3)

This course introduces students to metrology and the importance of accuracy and precision in measurements. Students analyze measurements in manufacturing and in the global market to be able to determine and describe resolution, accuracy, precision, calibration and working standards. A variety of instruments will be used to study measuring procedure and analysis of measured data.

EGR 2054 Engineering Project Development II (3-2-4)

A team approach to solving engineering problems will place students in teams of two to four to analyze, design and construct a solution to engineering problems. Students will apply the principles learned in the preceding engineering courses. Computer aided drafting and design will be used to analyze and evaluate all aspects of the engineering problem. The purpose of this capstone course is to provide pre-engineering students a platform to display their knowledge of engineering design and development. **Prerequisite: EGR 2034**

EGR 2062 Statistical Process Control (2-0-2)

This course introduces the basic concepts and tasks of Statistical Process Control (SPC) including data collection, calculation of values, construction of values, and control charts, and interpretation of variations. **Prerequisite: MTH 1113**

EGR 2923 Engineering Technology Internship (0-10-3)

This course is a cooperative internship between industry and education and is designed to integrate the student's technical studies with industrial experience. Students work with their faculty advisor and internship employer to develop an education plan with meaningful learning objectives based on their program of study. A minimum of 136 contact hours are required. **Prerequisite: 45 credit hours toward graduation in the program, registration for internship during the pre-registration period prior to the semester of enrollment, and completion of an Internship Agreement.**

Environmental/Health and Safety Technology

EHS 1003 Introduction to Environmental Technology (3-0-3)

An introductory course designed to acquaint students with different aspects of the environmental technology field. This course specifically addresses air, water, and soil pollution, OSHA, hazardous waste, recycling, as well as other current issues. An overview of job opportunities will also be discussed.

EHS 1113 Environmental Regulations (3-0-3)

This course will present an overview and summary of the regulatory and legal requirements associated with environmental technology. The critical impact of accurate and complete records maintenance upon the overall success of environmental and hazardous waste management programs will be emphasized. Whenever possible, requirements in Arkansas will be used as the model presented in class.

EHS 1134 Environmental Sampling and Analysis I (3-2-4)

This course is a basic approach to field samplings and analytical testing often associated with environmental assessments and regulatory compliance activities. Emphasis will be placed on designing appropriate sampling schemes, appropriate use of sampling equipment and analysis of collected data. Hands-on experience will be a vital part of this course with students conducting sampling in real world situations. **Prerequisites: MTH 1032 with (Grade \geq C) and EHS 1003 with (Grade \geq C)**

EHS 2134 Environmental Sampling and Analysis II
(3-2-4)

This course continues with consideration of sampling designs and effective sample collection, handling, preservation, and shipping requirements often associated with environmental assessments, regulatory compliance and safety monitoring. Introductory analysis will also be conducted and emphasis will be given to correct summary reports from sample collections. **Prerequisite: EHS 1134 (Grade \geq C)**

EHS 2223 Hazardous Waste Operations
(HAZWOPER) (3-0-3)

This course is designed to provide the training (HAZWOPER) required under 29 CFR 1910.120 for hazardous waste site personnel. Topics include hazard recognition, hazard control, monitoring, work practices, emergency response, and right and responsibilities.

EHS 2233 Chemistry of Hazardous Materials (3-0-3)

This course introduces students to the basic concepts of chemistry and physics which are essential for the characterization of the chemical hazards such as carcinogens, corrosives, explosives, flammables, oxidizers, and radioactive materials. Student will also become familiar with the chemistry of some elements, principles of chemical reactions, and the use of various reference books. **Prerequisite: CHE 1024 (Grade \geq C)**

EHS 2331 Current Issues in Environmental Technology (1-0-1)

This course will cover a number of current issues facing people in the Environmental Technology field. Coursework will involve discussion of issues with emphasis on examining a number of viewpoints on each issue. Effort will be made to tie concepts learned in previous classes to examine these real life situations. **Prerequisites: EHS 1003 and EHS 1113 with Grade \geq C**

EHS 2493 Environmental Health and Safety Internship (0-10-3)

This course is a cooperative internship between work environment and education and is designed to integrate the student's technical studies with work experience. Students work with their faculty advisor and the internship employer to develop an education plan with meaningful learning objectives based on their program of study. A minimum of 136 contact hours is required. **Prerequisite: 45 credit hours toward graduation in the program, registration for internship course during the pre-registration period prior to the semester of enrollment, and completion of an Internship Agreement Form.**

Electronics

ELE Understanding Basic Electricity and Electronics
(1-0-1)

This course is an introduction to basic electrical terminology, units, symbols, concepts, and notation. An emphasis will be put on the application in a manufacturing setting.

ELE 1004 Electrical Technology I (3-2-4)

An introduction to basic electrical terminology, units, symbols, concepts, notation, and basic measurement techniques and equipment. Topics include charge, DC current and potential, resistance, Ohm's Law, power, series and parallel circuits, and basic troubleshooting techniques. **Prerequisite: MTH 1053 or MTH 1083 or permission**

ELE 1011 Using and Maintaining Transformers and AC Circuits (1-0-1)

This course is an introduction to the use of transformers and other power transfer devices as applied to motors and motor controls.

ELE 1021 Electrical Measuring Instruments (1-0-1)

This course is an introduction to basic electrical measurement techniques and equipment. An emphasis will be put on the proper use and maintenance of measuring equipment in an industrial setting.

ELE 1023 Motor Controls (2-2-3)

This course introduces the student to the electronic devices, circuits, and systems used to control machinery, processes and facilities in industry. Power control, single and three-phase rectifier, servomechanism, and transducer circuit applications are also studied. The theory and operating characteristics of DC and single and three-phase motors are taught and verified in a lab setting.

ELE 1024 Electrical Technology II (3-2-4)

A continuation of ELE 1004. Topics include magnetics, inductance, capacitance, AC, inductive and capacitive reactance, impedance, passive filters, and circuit analysis/troubleshooting techniques. **Prerequisite: ELE 1004**

ELE 1031 Electrical Safety and Protection (1-0-1)

This course is an introduction to proper safety and protection techniques associated with electrical maintenance technology in an industrial setting. Students will be required to demonstrate safe practices in a manufacturing setting.

ELE 1041 Operating/Maintaining DC Equipment and Controls (1-0-1)

An introduction to the electronic devices, circuits, and systems used to control machinery, processes, and facilities in a manufacturing setting.

ELE 1051 Operating/Maintaining Single Phase Motors (1-0-1)

This course is an introduction to the power control and operating characteristics of single-phase rectifier,

servomechanism, and transducer circuit applications.

ELE 1054 Electronics I (3-2-4)

This course introduces the student to solid state theory and devices. Topics include semiconductor materials, the PN junction diode, special diodes, bipolar and field effect transistors, thyristors, and optoelectric devices.

Prerequisite: ELE 1004

ELE 1061 Operating/Maintaining Three Phase Motors (1-0-1)

This course is an introduction to the operation and maintenance of three-phase rectifier, servomechanism, and transducer circuit applications. The operation characteristics and applications of three-phase motors will be stressed.

ELE 1071 Developing Electrical Troubleshooting (0-2-1)

This is a lab course designed to provide hands-on experience with various electrical troubleshooting techniques and theories associated with equipment in an industrial setting.

ELE 1114 Electrical-Electronic Technology (3-2-4)

This is an introductory course in basic electronics. Students learn the basics of resistors, capacitors, and inductors and how electrical resistance, current, and power apply to those components. Students are introduced to basic solid state electronics components. They also utilize the computer as a drafting/design tool to create schematic and wiring diagrams and printed circuitry. **Prerequisite: MTH 1053 or permission**

ELE 1124 Solid State and Digital Electronics (3-2-4)

This course covers digital electronics and logic and how they can be applied in the use of robotics. This course addresses in detail the various types of digital integrated circuits. BOOLEAN Algebra will be introduced as an important digital electronic design method. Circuits created as a part of classroom projects will be created and simulated on the computer to test their function for proper operation. Robotic fundamentals will be covered with emphasis on industrial robotics and the actual use of an industrial-type robotic arm. **Prerequisite: ELE 1114**

ELE 2004 Electronics II (3-2-4)

An introduction to electronic circuits employing solid state devices. Topics include bias and stabilization, typical amplifiers, linear integrated circuits, active filters, power supplies, oscillators, pulse circuits, and modulation.

Prerequisite: ELE 1054

ELE 2144 Programmable Logic Controllers (3-2-4)

This course describes the Programmable Logic Controller (PLC) and discuss its advantages over relay systems. It identifies the primary parts of the PLC and describe their functions. Number systems and codes are

reviewed with emphasis on their use in programming a PLC. General maintenance procedures for a PLC are also discussed.

ELE 2154 Digital Electronics (3-2-4)

An introduction to digital logic elements and electronic circuits employing digital techniques. Topics include number systems, data codes, logic elements, digital integrated circuits, registers, and sequential and combinational logic. **Prerequisite: ELE 1054**

Entrepreneurship

ETR 1003 Introduction to Entrepreneurship (3-0-3)

An introduction to the role of entrepreneurial business in the U.S., the impact of entrepreneurial business on the U.S. and global economy, how ideas become businesses, how entrepreneurs operate within a company and the general precepts of entrepreneurial businesses.

ETR 2003 Professional Selling/Advertising (3-0-3)

A course specifically designed to teach the tools of professional selling and advertising methods to students. Students will learn successful sales techniques for retail and non-retail customers. Students will also learn to develop an advertising program for products and services and the appropriate medium to use. **Prerequisite: BUS 2553, BUS 2013**

ETR 2013 Opportunity/Feasibility/Analysis (3-0-3)

This course will develop the student's knowledge of exploiting, determining, and implementing strategies for determining potential entrepreneurial opportunities in the marketplace and analyzing the feasibility of those opportunities. **Prerequisite: BUS 2013**

ETR 2023 Funding Acquisitions for Entrepreneurs (3-0-3)

A course designed to teach the students the various types of funding mechanisms available to the entrepreneurial company and the importance of selecting the proper funding method. **Prerequisite: BUS 2033, BUS 2113**

Geographic Information Systems

GIS 1003 Introduction to GIS (3-0-3)

This course teaches the fundamentals of a Geographic Information System (GIS). It introduces the components of the system, theories and concepts of GIS and will explore the application of GIS in a variety of careers. The point and click ARCGIS software version 9.0 will be used to provide students hands-on experience in map creation and manipulation. **Prerequisite: BUS 1603 completed within the past 5 years with Grade \geq C or permission**

GIS 1303 Cartography for GIS (3-0-3)

This course provides an introduction to cartography and geography. Topics of map design, map interpretation, and map analysis will be covered. Emphasis will be placed on

the comprehensive study of history, map projections, map scale, type of maps, and map accuracy.

GIS 2003 Remote Sensing and Data Acquisition (3-0-3)

This course is an overview of theories and principles of remote sensing and data acquisition. It provides the background ability to input data from various sources for use in GIS projects. Students will learn how various satellites and sensor systems are used to identify how images are corrected and analyzed. Obtaining GIS data, formatting and formal conversion of digital GIS data management will also be covered. **Prerequisite: GIS 1003 and GIS 1303 or permission**

GIS 2203 Advanced GIS (3-0-3)

This course continues the hands-on use of GIS system using the ARCGIS 9.0 software. Advanced topics such as planning, management, and data quality issues will be addressed. **Prerequisite: GIS 1003 (Grade \geq C)**

GIS 2303 Spatial Analysis and Modeling (3-0-3)

This course provides the fundamentals of spatial analysis and modeling in GIS and a survey of quantitative techniques applicable to spatial data. Concepts of spatial modeling is covered and students learn how to use various modeling techniques available for solving complex environmental and management problems. Students use statistical models in the process of spatial analysis. **Prerequisite: MTH 1053 (Grade \geq C) of appropriate placement test score and GIS 1003 and GIS 1303 or permission**

GIS 2503 Independent Project (3-0-3)

This course will provide students with the opportunity to integrate knowledge used in previous courses for completion of an entire project. Work will begin with developing a proposal, obtaining the required data from numerous sources, performing analysis, and preparing final analysis. **Prerequisite: or Corequisite: GIS 2203**

Hospitality/Tourism

HOS 1003 Introduction to Hospitality (3-0-3)

This course covers the history and development of the hospitality industry, an introduction to principles and concepts used in the service industry, and career opportunities in the field. The restaurant industry, hotel management, cruise line industry, gaming and casino, and franchising are covered. The course is designed for those who would like to learn about the hospitality industry.

HOS 1013 Introduction to Travel and Tourism (3-0-3)

This course provides thorough, current knowledge of the principles, practices, and economic, social, cultural, and environmental impact of the travel and tourism industry. It addresses opportunities, responsibilities, concerns, and

ethics of a career in travel, transportation or tourism. Students develop effective reasoning, communication, decision-making, and interpersonal skills. The course facilitates development of individual responsibility, self-esteem, sociability, self-management, and personal integrity.

HOS 1113 Introduction to Lodging Industry (3-0-3)

This course covers the history and development of the lodging industry, an introduction to principles and concepts used in the service industry, and career opportunities in the field. The course is designed to help prepare students for a rewarding management career.

HOS 1123 Lodging Fundamentals (3-0-3)

This course covers the physical management areas of the lodging industry. Students learn to manage the back of the house operations in the lodging industry. This course is designed for those who are interested in learning more about physical aspects of the lodging industry.

HOS 2023 International Travel (3-0-3)

This course provides a detailed coverage of international air travel geography, international airfares and ticketing procedures, travel requirements, travel in Europe, Russia, Asia, and the Pacific, ecotourism analysis, and broadening global horizons to maximize cultural understanding. **Prerequisite: HOS 1013 or permission.**

HOS 2033 Travel Operations (3-0-3)

This course provides detailed information on the basics of the travel business. Topics covered include appointments, functions, resources, reservations, booking, traffic documents, accounting, sales reports, automation, and financial planning and management. **Prerequisite: HOS 1013 or permission**

HOS 2133 Lodging Concepts (3-0-3)

This course covers skills needed in operating a lodging facility. Such skills include leadership, communication, and team building. In addition, such topics as career development, marketing, and sales are covered as they specifically relate to the lodging industry. **Prerequisite: HOS 1123 or permission**

HOS 2143 Advanced Lodging Concepts (3-0-3)

This course covers specific topics in the lodging industry that pertain to food services. Topics included are menu planning, dining, and beverage service, casual/theme restaurants, banquets and catering, and room service. **Prerequisite: HOS 2133**

HOS 2993 Internship in Hospitality/Lodging (0-10-3)

This course is designed to give students an opportunity to enhance their knowledge by applying what they have learned in a work situation. Students work with a faculty advisor and internship employer to develop an education

program with meaningful learning objectives based upon their program of study. A minimum of 136 contact hours is required. **Prerequisite: 45 credit hours toward graduation in the A.A.S. Management degree program, registration for the internship during the preregistration period prior to the semester of enrollment.**

Lean Technology

LNT 1004 Introduction to Lean Technology (4-0-4)

This course provides an overview of the Lean principles of team development, continuous improvement, inventory control, material and process flow, quick changeovers, customer satisfaction, and lean maintenance. Students are introduced to different types of teams and their functions and explore a wide variety of teams including Kaizen, Quality Circles, and GE Workout teams. Evaluation is based on team involvement and participation.

LNT 1014 Inventory Control (4-0-4)

This course explores JIT (just in time) and material inventory processes involving raw materials, WIP (work in process), and finished goods. Additional topics covered include material and process flow to facilitate waste reduction and customer satisfaction. **Prerequisite: LNT 1004 or permission.**

LNT 1023 Quick Changeovers (3-0-3)

In this course, students design and use a process map to examine changeover steps. By using this process, changeover time is reduced allowing for greater flexibility in meeting customer demands. **Pre or Corequisite: LNT 1014**

LNT 1033 Lean Maintenance (3-0-3)

This course is designed to provide students the secret to equipment performance. Students explore the role of the operator, supervisor, and maintenance personnel in developing a plan of equipment up time. **Pre or Corequisite: LNT 1014**

LNT 1043 Value Stream Development (3-0-3)

This course explores the set of specific actions (value stream) required to develop a product (whether a good, service or increasingly, a combination of the two) that creates value to the ultimate customer. After generating a value stream, a plan is developed to eliminate all non value-added steps from the stream. **Pre or Corequisite: LNT 1014**

LNT 1053 Total Productive Maintenance (3-0-3)

This course explores the use of TPM (total productive maintenance) to prevent equipment breakdowns. Students are introduced to the concepts of OEE (overall equipment effectiveness), OI (operation instructions), and SWI (standard work instructions) which are used to develop the charts and tools needed in charting lean maintenance. This course is designed specifically for the maintenance department. **Pre or Corequisite: LNT 1014**

Industrial Maintenance Technology

MCH 1001 Reading Blueprints (1-0-1)

This course is an introduction to the use of blueprints pertaining to maintenance and repair. Special emphasis will be given to applications in soldering, brazing, welding, and cutting operations.

MCH 1011 Reading Schematics and Symbols (1-0-1)

This course is an introduction to reading and interpreting schematics and the symbols used on schematics pertaining to maintenance and repair. Special emphasis will be given to applications associated with mechanical devices in an industrial manufacturing setting.

MCH 1051 Selecting and Maintaining Bearings (1-0-1)

This course is an overview of the principles, concepts, and applications of bearings in mechanical devices found in an industrial plant. Topics covered include the use and maintenance of bearings in various drive systems and sheaves and lubrication. Lab will be used to emphasize practical maintenance, installation, and procedures for repair and replacement.

MCH 1061 Welding Principles (1-0-1)

This course is designed to provide the basic knowledge of oxy-acetylene welding, cutting and brazing, and basic arc welding necessary in the maintenance and repair of production equipment. It provides a basic introduction to TIG and MIG welding procedures and practices.

MCH 1071 Welding Operations (1-0-1)

This course is designed to provide hands-on skills in oxy-acetylene welding, cutting and brazing, basic welding, and safety necessary in the maintenance and repair of production equipment.

MCH 1081 Purging, Piping, and Safety (1-0-1)

This course is an introduction to the proper techniques and safety procedures associated with soldering or welding pipes and pipe fittings in an industrial setting.

MCH 2043 Mechanical Devices (2-2-3)

This course is an overview of the principles, concepts, and applications of mechanisms found in an industrial plant. Topics covered include belt drive systems, chains, chain drives, conveyor belts, conveyor systems, bearings, sheaves, lubrication, sprockets, and mechanical fasteners. Lab will be used to emphasize practical maintenance, installation and procedures for repair and replacement.

MCH 2083 Hydraulics and Pneumatics (2-2-3)

This class covers the principles of hydraulics and pneumatic equipment and their uses and applications in industry. Some of the topics covered in this class include: hydraulic pumps, control valves, cylinders, seals, air compressors, filters, pressure regulators, pressure control valves, and flow controls.

MCH 2204 Basic Machine Shop (3-2-4)

In this course, instruction is given in the care and operation of basic machine tools, measuring instruments, and shop safety procedures. Students learn the use of hand tools, drills and lathe cutting tools. They will study the methods used to machine parts by various methods. Shop projects are designed to provide practice in accurate turning, knurling, threading, and other operations.

MCH 2213 Maintenance Welding (2-2-3)

This course is designed to provide the basic skills in oxy-acetylene welding, cutting and brazing, basic arc welding, and safety necessary to the maintenance and repair of production equipment. It provides a basic introduction to TIG and MIG welding procedures and practices. The use of blueprints will be emphasized in this course.

Advanced Manufacturing Technology**MFG1001 Developing Troubleshooting Skills (1-0-1)**

This course is a lab designed to provide hands-on experience with various mechanical troubleshooting techniques and theories associated with equipment in an industrial setting.

MFG1011 Understanding Basic Hydraulics (1-0-1)

This course covers the principles of hydraulic equipment and its use and application in industry. Topics include hydraulic pumps, control valves, cylinders, seals, filters, pressure regulators, pressure control valves, and flow controls.

MFG1021 Hydraulic Troubleshooting Skills (1-0-1)

This course is a lab designed to provide hands-on experience with various troubleshooting techniques and theories associated with hydraulic equipment in an industrial setting.

MFG 1023 Design for Manufacturing (2-2-3)

This course is designed to expand on the introductory manufacturing course and expose the student to basic design concepts, computer skills, and drawing skills used in product and process design within the field of manufacturing. Additionally, the course is designed to expose students to a number of interpersonal skills and competencies necessary for a sustained career in manufacturing.

MFG1031 Mechanical and Fluid Drive Systems (1-0-1)

This course is an overview of the principles, concepts, and applications of mechanical and fluid drive systems found in an industrial plant. Topics covered include belt drive systems, chain drives, conveyor belts, and sprockets associated with the manufacturing industry. Lab will be

used to emphasize practical maintenance, installation and procedures for repair and replacement.

MFG 1033 Manufacturing Production Processes (2-2-3)

This course is designed to provide the student with a hands-on learning experience with the basic tools, equipment, and operations of manufacturing industries. The student will also understand the relationship between a manufacturing need, a design, materials, processes as well as tools and equipment. During this course, the student utilizes many of the basic manufacturing processes to produce primary and secondary materials for manufacturing.

MFG1041 Understanding Basic Pneumatics (1-0-1)

This course covers the principles of pneumatic equipment and its use and application in industry. Topics include vacuum pumps, control valves, cylinders, seals, air compressors, filters, pressure regulators, pressure control valves, and flow controls.

MFG 1043 Manufacturing Power & Equipment Systems (2-2-3)

This course is designed to expand upon previous courses and allow students the opportunity to demonstrate knowledge of power systems and use the advanced tools of manufacturing production. Students plan, design, implement, use, and troubleshoot manufacturing power systems, equipment systems, and control systems.

MFG1051 Pneumatic Troubleshooting Skills (1-0-1)

This course is a lab designed to provide hands-on experience with various troubleshooting techniques and theories associated with pneumatic equipment in an industrial setting.

MFG 2013 Manufacturing Materials (2-2-3)

This course introduces students to manufacturing materials, materials testing, and material science. Additionally, this course will introduce students to primary and secondary processing in manufacturing and allow the student to construct and conduct experiments with various manufacturing materials. **Prerequisite: MFG 1033**

MFG 2023 The Manufacturing Enterprise (3-1-3)

This course is designed to expand upon concepts learned in introductory courses while allowing students to further explore how manufacturing enterprises are established, how they maintain control, how they plan, how they produce, package, distribute, and market products. As a part of a product development team, students analyze customer needs and market requirements, conceptualize a design, develop a prototype, production tooling, quality control mechanisms, process control mechanisms, and other procedures necessary to complete a basic production

run and distribute a final product. **Prerequisite:** MFG 1033

MFG 2033 Manufacturing Equipment Maintenance & Operation (2-2-3)

This course is designed to provide the student with a comprehensive knowledge of manufacturing equipment, safety, maintenance, and operation procedures, control systems as well as leadership abilities in the field. **Prerequisite:** MFG 1043

MFG 2923 Manufacturing Capstone: Engineering Design & Problem Solving (2-3-3)

This course introduces some new concepts related to engineering design and problem solving, however the primary function of this course will be to serve as a venue for students to place all previous learning into a manufacturing context. Students solve a given manufacturing challenge that requires the use of advanced manufacturing technology systems, design skills, communication skills, and a thorough understanding of manufacturing materials, processes, and techniques. **Prerequisite:** Permission of Department Chair

MNT1003 Maintenance Management (3-0-3)

This course introduces the student to the processes that ensure that systems and plants continue to function at optimum levels through use of a totally supportive maintenance plan. Various maintenance techniques, including reliability, life cycle maintenance, and computerized maintenance management programs to enable a preventative and predictive approach in building reliability into the total production maintenance system are introduced. The course stresses maintenance planning within the corporate objectives, in particular considering cost factors, maintenance effectiveness and how to define and present the plan.

Microcomputer Systems

Administration

MSA 1113 Microsoft Server Operating Systems I (3-1-3)

This course prepares students to manage a network running Windows Server 2003. Students learn to create, configure and manage various operating system resources such as file, print, and Web resources as well as user accounts and groups. **Prerequisite:** BUS 1603 (Grade \geq C), **Pre or Corequisites:** CIS 1013, CIS 2213 or permission.

MSA 2123 Microsoft Server Operating Systems II (3-1-3)

This course provides students with the knowledge and skills necessary to implement, manage, and maintain a Microsoft Windows 2003 Server network infrastructure. Emphasis is on managing IP addressing, name resolution,

network security, and remote access. **Prerequisite:** MSA 1113

MSA 2243 Microsoft Workstation Operating Systems (3-1-3)

This course is designed to provide students with the knowledge and skills that are necessary to implement, configure, and administer Windows XP operating system. Emphasis is on administering resources, optimizing performance, troubleshooting, and implementing security measures. **Prerequisite:** BUS 1603 must be completed within the past 5 years with Grade \geq C or permission. **Corequisite:** CIS 1013, CIS 2213 or permission

Military Science

MSC 1011 Introduction to ROTC (1-2-1)

Self-confidence through team study and activities in basic drill, physical fitness, rappelling, first-aid, basic rifle marksmanship, and making presentations. Fundamental concepts of professional leadership in both classroom and outdoor lab environments. **Leadership lab required and 1-hour physical fitness session.**

MSC 1021 Introduction to Leadership (1-2-1)

Principles of effective leading. Self-confidence through physically and mentally challenging exercise with upper-division ROTC students and instructors. Individual and group communication skills and organizational ethical values for effective leadership.

Leadership lab required and 1-hour physical fitness session. Prerequisite: MSC 1011 or permission

Cisco Networking

NET 1016 Cisco Internetworking I (4-4-6)

This course provides the student with the skills necessary to set up, configure, and maintain a computer network and the network's link to other networks via an intranet or Internet. **Corequisites:** BUS 1603

NET 1026 Cisco Internetworking II (4-4-6)

A continuation of NET 1016-Cisco Internetworking I, this course is intended to provide the student with the skills necessary to program and troubleshoot Cisco brand internetworking equipment. Completion of these courses will prepare the student to take the Cisco Certified Networking Associate exam. **Prerequisites:** NET 1016 or special permission

Plastic Injection Molding

PIM 1313 Plastic Injection Molding I (2-3-3)

This course provides lecture and hands-on experiences in the injection molding process. Areas covered are safety, machine identification, setup procedures, operation, troubleshooting, and machine adjustment. Students are introduced to computer monitoring of the molding process as a quality control method to increase productivity.

PIM 2023 Properties of Plastics (2-2-3)

This course is a survey of the mechanical, chemical, and electrical properties of plastic materials as they relate to the design of plastics parts. Topics include molecular structure and its effects on properties of plastic materials; classification of materials; rheology; physical behavior under various loading conditions; stress and strain characteristics; brittleness and impact strength; and electrical and thermal properties. Use is made of both empirical and theoretical formulas in the design of plastics parts.

PIM 2213 Tooling for Plastic Injection Molding (2-2-3)

This course covers construction methods necessary to build tooling for injection molding and blow molding. Includes an introduction to extrusion dies and thermoforming tools.

PIM 2323 Plastic Injection Molding II (2-3-3)

This course is an extension of PIM 1313, Plastic Injection Molding I. Subjects include insert molding and accessory equipment associated with injection molding such as drying and pneumatic conveying. **Prerequisite: PIM 1313**

Renewable Energy Technology

RET 1003 Introduction to Renewable Energy Technology (2-2-3)

This course introduces the concepts, methodologies, and sources of renewable energy. Energy production and the environment impacts from the use of fossil fuels will be compared with alternative forms of energy, including hydroelectric, solar, wind, geothermal, tidal, and nuclear energies. Upon completion, students should have a thorough understanding of renewable energy technology and its impact on humans and the environment.

RET 1014 Biomass and Feedstocks (3-2-4)

This course provides a detailed study of the forms, structures, functions, and reproduction of plants and the production, handling, and maintenance of biomass in the alternative fuels industry.

RET 1024 Biofuels (2-3-4)

The history and early applications of biodiesel and ethanol will be explored. Understanding biochemical methods involved in the generation of biodiesel from feedstocks, animal fats, and waste vegetable oil. Students will investigate the structure, function, and production of ethanol and its uses. Social, environmental, and economical aspects of the production and usage of alternative fuels and new advancements in alternative fuel production will be introduced.

RET 1103 Fuels and Lubricants (3-0-3)

This course will cover the different grades and

viscosities of lubricants and their function in an engine. The student will learn the process by which fuels and lubricants are produced. Topics covered will be: how lubricants are graded, how fuel oil is produced and graded, and the use of biodiesel and how it affects engine parts and its direct effect on the lubricating system.

RET 2024 Process Instrumentation (2-2-4)

Intensive combined lecture/lab course designed to expose students to the spectrum of analytical instruments utilized in modern biofuels production. **Prerequisites: RET 1003, RET 1013**

RET 2034 Bioprocess Practices and Lab (3-2-4)

This course involves an in-depth examination of the methods utilized in the production of biofuel throughout the plant manufacturing process. The laboratory provides a hands-on experience of producing and testing biofuel.

RET 2923 Renewable Energy Internship (0-10-3)

This course is a cooperative internship between work environment and education and is designed to integrate the student's technical studies with work experience. Students work with their faculty advisor and the internship employer to develop an education plan with meaningful learning objectives based on their program of study. A minimum of 136 contact hours is required. **Prerequisite: 45 credit hours toward graduation in the program, registration for internship course during the pre-registration period prior to the semester of enrollment, and completion of an Internship Agreement Form.**

RET 2933 Renewable Energy Capstone (2-3-3)

This course introduces some new concepts related to renewable energy technology design and problem solving. Students solve a given challenge that requires the use of advanced renewable energy technology systems, design skills, communication skills, and a thorough understanding of renewable energy technology materials, processes, and techniques.

Diesel Technology

DST 1003 Introduction to Diesel Engines (3-0-3)

This course is the first course in diesel technology. Students will gain skills in shop safety and other basic skills that will prepare them for specific diesel courses. The following topics will be covered: the basic theory of the internal combustion engine, the inventor of the diesel engine and its development, major components of a diesel engine, the proper use of precision measuring instruments, identifying different grades of fasteners and proper use of hand tools. Particular attention is given to the ability to follow detailed instructions from service manuals.

DST 1013 Introduction to Fuel Systems (3-0-3)

This course covers the different types of diesel

injection systems and their operation. The students will learn to identify the different components that make up complete fuel delivery systems and that components specific function. All four major types of fuel systems will be broken down and described in detail. The student will learn what parts and seals in older fuel systems are prone to failure due to the use of biodiesel. This course will prepare the student for the diesel engine diagnosis and repair courses by familiarizing them with the most complex part of a diesel engine, the fuel system.

DST 2004 Diesel Engine Diagnosis and Repair

(3-2-4)

This course is designed to instruct the student on correct diesel engine failure diagnosis and repair procedures. This will be done through failure analysis of each diesel engine component. Emphasis is placed on component identification and how it relates to the particular failure. All types of parts failure will be covered from minor to catastrophic and the proper repair procedures for each. Fuel system failure diagnosis will be studied as it relates to high concentrations of biodiesel and the moisture it sometimes introduces to the fuel system and its high solvent properties.

DST 2124 Advanced Diesel Engine Diagnosis and Repair

(3-2-4)

This course is a continuation of diesel engine diagnosis and repair. Students will perform timing and tune-up procedures on different makes and models of diesel engines. They will learn to use each individual type of diagnostic and testing equipment that is in use in repair shops at the present time. The course will cover mechanical and electronic failure. They will learn to identify different types of failures by studying wear patterns on moving parts as well as detailed electronic system diagnosis and repair.

Safety

SFT 1063 Industrial Loss Prevention (3-0-3)

A survey course dealing with methods and programs utilized by industry to prevent injury and fatalities.

SFT 1071 CPR and First Aid (1-0-1)

A course designed to teach students how to deal with various injuries and health emergencies including heart and breathing difficulties, cuts, breaks, poisons, or other problems.

SFT 1081 Introduction to Industrial Safety (1-0-1)

An introduction to industrial hazards and methods for their remedy. Also introduces the role of the Occupational Safety and Health Act (OSHA).

SFT 2073 Industrial Safety and OSHA (3-0-3)

This course is designed to assist individuals on the supervisory levels of industry to establish, maintain, and

update successful safety and loss prevention programs.

Internet Technology/Web Page Design

WEB 1003 Internet Business Foundations (3-0-3)

This course is designed to teach students about key Internet technologies, such as Web browsers, e-mail, newsgroups, File Transfer Protocol, Telnet, and search engines. This course also exposes students to topics in e-commerce, project management, and security in information technology. **Prerequisite: BUS 1603 must be completed within the past 5 years with Grade \geq C or permission. \$25 CIW testing fee required.**

WEB 1013 Introduction to Web page Design (3-0-3)

This course is designed to teach students Web page creation and other aspects of Web authoring utilizing both text and graphical user interface (GUI) editors. Students will learn the basics of HTML, cascading style sheets, javascript, dynamic HTML, and document object models. **Prerequisite: BUS 1603 must be completed within the past 5 years with Grade \geq C or permission. \$30 CIW testing fee required.**

WEB 1023 Networking Technology Foundations

(3-0-3)

This course teaches fundamental networking concepts and practices. Topics include network architecture and standards, network types, protocols, Internet servers, TCP/IP, and security. **Prerequisite: BUS 1603 must be completed within the past 5 years with Grade \geq C or permission. \$25 CIW testing fee required.**

WEB1033 Introduction to Webpage Editors (3-0-3)

This course provides an introduction to software applications for webpage design. Students are exposed to Microsoft Expressions and Adobe Dreamweaver. Students learn the skills necessary to quickly and easily design, develop, and maintain websites and web application from start to finish. Topics covered include creating a webpage and local site, adding web pages, links, and images, tables and page layout with forms, templates and style sheets, and layers, image maps and navigation bars. The course also introduces students to the seamless integration with Adobe Photoshop and Adobe Flash. **Prerequisite: WEB 1013**

WEB 2266 Advanced Web Page Design and Methodology

(4-4-6)

This course teaches students to create and administer media-rich Web sites while utilizing tools such as Flash, Dreamweaver, FrontPage, and various multimedia components. Emphasis is on theory, design and Web construction, along with information architecture concepts, Web project management, scenario development, and performance evaluations in preparation for the Certified Internet Webmaster Professional certification. **Prerequisite: WEB 1013 with Grade \geq C or better. \$80**

CIW testing fee required.

WEB 2366 E-Commerce Technology (4-4-6)

This course, a part of the Certified Internet Webmaster sequence, teaches students how to conduct business online and how to manage the technological issues associated with constructing an electronic-commerce website. The course focuses on standards and practices for both business-to-business (B2B) and business-to-consumer (B2C e-commerce models. Students implement a genuine transaction-enabled B2C website; explore strategies and products available for building e-commerce sites; examine the management techniques for administering and operating e-commerce sites; and learn how to complement an existing business infrastructure with the latest tools and technologies. **Prerequisites: WEB 1003, WEB 1013, WEB 1023, WEB 2266**