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## 3D DESIGN AND ANIMATION ASSOCIATE IN APPLIED SCIENCE

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Business, Management, Marketing & Technology  
Career Pathway

### 3D DESIGN AND ANIMATION – ASSOCIATE IN APPLIED SCIENCE (DDDA.AAS)

Looking for a great way to put your digital art skills to use? Along with the film industry, the games industry is one of the fastest growing places to build your career as an artist. Traditional hand skills and digital know-how are both in demand. Artists who want challenging creative work that's fast-paced, collaborative, and fun, should check here first.

Minimum credits: .....	64
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

#### GENERAL EDUCATION REQUIREMENTS - (21 credits)

##### ADO 1: Write clearly, concisely and intelligibly (3 credits)

Take the following:

ENG 131 Writing Experience

##### ADO 2: Speak clearly, concisely and intelligibly (3 credits)

Choose one of the following:

COM 231 Communication Fundamentals

COM 240 Interpersonal Communication

##### ADO 3: Demonstrate computational skills and mathematical reasoning (3-5 credits)

Take the following:

MTH 120 Beginning Algebra or higher

##### ADO 4: Demonstrate scientific reasoning (4-5 credits)

Choose one of the following:

BIO 110 Introductory Biology

BIO 131 General Biology

BIO 132 Human Biology

BIO 155 Human Anatomy & Physiology

BIO 220 Microbiology

CEM 131 Fundamentals of Chemistry

CEM 141 General Chemistry I

GEL 160 Introduction to Geology

PHY 131 Conceptual Physics

PHY 151 Astronomy

PHY 231 College Physics I

PHY 251 Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (3-4 credits)

Choose one of the following:

ECN 231 Macroeconomics

ECN 232 Microeconomics

HIS 131 Western Civilization to 1555

HIS 132 Western Civilization 1555 to Present

HIS 231 Development of the US through the Civil War

HIS 232 Development of the US from the Civil War

HIS 235 20th Century History

PLS 141 American National Government

PSY 140 Introduction to Psychology

##### ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

ART 111 Art History: Prehistoric to 1400

ART 112 Art History: Renaissance to Present

ENG 210 Introduction to Film

ENG 246 Short Story & Novel

ENG 247 Poetry & Drama

ENG 252 Shakespeare

ENG 254 Children's Literature

ENG 255 American Literature – 19th Century

ENG 256 American Literature – 20th Century

HUM 131 Cultural Connections

MUS 131 Understanding Music

THR 116 Introduction to Theatre

##### ADO 7: Think critically

Program courses meet this requirement

##### ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)

Choose one of the following:

HPF 160 Wellness

HPF 277 Stress Management

HPF 283 Managing Stress and Holistic Health

PHL 236 Ethics

##### ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement

##### ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program courses meet this requirement



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## 3D DESIGN AND ANIMATION ASSOCIATE IN APPLIED SCIENCE

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### 3D DESIGN AND ANIMATION RELATED REQUIREMENTS - (15 credits)

ART 103 Drawing I: Foundations  
ART 205 Drawing II: Figure & Composition  
ENG 232 Technical & Business Writing  
THR 242 Sound for Stage and Video  
VID 101 Video Production I

### 3D DESIGN AND ANIMATION CORE REQUIREMENTS - (28 credits)

CIS 101 Introduction to Computer Systems  
CIS 134 Graphic Imaging (Adobe® PhotoShop®)  
CIS 144 Web Page Design  
CIS 171 3-D Modeling I  
CIS 172 Lighting and Texturing  
CIS 271 3-D Modeling II  
CIS 173 Animation I  
CIS 272 Computer Gaming Fundamentals



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## P.C. TECHNICIAN ENTREPRENEUR CERTIFICATE

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*Business, Management, Marketing & Technology  
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### P.C. TECHNICIAN ENTREPRENEUR – CERTIFICATE (PTEN.CERT)

The P.C. technician certificate prepares students to work as a computer service professional. A+/Networking+ is the recognized industry standard for computer service technicians. This training is the “journeyman’s card” for professionals in microcomputer maintenance. The P.C. technician validates technical competency in networking administration and support. Those holding A+/Network+ should demonstrate critical knowledge of media and topologies, protocols and standards, network implementation and network support. JCC’s P.C. technician entrepreneurship program, offered for college credit, can help prospective entrepreneurs launch new ventures. Entrepreneurs who already have established businesses can strengthen their managerial and business skills. Students in the P.C. technician entrepreneurship program at JCC will learn the fundamentals of starting and operating their own businesses. The program includes basic skills as well as specific courses in starting and managing a small business.

Minimum credits: .....	36
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

#### GENERAL EDUCATION REQUIREMENTS - (9 credits)

**Take the following:**

- ENG 131 Writing Experience
- ENG 232 Technical & Business Writing
- MTH 120 Beginning Algebra or higher

#### ENTREPRENEURSHIP RELATED REQUIREMENTS - (13 credits)

**Take the following:**

- ENT 160 Introduction to Entrepreneurship
- ENT 161 Opportunity Analysis
- ENT 162 Legal Issues for Small Business
- ENT 163 Financial Management for Small Business
- ENT 164 Entrepreneurial Marketing
- ENT 169 Business Plan

#### P.C. TECHNICIAN PROGRAM CORE REQUIREMENTS - (14 credits)

**Take the following:**

- CIS 101 Introduction to Computer Systems
- CIS 174 PC Repair/A+ Hardware Component
- CIS 175 PC Repair/A+ Software Component
- CIS 176 A+ Certification Exam Preparation
- CIS 177 Network+ Networking Fundamentals
- CIS 179 Network+ Certification Exam Preparation



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## NETWORKING SPECIALIST ASSOCIATE IN APPLIED SCIENCE

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### NETWORKING SPECIALIST – ASSOCIATE IN APPLIED SCIENCE (NESP.AAS)

Networking involves the hardware, software and communication channels necessary to allow computers to talk to each other. Many organizations now use computer networks and need networking specialists to maintain their networks. Several other occupations may utilize networking skills, such as office assistants, accountants, or managers. Students will study various components of computer hardware and networking. These courses prepare the student to take industry standard exams for both A+ and Network+ certifications. For specific information on these certifications, please talk to the instructors. Students who pass the appropriate related certification exams can also achieve the premier certifications of CompTIA Security+, Microsoft® Certified System Administrator (MCSA) and Certified Cisco Network Administrator (CCNA).

Minimum credits: .....	61
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

#### GENERAL EDUCATION REQUIREMENTS – (20 credits)

##### ADO 1: Write clearly, concisely and intelligibly (3 credits)

###### Take the following:

ENG 131 Writing Experience

##### ADO 2: Speak clearly, concisely and intelligibly (3 credits)

###### Choose one of the following:

COM 231 Communication Fundamentals

COM 240 Interpersonal Communication

##### ADO 3: Demonstrate computational skills and mathematical reasoning (3-5 credits)

###### Take the following:

MTH 120 Beginning Algebra or higher

##### ADO 4: Demonstrate scientific reasoning (4-5 credits)

###### Choose one of the following:

BIO 110 Introductory Biology

BIO 131 General Biology

BIO 132 Human Biology

BIO 155 Human Anatomy & Physiology

BIO 220 Microbiology

BIO 253 Human Anatomy and Physiology I

CEM 131 Fundamentals of Chemistry

CEM 141 General Chemistry I

GEL 160 Introduction to Geology

NSC 131 Contemporary Science

PHY 131 Conceptual Physics

PHY 151 Astronomy

PHY 231 College Physics I

PHY 251 Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (3-4 credits)

###### Choose one of the following:

ECN 231 Macroeconomics

ECN 232 Microeconomics

HIS 131 Western Civilization to 1555

HIS 132 Western Civilization 1555 to Present

HIS 231 Development of the US through the Civil War

HIS 232 Development of the US from the Civil War

HIS 235 20th Century History

PLS 141 American National Government

PSY 140 Introduction to Psychology

SOC 231 Principles of Sociology

##### ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

###### Choose one of the following:

ART 111 Art History: Prehistoric to 1400

ART 112 Art History: Renaissance to Present

ENG 210 Introduction to Film

ENG 246 Short Story & Novel

ENG 247 Poetry & Drama

ENG 252 Shakespeare

ENG 254 Children's Literature

ENG 255 American Literature – 19th Century

ENG 256 American Literature – 20th Century

HUM 131 Cultural Connections

MUS 131 Understanding Music

THR 116 Introduction to Theatre

##### ADO 7: Think critically

Program courses meet this requirement

##### ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)

###### Choose one of the following:

HPF 160 Wellness

HPF 277 Stress Management

HPF 283 Managing Stress and Holistic Health

PHL 236 Ethics

##### ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement

##### ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program courses meet this requirement



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## NETWORKING SPECIALIST ASSOCIATE IN APPLIED SCIENCE

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### NETWORKING RELATED REQUIREMENTS - (3 credits)

Take the following:

BUA 100 Contemporary Business

### NETWORKING CORE REQUIREMENTS - (38 credits)

Take the following:

CIS 101 Introduction to Computer Systems  
CIS 174 PC Repair/A+ Hardware Component  
CIS 175 PC Repair/A+ Software Component  
CIS 176 A+ Certification Exam Preparation  
CIS 177 Network+/Networking Fundamentals  
CIS 179 Network+ Certification Exam Preparation  
CIS 281 Microsoft® Networking 1  
CIS 282 Microsoft® Networking 2  
CIS 283 Microsoft® Networking 3  
CIS 284 Microsoft® Networking 4  
CIS 285 Microsoft® Directory Service  
CIS 286 Designing a Secure Microsoft® Network  
CIS 287 Interconnecting Cisco Network Devices  
CIS 289 Networking Security/Security+



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# NETWORK+/SECURITY+ – CONCENTRATION

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Business, Management, Marketing & Technology  
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## NETWORK+/SECURITY+ – CONCENTRATION (NWSC.CON)

There is compelling evidence that neither technologies nor policies alone offer effective protection against security threats. Theft and destruction of intellectual property takes place despite the presence of firewalls, encryption and corporate edicts. Industry and governments around the world must have a well-trained workforce to effectively combat hackers, attacks, and security threats. The Network+/Security+ is designed to prepare students to work as an information technology professional with a knowledge of information security within computer networks. Both the CompTIA (Computing Technology Industry Association) Network+ and Security+ certifications are recognized as basic industry standards and are required by many employers. JCC provides this program to prepare students to pass both exams. The exams are administered by CompTIA agents.

Minimum credits: .....	16
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

### REQUIRED COURSES - (17 credits)

**Take the following:**

- CIS 101 Introduction to Computer Systems
- CIS 177 Network+/Networking Fundamentals
- CIS 179 Network + Certification Exam Preparation
- CIS 281 Microsoft® Networking 1
- CIS 282 Microsoft® Networking 2
- CIS 288 Network Security/Security+



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## NETWORKING SPECIALIST CERTIFICATE

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### NETWORKING SPECIALIST – CERTIFICATE (NESP.CERT)

Networking involves the hardware, software and communication channels necessary to allow computers to talk to each other. Students will study various components of computer networking. Each 200 level networking class helps prepare students with the skills and knowledge to take vendor-sponsored certification exams. Students who pass the related core exams will be CompTIA Network+ certified and recognized as a Microsoft® Certified Systems Administrator (MCSA). Students who pass the appropriate related elective exam can also achieve the premier certifications of Microsoft® Certified System Engineer (MCSE) and Certified Cisco Network Administrator (CCNA). Nearly all organizations of any size use computer networks to leverage their core competencies. These organizations need trained networking specialists to install, maintain and troubleshoot their networks. The CompTIA and Microsoft® certifications are recognized as industry standards and are required by many employers.

Minimum credits.....	32
Minimum cumulative GPA:.....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement:.....	No

#### GENERAL EDUCATION REQUIREMENTS – (6 credits)

**Take the following:**

ENG 131 Writing Experience  
MTH 120 Beginning Algebra or higher

#### NETWORKING SPECIALIST CORE REQUIREMENTS – (26 credits)

**Take the following:**

CIS 101 Introduction to Computer Systems  
CIS 174 PC Repair/A+ Hardware Component  
CIS 175 PC Repair/A+ Software Component  
CIS 176 A+ Certification Exam Preparation  
CIS 177 Network+/Networking Fundamentals  
CIS 179 Network+ Certification Exam Preparation  
CIS 281 Microsoft® Networking 1  
CIS 282 Microsoft® Networking 2  
CIS 283 Microsoft® Networking 3  
CIS 284 Microsoft® Networking 4



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# MICROCOMPUTER APPLICATIONS CONCENTRATION

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*Business, Management, Marketing & Technology  
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## MICROCOMPUTER APPLICATIONS – CONCENTRATION (MCAP.CON)

Minimum credits: .....	19
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

### REQUIRED COURSES - (20 credits)

Take the following:

- CIS 012 Microsoft® Windows® Workshop
- CIS 045 Web Page Design I (Dreamweaver®) or CIS 025
- CIS 101 Introduction to Computer Systems
- CIS 119 Microsoft® PowerPoint®
- CIS 120 Microsoft® Word® Comprehensive
- CIS 121 Microsoft® Excel® Comprehensive
- CIS 122 Microsoft® Access® Comprehensive
- CIS 177 Network+ /Networking Fundamentals



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## MICROCOMPUTER APPLICATIONS SPECIALIST CERTIFICATE

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### MICROCOMPUTER APPLICATION SPECIALIST – CERTIFICATE (MCSP.CERT)

Minimum credits: .....	31
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

#### GENERAL EDUCATION REQUIREMENTS – (12 credits)

**Take the following:**

- ENG 131 Writing Experience
- ENG 232 Technical & Business Writing
- MTH 120 Beginning Algebra or higher

**Choose one of the following:**

- COM 231 Communication Fundamentals
- or COM 240 Interpersonal Communication

#### MICROCOMPUTER APPLICATIONS SPECIALIST CORE REQUIREMENTS – (19 credits)

**Take the following:**

- CIS 012 Microsoft® Windows® Workshop
- CIS 013 Operating System: UNIX
- CIS 016 Microsoft® DOS® Workshop
- CIS 045 Web Page Design I (Dreamweaver®) or CIS 025
- CIS 101 Introduction to Computer Systems
- CIS 120 Microsoft® Word® Comprehensive
- CIS 121 Microsoft® Excel® Comprehensive
- CIS 122 Microsoft® Access® Comprehensive
- CIS 177 Network+ /Networking Fundamentals



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# MICROCOMPUTER APPLICATIONS SPECIALIST ASSOCIATE IN APPLIED SCIENCE

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*Business, Management, Marketing & Technology  
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## MICROCOMPUTER APPLICATIONS SPECIALIST – ASSOCIATE IN APPLIED SCIENCE (MCSP.AAS)

Students completing this program are prepared to assume a variety of positions in an automated office setting. The program recognizes the increasingly important role of the microcomputer in modern business and is designed to assist students in developing skills in the use of microcomputer applications. Depending upon the curriculum students choose, career choices may include applications specialist, information office manager, end user support technician, information systems associate, personal computer (PC) coordinator, or software specialist.

Minimum credits: .....	.61
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

### GENERAL EDUCATION REQUIREMENTS - (23 credits)

#### ADO 1: Write clearly, concisely and intelligibly (6 credits)

**Take the following:**

- ENG 131 Writing Experience
- ENG 232 Technical & Business Writing

#### ADO 2: Speak clearly, concisely and intelligibly (3 credits)

**Choose one of the following:**

- COM 231 Communication Fundamentals
- COM 240 Interpersonal Communication

#### ADO 3: Demonstrate computational skills and mathematical reasoning (3-5 credits)

**Take the following:**

- MTH 120 Beginning Algebra or higher

#### ADO 4: Demonstrate scientific reasoning (4-5 credits)

**Choose one of the following:**

- BIO 110 Introductory Biology
- BIO 131 General Biology
- BIO 132 Human Biology
- BIO 155 Anatomy & Physiology
- BIO 220 Microbiology
- BIO 253 Human Anatomy and Physiology I
- CEM 131 Fundamentals of Chemistry
- CEM 141 General Chemistry I
- GEL 160 Introduction to Geology
- NSC 131 Contemporary Science
- PHY 131 Conceptual Physics
- PHY 151 Astronomy
- PHY 231 College Physics I

PHY 251 Modern University Physics I

**ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (3 credits)**

**Choose one of the following:**

- ECN 231 Macroeconomics
- ECN 232 Microeconomics
- PLS 141 American National Government
- PSY 140 Introduction to Psychology
- SOC 231 Principles of Sociology

**ADO 6: Understand aesthetic experience and artistic creativity (3 credits)**

**Choose one of the following:**

- ART 111 Art History: Prehistoric to 1400
- ART 112 Art History: Renaissance to Present
- ENG 210 Introduction to Film
- ENG 246 Short Story & Novel
- ENG 247 Poetry & Drama
- ENG 252 Shakespeare
- ENG 254 Children's Literature
- ENG 255 American Literature – 19th Century
- ENG 256 American Literature – 20th Century
- HUM 131 Cultural Connections
- MUS 131 Understanding Music
- THR 116 Introduction to Theatre

**ADO 7: Think critically**

Program courses meet this requirement

**ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)**

**Choose one of the following:**

- HPF 160 Wellness
- HPF 277 Stress Management
- HPF 283 Managing Stress and Holistic Health
- PHL 236 Ethics

**ADO 9: Work productively with others, recognizing individual contributions to group success**

Program courses meet this requirement

**ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures**

Program courses meet this requirement



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## MICROCOMPUTER APPLICATIONS SPECIALIST ASSOCIATE IN APPLIED SCIENCE

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### MICROCOMPUTER APPLICATIONS SPECIALIST RELATED REQUIREMENTS - (5 credits)

Take the following:

ACC 115 Payroll Accounting

BUA 130 Customer Service

### MICROCOMPUTER APPLICATIONS SPECIALIST CORE - (33 credits)

Take the following:

CIS 012 Microsoft® Windows® Workshop

CIS 013 Operating Systems: UNIX®

CIS 016 Microsoft® DOS® Workshop

CIS 025 Microsoft® Expression Web®

or CIS 045 Web Page Design I (Dreamweaver®)

CIS 101 Introduction to Computer Systems

CIS 119 Microsoft® PowerPoint®

CIS 120 Microsoft® Word® Comprehensive

CIS 121 Microsoft® Excel® Comprehensive

CIS 122 Microsoft® Access® Comprehensive

CIS 136 Integrated Design I

CIS 160 Programming in Visual Basic.NET

CIS 174 PC Repair/A+ Hardware Component

CIS 175 PC Repair/A+ Software Component

CIS 177 Network+/Networking Fundamentals



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**BUSINESS, MANAGEMENT, MARKETING  
& TECHNOLOGY TRANSFER PROGRAMS**

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*Business, Management, Marketing & Technology  
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**MANAGEMENT – CERTIFICATE  
(MGMT.CERT)**

People with management skills are employed in every industry in the career world. This program will build on your natural ability to get along with people and help develop your leadership potential. The focus in this program is on the principles, theories, and application of planning, organizing, leading, staffing, and evaluating results. Having good communication skills and the ability to make reliable decisions without supervision are essential to beginning a career in management.

Minimum credits: .....	30
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

**GENERAL EDUCATION REQUIREMENTS - (9 credits)**

Take the following:

- ENG 131 Writing Experience
- ENG 232 Technical & Business Writing
- MTH 120 Beginning Algebra or higher

**MANAGEMENT RELATED REQUIREMENTS - (4 credits)**

Take the following:

- ACC 231 Principles of Accounting I  
or ACC 216 Financial Accounting Concepts

**MANAGEMENT CORE REQUIREMENTS - (12 credits)**

Take the following:

- BUA 100 Contemporary Business
- BUA 130 Customer Service or
- BUA 120 Human Relations
- BUA 220 Principles of Management
- BUA 221 Human Resource Management

**ELECTIVES**

Select electives from classes in ACC, BUA, CIS or ECN in order to meet 30 credits required for certificate. FIN courses have been replaced with BUA.



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# MEDICAL INSURANCE BILLER ENTREPRENEUR CERTIFICATE

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*Business, Management, Marketing & Technology Career Pathway*

## MEDICAL INSURANCE BILLER ENTREPRENEUR – CERTIFICATE (MIEN.CERT)

MOA 242 Advanced Medical Billing  
MOA 245 Billing/Transcriptionist Externship

The medical insurance biller entrepreneurship certificate program prepares the student to work in the medical billing field. Emphasis is placed on interpersonal, written and oral communication, office procedures, medical terminology, use of computers, diagnostic and procedure coding and medical insurance billing, record keeping and medical insurance. On the job experience is provided in a 150-hour non-paid externship. The student may enter any semester part-time or full-time. JCC's medical insurance biller entrepreneurship program, offered for college credit, can help prospective entrepreneurs launch new ventures. Entrepreneurs who already have established businesses can strengthen their managerial and business skills. Students in the medical insurance biller entrepreneurship program at JCC will learn the fundamentals of starting and operating their own businesses. The program includes basic business skills as well as specific courses in starting and managing a small business.

Minimum credits: .....	44
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

### GENERAL EDUCATION REQUIREMENTS - (6 credits)

**Take the following:**

- ENG 131 Writing Experience
- MTH 120 Beginning Algebra or higher

### ENTREPRENEURSHIP RELATED REQUIREMENTS - (13 credits)

**Take the following:**

- ENT 160 Introduction to Entrepreneurship
- ENT 161 Opportunity Analysis
- ENT 162 Legal Issues for Small Business
- ENT 163 Financial Management for Small Business
- ENT 164 Entrepreneurial Marketing
- ENT 169 Business Plan

### MEDICAL INSURANCE BILLER ENTREPRENEURSHIP CORE REQUIREMENTS - (25 credits)

**Take the following:**

- CIS 101 Introduction to Computer Systems
- MOA 112 Insurance Reports, Law & Ethics
- MOA 120 Medical Terminology
- LPN 141 Body Structure & Function
- or MOA 141 Body Structure & Function
- MOA 242 Advanced Medical Billing
- MOA 245 Internship/Externship



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## COMPUTER SERVICE TECHNICIAN (A+/NETWORK+) – SKILL SET

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### COMPUTER SERVICE TECHNICIAN (A+/NETWORK+) – SKILL SET (CPST.SSET)

The computer service technician credential prepares students to work as a computer service professional. A+/Network+ is the recognized industry standard for computer service technicians. This training is the “journeyman’s card” for professionals in microcomputer maintenance. The computer service technician validates technical competency in networking administration and support. Those holding A+/Network+ should demonstrate critical knowledge of media and topologies, protocols and standards, network implementation and network support. CompTIA (Computing Technology Industry Association) is the certifying agent, a non-profit industry group which determines competencies. CompTIA assures the quality of those who successfully pass the A+ and Network+ Certification exams. Jackson Community College provides this program to prepare students to pass both exams. The exam is administered by CompTIA’s agents.

Minimum credits: .....	14
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

#### REQUIRED COURSES - (14 credits)

**Take the following:**

- CIS 101 Introduction to Computer Systems
- CIS 174 PC Repair/A+ Hardware Component
- CIS 175 PC Repair/A+ Software Component
- CIS 176 A+ Certification Exam Preparation
- CIS 177 Network+ Networking Fundamental Component
- CIS 179 Network+ Certification Exam Preparation



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## COMPUTER PROGRAMMING SPECIALIST ASSOCIATE IN APPLIED SCIENCE

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*Business, Management, Marketing & Technology  
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### COMPUTER PROGRAMMING SPECIALIST – ASSOCIATE IN APPLIED SCIENCE (CPSP.AAS)

Programmers write the detailed sets of instructions computers understand and act on. Emphasis is placed on computer information systems, programming language, concepts and designs, logic and theory. Job opportunities may include applications programmer, computer operator, information office systems manager, operations scheduler, systems analyst or programmer.

Minimum credits: .....	65
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

#### GENERAL EDUCATION REQUIREMENTS - (20 credits)

##### ADO 1: Write clearly, concisely and intelligibly (3 credits)

**Take the following:**

ENG 131 Writing Experience

##### ADO 2: Speak clearly, concisely and intelligibly (3 credits)

**Choose one of the following:**

COM 231 Communication Fundamentals

COM 240 Interpersonal Communication

##### ADO 3: Demonstrate computational skills and mathematical reasoning

(3-5 credits)

**Take the following:**

MTH 131 Intermediate Algebra or higher

##### ADO 4: Demonstrate scientific reasoning (4-5 credits)

**Choose one of the following:**

BIO 110 Introductory Biology

BIO 131 General Biology

BIO 132 Human Biology

BIO 155 Anatomy & Physiology

BIO 220 Microbiology

BIO 253 Human Anatomy and Physiology I

CEM 131 Fundamentals of Chemistry

CEM 141 General Chemistry I

GEL 160 Introduction to Geology

NSC 131 Contemporary Science

PHY 131 Conceptual Physics

PHY 151 Astronomy

PHY 231 College Physics I

PHY 251 Modern University Physics

ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (3-4 credits)

**Choose one of the following:**

ECN 231 Macroeconomics

ECN 232 Microeconomics

HIS 131 Western Civilization to 1555

HIS 132 Western Civilization 1555 to Present

HIS 231 Development of the US through the Civil War

HIS 232 Development of the US from the Civil War

HIS 235 20th Century History

PLS 141 American National Government

PSY 140 Introduction to Psychology

SOC 231 Principles of Sociology

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

**Choose one of the following:**

ART 111 Art History: Prehistoric to 1400

ART 112 Art History: Renaissance to Present

ENG 210 Introduction to Film

ENG 246 Short Story and Novel

ENG 247 Poetry and Drama

ENG 252 Shakespeare

ENG 254 Children's Literature

ENG 255 American Literature – 19th Century

ENG 256 American Literature – 20th Century

HUM 131 Cultural Connections

MUS 131 Understanding Music

THR 116 Introduction to Theatre

##### ADO 7: Think critically

Program courses meet this requirement

ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)

**Choose one of the following:**

HPF 160 Wellness

HPF 277 Stress Management

HPF 283 Managing Stress and Holistic Health

PHL 236 Ethics

ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program courses meet this requirement



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## COMPUTER PROGRAMMING SPECIALIST ASSOCIATE IN APPLIED SCIENCE

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### COMPUTER PROGRAMMING SPECIALIST RELATED REQUIREMENTS - (10 credits)

Take the following:

ACC 216 Financial Accounting Concepts  
BUA 100 Contemporary Business  
BUA 120 Human Relations in Business

### COMPUTER PROGRAMMING SPECIALIST CORE REQUIREMENTS - (35 credits)

Take the following:

CIS 012 Microsoft® Windows® Workshop  
CIS 013 Operating Systems: UNIX  
CIS 016 Microsoft® DOS® Workshop  
CIS 101 Introduction to Computer Systems  
CIS 122 Microsoft® Access® Comprehensive  
CIS 143 HTML  
CIS 158 Programming Logic  
CIS 160 Programming in Visual Basic.NET  
CIS 165 JAVA Programming  
CIS 170 Programming in C++  
CIS 174 PC Repair/A+ Hardware Component  
or CIS 177 Network+/Networking Fundamentals  
CIS 244 Web Programming  
CIS 260 Advanced Visual Basic.NET  
CIS 273 Systems Concepts and Design



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# COMPUTER LITERACY – SKILL SET

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Business, Management, Marketing & Technology  
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## COMPUTER LITERACY – SKILL SET

### (CPLI.SSET)

Minimum credits: .....	10
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

### REQUIRED COURSES - (10 credits)

Take the following:

- CIS 010 Learning the Keyboard & CIS 011 Keyboard Speed/Accuracy  
or CIS 110 Beginning Keyboard/Typing
- CIS 100 Computer Literacy
- ENG 085 (or equivalent) College Reading
- ENG 090 (or higher) Introduction to Writing
- MTH 098 (or higher) Pre-Algebra



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## MICROSOFT® OFFICE® SPECIALIST CONCENTRATION

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*Business, Management, Marketing & Technology  
Career Pathway*

### MICROSOFT® OFFICE® SPECIALIST – CONCENTRATION (MSOS. CON)

These courses are part of the Microsoft® Certified Applications Specialist credential tests. Students who pass the “expert” Word® and Excel® exams and the “specialist” Access® and PowerPoint® exams will receive “Master” recognition from the Microsoft® Corporation. Other levels of Microsoft® Office® certification are available from Microsoft® as students begin passing exams. The successful completion of Microsoft® Office® sponsored exams are in addition to the successful completion of JCC’s courses for credit. For specific information on Microsoft® certification, students should talk with the program advisor. Students completing the program could be hired as administrative assistants, database administrators, and secretaries.

Minimum credits: .....	17
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

#### REQUIRED COURSES - (18 credits)

Take the following:

- CIS 101 Introduction to Computer Systems
- CIS 110 Beginning Keyboarding/Typing
- CIS 119 Microsoft® PowerPoint®
- CIS 120 Microsoft® Word® Comprehensive
- CIS 121 Microsoft® Excel® Comprehensive
- CIS 122 Microsoft® Access® Comprehensive



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# MICROSOFT® OFFICE® SPECIALIST CERTIFICATE

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*Business, Management, Marketing & Technology  
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## MICROSOFT® OFFICE® SPECIALIST – CERTIFICATE (MSOS.CERT)

Students completing this certificate are prepared to assume a variety of positions in an automated office setting. The program recognizes the increasingly important role of the personal computer in modern business and is designed to assist students in developing their skills in the use of graphing, personal management, project management, and electronic presentations. The Microsoft® Office® Specialist program provides a framework for measuring student proficiency with Microsoft® Office® applications and prepares students for the industry recognized Microsoft® Exams for measuring an individual's mastery of "Office®" applications. Students completing the program could be hired at entry-level positions such as secretaries, help desk technicians, administrative assistants, and stenographers.

Minimum credits: .....	33
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

### GENERAL EDUCATION REQUIREMENTS - (12 credits)

**Take the following:**

- ENG 131 Writing Experience
- ENG 232 Technical & Business Writing
- MTH 120 Beginning Algebra or higher

**Choose one of the following:**

- COM 231 Communication Fundamentals
- or COM 240 Interpersonal Communication

### MICROSOFT® OFFICE® SPECIALIST CORE REQUIREMENTS - (21 credits)

**Take the following:**

- CIS 101 Introduction to Computer Systems
- CIS 110 Beginning Keyboarding/Typing
- CIS 119 Microsoft® PowerPoint®
- CIS 120 Microsoft® Word® Comprehensive
- CIS 121 Microsoft® Excel® Comprehensive
- CIS 122 Microsoft® Access® Comprehensive
- CIS 210 Office Administration Systems



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# MICROSOFT® NETWORKING CONCENTRATION

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*Business, Management, Marketing & Technology  
Career Pathway*

## MICROSOFT® NETWORKING – CONCENTRATION (MSNW.CON)

Minimum credits: .....	26
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	6
MACRAO agreement: .....	No

### REQUIRED COURSES - (26 credits)

Take the following:

- CIS 101 Introduction to Computer Systems
- CIS 174 PC Repair / A+ Hardware Component
- CIS 175 PC Repair / A+ Software Component
- CIS 176 A+ Certification Exam Preparation
- CIS 177 Network+ / Networking Fundamentals
- CIS 179 Network+ Certification Exam Preparation
- CIS 281 Microsoft® Networking 1
- CIS 282 Microsoft® Networking 2
- CIS 283 Microsoft® Networking 3
- CIS 284 Microsoft® Networking 4



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## MARKETING – CERTIFICATE

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*Business, Management, Marketing & Technology  
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### MARKETING – CERTIFICATE

#### (MRKT.CERT)

Individuals considering a marketing career should be good listeners, enjoy current events and look forward to the business challenges that come with changing cultural habits. Also important are the abilities to think creatively, communicate effectively, and manage time wisely to meet deadlines.

Minimum credits: .....	30
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

#### GENERAL EDUCATION REQUIREMENTS - (9 credits)

**Take the following:**

- ENG 131 Writing Experience
- ENG 232 Technical & Business Writing
- MTH 120 Beginning Algebra or higher

#### MARKETING CORE REQUIREMENTS — (18 credits)

**Take the following:**

- BUA 120 Human Relations
- BUA 122 Successful Small Business
- BUA 130 Customer Service
- BUA 131 Effective Selling
- BUA 230 Principles of Marketing
- BUA 231 Advertising, Promotion & Public Relations

#### ELECTIVES

Select electives from classes in ACC, BUA, CIS or ECN in order to meet 30 credits required for certificate.



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# MARKETING ENTREPRENEUR CERTIFICATE

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Business, Management, Marketing & Technology  
Career Pathway

## MARKETING ENTREPRENEUR – CERTIFICATE (MAEN.CERT)

Individuals considering a marketing career should be good listeners, enjoy current events and look forward to the business challenges that come with changing cultural habits. Also important are the abilities to think creatively, communicate effectively, and manage time wisely to meet deadlines. The student will assess the current economic, social and political climate for their entrepreneurial idea(s). JCC’s marketing entrepreneurship program, offered for college credit, can help prospective entrepreneurs launch new ventures. Entrepreneurs who already have established businesses can strengthen their managerial and business skills. Students in the marketing entrepreneurship program at JCC will learn the fundamentals of starting and operating their own businesses, the program includes basic business skills as well as specific courses in starting and managing a small business.

Minimum credits: .....	37
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

### GENERAL EDUCATION REQUIREMENTS - (9 credits)

Take the following:

- ENG 131 Writing Experience
- ENG 232 Technical & Business Writing
- MTH 120 Beginning Algebra or higher

### ENTREPRENEURSHIP RELATED REQUIREMENTS - (13 credits)

Take the following:

- ENT 160 Introduction to Entrepreneurship
- ENT 161 Opportunity Analysis
- ENT 162 Legal Issues for Small Business
- ENT 163 Financial Management for Small Business
- ENT 164 Entrepreneurial Marketing
- ENT 169 Business Plan

### MARKETING ENTREPRENEURSHIP CORE REQUIREMENTS - (15 credits)

Take the following:

- BUA 120 Human Relations
- BUA 130 Customer Service
- BUA 131 Effective Selling
- BUA 230 Principles of Marketing
- BUA 231 Advertising, Promotion & Public Relations



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## GRAPHIC DESIGN ENTREPRENEUR CERTIFICATE

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*Business, Management, Marketing & Technology  
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### GRAPHIC DESIGN ENTREPRENEUR – CERTIFICATE (GREN.CERT)

The graphic design program prepares students for entry-level positions in design organizations. Graphic design graduates find employment in a variety of settings including the publication and printing industries, advertising and marketing organizations, and graphic design department of corporations, government agencies and retailers. JCC's graphic design entrepreneurship program, offered for college credit, can help prospective entrepreneurs launch new ventures. Entrepreneurs who already have established businesses can strengthen their managerial and business skills. Students in the graphic design entrepreneurship program at JCC will learn the fundamentals of starting and operating their own businesses. The program includes basic business skills as well as specific courses in starting and managing a small business.

Minimum credits: .....	43
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

#### GENERAL EDUCATION REQUIREMENTS - (6 credits)

**Take the following:**

- ENG 131 Writing Experience
- MTH 120 Beginning Algebra or higher

#### ENTREPRENEURSHIP RELATED REQUIREMENTS - (13 credits)

**Take the following:**

- ENT 160 Introduction to Entrepreneurship
- ENT 161 Opportunity Analysis
- ENT 162 Legal Issues for Small Business
- ENT 163 Financial Management for Small Business
- ENT 164 Entrepreneurial Marketing
- ENT 169 Business Plan

#### GRAPHIC DESIGN ENTREPRENEURSHIP PROGRAM

##### CORE REQUIREMENTS - (24 credits)

**Take the following:**

- ART 101 Two-Dimensional Design  
or ART 103 Drawing I: Foundations  
or ART 152 Painting I: Design & Color
- CIS 101 Introduction to Computer Systems
- CIS 128 Typography & Layout
- CIS 132 Graphic Illustration (Adobe® Illustrator®)
- CIS 134 Graphic Imaging (Adobe® Photoshop®)
- CIS 136 Integrated Design I (Adobe® InDesign®)
- CIS 232 Integrated Design II (Adobe® InDesign®)
- CIS 234 Graphic Technology Applications



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## FINANCIAL SERVICES – CONCENTRATION

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*Business, Management, Marketing & Technology  
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### FINANCIAL SERVICES – CONCENTRATION (FISR.CON)

This credential prepares students for work in the banking and financial services industries. Job opportunities could include introductory positions with banks (teller or customer service representative), trust offices, pension and retirement planning firms, personal financial planning groups and investment brokerage houses (clerk or customer service representative). Students acquire skills in customer relations and financial problem solving. Students learn about financial markets and economic issues.

Minimum credits: .....	17
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

#### CORE COURSES - (17 credits)

- ACC 216 Financial Accounting Concepts
- BUA 110 Introduction to Wall Street
- BUA 111 Personal Finance
- BUA 120 Human Relations
- BUA 130 Customer Service
- ECN 232 Microeconomics



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# ENTREPRENEUR – CONCENTRATION

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*Business, Management, Marketing & Technology  
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## ENTREPRENEUR – CONCENTRATION

### (ENTR.CON)

Minimum credits: .....	16
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

#### ENTREPRENEURSHIP RELATED REQUIREMENTS - (3 credits)

Take the following:

CIS 101 Introduction to Computer Systems

#### ENTREPRENEURSHIP CORE REQUIREMENTS - (13 credits)

ENT 160 Introduction to Entrepreneurship

ENT 161 Opportunity Analysis

ENT 162 Legal Issues for Small Business

ENT 163 Financial Management for Small Business

ENT 164 Entrepreneurial Marketing

ENT 169 Business Plan



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# ENTREPRENEUR – CERTIFICATE

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Business, Management, Marketing & Technology  
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## ENTREPRENEUR – CERTIFICATE

### (ENTR.CERT)

Students will meet and exceed their entrepreneurial goals. Students participating in this academic program will exit JCC with the business acumen necessary to launch their own business venture.

Minimum credits: .....	30
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

### GENERAL EDUCATION REQUIREMENTS - (9 credits)

Take the following:

- ENG 131 Writing Experience
- ENG 232 Technical & Business Writing
- MTH 120 Beginning Algebra or higher

### ENTREPRENEURSHIP RELATED REQUIREMENTS - (7 credits)

Take the following:

- BUA 120 Human Relations in Business
- CIS 021 Excel® Workshop
- CIS 101 Introduction to Computer Systems

### ENTREPRENEURSHIP CORE REQUIREMENTS - (13 credits)

Take the following:

- ENT 160 Introduction to Entrepreneurship
- ENT 161 Opportunity Analysis
- ENT 162 Legal Issues for Small Business
- ENT 163 Financial Management for Small Business
- ENT 164 Entrepreneurial Marketing
- ENT 169 Business Plan

### ELECTIVE CREDITS

Choose any additional courses from the ACC or BUA discipline to meet the 30 credit degree requirement.



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# ELECTRICIAN ENTREPRENEUR – CERTIFICATE

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*Business, Management, Marketing & Technology  
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## ELECTRICIAN ENTREPRENEUR – CERTIFICATE (ELEN.CERT)

JCC's electrician entrepreneurship program, offered for college credit, can help prospective entrepreneurs launch new ventures. Entrepreneurs who already have established businesses can strengthen their managerial and business skills. Students in the electrician entrepreneurship program at JCC will learn the fundamentals of starting and operating their own businesses. The program includes basic business skills as well as specific courses in starting and managing a small business.

Minimum credits: .....	40
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

### GENERAL EDUCATION REQUIREMENTS - (6 credits)

**Take the following:**

- ENG 131 Writing Experience
- MTH 120 Beginning Algebra or higher

### ENTREPRENEURSHIP RELATED REQUIREMENTS - (13 credits)

**Take the following:**

- ENT 160 Introduction to Entrepreneurship
- ENT 161 Opportunity Analysis
- ENT 162 Legal Issues for Small Business
- ENT 163 Financial Management for Small Business
- ENT 164 Entrepreneurial Marketing
- ENT 169 Business Plan

### ELECTRICIAN ENTREPRENEURSHIP CORE REQUIREMENTS - (21 credits)

**Take the following:**

- ELT 074 National Electric Code
- ELT 120 Circuit Analysis I
- ELT 125 Circuit Analysis II
- ELT 148 Electrical Math I
- ELT 149 Electrical Math II
- ELT 150 Residential Wiring
- ELT 151 Commercial Wiring
- ELT 152 Industrial Wiring
- ELT 215 Electrical Troubleshooting



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## COMPUTER PROGRAMMING SPECIALIST CERTIFICATE

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*Business, Management, Marketing & Technology  
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### COMPUTER PROGRAMMING SPECIALIST – CERTIFICATE (CPSP.CERT)

Minimum credits: .....	41
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

#### GENERAL EDUCATION REQUIREMENTS – (6 credits)

Take the following:

- ENG 131 Writing Experience
- MTH 131 Intermediate Algebra or higher

#### COMPUTER PROGRAMMING SPECIALIST CORE REQUIREMENTS – (35 credits)

Take the following:

- CIS 012 Microsoft® Windows® Workshop
- CIS 013 Operating Systems: UNIX
- CIS 016 Microsoft® DOS® Workshop
- CIS 101 Introduction to Computer Systems
- CIS 122 Microsoft® Access® Comprehensive
- CIS 143 HTML
- CIS 158 Programming Logic
- CIS 160 Programming in Visual Basic.NET
- CIS 165 JAVA Programming
- CIS 170 Programming in C++
- CIS 174 PC Repair/A+ Hardware Component  
or CIS 177 Network+/Networking Fundamentals
- CIS 244 Web Programming
- CIS 260 Advanced Visual Basic.NET
- CIS 273 System Concepts and Design



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## BUSINESS ADMINISTRATION – CERTIFICATE

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*Business, Management, Marketing & Technology  
Career Pathway*

### BUSINESS ADMINISTRATION – CERTIFICATE (BUAD.CERT)

The Business Administration Certificate will develop your awareness in all of the functional aspects of the business world. You can use your ability to get along with people, develop your leadership potential, and use your oral and written communication skills. Jobs may be found in insurance companies, hospitals, health-care facilities, educational institutions, transportation/distribution centers, government agencies and manufacturing firms in a variety of departments. This program also consists of the foundational courses needed for an associate degree.

Minimum credits: .....	30
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

#### GENERAL EDUCATION REQUIREMENTS - (9 credits)

**Take the following:**

ENG 131 Writing Experience  
 ENG 232 Technical & Business Writing  
 MTH 120 Beginning Algebra or higher

#### BUSINESS ADMINISTRATION RELATED REQUIREMENTS - (7 credits)

**Take the following:**

ACC 231 Principles of Accounting I  
 CIS 101 Introduction to Computer Systems

#### BUSINESS CORE REQUIREMENTS - (12 credits)

**Take the following:**

ACC 216 Financial Accounting Concepts  
 BUA 100 Contemporary Business  
 BUA 220 Principles of Management  
 BUA 230 Principles of Marketing  
 BUA 250 Business Law I

#### ELECTIVES

Select electives from courses in ACC, BUA, ECN and ENT in order to meet 30 credits required for certificate.

*Please note: BUA courses are not available at all JCC sites every semester.  
 Please consult with an advisor.*



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## BUSINESS ADMINISTRATION ASSOCIATE IN APPLIED SCIENCE

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*Business, Management, Marketing & Technology  
Career Pathway*

### BUSINESS ADMINISTRATION – ASSOCIATE IN APPLIED SCIENCE (BUAD.AAS)

This is a broad-based program of business studies. This program allows the student to customize a program of study that meets the specific employment and/or transfer needs of the student.

Minimum credits: .....	60
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

#### GENERAL EDUCATION REQUIREMENTS - (19 credits)

##### ADO 1: Write clearly, concisely and intelligibly (3 credits)

Take the following:

ENG 131 Writing Experience

##### ADO 2: Speak clearly, concisely and intelligibly (3 credits)

Choose one of the following:

COM 231 Communication Fundamentals

COM 240 Interpersonal Communication

##### ADO 3: Demonstrate computational skills and mathematical reasoning (3-5 credits)

Take the following:

MTH 120 Beginning Algebra or higher

##### ADO 4: Demonstrate scientific reasoning (4-5 credits)

Choose one of the following:

BIO 110 Introductory Biology

BIO 131 General Biology

BIO 132 Human Biology

BIO 155 Anatomy & Physiology

BIO 220 Microbiology

BIO 253 Human Anatomy and Physiology I

CEM 131 Fundamentals of Chemistry

CEM 141 General Chemistry I

GEL 160 Introduction to Geology

NSC 131 Contemporary Science

PHY 131 Conceptual Physics

PHY 151 Astronomy

PHY 231 College Physics I

PHY 251 Modern University Physics I

ADO 5: Understand human behavior and social systems, the principles which govern them and their implications for the present and future (3 credits)

Choose one of the following:

ECN 231 Macroeconomics

ECN 232 Microeconomics

ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

ART 111 Art History: Prehistoric-1400

ART 112 Art History: Renaissance-Present

ENG 210 Introduction to Film

ENG 246 Short Story & Novel

ENG 247 Poetry & Drama

ENG 252 Shakespeare

ENG 255 American Literature – 19th Century

ENG 256 American Literature – 20th Century

HUM 131 Cultural Connections

MUS 131 Understanding Music

THR 116 Introduction to Theatre

ADO 7: Think critically

Program courses meet this requirement

ADO 8: Make responsible decisions in personal and professional contexts

Program courses meet this requirement

ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement

ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program courses meet this requirement

#### BUSINESS ADMINISTRATION RELATED REQUIREMENTS - (7 credits)

Take the following:

ACC 231 Principles of Accounting I

CIS 101 Introduction to Computer Systems

#### BUSINESS ADMINISTRATION CORE REQUIREMENTS - (12 credits)

Take the following:

ACC 216 Financial Accounting Concepts

BUA 100 Contemporary Business

BUA 220 Principles of Management

BUA 230 Principles of Marketing

BUA 250 Business Law I



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## BUSINESS ADMINISTRATION ASSOCIATE IN APPLIED SCIENCE

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*Business, Management, Marketing & Technology  
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### BUSINESS ADMINISTRATION ELECTIVES - (18-22 credits)

Select electives from the following list to meet the 60-credit degree requirement.

Choose from the following:

- ACC 115 Payroll Accounting
- ACC 122 Volunteer Income Tax Project
- ACC 214 Income Tax Accounting
- ACC 216 Financial Accounting Concepts
- ACC 231 Principles of Accounting I
- ACC 232 Principles of Accounting II
- ACC 234 Managerial Accounting
- ACC 240 Intermediate Accounting
- BUA 110 Introduction to Wall Street
- BUA 111 Personal Finance
- BUA 120 Human Relations in Business
- BUA 121 Leadership
- BUA 122 Successful Small Business
- BUA 130 Customer Service
- BUA 131 Effective Selling
- BUA 221 Human Resource Management
- BUA 231 Advertising, Promotion & Public Relations
- BUA 245 Internship/Externship
- BUA 251 Business Law II
- ECN 231 Macroeconomics
- ECN 232 Microeconomics
- ENG 232 Technical & Business Writing
- ENT 160 Introduction to Entrepreneurship
- PSY 140 Introduction to Psychology

*Please note: BUA courses are not available at all JCC sites every semester.  
Please consult with an advisor.*



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# AUTOMOTIVE ENTREPRENEUR – CERTIFICATE

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Business, Management, Marketing & Technology  
Career Pathway

## AUTOMOTIVE ENTREPRENEUR – CERTIFICATE (AUEN.CERT)

This program provides classroom and laboratory experiences that prepares the students for entry-level employment in the automotive service field. It also prepares students for the Michigan and/or Automotive Service Excellence (ASE) certification tests. JCC’s automotive entrepreneurs who already have established businesses can strengthen their managerial and business skills. Students in the automotive entrepreneurship program at JCC will learn the fundamentals of starting and operating their own businesses. The program includes basic business skills as well as specific courses in starting and managing a small business.

Minimum credits: .....	39
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

### GENERAL EDUCATION REQUIREMENTS - (6 credits)

**Take the following:**

- ENG 131 Writing Experience
- MTH 120 Beginning Algebra or higher

### ENTREPRENEURSHIP RELATED REQUIREMENTS - (13 credits)

**Take the following:**

- ENT 160 Introduction to Entrepreneurship
- ENT 161 Opportunity Analysis
- ENT 162 Legal Issues for Small Business
- ENT 163 Financial Management for Small Business
- ENT 164 Entrepreneurial Marketing
- ENT 169 Business Plan

### AUTOMOTIVE ENTREPRENEURSHIP CORE REQUIREMENTS - (20 credits)

**Take the following:**

- AUT 102 Engine Performance I
- AUT 103 Engine Performance II
- AUT 105 Automotive Brakes
- AUT 106 Suspension & Steering
- or AUT 108 Automotive Air Conditioning/Heating
- AUT 112 Electrical Systems I
- AUT 113 Electrical Systems II



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## ADMINISTRATIVE ASSISTANT ASSOCIATE IN APPLIED SCIENCE

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*Business, Management, Marketing & Technology  
Career Pathway*

### ADMINISTRATIVE ASSISTANT – ASSOCIATE IN APPLIED SCIENCE (ADAS.AAS)

This degree provides a solid foundation for students seeking higher-level support positions in office settings where increased responsibilities require technical skills in business communications, interpersonal relations, desktop publishing, presentation software, accounting, and database software. Office and support staff personnel are in great demand everywhere today. Employment opportunities for secretaries and administrative assistants are expected to grow through the year 2010. Students completing this program could be hired for above entry-level positions such as office information assistants, office systems supervisors, administrative office systems assistants, administrative secretaries, and executive assistants.

Minimum credits: .....	60
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

#### GENERAL EDUCATION REQUIREMENTS - (23 credits)

##### ADO 1: Write clearly, concisely and intelligibly (6 credits)

**Take the following:**

- ENG 131 Writing Experience
- ENG 232 Technical & Business Writing

##### ADO 2: Speak clearly, concisely and intelligibly (3 credits)

**Choose one of the following:**

- COM 231 Communication Fundamentals
- COM 240 Interpersonal Communication

##### ADO 3: Demonstrate computational skills and mathematical reasoning (3-5 credits)

**Take the following:**

- MTH 120 Beginning Algebra or higher

##### ADO 4: Demonstrate scientific reasoning (4-5 credits)

**Choose one of the following:**

- BIO 110 Introductory Biology
- BIO 131 General Biology
- BIO 132 Human Biology
- BIO 155 Anatomy & Physiology
- BIO 220 Microbiology
- BIO 253 Human Anatomy and Physiology I
- CEM 131 Fundamentals of Chemistry
- CEM 141 General Chemistry I
- GEL 160 Introduction to Geology
- NSC 131 Contemporary Science
- PHY 131 Conceptual Physics
- PHY 151 Astronomy

- PHY 231 College Physics I
- PHY 251 Modern University Physics I

##### ADO 5: Understand human behavior and social systems, the principles which govern them, and their implications for the present and future (3 credits)

**Choose one of the following:**

- ECN 231 Macroeconomics
- ECN 232 Microeconomics
- PLS 141 American National Government
- PSY 140 Introduction to Psychology
- SOC 231 Principles of Sociology

##### ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

**Choose one of the following:**

- ART 111 Art History: Prehistoric to 1400
- ART 112 Art History: Renaissance to Present
- ENG 210 Introduction to Film
- ENG 246 Short Story & Novel
- ENG 247 Poetry & Drama
- ENG 252 Shakespeare
- ENG 254 Children's Literature
- ENG 255 American Literature – 19th Century
- ENG 256 American Literature – 20th Century
- HUM 131 Cultural Connections
- MUS 131 Understanding Music
- THR 116 Introduction to Theatre

##### ADO 7: Think critically

Program courses meet this requirement

##### ADO 8: Make responsible decisions in personal and professional contexts (1-3 credits)

**Choose one of the following:**

- HPF 160 Wellness
- HPF 277 Stress Management
- HPF 283 Managing Stress and Holistic Health
- PHL 236 Ethics

##### ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement

##### ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures

Program courses meet this requirement

#### ADMINISTRATIVE ASSISTANT RELATED REQUIREMENTS - (8 credits)

**Take the following:**

- ACC 115 Payroll Accounting



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## ADMINISTRATIVE ASSISTANT ASSOCIATE IN APPLIED SCIENCE

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BUA 121 Leadership  
BUA 130 Customer Service

### ADMINISTRATIVE ASSISTANT CORE REQUIREMENTS - (29 credits)

#### Take the following:

CIS 024 Microsoft® Outlook® Workshop  
CIS 045 Web Page Design I (Dreamweaver®)  
CIS 101 Introduction to Computer Systems  
CIS 110 Beginning Keyboarding/Typing  
CIS 111 Intermediate Keyboarding/Typing  
CIS 119 Microsoft® PowerPoint®  
CIS 120 Microsoft® Word® Comprehensive  
CIS 121 Microsoft® Excel® Comprehensive  
CIS 122 Microsoft® Access® Comprehensive  
CIS 210 Office Administration Systems  
CIS 245 Internship/Externship



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## ACCOUNTING CERTIFICATE

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*Business, Management, Marketing & Technology  
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### ACCOUNTING – CERTIFICATE (ACCT.CERT)

This program prepares students for bookkeeping and related occupations. Job opportunities exist for audit clerks, general accounting clerks, credit card clerks in hotels and restaurants, general ledger bookkeepers and many more. Learn to keep accounting records and compile reports using computers and calculators; prepare payrolls, tax reports; compute, type, and mail monthly statements, keep general ledgers, and perform many other accounting functions.

Minimum credits: .....	30
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

#### GENERAL EDUCATION REQUIREMENTS - (9 credits)

Take the following:

- ENG 131 Writing Experience
- ENG 232 Technical & Business Writing
- MTH 120 Beginning Algebra or higher

#### ACCOUNTING CORE REQUIREMENTS - (17 credits)

Take the following:

- ACC 115 Payroll Accounting
- ACC 231 Principles of Accounting I
- ACC 232 Principles of Accounting II
- BUA 110 Introduction to Wall Street
- CIS 101 Introduction to Computer Systems
- CIS 121 Microsoft® Excel® Comprehensive

#### ELECTIVES

Select electives from courses in ACC, BUA, or ECN, if necessary to meet 30 credits required for the certificate.

*Please note: ACC courses are not available at all JCC sites every semester.  
Please consult with an academic advisor.*

*Online note: Some students find online ACC courses to be challenging. It is recommended that online accounting students have strong computer skills including proficiency using e-mail, the Internet, experience using Microsoft® Word®, Excel® and skills with attaching files.*



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# ACCOUNTING ASSOCIATE IN APPLIED SCIENCE SCIENCE

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*Business, Management, Marketing & Technology  
Career Pathway*

## ACCOUNTING – ASSOCIATE IN APPLIED SCIENCE (ACCT.AAS)

Accountants and auditors prepare, analyze and verify financial reports and taxes and monitor information systems that furnish this information to managers in business, industry and government.

The accounting/finance major prepares students for initial employment and develops competencies for those already in the field. Students develop skills in the posting and recording of financial data, use of computers, preparation of financial statements and reports, interpretation of financial information, and develop effective supervisory and communicative techniques and skills.

Typical job opportunities and places of employment are: junior accountant with public accounting firms, banks and other financial institutions, educational institutions and other profit and not-for-profit organizations.

Minimum credits: .....	60
Minimum cumulative GPA: .....	2.0
Minimum grade in all courses: .....	2.0
Minimum JCC credits: .....	12
MACRAO agreement: .....	No

### GENERAL EDUCATION REQUIREMENTS - (22 credits)

#### ADO 1: Write clearly, concisely and intelligibly (6 credits)

Take the following:

- ENG 131 Writing Experience
- ENG 232 Technical & Business Writing

#### ADO 2: Speak clearly, concisely and intelligibly

Program courses meet this requirement

#### ADO 3: Demonstrate computational skills and mathematical reasoning (3-5 credits)

Take the following:

- MTH 120 Beginning Algebra or higher

#### ADO 4: Demonstrate scientific reasoning (4-5 credits)

Choose one of the following:

- BIO 110 Introductory Biology
- BIO 131 General Biology
- BIO 132 Human Biology
- BIO 155 Human Anatomy & Physiology
- BIO 220 Microbiology
- BIO 253 Human Anatomy and Physiology I
- CEM 131 Fundamentals of Chemistry
- CEM 141 General Chemistry I
- GEL 160 Introduction to Geology
- NSC 131 Contemporary Science
- PHY 131 Conceptual Physics
- PHY 151 Astronomy

- PHY 231 College Physics I
- PHY 251 Modern University Physics I

#### ADO 5: Understand human behavior and social systems, the principles which govern them and their implications for the present and future (3 credits)

Choose one of the following:

- ECN 231 Macroeconomics
- ECN 232 Microeconomics

#### ADO 6: Understand aesthetic experience and artistic creativity (3 credits)

Choose one of the following:

- ART 111 Art History: Prehistoric-1400
- ART 112 Art History: Renaissance-Present
- ENG 210 Introduction to Film
- ENG 246 Short Story & Novel
- ENG 247 Poetry & Drama
- ENG 252 Shakespeare
- ENG 254 Children's Literature
- ENG 255 American Literature – 19th Century
- ENG 256 American Literature – 20th Century
- HUM 131 Cultural Connections
- MUS 131 Understanding Music
- THR 116 Introduction to Theatre

#### ADO 7: Think critically

Program courses meet this requirement

#### ADO 8: Make responsible decisions in personal and professional contexts

Program courses meet this requirement

#### ADO 9: Work productively with others, recognizing individual contributions to group success

Program courses meet this requirement

#### ADO 10: Understand and respect the diversity and interdependence of the world's peoples and cultures (3 credits)

Choose one of the following:

- ANT 131 Cultural Anthropology
- ENG 236 Women in a Changing Society
- ENG 249 African American Literature
- ENG 257 World Literature I
- FRN 131 French I or higher
- GEO 132 World Regions
- GER 131 German I or higher
- HIS 125 African-American History
- PHL 243 World Religions
- PLS 262 International Relations
- MUS 130 Music of Non-Western Cultures



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SOC 235 Minority Groups in America  
SOC 236 Women in a Changing Society  
SPN 131 Spanish I or higher

### ACCOUNTING RELATED REQUIREMENTS - (10 credits)

Take the following:

BUA 100 Contemporary Business  
BUA 110 Introduction to Wall Street  
BUA 250 Business Law I  
CIS 101 Introduction to Computer Systems

### ACCOUNTING CORE REQUIREMENTS - (23 credits)

Take the following:

ACC 115 Payroll Accounting  
ACC 214 Income Tax Accounting  
or ACC 122 Volunteer Income Tax Project  
ACC 130 QuickBooks Pro  
or CIS 121 Microsoft® Excel®  
ACC 231 Principles of Accounting  
ACC 232 Principles of Accounting II  
ACC 234 Managerial Accounting  
ACC 240 Intermediate Accounting

### ACCOUNTING ELECTIVES

Select electives from the following list if necessary to meet the 60-credit degree requirement.

ACC 245 Internship/Externship  
BUA 111 Personal Finance  
BUA 120 Human Relations  
BUA 122 Successful Small Business  
BUA 220 Principles of Management  
BUA 230 Principles of Marketing

*Please note: ACC courses are not available at all JCC sites every semester.  
Please consult with an academic advisor.*

*Online note: Some students find online ACC courses to be challenging. It is recommended that online accounting students have strong computer skills including proficiency using e-mail, the Internet, experience using Microsoft® Word®, Excel® and skills with attaching files.*