

**PROCEDURAL SEQUENCE FOR ACADEMIC SENATE APPROVAL OF PROPOSALS**

1. Submit all proposals to the Office of Academic Affairs.
2. The Senate President will log items and forward them to the appropriate Senate subcommittees.
3. The Senate subcommittee will send the proposal to the Senate.
4. Senate proposals will be considered by the Full Faculty.
5. If approved, the proposal will then be forwarded to the Provost/Senior Vice Chancellor.

Proposals that require action to approve/disapprove/table or remand will be sent back to the Senate according to the monthly meeting schedule.

TITLE: NEW DEGREE COMPUTER ENGINEERING TECHNOLOGY A.A.S. & B.S.

SUBCOMMITTEE: \_\_\_\_\_ PROPOSAL #: 99-39

**PROPOSAL:**

NEW DEGREE -- COMPUTER ENGINEERING TECHNOLOGY A.A.S.  
COMPUTER ENGINEERING TECHNOLOGY B.S.

**Action Signatures:**

[Signature] 3/24/00  
Submitter Date

Daryl Teaching 3/24/00  
College Chair/Dean Date

Scott Mackenzie 4/5/00  
Committee Chair

Approve  Disapprove \_\_\_\_\_ Date 4/5/00

RP Chrestech  
Committee Chair

Approve  Disapprove \_\_\_\_\_ Date 4/19/00

[Signature]  
Faculty Senate President

Approve  Disapprove \_\_\_\_\_ Date 4/24/00

Roger A. Barber  
Provost/Senior Vice Chancellor for Academic Affairs

Approve  Disapprove \_\_\_\_\_ Date 7/28/00

Revised: 11/15/99

*with the revisions  
set out in the memo  
received on 7/24/00.*

*Roger A. Barber,  
chief operating officer*

*approved*

*7/28/00*

MSUN Requir.	ABET Math/Sci 24 sc	Elective/ Selective	ABET Soc Sci - 24	Tech. Courses (48 sc)	Upper Division
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**Freshman Year - Fall**

IET	100	Intro to Industrial & Engineering Tec	3			3	
EET	101	Intro to Electricity/Electronics*	5			5	
ENGL	111	Written Communication I	3	3			
MATH	112	College Algebra	3		3		
CIS	111	Integrated Business Applications	3	3			

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**Freshman Year - Spring**

DRFT	156	Dropped to Soc/Sci Elective	3		3		
EET	103	Electronic Fund. I	5			5	
CIS	115	Intro to Programming	3			3	
ENGL	112	Written Communication II	3	3			
MATH	125	Trigonometry	2		2		

16

**Sophomore Year - Fall**

CIS	155	Programming I	3				3
EET	207	Digital Fundamentals	5				5
CPET	260	Intro to Networks (Netprep I)	3				3
PHYS	231	Fund. of Physics I	4		4		
SPCH	141	Fund. of Speech	3	3			3
		OR					
SPCH	142	Interpersonal Communication	3				

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**Sophomore Year - Spring**

EET	204	Electronic Fund. II	4				4
CPET	201	Computer Hardware I	3				3
CPET	301	Discrete Mathematics	3		3		
Math	133	Intro to Calc	3		3		
		Gen Ed (Area B)	3			3	

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**Junior Year - Fall**

EET	305	Digital Systems	3				3
CIS	360	Networking I	3				3
MATH	220	Calculus & Analytic Geometry I	5		5		

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**Junior Year - Fall**

CIS	255	Programming II	3				3
EET	308	Dropped to Elective (UD)	3		3		
CIS	325	Dropped to Elective (UD)	3		3		
		Math/Sci Elective	4		4		
		Gen Ed Area A/B	3		3		3

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**Senior Year - Fall**

CIS	355	Dropped to Elective (UD)	3		3		
EET	450	Adv. Digital Systems	3			3	3
CPET	410	Dropped to Elective	3		3		
CIS	300	Operating Systems	3			3	3
		Selective (UD)	3		3		

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**Senior Year - Spring**

EET	401	Interfacing - (Senior Project)	3	3			3
EET	430	Adv. Communication Systems (Dig)	3			3	3
		Electives	3		3		
		Gen Ed Area A/B (UD)	3		3		3
		Gen Ed Area A/B (UD)	3		3		3

15

BS	124	15	24	37	24	52	39
AAS	67	12	15	6	15	34	3

Courses dropped  
New courses for CPET degree

*this is the  
course revision &  
approved.*

*RB  
7/28/00*

# Program Revision Form

NEW   X   DROPPED        MAJOR REVISION        INFORMATION ONLY       

ate: **March 24, 2000**

Department College of Technical Sciences Program Area Computer Engineering Technology BS.

Please provide in the space below a "before & after" picture of the program with the changes in the program noted. Attach appropriate Course Revision Forms.

### FRESHMAN YEAR

#### Courses to be taken Fall Semester

IET	100 Intro to Industrial & Engineering Tech	3
EET	101 Intro to Electricity/Electronics*	5
ENGL	111 Written Communication I	3
MATH	112 College Algebra	3
CIS	111 Integrated Business Applications	3

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#### Courses to be taken Spring Semester

DRFT	156 Intro. to CAD	3
EET	103 Electronic Fund. I	5
CIS	115 Intro to Programming	3
ENGL	112 Written Communication II	3
MATH	125 Trigonometry	2

16

### SOPHOMORE YEAR

#### Courses to be taken Fall Semester

CIS	155 Programming Level I	3
EET	207 Digital Fundamentals	5
PCH	141 Fund. of Speech	3
	OR	
SPCH	142 Interpersonal Communication	3
CPET	260 Networking I	3
PHYS	231 Fund. of Physics I	4

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#### Courses to be taken Spring Semester

EET	204 Electronic Fund. II	4
CPET	201 Computer Hardware I	3
CPET	211 Discrete Mathematics	3
MATH	133 Intro. to Calculus	3
	Gen Ed (Area B)	3

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### JUNIOR YEAR

#### Courses to be taken Fall Semester

EET	305 Digital Systems*	3
CIS	360 Bus. Telecomm. & Networking	3
MATH	220 Calculus & Analytic Geometry	5
	Math/Sci Selective (upper division)	3

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#### Courses to be taken Spring Semester

CIS	255 Programming Level II	3
EET	308 Industrial Electronics	3
CIS	325 Information Resource Management	3
	Math/Science Elective	4
	Gen Ed Area A/B	3

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### SENIOR YEAR

#### Courses to be taken Fall Semester

CIS	355 Programming III	3
CIS	300 Operating Systems Intro	3
CPET	410 Sr. Seminar-Computer Systems	3
EET	450 Adv. Digital Systems	3
CIS	Selective (300-400 level)	3

15

#### Courses to be taken Spring Semester

EET	401 Interfacing	3
EET	430 Advanced Communication Systems	3
	Gen Ed Area A/B	3
	Gen Ed Area A/B (upper Division)	3

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# Program Revision Form

NEW    X    DROPPED    MAJOR REVISION    INFORMATION ONLY     
 Date: March 24, 2000

Department College of Technical Sciences Program Area Computer Engineering Technology A.A.S.

Please provide in the space below a "before & after" picture of the program with the changes in the program noted. Attach appropriate Course Revision Forms.

*all relevant  
 revisions in  
 first 2 years  
 of program.*

### FRESHMAN YEAR

#### Courses to be taken Fall Semester

IET	100 Intro to Industrial & Engineering Tech	3
EET	101 Intro to Electricity/Electronics*	5
ENGL	111 Written Communication I	3
MATH	112 College Algebra	3
CIS	111 Integrated Business Applications	3

17

#### Courses to be taken Spring Semester

DRFT	156 Intro. to CAD	3
EET	103 Electronic Fund. I	5
CIS	115 Intro to Programming	3
ENGL	112 Written Communication II	3
MATH	125 Trigonometry	2

16

### SOPHOMORE YEAR

#### Courses to be taken Fall Semester

CIS	155 Programming Level I	3
EET	207 Digital Fundamentals	5
SPCH	141 Fund. of Speech	3
	OR	
SPCH	142 Interpersonal Communication	3
CPET	260 Networking I	3
PHYS	231 Fund. of Physics I	4

18

#### Courses to be taken Spring Semester

EET	204 Electronic Fund. II	4
CPET	201 Computer Hardware I	3
CPET	211 Discrete Mathematics	3
MATH	133 Intro. to Calculus	3
	Gen Ed (Area B)	3

16

67 credits

# MONTANA STATE UNIVERSITY - NORTHERN

## College of Technical Sciences

### Student Education Plan/Program Sheet

## COMPUTER ENGINEERING TECHNOLOGY BACHELOR OF SCIENCE DEGREE

124 Required Program Semester Credits

A student meeting "Time To Degree" requirements entering as a freshman fall 99 (1999 catalog) takes the following course sequence to complete a 2 year (Associate Degree=first 2 years of Bachelor degree) and 4 year degree. If a student does not test into the required math course - (ie MATH 112) the student does not meet "Time-To-Degree" requirements.

Program Sheet for catalog year: 2000-2001

Major Title: Computer Engineering Technology Bachelor of Science Degree

Major Code: Bachelor B

This program sheet outlines the preferred schedule of courses. Non-program areas courses (ie: Basic skills and/or general education courses) may be taken in semesters other than indicated.

**CONSULT YOUR ADVISOR**

Student \_\_\_\_\_

### FRESHMAN YEAR

		Course Pref/No.	Action/Explanation Substitution or Waiver?	Sem. Crs.	Grade	Adv.
<b>Courses to be taken Fall Semester</b>						
EET	100	Intro to Industrial & Engnrng Tech	3			
EET	101	Intro to Electricity/Electronics	5			
<b>ENGL</b>	<b>111</b>	<b>Written Communication I</b>	<b>3</b>			
<b>MATH</b>	<b>112</b>	<b>College Algebra</b>	<b>3</b>			
<b>CIS</b>	<b>111</b>	<b>Integrated Bus.Applications.</b>	<b>3</b>			
<b>Courses to be taken Spring Semester</b>						
DRFT	156	Intro. to CAD	3			
CIS	115	Intro to Programming	3			
EET	103	Electronic Fund. I	5			
<b>ENGL</b>	<b>112</b>	<b>Written Communication II</b>	<b>3</b>			
<i>MATH</i>	<i>125</i>	<i>Trigonometry (Area C)</i>	<i>2</i>			

**Indicates courses used to meet basic skills requirements**

*Indicates courses used to meet distribution requirments*

**Indicates courses used to meet 300-400 level credit requirement**

**SOPHOMORE YEAR**

Courses to be taken Fall Semester		Course Pref/No.	Action/Explanation Substitution or Waiver?	Sem. Crs.	Grade	Adv.
CIS	155 Programming Level II	3				
T	207 Digital Fundamentals	5				
SPCH	141 Fund. Of Speech	3				
<b>OR</b>						
SPCH	142 Interpersonal Communication	3				
CPET	260 Networking I	3				
PHYS	231 Fund. of Physics I (Area C)	4				
Courses to be taken Spring Semester		Course Pref/No.	Action/Explanation Substitution or Waiver?	Sem. Crs.	Grade	Adv.
EET	204 Electronic Fund. II	4				
CPET	201 Computer Hardware I	3				
CPET	211 Discrete Mathematics	3				
MATH	133 Intro. to Calculus	3				
	Gen Ed (Area B) (ABET req.)	3				

**JUNIOR YEAR**

Courses to be taken Fall Semester		Course Pref/No.	Action/Explanation Substitution or Waiver?	Sem. Crs.	Grade	Adv.
CIS	360 Business Telecomm. & Networking	3				
EET	305 Digital Systems	3				
	Math/Science Elective	3				
MATH	220 Calc. & Analytic Geo. I	5				
Courses to be taken Spring Semester		Course Pref/No.	Action/Explanation Substitution or Waiver?	Sem. Crs.	Grade	Adv.
CIS	255 Programming Level II	3				
IS	325 Information Resource Mgmt.	3				
ET	308 Industrial Electronics	3				
	Math/Sci. Elective	4				
	Gen Ed (Area A-Humanities)	3				

**SENIOR YEAR**

Courses to be taken Fall Semester		Course Pref/No.	Action/Explanation Substitution or Waiver?	Sem. Crs.	Grade	Adv.
CIS	355 Programming III	3				
CIS	300 Operating Systems Intro.	3				
CPET	410 Sr. Seminar-Cpmtr. Systems	3				
EET	450 Adv. Digital Systems	3				
CIS	Elective (300-400)	3				
Courses to be taken Spring Semester		Course Pref/No.	Action/Explanation Substitution or Waiver?	Sem. Crs.	Grade	Adv.
EET	401 Interfacing	3				
EET	430 Adv. Communication Systems	3				
	Gen Ed (Area A-Humanities)	3				
	Gen Ed (Area B-Soc Sci)	3				

\*\*\* May not include MATH 104 or MATH 105

**Indicates courses used to meet basic skills requirements**

*Indicates courses used to meet distribution requirements*

**Indicates courses used to meet 300-400 level credit requirement**

**ADVISOR'S CHECKLIST OF BACHELOR DEGREE GRADUATION REQUIREMENTS:**

All bachelor degrees require the following, plus course requirements under specific programs:

- General Education Core --**
- A. Writing: ENGL 111 & ENGL 112**
  - B. Speech: SPCH 141 or SPCH 142**
  - C. Mathematics: MATH 110, 112, or higher level MATH course**
  - D. Computing: CIS 110 or higher level CIS course**

*Distribution Requirements Completed -- may not include courses used to meet General Education Core listed above. Students in Baccalaureate degree programs must complete a minimum of 6 credits in each of the four distribution areas. Courses required in the student's major and minor programs may also be counted to meet distribution requirements (fulfill Area D). Distribution groups are:*

Prefix	No.	Course Title	Crs.	Date Completed	Grade
<i>A. Humanities - 6 credits (ART, DRMA, ENGL, FREN, GER, GDSN, HUM, MUS, NAS, PHIL, SPAN, SPCH)</i>					
<i>B. Social Sciences - 6 credits (ECON, GEOG, HIST, POL, PSYC, SOC, SOSOC)</i>					
<i>C. Mathematics/Science - 6 credits (BIOL, CHEM, CIS, ESCI, GSCI, MATH, NSCI, PHYS, TSCI)</i> <i>For bachelor degrees, at least one course offered to fill this group must be a lab science.</i>					
<i>D. Technology/Applied Arts - 6 credits (fulfilled by program requirements)</i>					
CAPSTONE COMPONENT: Advance Program Project as identified in each program area.					

A minimum of 120 credits with a cumulative GPA of 2.00 and a GPA of 2.25 in both the major and the minor course requirements. Some programs may include additional requirements for graduation or additional grade requirements. If so, they will be noted in the recommended sequences for individual programs.

At least 30 of the total credits must be taken at Montana State University-Northern

At least 31% of the total credits required for graduation must be from 300 or 400 level courses.

Advisor's initials present for each required course and substitution

No more than 9 credits total of independent study courses (x99) may apply toward a bachelor's degree.

Date \_\_\_\_\_

\_\_\_\_\_  
Student

\_\_\_\_\_  
Advisor

\_\_\_\_\_  
College Dean

**Indicates courses used to meet basic skills requirements**

*Indicates courses used to meet distribution requirements*

**Indicates courses used to meet 300-400 level credit requirement**

# MONTANA STATE UNIVERSITY - NORTHERN

College of Technical Sciences  
Student Education Plan/Program Sheet

## COMPUTER ENGINEERING TECHNOLOGY ASSOCIATE OF APPLIED SCIENCE DEGREE

67 Required Program Semester Credits

A student meeting "Time To Degree" requirements entering as a freshman fall 99 (1999 catalog) takes the following course sequence to complete a 2 year (Associate Degree=first 2 years of Bachelor degree) and 4 year degree. If a student does not test into the required math course - (ie MATH 112) the student does not meet "Time-To-Degree" requirements.

Program Sheet for catalog year: 2000-2001

Major Title: COMPUTER ENGINEERING TECHNOLOGY A. A. S. DEGREE

Major Code: Associate of Applied Science A

This program sheet outlines the preferred schedule of courses. Non-program areas courses (ie: Basic skills and/or general education courses) may be taken in semesters other than indicated.

**CONSULT YOUR ADVISOR**

Student \_\_\_\_\_

### FRESHMAN YEAR

	Courses to be taken Fall Semester	Course Pref/No.	Action/Explanation Substitution or Waiver?	Sem. Crs.	Grade	Adv.
IET	100 Intro to Ind/Engineering Tech	3				
EET	101 Intro to Electricity/Electronics	5				
<b>ENGL</b>	<b>111 Written Communication I</b>	3				
<b>MATH</b>	<b>112 College Algebra</b>	3				
<b>S</b>	<b>111 Integrated Bus. Applications</b>	3				
<b>Courses to be taken Spring Semester</b>						
CIS	115 Intro. To Programming	3				
DRFT	156 Intro. to CAD	3				
EET	103 Electronics Fundamentals I	5				
ENGL	112 Written Communication II	3				
<i>MATH</i>	<i>125 Trigonometry (Area C)</i>	2				

### SOPHOMORE YEAR

	Courses to be taken Fall Semester	Course Pref/No.	Action/Explanation Substitution or Waiver?	Sem. Crs.	Grade	Adv.
CIS	155 Programming Level II	3				
EET	207 Digital Fundamentals	5				
<b>SPCH</b>	<b>141 Fund. of speech</b>	3				
	<b>OR</b>					
<b>SPCH</b>	<b>142 Interpersonal Communication</b>	3				
CPET	260 Networking I	3				
<i>PHYS</i>	<i>231 Fund. of Physics I (Area C)</i>	4				
<b>Courses to be taken Spring Semester</b>						
EET	204 Electronic Fund. II	4				
CPET	201 Computer Hardware I	3				
CPET	211 Discrete Mathematics	3				
<b>MATH</b>	<b>133 Intro. to Calculus</b>	3				
	<i>Gen Ed Dist (Area B - ABET req.)</i>	3				

Indicates courses used to meet basic skills requirements

*Indicates courses used to meet distribution requirements*



ADVISOR'S CHECKLIST OF ASSOCIATE OF APPLIED SCIENCE DEGREE GRADUATION REQUIREMENTS:

All Associate/Associate of Applied Science degrees require the following, plus course requirements under specific programs:

- General Education Core** -
  - A. Writing: ENGL 111**
  - B. Speech: SPCH 141 or SPCH 142**
  - C. Mathematics: MATH 110, 112, or higher level MATH course**
  - D. Computing: CIS 110 or higher level CIS course**

*Distribution Requirements Completed -- may not include courses used to meet General Education Core listed above. Students in A.A.S. degree programs must complete a minimum of 3 credits in at least two of the four distribution areas for a total of 6 distribution credits. Courses required in the student's major program may also be counted to meet distribution requirements (fulfill Area D).*

- A. Humanities - 3 credits (ART, DRMA, ENGL, FREN, GER, GDSN, HUM, MUS, NAS, PHIL, SPAN, SPCH)*
- B. Social Sciences - 3 credits (ECON, GEOG, HIST, POL, PSYC, SOC, SOSC)*
- C. Mathematics/Science - 3 credits (BIOL, CHEM, CIS, ESCI, GSCI, MATH, NSCI, PHYS, TSCI)*
- D. Technology/Applied Arts - 3 credits (fulfilled by program requirements)*

At least 15 of the total credits must be taken at MSU-Northern for an A.A.S. degree.

Some programs may include additional requirements for graduation. If so, they will be noted in the recommended sequence for any individual programs.

An Associate of Applied Science degree has a minimum of 60 credits and a maximum of 72 credits.

Advisor's initials present for each required course and substitution

No more than 6 credits total of independent study (designated X99) may be applied toward an A.A.S. degree

**Indicates courses used to meet basic skills requirements**

*Indicates courses used to meet distribution requirements*

\_\_\_\_\_  
Student

\_\_\_\_\_  
Advisor

\_\_\_\_\_  
College Dean

## Course Revision Form

NEW  DROPPED  MAJOR REVISION  INFORMATION ONLY

**Department:** College of Technical Sciences  
**Program Area:** Computer Engineering Technology  
**Date:** February 2000

**Course pref and no.:** CPET 201  
**Course title:** Computer Hardware I

**Credits:** 3

**Required by:** Computer Engineering Technology B.S., No Minor Required  
Computer Engineering Technology A.A.S.

**Selective in:**  
**Elective in:**  
**General Educ:**

**Lecture:**  
**Lecture/lab:** X  
**Contract hrs. lecture:** 2  
**Contact hrs. lab:** 2

### Current/proposed Catalog Description (Include all prerequisites:)

*-This course is* an introduction to current computer hardware leading to the students ability to successfully pass the COMP/TIA A+ Certification exam.

### Course Outcome Objectives:

- Understand the basic primary components of a modern computer system, including
  - Mass Storage devices and interfaces
  - Central Processing Unit
  - Memory subsystems (RAM and ROM)
  - Chipset
  - System bus organization and specifications
  - Video display systems
  - System expansion cards
  - Input / Output peripheral devices
  - Printing systems
  - Telecommunications systems

**New instructional Resources needed (including: library materials, special equipment, and facilities). Please note: approval does not indicate support for new faculty or additional resources.**

Use of electronics lab facilities and equipment will be required.

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## Course Revision Form

NEW  DROPPED  MAJOR REVISION  INFORMATION ONLY

Department: College of Technical Sciences  
Program Area: Computer Engineering Technology  
Date: February 2000

Course pref and no.: CPET 260  
Course title: Networking I

Credits: 3

Required by: Computer Engineering Technology B.S., No Minor Required  
Computer Engineering Technology A.A.S.

Selective in:  
Elective in:  
General Educ:

Lecture: X  
Lecture/lab:  
Contract hrs. lecture: 3  
Contact hrs. lab:

### Proposed Catalog Description (Include all prerequisites:)

Coverage includes the basic concepts of networking including LAN & WAN hardware and software, OSI network model and the protocol services approach to networking.

### Course Outcome Objectives:

- Understand the OSI model
- Define and contrast
  - Local Area Networks
  - Wide Area Networks
- Network hardware including
  - Routers
  - Gateways
  - Network interface boards
  - Hubs
- Understand hardware standards
  - Network wiring standards (CAT 5/Cat 5e)
  - Network topologies

**New instructional Resources needed (including: library materials, special equipment, and facilities). Please note: approval does not indicate support for new faculty or additional resources.**

## Course Revision Form

NEW  DROPPED  MAJOR REVISION  INFORMATION ONLY

**Department:** College of Technical Sciences  
**Program Area:** Computer Engineering Technology  
**Date:** February 2000

**Course pref and no.:** CPET 211  
**Course title:** Discrete Mathematics

**Credits:** 3

**Required by:** Computer Engineering Technology B.S., No Minor Required  
Computer Engineering Technology A.A.S.

**Selective in:**

**Elective in:**

**General Educ:**

**Lecture:** X

**Lecture/lab:**

**Contract hrs. lecture:** 3

**Contact hrs. lab:**

### Proposed Catalog Description (Include all prerequisites:)

*This is* An introductory course in mathematics and logical processes used in computer programming and design.

### Course Outcome Objectives:

Familiarity and the ability to use:

Boolean Algebra including identities and algebraic simplification

Diagramming techniques to illustrate and quantify

Number base conversions

Binary number systems including 1's complement, 2's complement, and representation of floating point numbers in binary (computer) systems.

Tabulation and approximation techniques for generation of trigonometric and transcendental functions.

**New instructional Resources needed (including library materials, special equipment, and facilities). Please note: approval does not indicate support for new faculty or additional resources.**

## Course Revision Form

NEW  DROPPED  MAJOR REVISION  INFORMATION ONLY

**Department:** College of Technical Sciences  
**Program Area:** Computer Engineering Technology  
**Date:** February 2000

**Course pref and no.:** CPET 410  
**Course title:** Senior Seminar – Computer Systems

**Credits:** 3

**Required by:** Computer Engineering Technology B.S., No Minor Required  
Computer Engineering Technology A.A.S.

**Selective in:**  
**Elective in:**  
**General Educ:**

**Lecture:** X  
**Lecture/lab:**  
**Contract hrs. lecture:** 3  
**Contact hrs. lab:**

### Current/proposed Catalog Description (Include all prerequisites:)

A seminar based course on the current developments and directions in the computer industry. The course will consist of intense research into hardware developments that will affect the 'state of the art' definition of computer systems.

### Course Outcome Objectives:

Current developments in:  
Central Processing Units  
System expansion bus technology  
Memory organization and interfacing  
Video display adapters, systems and display units.  
Basic 'chipset' designs.  
Peripheral interfacing  
Network standards  
Hardware/Software interfaces and operating systems.

**New instructional Resources needed (including: library materials, special equipment, and facilities). Please note: approval does not indicate support for new faculty or additional resources.**