

0557



Minnesota State University, Mankato HOLD and CLEAR buttons only compatible with Acrobat V. 4 and 5 Curriculum Proposal

Please type or select the requested information. Print completed forms, add appropriate paper attachments, and route through MSU's curricular process for recommendations and decisions.

(Check all that apply):		Proposal #	119
College: Science, Engineering and Technology	<input checked="" type="checkbox"/> Undergraduate	Effective Date of Change:	
Department: Electrical and Computer Engineering and T	<input type="checkbox"/> Graduate	Academic Year	05
Program: Electrical Engineering /Computer Engineerin	CIP #	(For Office Use Only)	
Type of Change	N/A	Course Designator	Number of Credits
Proposed:	N/A	EE 254	1
Title Current:	Digital and Circuits Lab	(if applicable)	
Title Proposed:			
24-Char. Abbrev:			

Include a course or program description for the Bulletin (30-40 words maximum for courses, 100 for programs):

Delete the last sentence of the catalog copy as shown on attached copy.

Rationale or Justification for change:

This change reflects the refinement of the course content as a result of the Fall 2004 ECET outcome review process.

For General Education or Cultural Diversity Courses Only

General Education Course:		Cultural Diversity Course:
GE Category #	GE Category Name (Maximum of 3 Categories)	(Please check one.)
N/A		<input type="checkbox"/> Core (At least 75% devoted to topics of race, gender, sexual orientation, age, class, and disabilities as they occur in United States Society.)
N/A		<input type="checkbox"/> Related (At least 25% devoted to the above topics or to a global perspective on topics related to African American, Asian, Hispanic, and Native American inhabitants of the United States.)
N/A		

? For Writing Intensive Courses, attach a description of the kind and quantity of writing.
 ? For Upper Division Courses, include a description of the respects in which it is broad and general rather than narrow and specific, and so suitable as GE.

Attach paper copies of the following:

- a. Syllabus or course outline.
- b. Course's student learning outcomes associated with each GE competency or CD designation.
- c. List of strategies to be used to assess students' achievement of each GE competency or CD designation.

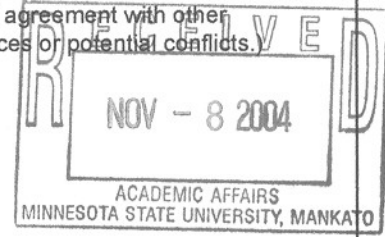
For New Courses

(Check all that apply):	Instructional Type: Lecture	Course will be offered:
<input type="checkbox"/> Course is an elective.	Grading Format: <input type="checkbox"/> Grade <input type="checkbox"/> P/N	<input type="checkbox"/> Fall Semester
<input type="checkbox"/> Course is required for program		<input type="checkbox"/> Spring Semester
<input type="checkbox"/> Pre- or Co-requisites:		<input type="checkbox"/> Summer Session
<input type="checkbox"/> Other courses are being changed or eliminated. (Explain.)		

Course content or title is similar to courses in other departments. (Attach copy of letter of agreement with other program(s) contacted. Indicate the nature of the discussions and/or resolution of differences or potential conflicts.)

Attach paper copies of the following:

- a. Syllabus or course outline.
- b. Course's student learning outcomes.
- c. A list of resources required to offer and support this course.
- d. A description of how teaching this course will affect department staffing.
- e. If 400/500 level course, an explanation of added expectations of graduate students.





**Minnesota State University, Mankato
Curriculum Proposal**

*****Signature Page*****

Department		
<input checked="" type="checkbox"/> Recommended (Category/ies _____)	<u>William B. Hudson</u> Department Chair	<u>Oct 17 2004</u> Date
<input type="checkbox"/> Not Recommended (Category/ies _____)		
Comments:		
College Curriculum Committee		
<input checked="" type="checkbox"/> Recommended (Category/ies _____)	<u>Karen C. Chou</u> Committee Chair	<u>11/4/04</u> Date
<input type="checkbox"/> Not Recommended (Category/ies _____)		
Comments:		
College Dean		
<input checked="" type="checkbox"/> Recommended (Category/ies _____)	<u>[Signature]</u> Dean	<u>11/05/04</u> Date
<input type="checkbox"/> Not Recommended (Category/ies _____)		
Comments:		
General Education Subcommittee		
<input type="checkbox"/> Recommended (Category/ies _____)	_____	_____
<input type="checkbox"/> Not Recommended (Category/ies _____)	General Education Subcommittee Chair	Date
Comments:		
Undergraduate Curriculum and Academic Policy Committee		
<input type="checkbox"/> Recommended (Category/ies _____)	_____	_____
<input type="checkbox"/> Not Recommended (Category/ies _____)	UCAP Faculty Chair	Date
Comments:		
Faculty Association Graduate Committee		
<input type="checkbox"/> Recommended	_____	_____
<input type="checkbox"/> Not Recommended	Faculty Association Graduate Chair	Date
Comments:		
Graduate Dean		
<input type="checkbox"/> Recommended	_____	_____
<input type="checkbox"/> Not Recommended	Graduate Dean	Date
Comments:		
Academic Affairs Council		
<input type="checkbox"/> Recommended (Category/ies _____)	_____	_____
<input type="checkbox"/> Not Recommended (Category/ies _____)	Assistant Vice President	Date
Comments:		
Senior Vice President and Vice President for Academic Affairs		
<input type="checkbox"/> Approved (Category/ies _____)	_____	_____
<input type="checkbox"/> Not Approved (Category/ies _____)	Sr. Vice President / Vice Pres. Academic Affairs	Date
Comments:		

Required Core for Major (Engineering, 48 credits):

- EE 101 Introduction to Engineering I (1)
 ME 103 Introduction to Engineering III (1)
 EE 244 Introduction to Digital Systems (2)
 EE 254 Digital and Circuits Lab (1)
 EE 303 Introduction to Solid State Devices (3)
 EE 304 Introduction to Solid State Devices Lab (1)
 EE 332 Electronic Circuits and Devices (4)
 EE 333 Digital and Analog Electronic Systems (4)
 EE 334 Microprocessor Engineering (3)
 EE 337 Principles of Engineering Design (1)
 EE 341 Signals and Systems (3)
 EE 342 Electronics Design Laboratory (1)
 EE 344 Design and Evaluation of Microprocessors (1)
 EE 350 Engineering Electromagnetics (4)
 EE 353 Communication Systems Engineering (2)
 EE 358 Control Systems (3)
 EE 363 Communication Systems Laboratory (1)
 EE 368 Control Systems Laboratory (1)
 EE 467 Principles of Engineering Design I (2)
 EE 477 Principles of Engineering Design II (2)
 EE 482 Electromechanics (3)
 EE 488 Thermal Systems Engineering (2) or
 ME 299 Thermal Analysis (2)
 ME 291 Engineering Analysis (3) or MATH 354 Concepts of Probability and Statistics (3)

Required for Major (Business, 5 credits):

- EE 250 Engineering Economics (2)
 Choose one course from the following list:
 BLAW 200, FINA 362, MGMT 330 or 440, MRKT 310

Required Electives for Major (9 credits):

Choose a minimum of 9 credits from the following courses. Two courses must be in sequence (same subject area):

- | | | | | |
|--------|--------|--------|--------|--------|
| EE 453 | EE 462 | EE 471 | EE 472 | EE 475 |
| EE 476 | EE 479 | EE 480 | EE 481 | EE 484 |
| EE 487 | | | | |

Required Minor: None.

No minor or other major accepted toward degree.

COURSE DESCRIPTIONS**EE 101 (1) Introduction to Engineering I**

Discussion of historical, educational, and professional aspects of engineering. Problem solving, study approaches and techniques, and the motivation behind modern engineering education and practices. Lab sessions cover the basics of word processing, spreadsheets, databases, drawing, and graphing programs. As well as preparation of plan to graduation, and study techniques.

F

EE 230 (3) Circuit Analysis I

This course is meant to develop Electrical Engineering Circuit Analysis skills in DC and AC circuits. It includes circuit laws and theorems, mesh and node analysis. Natural and step response of RL, RC, and RLC circuits.

Pre: PHYS 222 or concurrent, MATH 321 or concurrent F

EE 231 (3) Circuit Analysis II

Continuation of Circuit Analysis I to include special topics in circuit analysis.

Pre: EE 230 and 240, MATH 321, PHYS 222 S

EE 240 (1) Evaluation of Circuits

Laboratory support for EE 230. Use of laboratory instrumentation to measure currents and voltages associated with DC and AC circuits. Statistical analysis of measurement data. Measurements of series, parallel and series-parallel DC and AC circuits. Measurement of properties for circuits using operational amplifiers. Measurement of transient responses for R-L and R-C circuits. Simulation of DC

and AC circuits using PSPICE. Concepts covered in EE 230 will be verified in the laboratory. Prerequisites: Must be taken concurrently with EE 230.

F

EE 244 (2) Introduction to Digital Systems

A study of digital systems including number conversion, and the mathematical operations of addition, subtraction and multiplication using signed and unsigned binary numbers. The use of flip-flops, counters and shift registers and software tools to simulate digital circuit behavior.

Pre: MATH 122

EE 250 (2) Engineering Economics

Overview of accounting and finance and their interactions with engineering, manufacturing, marketing, R&D and sales. Lectures include the development and analysis of financial statements, time value of money, decision making tools, ratio analysis, cost of capital, depreciation, taxes, cash flow, rate of return and forecasting.

F

EE 253 (1) Logic Circuits Lab

Laboratory support to complement EE 244. Use of laboratory instrumentation to measure characteristics of various logic circuits and digital subsystems. Experimental evaluation of digital logic devices and circuits including logic gates, flip flops, and sequential machines. Some simulation and testing of programmable logic devices and digital integrated circuits will be included.

Pre: EE 230 and concurrently with EE 244 S

EE 254 (1) Digital and Circuits Lab

Laboratory support for EE 231 and EE 244. Experimental evaluation of AC and transient circuits, digital logic devices including logic gates, flip flops, and sequential machines. ~~Some simulation and testing of PAL devices and memory IC's.~~

Pre: EE 230, 240 and concurrently with EE 231 and 244 S

EE 303 (3) Introduction to Solid State Devices

Introduction to crystal structure, energy band theory, conduction and optical phenomenon in semiconductors, metals and insulators. Study of equilibrium and non-equilibrium charge distribution, generation, injection, and recombination. Analysis and design of PN-junctions, (bipolar transistor, junction) and MOS field-effect transistors. Introduction to transferred electron devices and semiconductor diode laser.

Pre: PHYS 222, and MATH 321 F

EE 304 (1) Lab: Introduction to Solid State Devices

Laboratory support for EE 303. Experiments include resistivity and sheet resistivity measurements of semiconductor material, probing material, probing of IC chips, PN-junction IV and CV measurements, BJT testing to extract its parameters, MOSFET testing and evaluating its parameters, cv-measurements of MOS structure, and familiarization with surface analysis tools.

F

EE 332 (4) Electronics I

Semiconductor device characteristics of diodes, BJT's, JFET's, MOSFET's and GaAs FET's will be examined. DC bias circuits small signal, large signal, and PSPICE device modeling and analysis will be studied. Design and analysis will be conducted on small-signal amplifiers (single and multi-stage), power amplifiers, differential amplifiers, and feedback amplifier concepts.

Pre: EE 231, admission to EE program. F

EE 333 (4) Electronics II

This is the second course of the electronics sequence. Design and analysis skills will be developed by examining the 741 and related devices. Additional course topics include filters, tuned circuits, signal generators, and wave-shaping. Digital circuits including the basics of various forms of MOS and bipolar digital logic and memory will be studied.

Pre: EE 332 S

EE 334 (3) Microprocessor Engineering

Use of microprocessors and microcontrollers in engineering applications. Topics include assembly language programming, smart and programmable controllers, memory design including dynamic memory and direct memory access, bus

Minutes of the meeting of the Department of Electrical and Computer Engineering and Technology, 13 October 2004

Present: Gale Allen, Suraj Amatya, Mark Dvorak, William Hudson, Rajiv Kapadia, Muhammad Khaliq, Pentti Lappalainen, Paul Lindfors, Julio Mandojana, Andrew Miner, RA Nair.

The meeting was called to order by Department Chairman, William Hudson

1. The minutes of the meeting of 6 October were approved with a minor technical correction.
2. Good News:
 - a. May '04 EET graduate Aaron Dahlen had an article published in Circuit Cellar magazine regarding his senior design project.
 - b. The IEEE Section in Rochester presented a check for \$500 to the students attending the section meeting in Rochester on Monday. This funding I believe will be used to pay for the attendance of the Student Branch president and vice-president to a leadership training conference at Purdue University 16-18 October.
3. There was continuing discussion of the Spring Semester teaching schedule and scheduling in general for the future. A spread sheet was distributed so faculty could make known their preferences for teaching or not-teaching courses. This spreadsheet will be available in the office for review and faculty input. It was noted that scheduling was very tight with the spring semester EET courses used as an example.
4. Hudson advocated publication of a policy for evaluation of transfer credit by the department not later than the first semester the student is enrolled. This was approved with any exceptions requiring approval of the department faculty.
5. Course outcomes described in Attachment #2 for the courses listed below were reviewed.

EET-452 Outcomes were approved

EE-332 Outcomes were approved

EET-101 Addition of interpretation of graphs and statistics was discussed but not accepted. The outcomes were approved

EET-355 Outcomes were approved

EE-333 Outcomes were approved

EET-456 Outcomes were approved

EET-430 Outcomes were approved

EET-431 Outcomes were approved

EET-488 There was spirited discussion of individual vs. team projects. The outcomes describe team projects and they were approved

EET-489 Same comments as for EET-488

EE-254 Outcomes were approved