College of Engineering and Computing Course Catalogs

NSU Course Catalogs and Course Descriptions

1984

Center for Science and Engineering Schedule of Classes January-April 1984

Nova University

8401

Schedule of Classes
Jan.-April Schedule

Bachelor's Degree Programs
Electrical Engineering
Computer Engineering
Computer Science
Computer Systems
Computer Information Systems
Mathematics
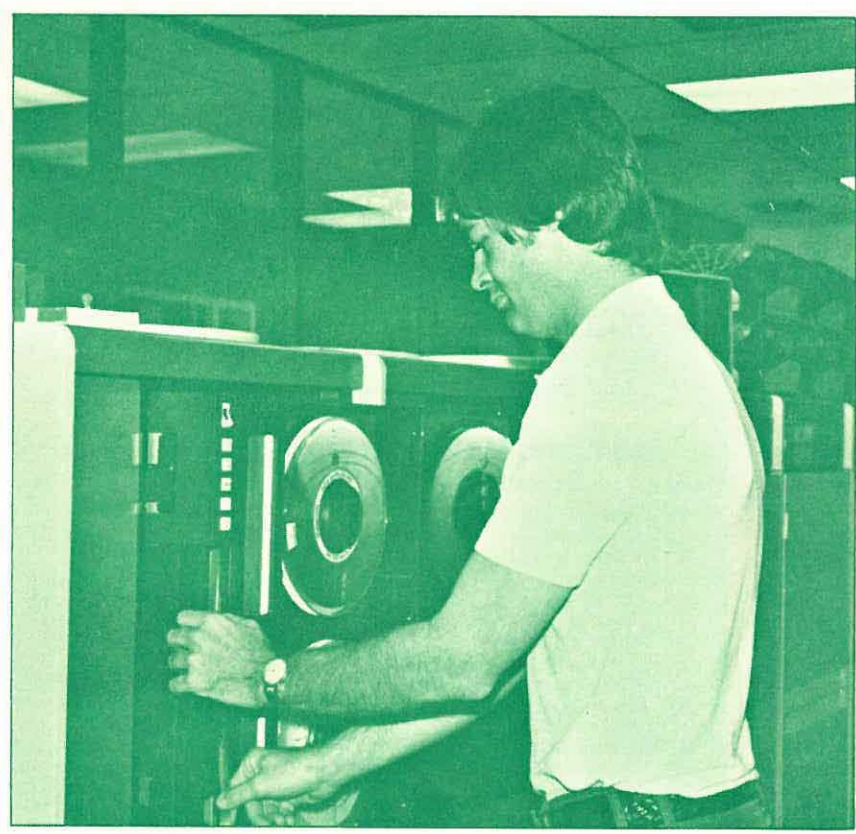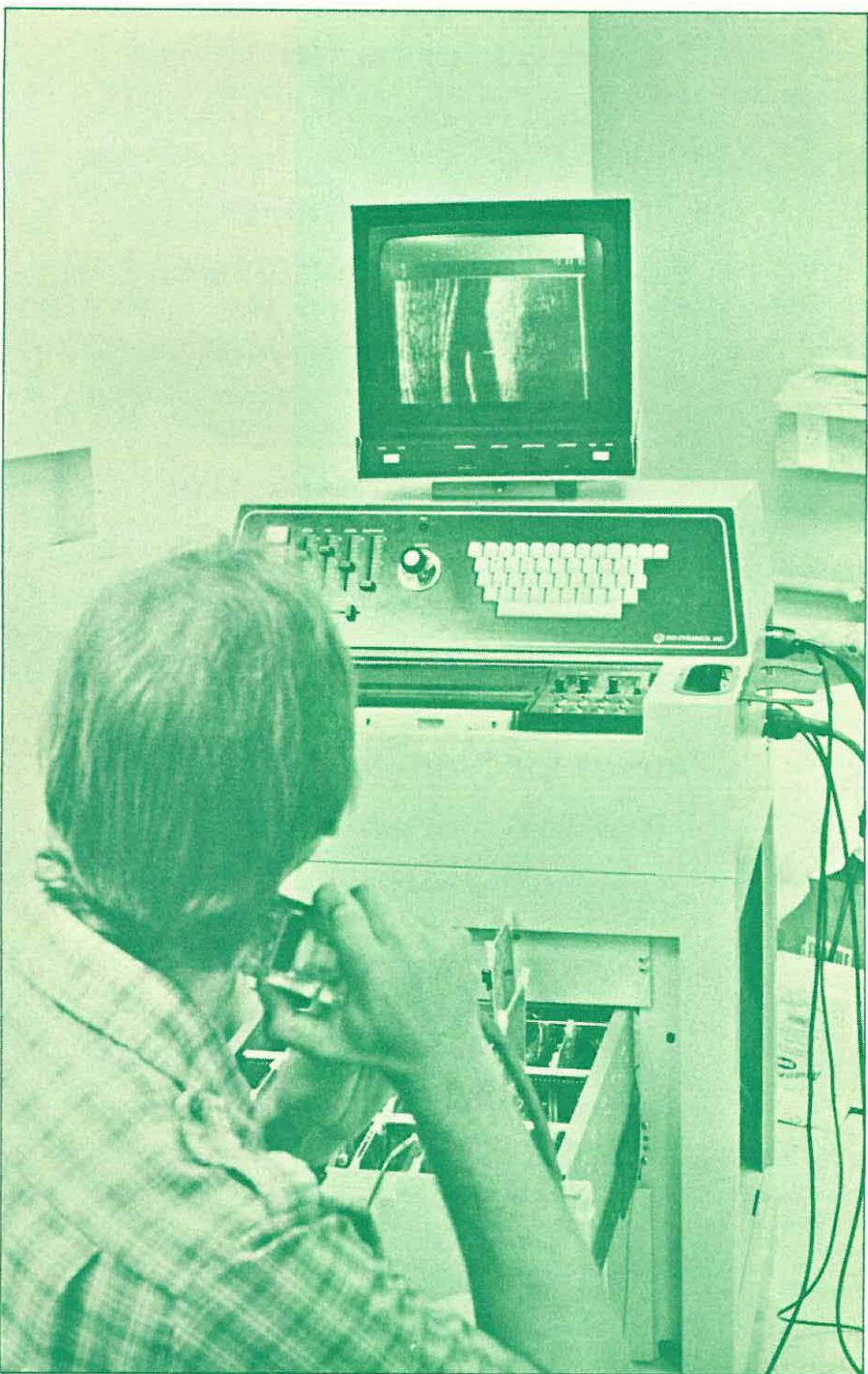Computer Systems/Technical Communications

Master's Degree Programs
Computer Science
Engineering Management
Computer Management
Special Programs

◆ Nova University
CENTER FOR SCIENCE AND ENGINEERING

Registration Policies

Registration

Register in person by submitting your completed registration form and tuition and fees IN FULL to the Office of the Registrar, Parker Building, Room 104. The hours are Monday through Thursday, 8:30 a.m.-8:00 p.m., and Friday, 8:30 a.m.-5:00 p.m.

OR

mail your completed registration form, tuition and fees IN FULL to the Office of the Registrar, 3301 College Avenue, Fort Lauderdale, Florida 33314. Call 475-7400 to request registration materials if you have not received them.

The regular registration fee is in effect until one week before the term begins. After that, a late fee will be charge.

Drop/Add Procedures

The first week of classes is the Drop/Add Period. After a class has met once you must receive written permission from the program office to add the class. The normal refund policy applies to a course dropped during the drop and add period unless another course of equal credit, with the same term beginning date, is added in its place.

The Registrar's Office must be notified in writing of the course to be dropped. This may be done by completing a change of Registration form available in the Registrar's Office or by mailing a simple written note to the Registrar's Office.

Tuition Refund Policy

The following refund policy will be computed based upon the date written notification of the drop is received by the Registrar's Office:

100% refund prior to the first class meeting.

75% refund prior to the second class meeting, regardless of class attendance.

50% refund prior to the third class meeting, regardless of class attendance.

Fees are non-refundable.

Policy Regarding Incomplete Grades

With the written approval of the course instructor, you may have up to one additional term to complete the course and receive a letter grade. An incomplete form must be completed and signed by the instructor in order to receive a grade of "I".

Withdrawal Policy

After the third class meeting, a student may withdraw from a course by completing a "Withdrawal Form" available in the Registrar's Office. This form should be approved by the instructor and academic office. It is the student's responsibility to return the completed form to the Registrar's Office.

Financial Aid

Nova University participates in various governmental financial aid programs for the benefit of its students.

For information call: 475-7410.

For information call:

Broward County 475-7650
Dade County 940-6447 x 7650
Palm Beach
County 732-6600 x 7650

Undergraduate Courses

Beginning January 16, 1984 (9 Weeks)

COURSE #	SEC	COURSE TITLE	DAY	DATES	TIME	ROOM
CS-170	A	Computer Programming I	M	1/16-3/12	6-10:30 pm	P209
CS-335	A	Assembler & Assembly Language Programming	M	1/16-3/12	6-10:30 pm	P213
EE-255	A	Electricity Laboratory	M	1/16-3/12	6-10:30 pm	P336
EE-335	A	Electronics Lab I	M	1/16-3/12	6-10:30 pm	P336
EE-345	A	Electronics Lab II	M	1/16-3/12	6-10:30 pm	P336
EE-400	A	Electronics Lab III	M	1/16-3/12	6-10:30 pm	P208
PHY-150	A	Physics II	M	1/16-3/12	6-10:30 pm	P207
CS-170	B	Computer Programming I	T	1/17-3/13	6-10:30 pm	P209
CS-345	A	Distributed Data Processing	T	1/17-3/13	6-10:30 pm	P207
CS-420	A	Operating System Concepts	T	1/17-3/13	6-10:30 pm	P208
EE-330	A	Electronics I	T	1/17-3/13	6-10:30 pm	P214
MAT-420	A	Linear Algebra	T	1/17-3/13	6-10:30 pm	P107
CS-200	A	Computer Programming II	W	1/18-3/14	6-10:30 pm	P209
CS-240	A	Digital Design	W	1/18-3/14	6-10:30 pm	P208
CS-450	A	Data Base Management Systems Design	W	1/18-3/14	6-10:30 pm	P207
EE-410	A	Electromagnetic Theory	W	1/18-3/14	6-10:30 pm	P214
MAT-150	A	Precalculus	W	1/18-3/14	6-10:30 pm	P107
CS-150	A	Computer Organization	Th	1/19-3/15	6-10:30 pm	P209
CS-220	A	COBOL—Business Oriented Language	Th	1/19-3/15	6-10:30 pm	P208
CS-340	A	Data Structures	Th	1/19-3/15	6-10:30 pm	P130
CS-405	A	Computer Architecture	Th	1/19-3/15	6-10:30 pm	P207
MAT-220	A	Calculus II	Th	1/19-3/15	6-10:30 pm	P107

Last Day to Withdraw   March 2, 1984

Beginning March 19, 1984 (9 Weeks)

COURSE #	SEC	COURSE TITLE	DAY	DATES	TIME	ROOM
CS-401	A	Organization of the Computer Environment	M	3/19-5/14	6-10:30 pm	P207
CS-480	A	Introduction to Compilers and Interpreters	M	3/19-5/14	6-10:30 pm	P213
EE-310	A	Networks II	M	3/19-5/14	6-10:30 pm	P209
MAT-210	A	Calculus I	M	3/19-5/14	6-10:30 pm	P208
MAT-440	A	Numerical Analysis	M	3/19-5/14	6-10:30 pm	P107
CS-170	A	Computer Programming I	T	3/20-5/15	6-10:30 pm	P207
CS-210	A	Fortran	T	3/20-5/15	6-10:30 pm	P208
EE-405	A ·	Networks III	T	3/20-5/15	6-10:30 pm	P209
CS-315	A	Advanced Cobol	W	3/21-5/16	6-10:30 pm	P209
CS-410	A	System Design and Analysis	W	3/21-5/16	6-10:30 pm	P207
MAT-135	A	Technical Mathematics	W	3/21-5/16	6-10:30 pm	P107
MAT-305	A	Calculus III	W	3/21-5/16	6-10:30 pm	P208
EE-420	A	Field Transmission Lines	W	3/21-5/16	6-10:30 pm	P105
CS-160	A	Fundamentals of Logic Design	Th	3/22-5/17	6-10:30 pm	P207
CS-200	A	Computer Programming II	Th	3/22-5/17	6-10:30 pm	P209
CS-330	A	Structured Programming (Pascal)	Th	3/22-5/17	6-10:30 pm	P208
CS-350	A	Computer Circuit Design	Th	3/22-5/17	6-10:30 pm	P107
EE-470	A	Electrical Engineering Design	Th	3/22-5/17	6-10:30 pm	P105

Last Day to Withdraw   May 4, 1984

Graduate Courses

Beginning January 9, 1984 (12 Weeks)

COURSE #	SEC	COURSE TITLE	DAY	DATES	TIME	ROOM
CS-665	A	Management of Software Projects	M	1/9-3/26	6-10:00 pm	P147
CS-661	A	Data Base Management	T	1/10-3/27	6-10:00 pm	P147
EGR-688	A	Industrial Systems Analysis	T	1/10-3/27	6-10:00 pm	TBA
CS-677	A	Firmware Logic Design	W	1/11-3/28	6-10:00 pm	P147
CS-633	A	Language Theory and Automata	Th	1/12-3/29	6-10:00 pm	P147

Last Day to Withdraw   February 3, 1984

Beginning January 16, 1984 (9 Weeks)

COURSE #	SEC	COURSE TITLE	DAY	DATES	TIME	ROOM
CS-520	A	Operating System Concepts	T	1/17-3/13	6-10:00 pm	P208
CS-550	A	Data Base Management Systems Design	W	1/18-3/14	6-10:00 pm	P207
CS-505	A	Computer Architecture	Th	1/19-3/15	6-10:00 pm	P207

Last Day to Withdraw   March 2, 1984

Beginning March 19, 1984 (9 Weeks)

COURSE #	SEC	COURSE TITLE	DAY	DATES	TIME	ROOM
CS-580	A	Introduction to Compilers & Interpreters	M	3/19-6/4	6-10:00 pm	P213
CS-501	A	Organization of the Computer Environment	M	3/19-6/4	6-10:00 pm	P207

Last Day to Withdraw   May 4, 1984

Beginning April 2, 1984 (12 Weeks)

COURSE #	SEC	COURSE TITLE	DAY	DATES	TIME	ROOM
CS-627	A	Operations Research	M	4/2-5/28	6-10:00 pm	P147
CS-662	A	Data Base Management System Architecture	T	4/3-5/29	6-10:00 pm	P147
CS-678	A	Microprocessor Arch.	W	4/4-5/30	6-10:00 pm	P147
CS-637	A	Compiler Design Theory	Th	4/5-5/31	6-10:00 pm	P147

Last Day to Withdraw   April 27, 1984

Courses for Non-Technical Majors

Beginning January 9, 1984 (16 Weeks)

COURSE #	SEC	COURSE TITLE	DAY	DATES	TIME	ROOM
MAT-092	M	Foundations of Mathematics	W	1/11-4/25	6-8:00 pm	P130
MAT-101	M	General Mathematics	W	1/11-4/25	6-8:00 pm	P128

Beginning January 9, 1984 (8 Weeks)

COURSE #	SEC	COURSE TITLE	DAY	DATES	TIME	ROOM
CS-111	M	Computer Literacy	M	1/9-2/27	6-10:00 pm	P105
CS-112	M	Introduction to Data Processing	T	1/10-2/28	6-10:00 pm	P106
MAT-102	M	Introductory Algebra	W	1/11-2/29	6-10:00 pm	P105
PHY-101	M	Introduction to Physical Science	Th	1/12-3/1	6-10:00 pm	P128

Beginning March 2, 1984 (8 Weeks)

COURSE #	SEC	COURSE TITLE	DAY	DATES	TIME	ROOM
CS-111	M	Computer Literacy	W	3/7-4/25	6-10:00 pm	P106
CS-113	M	Business Applications of Microcomputers	Th	3/8-4/26	6-10:00 pm	P106
CS-114	M	Computer Applications for Health Care Administrators	T	3/6-4/24	6-10:00 pm	P106
LSC-105	M	Concepts in Biology	M	3/5-4/23	6-10:00 pm	P239
MAT-102	M	Introductory Algebra	M	3/5-4/23	6-10:00 pm	P106
MAT-105	M	College Algebra	M	3/5-4/23	6-10:00 pm	P128

Avoid Closed Classes Register Early

Summary of Program Requirements

All courses are 3 semester hours of credit unless otherwise indicated.

EE	CE	CS	MATH	SYS	CIS	SYS/TC	Code	Course
x	x	x	x	x	x	x		Communications (3 cr.) (LAN-111)
x	x	x	x	x	x	x		Communications (3 cr.) (LAN-112 or TEC-330)
x	x	x	x	x	x	x		Social Science/Behavioral Science (12 cr.)
x	x	x	x	x	x	x		Humanities (6 cr.)
		x		x		x	MAT-150	Precalculus
x	x	x	x	c		c	MAT-210	Calculus I
x	x	x	x				MAT-220	Calculus II
x	x		x				MAT-305	Calculus III
x	x		x				MAT-310	Differential Equations
				c	x	c	MAT-315	Introduction to Statistics
			x				MAT-320	Advanced Calculus
a	a	a					MAT-360	Matrices & Statistics
a	a	a	x				MAT-420	Linear Algebra
			x				MAT-430	Functions of a Complex Variable
x	x	x	x				MAT-440	Numerical Analysis
a	a	a	x				MAT-450	Probability & Statistics
x	x	x	x				PHY-140	Physics I
x	x	x	x				PHY-150	Physics II
x	x	x	x				PHY-160	Physics III
x	x	x	x				PHY-212	Science of Matter/or a chemistry course
			x				PHY-310	Modern Physics
				x	x	x		Physical/or Life Science (9 cr.)
					x		CS-112	Introduction to Data Processing
				x	x	x	CS-150	Introduction to Computer Organization
x	x	x	x				CS-160	Fundamentals of Logic Design
x	x	x	x	x	x	x	CS-170	Computer Programming I
x	x	x	x	x	x	x	CS-200	Computer Programming II
c	x	x	x	x		x	CS-210	Fortran
	x	x	x	x	x	x	CS-220	Business Oriented Language (Cobol)
x	x	x	x				CS-240	Digital Design
					x		CS-315	Advanced Cobol
	x	x	x			x	CS-320	Organization of Programming Languages
c	x	x	x	x	x	x	CS-330	Structured Programming (Pascal)
x	x	x	x			x	CS-335	Assemblers & Assembly Language Programming
	x	x	x	x	x	x	CS-340	Data Structures
					x		CS-345	Distributed Data Processing
x	x	x					CS-350	Computer Circuit Design
					x		CS-365	Methods of Systems Analysis
		x	x	x		x	CS-370	Software Design
					x		CS-401	Organization of the Computer Environment
x	x	x					CS-405	Computer Architecture
x	x	x					CS-410	System Design & Analysis
	b			a			CS-420	Operating System Concepts
							CS-430	Simulation & Modeling
							CS-440	Microcomputers
	b			x	x		CS-450	Data Base Management Systems Design
	x			x		x	CS-460	System Programming
				a	x		CS-470	Information Systems Analysis and Design
					x		CS-475	EDP Audit and Control
	b			a			CS-480	Introduction to Compilers & Interpreters
							CS-485	Theory of Computation
					x		CS-490	Directed Project in Computer Science
x	x	x					EE-210	Networks I
x	x						EE-255	Electricity Laboratory (1 cr.)
x	x						EE-310	Networks II
x	x	x					EE-330	Electronics I
x	x						EE-335	Electronics Lab I (1 cr.)
x	x						EE-340	Electronics II
x	x						EE-345	Electronics Lab II (1 cr.)
x	c						EE-400	Electronics III
x	c						EE-405	Networks III
x	c						EE-410	Electromagnetic Theory
x	c						EE-420	Field Transmission Lines
x	c						EE-430	Fundamentals of Communication Systems
x	c						EE-440	Energy Systems
x	c						EE-450	Control Systems
x	x						EE-460	Micro Processor Applications
x	x						EE-470	Electrical Engineering Design
x						x	ES-220	Engineering Drawing
x							ES-310	Engineering Applications of Materials
							ES-320	Industrial Planning
							ES-330	Statics
							ES-340	Dynamics
							ES-390	Thermodynamics
						x	TEC-320	Technical Communication
						x	TEC-330	Technical Writing
						x	TEC-350	Production of Technical Communication Material
						x	TEC-370	Technical Documentation I
						x	TEC-380	Technical Documentation II
						x	TEC-450	Legal Aspects of Technical Communication
						x	TEC-460	Technical Communication Project Management
						x	TEC-470	Seminar in Technical Communication
9	9	12	15	12	21	12		Electives (in credits)
					30	12		Credits in Business (or approved discipline)
		6			6	9		Electives in CS or EE

Program Requirements

	Credits	Degree Code
B.S. Electrical Engineering (EE)	138 credits	460
B.S. Computer Engineering (CE)	120 credits	465
B.S. Computer Science (CS)	120 credits	463
B.S. Mathematics (MATH)	120 credits	462
B.S. Computer Systems (SYS)	120 credits	464
B.S. Computer Information Systems (CIS)	120 credits	466
B.S. Computer Systems/Technical Communications (SYS/TC)	120 credits	464

a = Choose 1 "a" course.　　b = Choose 2 "b" courses.　　c = Choose 1 "c" course.

Deferred Payments

In certain circumstances students may satisfy the registration FULL PAYMENT policy by signing an official NOTE which will obligate them to complete full payment within a period of time prescribed by the University. The circumstances when deferred payment is possible are as follows:

• Students who have APPROVED bank or government LOANS, or other forms of financial aid may obtain a promissory note allowing them to defer full payment until the loan or aid is actually disbursed.

• Students who are eligible for TUITION REIMBURSEMENT from their EMPLOYER may obtain a promissory note allowing them to defer full payment until they are actually reimbursed. Students must document that they are eligible under an approved company reimbursement policy.

Fee Schedule

Graduate application fee (non-refundable)	$ 15
Graduate registration fee (non-refundable)	$ 15
Graduate late registration fee	$ 15
Graduate tuition fee (per credit)	$150
Undergraduate application fee (non-refundable)	$ 20
Undergraduate registration fee (non-refundable)	$ 10
Undergraduate late registration fee	$ 10
Undergraduate tuition fee (per credit)	$125

Bulletin Board

Placement Test Dates

Jan. 14	10am-1pm	P213
Jan. 19	6pm-9pm	P238
Feb. 4	10am-1pm	P213
Feb. 15	6pm-9pm	P213
March 3	10am-1pm	P238
March 26	6pm-9pm	P213
April 4	6pm-9pm	P209
April 14	10am-1pm	P131
April 24	6pm-9pm	P213

Computer Applications for Health Care Administrators

A new course covering theory and applications of programs for computers which are useful in the health care environment. This course will include discussion of computerized monitoring and testing in addition to hands-on experience with microcomputers. (CS-114)

Course Descriptions

All courses are 3 semester credits unless noted.

CS-111 Computer Literacy Introduction for the non-technical person. Computer literacy, principles of computer operation, uses of computer in small businesses, schools, social service agencies, hospitals. Hands-on experience with micro-computers and specialized software. This course is for non-computer science majors.

CS-112 Introduction to Data Processing (BUS 3801, CS-101) Topics include basic computer theory, file storage media, input devices, number systems and programming techniques. This course is for non-computer science majors. PREREQUISITE: CS-111.

CS-113 Business Applications of Microcomputers Theory and applications of programs for microcomputers which are useful in the business environment. Accounting, data base management, and information system management programs will be included. Computer laboratory-oriented course. PREREQUISITE: CS-111 or familiarity with microcomputers.

CS-114 Computer Applications for Health Care Administrators Theory and applications of programs for computers which are useful in the health care environment. Will include discussion of computerized monitoring and testing in addition to hands-on experience with microcomputers.

CS-150 Introduction to Computer Organization An introduction to principles of digital computer operation and organization, data representation, the central processing unit, memory, input/output devices, number systems, logic systems. PREREQUISITE: Demonstrated competency equivalent to MAT-102.

CS-160 Fundamentals of Logic Design An introduction to elementary digital logic circuits. Boolean algebra, Karnaugh maps, digital counters, other basic circuit elements. Number set modules, binary, octal and hexadecimal number systems are investigated and related to digital computing structures. PREREQUISITE: demonstrated competency equivalent to MAT 135.

CS-170 Computer Programming I An introduction to good programming techniques including flowcharting, code design, debugging techniques and documentation, problem-solving methods and algorithm development to be used in the design of computer programs. The language, BASIC, will be taught as part of this course. An introduction to the use of microcomputers and computer terminals. PREREQUISITE: demonstrated competency equivalent to MAT 102.

CS-200 Computer Programming II Continuation of Computer Programming I including introduction to random and sequential files, program design, modular design, structured programming, large programming design, documentation. PREREQUISITE: CS-170.

CS-210 Fortran Introduction to the language FORTRAN with reference to the latest standards, special techniques for programming in FORTRAN. PREREQUISITE: CS-200.

CS-220 Business Oriented Language (COBOL) A study of the COBOL programming language with emphasis on business applications. Topics covered will include program structure and breakdown, report generation and file handling. PREREQUISITE: CS-200.

CS-240 Digital Design Application of the principles of logic design in digital systems. Arithmetic logic units, parallel and serial interfaces, information transfer in a digital system, major hardware components and peripheral devices, digital computers. PREREQUISITE: CS-160.

CS-315 Advanced COBOL A continuation of CS-220. COBOL with emphasis on advanced computer problem solving. PREREQUISITE: CS-220.

CS-330 Structured Programming (PASCAL) Basic principles of structured programming and language foundation. PASCAL will be taught as an example of a structured programming language. PREREQUISITE: CS-200, and CS-210 or CS-220.

CS-335 Assemblers and Assembly Language Programming A detailed analysis of the operation of assemblers. Assembler features, assembly language programming, macrofacilities. Assembly language programs will be written as part of this course. PREREQUISITE: CS-210 or CS-330.

CS-340 Data Structures An introduction to the concepts and techniques of structuring data on bulk storage devices, introduction to data structures and file processing including: arrays, records, strings, lists, trees, stacks, queues, manipulation and limitations of files. PREREQUISITE: CS-330.

CS-345 Distributed Data Processing An examination of the features and impact of distributed systems in the business environment. PREREQUISITE: CS-112, CS-220.

CS-350 Computer Circuit Design Design of combinational and sequential digital circuits, programmable logic design, and firmware design. PREREQUISITE: CS-240.

CS-401/501 Organization of the Computer Environment Management of the computer environment, personnel, customer interface, budgeting, coordination, policy development, staffing, department interface, hardware and software selection, planning, maintenance, and management. PREREQUISITE: Requires senior standing.

CS-405/505 Computer Architecture The analysis and design of computer systems; the interrelation of software and hardware design in the final computer system, interrelation between the operating system and the architecture of computer systems, concurrent processes and resource allocation. PREREQUISITE: CS-350. Suggested prerequisite: CS-335.

CS-410 System Design and Analysis Advanced topics in design of digital computer systems and components. PREREQUISITE: CS-405.

CS-420/520 Operating System Concepts Methods in the analysis and design of large scale systems, including concepts of semaphores, processed, linear address space, resource allocation, protection and basic topics in operating system development. PREREQUISITE: CS-460.

CS-450/550 Data Base Management Systems Design Concepts and structures necessary to design and implement a data base management system, including physical file organization and data organization techniques, data models, networks, data integrity, and file security. PREREQUISITE: CS-220, CS-340.

CS-480/580 Introduction to Compilers and Interpreters An introduction to compiler/interpreter design. Topics include lexical analysis, parsing, intermediate code, final code generation, optimization, and error recovery. PREREQUISITE: CS-320 OR CS-631.

CS-627 Operations Research Analytic formulation and solution of decision problems using mathematical techniques. Linear and dynamic programming. Queuing, searching, maximizing/minimizing techniques. Scheduling and inventory models, forecasting and time series analysis.

CS-633 LANGUAGE THEORY AND AUTOMATA Introduction to formal grammars, Backus-Naur notation. The formal theory behind the design of a computer language is studied. The corresponding types of automata which may serve as recognizers and generators for a language will be described.

CS-637 COMPILER DESIGN THEORY Language theory will be applied to the design of a compiler for a high-level language. Parsing, syntax analysis, interpretation phase and code generation. Other areas of the compilation process will be covered, such as storage allocation, symbol table management, searching and sorting, and recursion. PREREQUISITE: CS-580 Introduction to Compilers and Interpreters.

CS-661 Data Base Management Computer-oriented techniques for information storage and retrieval with emphasis on on-line capability. File structures, including data definition and manipulation languages. PREREQUISITE: CS-550 Data Base Management Systems Design.

CS-662 Data Base Management System Architecture Physical system design. Physical storage and data organization. Construction of dictionaries and indices. PREREQUISITE: CS-661 Data Base Management.

CS-665 Management of Software Projects Management techniques applied to the development of software. Planning, evaluation, testing and validation of software products. Budgeting, scheduling and quality control techniques for software projects. PREREQUISITE: Consent of the Center.

CS-677 Firmware Logic Design Modern structured logic design using programmable logic. Implementation of structured logic design in computer systems.

CS-678 Microprocessor Architecture Introduction to processor components including bus structures; comparative study of commercially available 8, 16, and 32 bit microprocessor chips. The processors studied will change from term to term depending on the state of the art.

EE-255 Electricity Laboratory Basic laboratory to complement Networks I. PREREQUISITE or COREQUISITE: EE 210.

EE-310 Networks II Phasors, sinusoidal steady-state analysis, rms value, average power, balanced three-phase circuits, resonance, frequency response, two-port networks and laplace transforms. PREREQUISITE: MAT-220, EE-210.

EE-330 Electronics I Introduction to the physical theory of semi-conductor devices, diodes, diode circuit applications, transistor characteristics, transistor equivalent circuits and single-stage amplifiers. PREREQUISITE: EE-210.

EE-335 Electronics Lab I (1 credit) Laboratory work to complement electronics theory course. PREREQUISITE or COREQUISITE: EE-330.

EE-345 Electronics II Lab (1 credit) Lab work to complement electronics theory course. PREREQUISITE: EE-335, EE-340.

EE-400 Electronics III Wave shaping, pulse and digital circuits, multivibrators, logic circuits. Emphasis on analysis and design. PREREQUISITE: EE-340, EE-405, MAT-305, MAT-310.

EE-405 Networks III Continuation of Networks II emphasizing Laplace transforms for solving advanced network problems. PREREQUISITE: EE-310, MAT-305, MAT-310, EE-340.

EE-410 Electromagnetic Theory Fundamentals of electric and magnetic fields, Ampere's law, Gauss' law and Maxwell's equations, coordinate systems and boundary conditions. PREREQUISITE: PHY-150, MAT-305, MAT-310, EE-310.

EE-420 Field Transmission Lines Transmission lines and plane waves in uniform homogeneous media, reflection and transmission at discontinuities, Poynting's theorem. Time averages, power, energy attenuation, wave guides, cavities. Antennas and radiation. PREREQUISITE: EE-410.

EE-470 Electrical Engineering Design Application of design techniques to special projects in Electrical Engineering. PREREQUISITE: This is a senior-level Electrical Engineering course and requires that most Electrical Engineering courses be completed.

EGR-688 Industrial Systems Analysis Engineering analysis including engineering economics, process flow, process evaluation, resource layout, quality control, budgeting.

MAT-092 Foundations of Mathematics A basic course which will prepare the student for college level mathematics courses. Students not achieving all of the required competencies will receive a grade of PR and may re-enroll. Credit does not count toward graduation.

MAT-101 General Mathematics Application of basic mathematical operations. Problem solving techniques. Introduction to basic algebraic concepts and graphs. Appropriate for non-math and non-science majors. PREREQUISITE: Placement examination requirement satisfied.

MAT-102 Introductory Algebra A basic review of algebra including algebraic terminology, polynomials and applications. Appropriate for non-math and non-science majors. PREREQUISITE: Placement examination requirement satisfied or MAT-101.

MAT-105 College Algebra (MAT-3002) Includes topics such as fundamental operations, functions and graphs, linear and quadratic equations, and conic sections. PREREQUISITE: Placement examination requirement satisfied or MAT-102.

MAT-135 Technical Mathematics Prepares the technical major for Pre-calculus. Including a basic review of algebraic terminology, polynomials, fundamental operations, functions and graphs, linear and quadratic equations, and conic sections. PREREQUISITE: Placement examination requirement satisfied or MAT-102. Credit not given for those students who have taken MAT-105.

MAT-150 Precalculus Review of algebra, trigonometric functions, graphs of functions, logarithms, exponents, functions of the natural number. Introduction to calculus, concept of limits, integrals. PREREQUISITE: Placement examination requirement satisfied or MAT-135 OR MAT-105.

MAT-210 Calculus I Functions, limits, derivatives of algebraic functions. Introduction to derivatives of trigonometric functions, logarithmic functions, application of derivatives to physics problems, related rates and maximum/minimum problems, definite and indefinite integrals with applications. PREREQUISITE: MAT-150.

MAT-220 Calculus II Riemann sums, the definite integral, methods of integration, continuation of exponential, logarithmic functions, inverse trigonometric functions. L'Hopital's rule and improper integrals. PREREQUISITE: MAT-210.

MAT-305 Calculus III Sequences and series. Taylor series, vector analysis, functions of several variables, partial derivatives, total differential chain rule, multiple integral and application functions of a complex variable. PREREQUISITE: MAT-220.

MAT-420 Linear Algebra Matrices and systems of linear equations, vector spaces. Linear transformations, determinants, eigenvalues and eigenvectors, canonical forms, inner product spaces. PREREQUISITE: MAT-220.

MAT-440 Numerical Analysis Solution of algebraic and transcendental equations by a number of iterative methods, discussion of convergence considerations, probability and statistical theory, numerical integrator of a number of types of problems will be discussed both in theory and in practice through the use of computer problem-solving. PREREQUISITE: MAT-220 and PHY-140, PHY-150 and PHY-160, CS-210 or CS-330.

PHY-101 Introduction to Physical Sciences A survey course in physical sciences for non-science majors. Topics include the concepts of motion, electricity and light, matter, atoms and nuclear and solar system.

PHY-105 Introduction to Chemistry Non-laboratory course. Presents an introduction to the elementary principles of chemistry. A study of the structure of matter and the transformation it undergoes. Does not satisfy chemistry requirement for engineering majors.

LSC-105 Concepts in Biology This course is designed to explore the major concepts in Biology from the cell to the behavior of the whole integrated plant and animal. This course is intended for non-science students.