University Curriculum Committee  
10 February 2005 Meeting Minutes

Members present:  

Guest present:  
   D. Coltraine

Members Excused:  
   E. Arnold, C. Estes, D. Long, R. Reaves

1) Approved without dissent the minutes of the 27 January 2005 meeting.

2) College of Education Associate Dean John Swope and Professor Al Muller of English Education spoke in support of curricular revisions to put their program into alignment with all teacher education programs; rationale behind the changes explained in their memo and in the letter. They have outlined the prerequisite changes in the marked and the final catalog copy. After brief discussion, Mitchelson moved for approval, with a second by Smith. Motion passed without dissent.

3) College of Education Associate Dean John Swope and Professor Carolyn Ledford of Elementary Education Program in the Department of Curriculum and Instruction spoke in support of curricular revisions to put their program into alignment with all teacher education programs; rationale behind the changes explained in their memo and in the letter. They have outlined the prerequisite changes in the marked and the final catalog copy. After brief discussion, Mitchelson moved for approval, with a second by Kean. Motion passed without dissent.

4) College of Education Associate Dean John Swope and Professor Harold Griffin of Special Education Program in the Department of Curriculum and Instruction spoke in support of curricular revisions to put their program into alignment with all teacher education programs; rationale behind the changes explained in their memo and in the letter. They have outlined the prerequisite changes in the marked and the final catalog copy. After brief discussion, Mitchelson moved for approval, with a second by Kean. Motion passed without dissent.

5) Professors Chuck Singhas and Mary Farwell of the Department of Biology spoke in favor of three new courses:

   - BIOL 1010: Biodiversity of Coastal North Carolina
   - BIOL 4170: Immunology I
   - BIOL 4230: Concepts in Cell Biology

   In the ensuing discussion, the committee praised the justification and syllabus of BIOL 1010 but expressed concerns about those of 4170 and 4230. After a long
discussion, Mitchelson moved for approval, with a second by Smith. Motion approved without dissent.

6) The committee discussed the standards we have been requiring for item #4 and #16 on the course proposal form, in particular, the justification, course content, objectives, assessment criteria. Those present unanimously agreed that the standards are valid, fair, and appropriate. Moreover, we agreed to continue working to ensure that all new and revised courses are held to these standards before approval. Committee also agreed to send a letter to Biology.

7) Chair Rick Ericson and Professor Paul Bin of the Department of Economics spoke in favor of ECON 3365: Russian Economic Transition. After a brief discussion, Kean moved for approval, with a second by Smith. Motion approved without dissent.

8) Professor Dale Knickerbocker of the Department of Foreign Languages and Literatures spoke in favor of various changes as described in their memo, marked and final catalog copy. There was no discussion on the teacher education changes, but lengthy discussion on requiring the placement exam in SPAN 1001 as well as the Certificate in Spanish. Afterwards, Kean moved for approval, with a second by Smith. Motion approved without dissent.

9) Professor Gail Ratcliff of the Department of Mathematics spoke in favor of one new course (MATH 2300: Transition to Advanced Mathematics), degree requirement revisions, and prerequisite changes, as described in their memo. The prerequisite and degree requirement changes are outlined in the marked and final catalog copy. After a brief discussion, Kean moved for approval, with a second by Mitchelson. Motion approved without dissent.

10) Department of Technology Systems Chair Paul Kauffman as well as Donna Hollar and David Batts of the College of Technology and Computer Science spoke in favor of a variety of curricular revisions, all explained in detail in their cover memo as well as an explanatory letter. The specific catalog revisions are outlined in the marked and final catalog copy. After a brief discussion, Mitchelson moved for approval, with a second by Graziani. Motion approved without dissent

11) Meeting adjourned at 3:45 pm.

Minutes submitted by T. D. Hudson

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University Curriculum Committee
10 February 2005 Catalog Minutes

Insert on p. 191 of 2004 – 2005 catalog

BS in English, Secondary Education
A minimum 2.5 GPA is required for admission to the BS program. English Education majors must have a minimum grade of C in EDTC 4001; EDUC 4400 or PSYC 4305; ENED 2123, 3815, 4323, 4960; ENGL 2000, 2700, 2710, 3000, 3010, 3020; PSYC 3206; READ 3990 or 5317; and SPED 4010.

See Section 7, Degree Programs, College of Education, Licensure, for NC teacher licensure requirements. Minimum degree requirement is 126 s.h. of credit as follows:
1. General education plus special requirements for licensure (See Section 4, General Education Requirements for all Baccalaureate Degree Programs), including those listed below:.............. 42 s.h.

**PSYC 1000. Introductory Psychology (3) (F, S, SS) (GE: SO)**
PSYC 3206. Developmental Psychology (3) (WI*) (F, S, SS) (GE: SO) (P: PSYC 1000 or 1060)
ENGL 2000. Interpreting Literature (3) (WI) (F, S, SS) (GE: HU) (P: ENGL 1200)

2. Foreign language through level 1004 ........................................................................................................... 12 s.h.

3. Core (exclusive of freshman composition) ................................................................................................. 36-39 s.h.

   - ENED 3815. Composition Instruction in Grades 9-12 (3) (WI) (F, S, SS) (P: ENED 2123 or consent of dept chair)
   - **ENDED 4323. The Teaching of English in High School (3) (F, S) (P: Admission to upper division; ENED 4960)**
   - ENED 4960. Literature for High School (3) (WI) (F, S)
   - ENGL 2700. Introduction to Language Studies (3) (F, S) (GE: HU) (P: ENGL 1200)
   - ENGL 2710. English Grammar (3) (WI) (F, S, SS)
   - ENGL 3000. British and American Literary History I (3) (WI) (GE: HU) (P: ENGL major, minor, academic concentration or consent of dept; ENGL 1200)
   - ENGL 3010. British and American Literary History II (3) (WI) (F, S) (GE:HU) (P: ENGL major, minor, academic concentration or consent of dept; ENGL 1200)
   - ENGL 3020. History of Literature in English, 1880-Present (3) (WI) (F, S) (GE:HU) (P: ENGL major, minor, academic concentration, or consent of dept; ENGL 1200)

Choose 3 s.h. from:

   - ENGL 4070. Shakespeare: The Histories (3) (WI) (F-EY) (GE: HU) (P: ENGL 1200)
   - ENGL 4080. Shakespeare: The Comedies (3) (WI) (F, S, SS) (GE: HU) (P: ENGL 1200)
   - ENGL 4090. Shakespeare: The Tragedies (3) (WI) (GE: HU) (P: ENGL 1200)

Choose 3 s.h. from:

   - ENGL 3240. U.S. Latino/a Literature (3) (WI) (F) (GE: HU)
   - ENGL3250. Native American Literature (3) (WI) (S) (GE: HU)
   - ENGL 3260. Black Literature in America (3) (WI) (F, S, SS) (GE: HU) (P: ENGL 1200)
   - ENGL 3300. Women in Literature (3) (WI) (F, S, SS) (GE: HU) (P: ENGL 1200)
   - ENGL 4340. Ethnic American Literature (3) (WI) (S-OY) (GE: HU)
   - ENGL 4360. World Literature in English. (3) (WI) (S-OY) (GE: HU) Formerly ENGL 3100 (P: ENGL 1200)

Choose 6 s.h. from any 4000- or 5000-level literature course, excluding ENED 4970; ENGL 4230, 4910, 4920, 4950

4. Professional courses ................................................................................................................................. 28-29 25-26 s.h.

   - EDUC 4001. Technology in Education (2) (F, S) (P: Admission to upper division)
   - EDUC 3200. Introduction to American Education (3) (WI*) (F, S, SS) (P: Early experience course or consent of instructor)
   - **EDUC 4400. Foundations of School Learning, Motivation, and Assessment (3) (F, S) (P: Admission to upper division) or PSYC 4305. Educational Psychology (3) (F, S, SS) (P: PSYC 2201 or 2240 or 3206 or 3240 or equivalent)**
   - ENED 2123. Early Experiences for the Prospective Teacher (1) (F, S) (P: ENGL 1200)
   - **ENDED 4323. The Teaching of English in High School (3) (F, S) (P: ENED 4960)**
   - ENED 4324. Internship in English (10) (F, S) (P: Admission to upper division; A minimum grade of C in ENED 2123, 3815, 4323, 4960; EDUC 4001; EDUC 3200; PSYC 3206; PSYC 4305 or EDUC 4400; SPED 4010.)
   - READ 3990. Teaching Reading in the Content Areas in the Secondary School (2) (F, S, SS) or READ 5317. Reading in the Junior and Senior High School (3) (F, S, SS)
   - SPED 4010. Exceptional Students in the Regular Classroom (2) (F, S) (RP: SPED 2000)

5. Electives to complete requirements for graduation.

   - **Insert on pp. 190 – 191 of 2004 – 2005 catalog:**
SECTION 7: ACADEMIC PROGRAMS

BS in Elementary Education (K-6)

2. Professional studies

**34 s.h.** – **25 s.h.**

EDTC 4001. Technology in Education (2) (F,S,SS) (P: Admission to Upper Division)

EDUC 3200. Introduction to American Education (3) (WI*) (F,S,SS) (P: Early experience course or consent of instructor)

EDUC 4400. Foundations of School Learning, Motivation, and Assessment (3) (F,S) (P: Admission to upper division) or PSYC 4305. Educational Psychology (3) (F,S,SS) (P: PSYC 2201 or 2240 or 3206 or 3240 or equivalent)

ELEM 2123. Early Experiences for the Prospective Teacher (I) (F,S) (P: Sophomore standing or consent of instructor)

ELEM 4324. Internship in the Elementary School (10) (F,S) (P: Admission to Upper Division; EDTC 4001; EDUC 4400 or PSYC 4305; ELEM 3236, 3250, 4525, 4551; MATE 3223; READ 3210; SCIE 3216; C: ELEM 4325)

ELEM 4325. Internship Seminar: Issues in Elementary Education (1) (F,S) (P: Admission to Upper Division; C: ELEM 4526)

**ELEM 4550. Social Studies in the Early Childhood and Elementary School (3) (WI) (F,S) (P: Minimum of 9 s.h. in social studies content courses; admission to upper division; ELEM 3236; C: ELEM 4551)**

**ELEM 4551. Practicum in Teaching Social Studies in the Elementary School (1) (F,S) (P: Upper-division status; C: ELEM 4550)**

**PSYC 2201. Psychology of Childhood (3) (F,S,SS) (P: PSYC 1000 or 1060 or equivalent)**

READ 3204. Fundamentals of Reading (3) (F,S,SS) (P: ELEM 3250)

**SPED 2000. Introduction to Exceptional Children (2) (F,S,SS)**

SPED 4010. Exceptional Students in the Regular Classroom (2) (F,S) (P: Admission to Upper Division; RP: SPED 2000)

3. Academic concentration (See Academic Concentration, above. A maximum of 6 s.h. may be counted in general education requirements.)

**24 s.h.**

4. Specialty area

**29 s.h.** – **38 s.h.**

ELEM 3235. Curriculum and Instruction in the Elementary School (4) (F,S,SS) (P/C: ELEM 2123; C: ELEM 3236)

ELEM 3236. Practicum in Curriculum and Instruction in the Elementary School (1) (F,S,SS) (P/C: ELEM 2123; C: ELEM 3235)

ELEM 3250. Language Arts in the Early Childhood and Elementary School (4) (WI) (F,S,SS)

ELEM 3275. Early Childhood and Elementary School Curriculum (3) (F,S,SS)

ELEM 4525. Classroom Organization and Management in the Early Childhood and Elementary School (3) (F,S) (P: Admission to upper division)

ELEM 4526. Practicum in Classroom Organization and Management (1) (F,S) (P: Admission to upper division; ELEM 3235, 3236; C: ELEM 4324, 4325)

**ELEM 4550. Social Studies in the Early Childhood and Elementary School (3) (WI) (F,S) (P: Minimum of 9 s.h. in social studies content courses; admission to upper division; ELEM 3236; C: ELEM 4551)**

**ELEM 4551. Practicum in Teaching Social Studies in the Elementary School (1) (F,S) (P: Upper-division status; C: ELEM 4550)**

EXSS 3545. Practices and Procedures in Physical Education for Elementary Schools (2) (F,S,SS) (P: ELEM major or consent of instructor)

HLTH 3244. Practices and Procedures in Health for Elementary School (2) (F,S,SS)
MATE 3223. Teaching Mathematics in the Elementary Grades K-6 (3) (F,S,SS) (P: Admission to Upper Division; MATE 2129)

**PSYC 2201. Psychology of Childhood (3) (F,S,SS) (P: PSYC 1000 or 1060 or equivalent)**

READ 3210. Assessment, Design, and Implementation of Elementary Classroom Reading Instruction (3) (F,S,SS) (P: READ 3204)

SCIE 3216. Teaching Science in the Elementary School (3) (F,S,SS)

**SPED 2000. Introduction to Exceptional Children (2) (F,S,SS)**

Cognates 5 s.h.

ENGL 4950. Literature for Children (3) (WI) (F,S,SS) (GE:HU) (P: ENGL 1200) or LIBS 4950. Literature for Children (3) (WI) (S)

MATE 2129. Basic Concepts of Mathematics (2) (F,S,SS) (P: MATH 2127)

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**Insert on pp. xxxx of 2004 – 2005 catalog:**

(Page 188)

BS in Special Education, General Curriculum

The BS in special education degree prepares and develops professionals in special education who are committed to accomplishing the following as teachers of exceptional children with disabilities: the development of each student’s maximum individual potential through the acquisition of skills, values, and attitudes in the academic, social, communicative, vocational, and motoric domains. To this end, students are prepared for the role of diagnostic/prescriptive teachers. The BS degree comprises two areas of special education that lead to initial teaching licensure in the general curriculum and the adapted curriculum. Students pursuing the SPED-General Curriculum license also pursue the Reading License. An add-on licensure program is available in academically gifted. See Licensure, above. Minimum degree requirement is 128 s. h. of credit as follows:

1. General education requirements (See Section 6, Undergraduate Studies, Requirements for Baccalaureate Degree Programs), including those listed below .......................... 42 s.h.
   ART 3850. Art in the Elementary School (3) (F,S,SS) (P: Junior standing) COMM 2410. Public Speaking (3) (F,S,SS) (GE:FA) or COMM 2420. Business and Professional Communication (3) (F,S,SS) (GE:FA)
   MATH 2127. Basic Concepts of Mathematics (3) (F,S,SS) (GE:MA) (P: Appropriate score on mathematics placement test)
   MUSC 3048. Music for Exceptional Children (2) (F,S) (P: MUSC 3018)
   PSYC 1000. Introductory Psychology (3) (F,S,SS) (GE:SO)
   **PSYC 3206. Developmental Psychology (3) (WI*) (F,S,SS) (GE:SO) (P: PSYC 1000 or 1060)**
   Choose 4 s.h. BIOL, CHEM, PHYS, or GEOL (GE:SC)
   **Choose 4 s.h. BIOL, CHEM, PHYS, or GEOL (GE:SC)**

Choose a history course (GE:SO)
Choose a literature course (GE:HU)

2. Professional studies .......................................................... 27 22 s.h.
   EDTC 4001. Technology in Education (2) (F,S,SS) (P: Admission to upper division)
   EDUC 3200. Introduction to American Education (3) (WI*) (F,S,SS) (P: Early experience course or consent of instructor)
   EDUC 4400. Foundations of School Learning, Motivation, and Assessment (3) (F,S) (P: Admission to upper division) or PSYC 4305. Educational Psychology (3) (F,S,SS) (P: PSYC 2201 or 2240 or 3206 or 3240 or equivalent)
   **PSYC 3206. Developmental Psychology (3) (WI*) (F,S,SS) (GE:SO) (P: PSYC 1000 or 1060)**
   READ 3204. Fundamentals of Reading (3) (F,S,SS) (P: Admission to upper division; ELEM 3250)
   **SPED 2000. Introduction to Exceptional Children (2) (F,S,SS)**
   SPED 2123. Early Experiences for Prospective Teachers (1) (F,S)
   SPED 4320. Communication and Collaboration in Special Education (3) (F,S) (C: SPED 4324. Taken as the Senior 2 Seminar.)
   SPED 4324. Internship in Special Education (10) (F,S) (P: Admission to upper division; SPED 3005, 4000)

3. Core .......................................................... 28 30s.h.
   **SPED 2000. Introduction to Exceptional Children (2) (F,S,SS)**
   SPED 2100. Introduction to Students with Disabilities in the General Curriculum (4) (F,S,SS) (P: SPED 2000 for SPED majors only; C: SPED 2109 for SPED majors only)

https://author.ecu.edu/cs-acad/fsonline/cu/cu2_051.cfm
SPED 2109. Introductory Practicum for Students with Disabilities in the General Curriculum (2) (F, SS) C: SPED 2100 for special education majors only

SPED 3001. Assessing Students with Disabilities in the General Curriculum. (3) (S) (P: SPED 2000, 2100, 2109)

SPED 3004. Managing the Learning Environment. (3) (S) (P: SPED 2000, 2100/2109, 2200/2209; C: SPED 3005)

SPED 3005. Instructional Programming in Special Education (3) (F, SS)

SPED 3100. Instructional Methods for Students with Disabilities in the General Curriculum (4) (WI) (S, SS) (P: SPED 3004, SPED 3005; C: SPED 3109)

SPED 3109. Instructional Practicum for Students with Disabilities in the General Curriculum (2) (S) (P: SPED 3004, SPED 3005; C: SPED 3100)

SPED 4000. Technology in Special Education (3) (F, SS, SS) (P: SPED 2000 and EDTC 4001)

SPED 4100. Special Issues and Strategies for Students with Disabilities in the General Curriculum (2) (F) CO: SPED 4300; P: SPED 3100/3109)

SPED 4300. Practicum in Special Education (2) (F, S) CO: SPED 4100/4200. P: SPED 3100/3200 and SPED 3109/3209

4. Cognates ........................................................................................................................................... 8 s.h.

MATE 2129. Basic Concepts of Mathematics II (2) (F, SS, SS) (P: MATH 2127)

MATE 3218. Teaching Mathematics in Special Education (3) (F, SS, SS) (P: MATH 1065, 2127; SPED 2000; at least 1 of the following: SPED 2100, 2200; admission to upper division; RP: MATE 2129)

SCIE 3216. Teaching Science in the Elementary School (3) (F, SS)

5. Academic concentration (The Academic Concentration is not required for SPED majors entering the university fall semester, 2004)

6. Reading License .................................................................................................................................. 20 s.h.

SPED-General Curriculum students entering the university after fall semester, 2004 will pursue the Reading License

7. Electives to complete requirements for graduation.

**BS in Special Education, Adapted Curriculum**

The BS in special education degree prepares and develops professionals in special education who are committed to accomplishing the following as teachers of exceptional children with disabilities: the development of each student's maximum individual potential through the acquisition of skills, values, and attitudes in the academic, social, communicative, vocational, and motoric domains. To this end, students are prepared for the role of diagnostic/prescriptive teachers. The BS degree comprises two areas of special education that lead to initial teaching licensure in the general curriculum and the adapted curriculum. An add-on licensure program is available in academically gifted. See Licensure, above. Minimum degree requirement is 128 s.h. of credit as follows:

1. General education requirements (See Section 6, Undergraduate Studies, Requirements for Baccalaureate Degree Programs), including those listed below ......................... 42 s.h.

   ART 3850. Art in the Elementary School (3) (F, SS, SS) (P: Junior standing)

   COMM 2410. Public Speaking (3) (F, SS, SS) (GE:FA) or COMM 2420. Business and Professional Communication (3) (F, SS, SS) (GE:FA)

   MATH 2127. Basic Concepts of Mathematics (3) (F, SS, SS) (GE:MA) (P: Appropriate score on mathematics placement test)

   MUSC 3048. Music for Exceptional Children (2) (F, S) (P: MUSC 3018)

   PSYC 1000. Introductory Psychology (3) (F, SS, SS) (GE:SO)

   **PSYC 3206. Developmental Psychology (3) (WI) (F, SS, SS) (GE:SO) (P: PSYC 1000 or 1060)**

   Choose 4 s.h. BIOL, CHEM, PHYS, or GEOL (GE:SC)

   Choose a history course (GE:SO)

   Choose a literature course (GE:HU)

   Choose 4 s.h. BIOL, CHEM, PHYS, or GEOL (GE:SC)

   Choose a history course (GE:SO)

   Choose a literature course (GE:HU)

2. Professional Studies ......................................................................................................................... 27 22 s.h.

   EDTC 4001. Technology in Education (2) (F, SS, SS) (P: Admission to upper division)

   EDUC 3200. Introduction to American Education (3) (WI*) (F, SS, SS) (P: Early experience course or consent of instructor)

   EDUC 4400. Foundations of School Learning, Motivation, and Assessment (3) (F, S) (P: Admission to upper division) or PSYC 4305. Educational Psychology (3) (F, SS, SS) (P: PSYC 2201 or 2240 or 3206 or 3240 or equivalent)

   **PSYC 3206. Developmental Psychology (3) (WI*) (F, SS, SS) (GE:SO) (P: PSYC 1000 or 1060)**

   READ 3204. Fundamentals of Reading (3) (F, SS, SS) (P: Admission to upper division; ELEM 3250)

   **SPED 2000. Introduction to Exceptional Children (2) (F, SS, SS)**

   SPED 2123. Early Experiences for Prospective Teachers (1) (F, S)

   SPED 4320. Communication and Collaboration in Special Education (3) (F, S) (C: SPED 4324. Taken as the Senior 2 Seminar.)

   SPED 4324. Internship in Special Education (10) (F, S) (P: Admission to upper division; SPED 3005, 4000)
3. Core ............................................................................................................................. 47 49 s.h.

**SPED 2200. Introduction to Exceptional Children (2) (F,SS)**
SPED 2200. Introduction to Students with Disabilities in the Adapted Curriculum (4) (F,SS) (P: SPED 2000 for SPED majors only; C: SPED 2209 for SPED majors only)
SPED 2209. Introductory Practicum for Students with Disabilities in the Adapted Curriculum (2) (F,SS) C: SPED 2200 for special education majors only)
SPED 3002. Assessing Students with Disabilities in the Adapted Curriculum. (3) (P: SPED 2000, 2200, 2209)
SPED 3004. Managing the Learning Environment. (3) (P: SPED 2000, 2100/2109, 2200/2209; C: SPED 3005)
SPED 3005. Instructional Programming in Special Education (3) (F,SS)
SPED 3006. Augmentative and Alternative Communication for Students with Disabilities (3) (P: SPED 2000, 2200/2209, 3004, 3005; C: SPED 3200/3209)
SPED 3200. Instructional Methods for Students with Disabilities in the Adapted Curriculum (4) (WI) (S,SS) (P: SPED 3004, SPED 3005; C: SPED 3209)
SPED 3209. Instructional Practicum for Students with Disabilities in the Adapted Curriculum (2) (S) (P: SPED 3004, SPED 3005; C: SPED 3200)
SPED 4000. Technology in Special Education (3) (F,SS) (P: SPED 2000 and EDTC 4001)
SPED 4200. Special Issues and Strategies for Students with Disabilities in the Adapted Curriculum (3) (F) CO: SPED 4300; P: SPED 3200/3209)
SPED 4300. Practicum in Special Education (2) (F,S) CO: SPED 4100/4200. P: SPED 3100/3200 and SPED 3109/3209
CSDI 2100. Introduction to Communication Disorders (3) (F,SS)
EXSS 5303. Physical Activity Programs for Individuals with Developmental, Emotional, and Learning Disabilities (3) (P: EXSS 3545 or 3546; SPED 5101; or consent of instructor)
OCCT 3000. Exploring Occupational Therapy (3) (F,S)
RCLS 2230. Recreational Therapy Foundations (3) (F,S) (RCLS 2000 or consent of instructor)
REHB 2000. Survey of Community Resources in Rehabilitation and Health Care (3) (S)

4. Cognates .......................................................................................................................... 15-22 9 s.h.
ENGL 4710. Teaching English as a Second Language: Theories and Principles (3) (F)
MATE 3218. Teaching Mathematics in Special Education (3) (F,SS) (P: MATH 1065, 2127; SPED 2000; at least 1 of the following: SPED 2100, 2200; admission to upper division; RP: MATE 2129)
SCIE 3216. Teaching Science in the Elementary School (3) (F,S,SS)

5. Academic concentration (The Academic Concentration is not required for SPED majors entering the university fall semester, 2004.)......................................................................................................................... 0 s.h.

6. Electives to complete requirements for graduation.

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**Insert on p. 306 of 2004 – 2005 catalog:**

1010. Biodiversity of Coastal North Carolina (3) (F,S) Survey of the major terrestrial and aquatic ecosystems from the coastal plain to the continental shelf, with emphasis on their flora and fauna. A self-guided coastal plain trip is required to one of several nature centers or museums at student’s expense.

**Insert in appropriate numerical order on p. 308 of 2004 – 2005 catalog:**

4170. Immunology I (3) (F) P: BIOL 2300, 3220, 3221 or permission of instructor. Structure, function, and genetic organization of body’s defense system. Interactions of immunocompetent cells and their role in infection, disease, and autoimmunity.


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**Insert on pp. 337 – 338 of 2004 – 2005 catalog:**

ECON 3365. Russian Economic Transition (3) (S) (GE:SO) P: ECON 2113, 2133, or permission of instructor. Analysis of the rise and fall of Russian Soviet economic system and its transformation into a market economic system, with focus on economic institutions and their functions.
Insert on p. 125 of 2004 – 2005 catalog:

BS in French Education

Minimum degree requirement is 126 s.h. of credit as follows:

3. **Professional Courses** ................................................................. 36 s.h.
**PROFESSIONAL STUDIES (Teacher Education Core Courses)** .......... 24 s.h.

EDTC 4001. Technology in Education (2) (F,S) (P: Admission to upper division)
EDUC 3200. Introduction to American Education (3) (WI*) (F,S,SS) (P: Early experience course or consent of instructor)
EDUC 4400. Foundations of School Learning, Motivation, and Assessment (3) (F,S) (; Admission to upper division) or
PSYC 4305. Educational Psychology (3) (F,S,SS) (P: PSYC 2201 or 2240 or 3206 or 3240 or equivalent
ELEM 3275. Early Childhood and Elementary School Curriculum (3) (F,S,SS)
FREN 2611. Early Experiences for the Prospective Teacher (1)
FREN 4611. Teaching Second Languages in Grades K-12 (5) (P: Admission to upper division)
PSYC 3206. Developmental Psychology (3) (WI*) (F,S,SS) (P: PSYC 1000 or 1060)

4. **SPECIALITY AREA STUDIES** ...................................................... 11 s.h.

- ELEM 3275. Early Childhood and Elementary School Curriculum (3) (F,S,SS)
FREN 4611. Teaching Second Languages in Grades K-12 (5) (P: Admission to upper division)
PSYC 3206. Developmental Psychology (3) (WI*) (F,S,SS) (GE:SO) (P: PSYC 1000 or 1060)

5. Electives to complete requirements for graduation.

5 6. In the second semester of the junior year, a French major must pass an oral qualifying examination.

Insert on pp. 126 – 127 of 2004 – 2005 catalog:

BS in German Education

3. **Professional Courses** ................................................................. 36 s.h.
**PROFESSIONAL STUDIES (Teacher Education Core Courses)** .......... 24 s.h.

EDTC 4001. Technology in Education (2) (F,S) (P: Admission to upper division)
EDUC 3200. Introduction to American Education (3) (WI*) (F,S,SS) (P: Early experience course or consent of instructor)
EDUC 4400. Foundations of School Learning, Motivation, and Assessment (3) (F,S) (P: Admission to upper division) or
PSYC 4305. Educational Psychology (3) (F,S,SS) (P: PSYC 2201 or 2240 or 3206 or 3240 or equivalent
ELEM 3275. Early Childhood and Elementary School Curriculum (3) (F,S,SS)
GERM 2611. Early Experiences for the Prospective Teacher (1)
GERM 4611. Teaching Second Languages in Grades K-12 (5) (P: Admission to upper division)
PSYC 3206. Developmental Psychology (3) (WI*) (F,S,SS) (GE:SO) (P: PSYC 1000 or 1060)

4. **SPECIALITY AREA STUDIES** ...................................................... 11 s.h.

- ELEM 3275. Early Childhood and Elementary School Curriculum (3) (F,S,SS)
GERM 4611. Teaching Second Languages in Grades K-12 (5) (P: Admission to upper division)
PSYC 3206. Developmental Psychology (3) (WI*) (F,S,SS) (GE:SO) (P: PSYC 1000 or 1060)
5.6. In the second semester of the junior year, a German major must pass an oral qualifying examination.

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**Insert on p. 129 of 2004 – 2005 catalog:**

**BS in Hispanic Studies Education**

3. **Professional Courses** ........................................................................................................... 36 s.h.

**PROFESSIONAL STUDIES (Teacher Education Core Courses).......................... 24 s.h.**

- EDUC 4001. Technology in Education (2) (F,S) (P: Admission to upper division)
- EDUC 3200. Introduction to American Education (3) (WI*) (F,S,SS) (P: Early experience course or consent of instructor)
- EDUC 4400. Foundations of School Learning, Motivation, and Assessment (3) (F,S) (P: Admission to upper division) or PSYC 4305. Educational Psychology (3) (F,S,SS) (P: PSYC 2201 or 2240 or 3206 or 3240 or equivalent)
- **ELEM 3275. Early Childhood and Elementary School Curriculum (3) (F,S,SS)**
- SPAN 2611. Early Experiences for the Prospective Teacher (1)
- **SPAN 4611. Teaching Second Languages in Grades K-12 (5) (P: 18 s.h. in SPAN above 1004 or consent of dept chair) (P: Admission to upper division)**

SPAN 4880. Internship in Spanish (10) (P: Admission to upper division; SPAN 2110, 2440, 2441, 3225, 3330; 15 s.h. in SPAN above 2999, including 9 s.h. in SPAN 4555, 4556, 4557, 4558, 4560, 4561, 4562, 4563, with a minimum of 3 s.h. in SPAN 4555, 4556, 4557, 4558 and 3 s.h. in SPAN 4560, 4561, 4562, 4563)

SPAN 4881. Internship Seminar: Issues in Spanish Teaching (1) (P: Admission to upper division; C: SPAN 4880)

**PSYC 3206. Developmental Psychology (3) (F,S,SS)**

READ 3990. Teaching Reading in the Content Areas in the Secondary School (2) (F,S,SS)

SPED 4010. Exceptional Students in the Regular Classroom (2) (F,S) (P: Admission to upper division) (RP: SPED 2000)

4. **SPECIALTY AREA STUDIES**........................................................................................... 11 s.h.

- **ELEM 3275. Early Childhood and Elementary School Curriculum (3) (F,S,SS)**
- **PSYC 3206. Developmental Psychology (3) (F,S,SS) (GE:SO) (P: Admission to upper division)**
- **SPAN 4611. Teaching Second Languages in grades K-12 (5) (P: Admission to upper division)**

4.5. Electives to complete requirements for graduation.

5.6. In the second semester of the junior year, an Hispanic studies major must pass an oral qualifying examination.

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**Insert on p. 130 of 2004 – 2005 catalog immediately before the Certificate in Spanish Translation:**

- **Departmental Certificate in Spanish**

The Certificate in Spanish offers students who may not be able to complete a major or minor in Hispanic Studies the opportunity to reach an intermediate level of linguistic competence in Spanish, and to become familiar with Hispanic cultures. The award of the certificate indicates a practical competence sufficient for use in the workplace. The certificate requires 15 s.h. credit as follows:

- **SPAN 1001. Spanish Level I (3) (P: Appropriate score on Spanish placement test)**
- **SPAN 1002. Spanish Level II (3) (P: SPAN 1001 or equivalent or appropriate score on Spanish placement test)**
- **SPAN 1003. Spanish Level III (3) (P: SPAN 1002 or equivalent or appropriate score on Spanish placement test)**
- **SPAN 1004. Spanish Level IV (3) (P: SPAN 1003 or appropriate score on Spanish placement test)**
- **SPAN 2117. Spanish for Professions (3) (P: SPAN 1004 or consent of dept chair) or another 2000-level SPAN course**
4611. Teaching Second Languages in Grades K-12 (5) (F) Formerly FREN 4641 5 lectures per week and 10 lab hours per semester. Includes 10 hours of field experience. May not count toward a BA major or minor in French. P: Admission to upper division, 18 s.h. of FREN above 1004 or consent of instructor. Modern methodologies, techniques and strategies, instructional resources, and evaluation procedures for teaching second languages in grades K-12.

1001. Spanish Level I (3) (F) (S) (SS) P: Appropriate score on Spanish placement test. Lab work. Recommended early in college career for BA students and potential SPAN majors and minors. First of four-course sequence. Focus on the basic skills of listening, speaking, reading, and writing Spanish. Emphasis on life and culture of Spanish-speaking world.

Biology Requirements for Students Participating in MD/7 Initiative
Students pursuing a BS in Biology who are also participating in the MD/7 Program must meet all the specified core requirements for their major and cognate courses of MATH 2121, MATH 2122, CHEM 2750/2753, CHEM 2760/2763, PHYS 1250/1251, and PHYS 1260/1261. Students who complete these courses will also have fulfilled the pre-health concentration. In addition to the core requirements students will also complete 16 hours of Biology electives at the undergraduate level. If the student is accepted for admission to the Brody School of Medicine under the MD/7 Program, Doctoring I will count as Internship BIOL 5995 to be repeated once for 2 hours credit, ANAT 7210 will count in lieu of BIOL 5450/5451, Medical Genetics will count in lieu of BIOL 4040 with all other medical school courses during the first year counting as the remaining 20 hours of electives as required for graduation.

BS in Biochemistry
Minimum degree requirement is 126 s.h. of credit as follows:
1. General education (See Section 4, General Education Requirements for all Baccalaureate Degree Programs), including those listed below:.................................................................................................................. 42 s.h.
   CHEM 1150, 1151. General Chemistry and Laboratory I (3,1) (F,S,SS) (GE:SC) (P: Chemistry placement test or passing grade in CHEM 0150; P/C: MATH 1065)
   CHEM 1160, 1161. General Chemistry and Laboratory I (3,1) (F,S,SS) (GE:SC) (P: CHEM 1150, 1151; C for 1160:
      CHEM 1161; C for 1161: CHEM 1160; RC: MATH 1083 or 1085)
   MATH 1065. College Algebra (3) (F,S,SS) (GE:MA) (P: Appropriate score on mathematics placement test)
2. Core ..................................................................................................................................................... 45 s.h.
   Biology:
   BIOL 1100, 1101. Principles of Biology and Laboratory I (3,1) (F,S,SS) (GE:SC) (P/C for 1101: BIOL 1100)
   BIOL 1200, 1201. Principles of Biology and Laboratory II (3,1) (F,S,SS) (GE:SC) (P/C for 1201: BIOL 1200)
BIOL 2300. Principles of Genetics (3) (F, S, SS) (P: 2 BIOL courses)  
BIOL 3310, 3311. Cellular Physiology (4,0) (F, SS) (P: Organic CHEM or biochemistry course)  
BIOL 5800, 5810. Principles of Biochemistry I, II (3,3) (P: CHEM 2760, 2763)  
BIOL 5821. Principles of Biochemistry Laboratory I (1) (P/C: BIOL 5800 or 5810)

**Chemistry:**

CHEM 2250, 2251. Quantitative and Instrumental Analysis (3,2) (WI, WI) (F, S) (P: CHEM 1160, 1161; one organic CHEM course)  
CHEM 2750. Organic Chemistry I (3) (F, SS) (P: CHEM 1160, 1161; C: CHEM 2753)  
CHEM 2753. Organic Chemistry Laboratory I (1) (F, SS) (C: CHEM 2750)  
CHEM 2760. Organic Chemistry II (3) (F, SS) (P: CHEM 2750; C: CHEM 2763)  
CHEM 2763. Organic Chemistry Laboratory II (1) (F, SS) (P: CHEM 2750, 2753; C: CHEM 2760)  
CHEM 3950, 3951. Physical Chemistry and Laboratory I (4,1) (WI, WI) (S) (P: PHYS 1261, 2360; MATH 2173; CHEM 2250, 2251)  
CHEM 3960, 3961. Physical Chemistry and Laboratory II (4,1) (WI, WI) (F) (P: CHEM 3950, 3951)

3. Cognates. .................................................................................................................. 25-27 s.h.

MATH 1083. Introduction to Functions (3) (F, S, SS) (GE:MA) (P: MATH 1065 with minimum grade of C Consent of dept chair) or MATH 1085. Pre-Calculus Mathematics (5) (F, SS) (GE:MA) (P: MATH 1065 with a minimum grade of C)

**MATH 2171, 2172, 2173. Calculus I, II, III (4,4,4) (F, SS, SS) (GE:MA) (P for 2171: minimum grade of C in any of MATH 1083, 1085, or 2122; P for 2172: MATH 2171 with minimum grade of C or 2122 with consent of instructor; P for 2173: MATH 2172 with minimum grade of C)**

**MATH 2171. Calculus I (4) (F, SS, SS) (GE:MA) (P: MATH 1083 or 1085 or 2122 with minimum grade of C)**

**MATH 2172. Calculus II (4) (F, SS, SS) (GE:MA) (P: MATH 2122 with a minimum grade of C or MATH 2171)**

**MATH 2173. Calculus III (4) (F, SS, SS) (GE:MA) (P: MATH 2172)**

PHYS 1251, 1261. General Physics Laboratory (1,1) (F, SS, SS) (GE:SC) (C for 1251: PHYS 1250 or 2350; C for 1261: 1260 or 2260)

PHYS 2350, 2360. University Physics (4,4) (F, SS, SS) (GE:SC) (P: MATH 1085; C: MATH 2121 or 2171)

4. Electives (Choose from the following.) ........................................................................ 6 s.h.

BIOL 3100, 3101. Basic Laboratory Methods for Biotechnology (3,0) (F, SS) (P: BIOL 2300; CHEM 1160, 1161)  
BIOL 3220, 3221. Microbiology (4,0) (F) (P: BIOL 1200, 1201; 1 organic CHEM course)  
BIOL 5510, 5511. Transmission Electron Microscopy (4) (P: Senior standing as a BIOL major or consent of instructor)

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Insert on pp. 118 – 119 of 2004 – 2005 catalog

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MATH 1065. College Algebra (3) (F, SS) (GE:MA) (P: Appropriate score on mathematics placement test)  
PHYS 1250, 1260. General Physics (3,3) (F, SS, SS) (GE:SC) (P for 1250: MATH 1065 or 1066; P for 1260: PHYS 1250)  
PHYS 1251, 1261. General Physics Laboratory (1,1) (F, SS, SS) (GE:SC) (C for 1251: PHYS 1250 or 2350; C for 1261: 1260 or 2360)

2. Foreign language through level 1004 ............................................................................. 12 s.h.

3. Core .................................................................................................................................. 30 s.h.

CHEM 1150, 1151. General Chemistry and Laboratory I (3,1) (F, SS, SS) (GE:SC) (P: Chemistry placement test or passing grade in CHEM 0150; P/C: MATH 1065)  
CHEM 1160, 1161. General Chemistry and Laboratory I (3,1) (F, SS, SS) (GE:SC) (P: CHEM 1150, 1151; C for 1160: CHEM 1161; C for 1161: CHEM 1160; RC: MATH 1083 or 1085)  
CHEM 2250, 2251. Quantitative and Instrumental Analysis (3,2) (WI, WI) (F, S) (P: CHEM 1160, 1161; one organic CHEM course)  
CHEM 2750. Organic Chemistry I (3) (F, SS) (P: CHEM 1160, 1161; C: CHEM 2753)  
CHEM 2753. Organic Chemistry Laboratory I (1) (F, SS) (C: CHEM 2750)  
CHEM 2760. Organic Chemistry II (3) (F, SS) (P: CHEM 2750; C: CHEM 2763)  
CHEM 2763. Organic Chemistry Laboratory II (1) (F, SS) (P: CHEM 2750, 2753; C: CHEM 2760)  
CHEM 3450, 3451. Elementary Inorganic Chemistry and Laboratory (3,1) (WI, WI) (S) (P: CHEM 2250, 2251)  
CHEM 3850, 3851. Introduction to Physical Chemistry (4,1) (WI, WI) (F) (P: CHEM 1160, 1161; MATH 2122 or 2172; PHYS 1260, 1261)

4. Cognates. .................................................................................................................. 6-13 s.h.

**MATH 2121. Calculus for the Life Sciences I (3) (F, SS, SS) (GE:MA) (P: MATH 1065 or 1077 with a minimum grade of C)**  
**MATH 2122. Calculus for the Life Sciences II (3) (F, SS) (P: MATH 2121) or MATH 1083. Introduction to Functions (3) (F, SS) (GE:MA) (P: MATH 1065 with minimum grade of C Consent of dept chair) or MATH 1085. Pre-Calculus Mathematics (5) (F, SS, SS) (GE:MA) (P: MATH 1065 with a minimum grade of C) and MATH 2171. Calculus I (4) (F, SS) (GE:MA) (P: minimum grade of C in any of MATH 1083, 1085, or 2122. MATH 1083**
5. Electives to complete requirements for graduation.

Chemistry Requirements for Students Participating in MD/7 Initiative

Students pursuing a BA in Chemistry who are also participating in the MD/7 Program must meet all the above-specified requirements for their major and the math cognate. In addition, the student will need to fulfill the pre-health concentration by taking BIOL 1100/1101, BIOL 1200/1201, PHYS 1250/1251 and PHYS 1260/1261. If the student is accepted for admission to the Brody School of Medicine under the MD/7 Program, the first year of medical studies will count toward fulfilling the remaining 28 hours of electives as required for graduation.

BS in Chemistry

The BS degree in chemistry is the appropriate program for students considering advanced degree programs in chemistry, biochemistry, and other related fields or a professional career in chemistry. Graduates of this program meet certification requirements of the American Chemical Society. Students are strongly encouraged to pursue undergraduate research with a faculty member. Up to 6 s.h. of undergraduate research may be applied toward degree requirements. Information regarding undergraduate research may be obtained from the Director of Undergraduate Studies. Students completing the BS degree are encouraged to consider some of the following courses as electives: COMM 2410 or COMM 2420; IITEC 3290 or ENGL 3820; MATH 2228, 3256, 4331; CHEM 4515, 4516, 4517; advanced 5000-level courses in chemistry; and BIOL 5800 or 5810. Minimum degree requirement is 126 s.h. of credit as follows:

1. General education (See Section 4, General Education Requirements for all Baccalaureate Degree Programs), including those listed below. 42 s.h.
   MATH 1065. College Algebra (3) (F,S,SS) (GE:MA) (P: Appropriate score on mathematics placement test)
   PHYS 1251, 1261. General Physics Laboratory (1,1) (F,S,SS) (GE:SC) (C for 1251: PHYS 1250 or 2350; C for 1261: 1260 or 2360)
   PHYS 2350, 2360. University Physics (4,4) (F,S,SS) (GE:SC) (C for 2350: MATH 2121 or 2171; P for 2360: PHYS 2350)

2. Core ................................................................................................................................. 47 s.h.
   CHEM 1150, 1151. General Chemistry and Laboratory I (3,1) (F,S,SS) (GE:SC) (P: Chemistry placement test or passing grade in CHEM 0150; P/C: MATH 1065)
   CHEM 1160, 1161. General Chemistry and Laboratory II (3,1) (F,S,SS) (GE:SC) (P: CHEM 1150, 1151; C for 1160: CHEM 1161; C for 1161: CHEM 1160; RC: MATH 1083 or 1085)
   CHEM 2103. Introduction to Chemical Literature (1) (WI) (F,S) (P: CHEM 2750)
   CHEM 2250, 2251. Quantitative and Instrumental Analysis (3,2) (WI, WI) (F,S) (P: CHEM 1160, 1161; one organic CHEM course)
   CHEM 2750. Organic Chemistry I (3) (F,S,SS) (P: CHEM 1160, 1161; C: CHEM 2753)
   CHEM 2753. Organic Chemistry Laboratory I (1) (F,S,SS) (C: CHEM 2750)
   CHEM 2760. Organic Chemistry II (3) (F,S,SS) (P: CHEM 2750; C: CHEM 2763)
   CHEM 2763. Organic Chemistry Laboratory II (1) (F,S,SS) (P: CHEM 2750, 2753; C: CHEM 2760)
   CHEM 2770. Biological Chemistry (3) (F,S) (GE:SC) (P: CHEM 2650 or 2760)
   CHEM 3450, 3451. Elementary Inorganic Chemistry and Laboratory (3,1) (WI, WI) (S) (P: CHEM 2250, 2251)
   CHEM 3950, 3951. Physical Chemistry and Laboratory I (4,1) (WI, WI) (S) (P: PHYS 1261, 2360; MATH 2173; CHEM 2250, 2251)
   CHEM 3960, 3961. Physical Chemistry and Laboratory II (4,1) (WI, WI) (F) (P: CHEM 3950, 3951)
   CHEM 4103. Seminar (1) (F,S) (P: Junior or senior standing; CHEM 2103)
   CHEM 5350, 5351. Instrumental Analysis (3,1) (WI, WI) (P: CHEM 3960)
   CHEM 5550. Advanced Inorganic Chemistry (3) (P: CHEM 3450, 3950)

3. Elective labs (Choose a minimum of 2 s.h. from the following.) ....................................... 2 s.h.
   BIOL 5821. Principles of Biochemistry Laboratory (1) (F,S) (P/C: BIOL 5800 or 5810)
   CHEM 2111. Applications of Molecular Modeling (1) (F,S) (GE:SC) (P/C: CHEM 2750)
   CHEM 2301. Teaching Laboratory Chemistry (2,0) (F,S) (P: CHEM 1160, 1161) May count only 1 s.h. toward the 2 s.h. lab requirement
   CHEM 2771. Biological Chemistry Laboratory (1) (F,S) (GE:SC) (C: CHEM 2770)
   CHEM 3301. Practicum in Teaching (1) (F,S) (P: CHEM 2301 and consent of instructor)
   CHEM 4515, 4516, 4517. Research Problems in Chemistry (1,2,3) (F,S,SS) (P: Consent of instructor)
   CHEM 5993. Industrial Internship in Chemistry (3) (P: Selection by joint chem dept/industry screening committee; CHEM 2250, 2760, 3950)

4. Cognates ........................................................................................................................... 17 s.h.
   MATH 1085. Pre-Calculus Mathematics (5) (F,S,SS) (GE:MA) (P: MATH 1065 with a minimum grade of C)
   MATH 2171, 2172, 2173. Calculus I, II, III (4,4,4) (F,S,SS) (GE:MA) (P for 2171: MATH 1085 or 1083 or 2122 with a minimum grade of C; P for 2172: MATH 2122 with a minimum grade of C or MATH 2171; P for 2173: MATH 2122)
MATH 2171, 2172, 2173. Calculus I, II, III (4,4,4) (F,S,SS) (GE:MA) (P for 2171: minimum grade of C in any of MATH 1083, 1085, or 2122; P for 2172: MATH 2171 with minimum grade of C or 2122 with consent of instructor; P for 2173: MATH 2172 with minimum grade of C)

5. Electives to complete requirements for graduation.

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**Insert on p. 121 of 2004 – 2005 catalog**

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**BS in Economics**

Economics majors are required to earn a minimum grade of C in each of the following courses: ECON 2113, 2133, 3144, 3244. Minimum degree requirement is 120 s.h. of credit as follows.

1. General education (See Section 4, General Education Requirements for all Baccalaureate Degree Programs), including those listed below: ................................................................. 42 s.h.

MATH 1065. College Algebra (3) (F,S,SS) (GE:MA) (P: Appropriate score on mathematics placement test) or MATH 1066. Applied Mathematics for Decision Making (3) (F,S,SS) (GE:MA) (P: Appropriate score on mathematics placement test or approval of dept chair)

2. Common Core ........................................................................................................... 45-48 s.h.

ACCT 2401. Financial Accounting (3) (F,S,SS) (P: MATH 1065 or 1066 or 2119 or 2121 or 2171)

ACCT 2521. Managerial Accounting (3) (F,S,SS) (P: ACCT 2401)

DSCI 2223. Introduction to Computers (3) (F,S,SS)

ECON 2113. Principles of Microeconomics (3) (F,S,SS) (GE:SO)

ECON 2133. Principles of Macroeconomics (3) (F,S,SS) (GE:SO) (P: ECON 2113)

ECON 3144. Intermediate Microeconomics (3) (F,S) (GE:SO) (P: ECON 2113)

ECON 3244. Intermediate Macroeconomics (3) (F,S) (GE:SO) (P: ECON 2133)

ENGL 3880. Writing for Business and Industry (3) (WI) (F,S,SS) (P: ENGL 1200)

MATH 2283. Statistics for Business (3) (F,S,SS) (P: MATH 1065 or 1066 or equivalent)

Choose additional electives as follows:

- **Applied Economics**: An additional 18 s.h. of ECON above 2999, including at least 6 s.h. above 3999

- **Quantitative**: An additional 21 s.h. of ECON above 2999, including at least 6 s.h. above 3999

3. Concentration area (Choose one.) .............................................................................. 15-20 s.h.

**Applied Economics**:

COMM 2410. Public Speaking (3) (F,S,SS) (GE:FA) or COMM 2420. Business and Professional Communication (3) (F,S,SS) (GE:FA)

ECON 3343. Econometrics (3) (F,S) (GE:SO) (P: DSCI 2223 or CSCI 2600; ECON 2133; MATH 2283)

FINA 2444. Legal Environment of Business (3) (F,S,SS)

FINA 3724. Financial Management (3) (F,S,SS) (P: ECON 2113; MATH 2283; C: ACCT 2521 or 3551)

MATH 2119. Elements of Calculus (3) (F,S,SS) (GE:MA) (P: MATH 1065 with a minimum grade of C)

**Quantitative**:

MATH 1085. Pre-Calculus Mathematics (5) (F,S,SS) (GE:MA) (P: MATH 1065 with a minimum grade of C)

MATH 2171. Calculus I (4) (F,S,SS) (GE:MA) (P: MATH 1083 or 1085 or 2122 with minimum grade of C)

MATH 2172. Calculus II (4) (F,S,SS) (GE:MA) (P: MATH 2122 with a minimum grade of C or MATH 2171)

MATH 2173. Calculus III (4) (F,S,SS) (GE:MA) (P: MATH 2172)

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MATH 2171, 2172, 2173. Calculus I, II, III (4,4,4) (F,S,SS) (GE:MA) (P for 2171: minimum grade of C in any of MATH 1083, 1085, or 2122; P for 2172: MATH 2171 with minimum grade of C or 2122 with consent of instructor; P for 2173: MATH 2172 with minimum grade of C)

MATH 3256. Linear Algebra (3) (F,S,SS) (P: MATH 2172) or MATH 3307. Mathematical Statistics I (3) (F,S,SS) (P: MATH 2172) or ECON 3343. Econometrics (3) (F,S) (GE:SO) (P: DSCI 2223 or CSCI 2600; ECON 2133; MATH 2283)

4. Electives, or optional minor and electives, to complete requirements for graduation. (Grades in required cognate courses will be used in computing the GPA in the major even in those cases in which the same courses are a part of the minor.)

**Economics Minor**

Minimum requirement for economics minor is 24 s.h. of credit as follows:

1. **Core** ....................................................................................................................12 s.h.

ECON 2113. Principles of Microeconomics (3) (F,S,SS) (GE:SO)

ECON 2133. Principles of Macroeconomics (3) (F,S,SS) (GE:SO) (P: ECON 2113)
2. General electives above 2999 .................................................................................................................. 12 s.h.

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- **Insert on pp. 141 – 144 of 2004 – 2005 catalog**

DEPARTMENT OF MATHEMATICS

Gail Ratcliff, Chairperson, 124 Austin Building

**Admission Requirements**

Students enrolled at East Carolina University or transferring from other institutions may be considered for admission to the Department of Mathematics as a mathematics major provided the following departmental requirements are met. To elect mathematics as a major, the student must have a minimum cumulative 2.0 GPA and a minimum grade of C in all mathematics courses taken below the 3000 level.

**Readmission**

Students previously admitted to the Department of Mathematics who have been out of school more than three academic years and students who were previously enrolled in the university but not admitted to the department must meet the requirements outlined in the section above. Students applying for readmission to the university who were previously admitted to the Department of Mathematics and who have been out of school no more than three academic years must have a minimum 2.0 GPA to be eligible for readmission to the department.

**Second Degree Students**

Students who hold a baccalaureate degree qualify for admission to the Department of Mathematics upon admission to the university.

**BA in Mathematics**

Credit toward a mathematics major will not be given in any MATH course or in CSCI 2610 or 2600, 2310/2311 with a grade less than C. The degree offers three two concentration areas: mathematics, computer science, and mathematics and statistics. The mathematics concentration requires a minor and the computer science and statistics concentration requires specified cognates in lieu of a minor. Minimum degree requirement is 126 s.h. of credit as follows:

1. General education (See Section 4, General Education Requirements for all Baccalaureate Degree Programs.) ....................................................................................................................................... 42 s.h.

2. Foreign language through level 1004 ........................................................................................................ 12 s.h.

3. Common core ........................................................................................................................................... 27-30 s.h.

   MATH 2171, 2172, 2173. Calculus I, II, III (4,4,4) (F,S,SS) (GE:MA) (P for 2171: minimum grade of C in any of MATH 1083, or-1085, or2122 with a minimum grade of C; P for 2172: MATH 2171 with minimum grade of C or 2122 with consent of instructor; P for 2173: MATH 2172 with minimum grade of C)

   MATH 2300. Transition to Advanced Mathematics (3) (P: MATH 2171)

   MATH 3256. Linear Algebra (3) (F,S,SS) (P: MATH 2172)

   MATH 3263. Introduction to Modern Algebra (3) (WI) (F,S) (P: MATH 2300, 3256)

   MATH 3307. Mathematical Statistics I (3) (F,S) (P: MATH 2172)

   MATH 4331. Introduction to Ordinary Differential Equations (3) (F,S) (P: MATH 2173)

   MATH 5101. Advanced Calculus I (3) (P: MATH 2173 or consent of instructor)

4. Cognate ....................................................................................................................................................... 4 s.h.

   CSCI 2310, 2311. Algorithmic Problem Solving and Programming Laboratory (4,0) (F,S,SS). P: MATH 1065; C for 2310: CSCI 2311; C for 2311: CSCI 2310.
4–5. Concentration area to include minor or specified cognates as listed below. 
(Choose one area.) ........................................................................................................... 30–39 s.h.

Computer Science (34 s.h.):
CSCI 3573. Introduction to Numerical Analysis (3) (P: CSCI 2610 or consent of instructor; MATH 2119 or 2172 or equivalent) or MATH 5121. Numerical Analysis in One Variable (3) or MATH 5122. Numerical Analysis in Several Variables (3) (P: MATH 3256, 4331)
Choose 6 s.h. of MATH electives numbered above 2999, excluding MATH 3229, 3237, 3239

Cognates (25 s.h.):
CSCI 2510. Introduction to Computer Science I (3) (F,S,SS) (P: MATH 1065 or 1066)
CSCI 2610, 2611. Introduction to Computer Science and Laboratory II (4.0) (F,S,SS) (P: CSCI 2510; C for 2610: CSCI 2611; C for 2611: CSCI 2640)
CSCI 3510. Data Structures (3) (F,S,SS) (P: CSCI 2610; P/C: MATH 2427)
CSCI 3601. Computer Organization and Programming (3) (F,S) (P: CSCI 3510 or 3526)

CSCI 3650. Analysis of Algorithms (3) (S,SS) (P: CSCI 3510; MATH 2427)
MATH 2427. Discrete Mathematical Structures (3) (F,S) (P: MATH 1065 or 1066)
Choose 6 s.h. from:
CSCI 3526. Switching Theory and Computer Organization (3) (F,S,SS) (P: CSCI 2610; MATH 2427)
CSCI 3675. Organization of Programming Language (3) (F,SS) (P: CSCI 3510)
CSCI 3700. Database Management Systems (3) (F) (P: CSCI 2618 or 3610)
CSCI 3800. Introduction to Computer Graphics (3) (F) (P: MATH 3256 or 3584; CSCI 3510)
CSCI 4200. Software Design and Development (3) (WI) (F,S) (P: CSCI 3510; CSCI major)
CSCI 4520. Introduction to Computer Architecture (3) (S) (P: CSCI 3526, 3601; CSCI major)
CSCI 4627. Procedural Languages and Compilers (3) (S) (P: CSCI 3601, 3675; CSCI major)
CSCI 4630. Operating Systems I (3) (S,SS) (P: CSCI 3601; CSCI major)
MATH 4332. The Calculus of Finite Differences (3) (P: MATH 2173)

Mathematics (33–39 30 – 36 s.h.):
CSCI 3510. Introduction to Computer Science I (3) (F,S,SS) (P: MATH 1065 or 1066) or CSCI 2600.
Introduction to Digital Computation (3) (S) (P: MATH 1065 or 1066)
Choose 6 s.h. of MATH electives numbered above 2999, excluding MATH 3229, 3237, 3239
Minor (24-30 s.h.)

Statistics (30 27 s.h.):
CSCI 3510. Introduction to Computer Science I (3) (F,S,SS) (P: MATH 1065 or 1066) or CSCI 2600.
Introduction to Digital Computation (3) (S) (P: MATH 1065 or 1066)
Choose 9 s.h. of MATH electives numbered above 2999, excluding MATH 3229, 3237, 3239, and excluding cognates listed below.

Cognates (18 s.h.):
CSCI 5774. Programming for Research (3) (F,S) (P: General course in statistics or consent of instructor)
MATH 3308. Mathematical Statistics II (3) (F) (P: MATH 3307)
MATH 5031. Applied Statistical Analysis (3) (WI) (P: MATH 2228 or 3308; 3584; or equivalent)
MATH 5801. Probability Theory (3) (P: MATH 2173 or 3307)
Choose 6 s.h. from:
BIOS 3501. Experimental Design I (3) (P: Consent of instructor)
BIOS 4371, 4372, 4373. Statistical Consulting I, II, III (1,1,1) (P: BIOS 3501 or equivalent or consent of instructor)
BIOS 5450. Applied Multivariate Analysis (3) (P: BIOS 3501; MATH 3256; or equivalent or consent of instructor)
BIOS 5500. Nonparametric Statistical Methods (3) (P: BIOS 3501 or consent of instructor)
DSCI 4491. Statistical Quality Control (3) (F) (P: MATH 2228 or 2283 or equivalent)
ECON 3343. Econometrics (3) (F,S) (GE:SO) (P: DSCI 2223 or CSCI 2600; ECON 2133; MATH 2283)
ECON 4430. Business Cycles and Forecasting (3) (P: ECON 3244, 3343; or consent of instructor)
MATH 4201. Introduction to Stochastic Processes (3) (S: MATH 3307 or equivalent or consent of instructor)
MATH 5000. Introduction to Sampling Design (3) (P: MATH 3308 or 3229 or consent of instructor)
MATH 5132. Probabilistic Methods in Operations Research (3) (P: MATH 2173, 3256, 3307; or 5801)

5 6. Electives to complete requirements for graduation.

BS in Mathematics
Credit toward a mathematics major will not be given in any MATH course or in CSCI 2510 with a grade less than C. Minimum degree requirement is 126 s.h. of credit as follows:

1. General education (See Section 4, General Education Requirements for all Baccalaureate Degree Programs) ......................................................... 42 s.h.

2. Common mathematics core ........................................... 3337 s.h.
   MATH 2171, 2172, 2173. Calculus I, II, III (4,4,4) (F,S,SS) (GE:MA) (P for 2171: MATH 1083, or 1085, or 2122 with minimum grade of C; P for 2172: MATH 2171 or 2122 with consent of instructor; P for 2173: MATH 2172)
   **MATH 2300. Transition to Advanced Mathematics (3) (P: MATH 2171)**
   MATH 3256. Linear Algebra (3) (F,S,SS) (P: MATH 2172)
   MATH 3263. Introduction to Modern Algebra (3) (WI) (F,S) (P: MATH 2300, 3256)
   MATH 3307. Mathematical Statistics I (3) (F,S) (P: MATH 2172)
   MATH 3308. Mathematical Statistics II (3) (F) (P: MATH 3307)
   MATH 4101. Advanced Calculus I (3) (P: MATH 2173, 2300, or consent of instructor)
   MATH 4331. Introduction to Ordinary Differential Equations (3) (F,S) (P: MATH 2173)
   **CSCI 2510. Introduction to Computer Science I (3) (F,S,SS) (P: MATH 1065 or 1066)**
   **CSCI 2310,2311. Algorithmic Problem Solving and Programming Laboratory (4,0) (F,S,SS). P: MATH 1065; C for 2310: CSCI 2311; C for 2311: CSCI 2310.**

3. Concentration area (Choose one area) ........................................... 16-2720-27 s.h.

   **Mathematics (27-33 s.h.):**
   MATH 4110. Elementary Complex Variables (3) (S: MATH 2173) Minor (24-30 s.h.)

   **Science (27-28 s.h.)**
   CSCI 1150, 1151. General Chemistry and Laboratory I (3,1) (F,S,SS) (GE:SC) (P: chemistry placement test or passing grade in CHEM 1050; P/C: MATH 1065; C for 1150: CHEM 1151; C for 1151: CHEM 1150)
   CHEM 1160, 1161. General Chemistry and Laboratory II (3,1) (F,S,SS) (GE:SC) (P: CHEM 1150, 1151; C for 1160,
   CHEM 1161; C for 1161: CHEM 1160; R/C: MATH 1083 or 1085)
   MATH 4110. Elementary Complex Variables (3) (S: MATH 2173)
   PHYS 2350, 2360. University Physics (4,4) (F,S,SS) (GE:SC) (C: MATH 2121 or 2171; P for PHYS 2360: PHYS 2350)
   Choose one of the following:
   BIOL 1100, 1101. Principles of Biology I (4,0) (F,S,SS) (GE:SC) and BIOL 1200, 1201. Principles of Biology II (4,0) (F,S,SS) (GE:SC)
   A combination of any 3 courses numbered above 1999 in Chemistry or numbered above 399 in Physics.

   **Statistics (21 s.h.)**
   ENGL 3880. Writing for Business and Industry (3) (WI) (F,S,SS) (P: ENGL 1200)
   MATH 4031. Applied Statistical Analysis (3) (WI) (P: MATH 2228 or 2283 or 3308; MATH 3256 or MATH/CSCI 3584; or equivalent; or consent of instructor)
   MATH 4201. Introduction to Stochastic Processes (3) (P: MATH 3307 or equivalent or consent of instructor) or
MATH 5000. Introduction to Sampling Design (3) (F) (P: MATH 3308 or 3229 or consent of instructor)
MATH 4774. Programming for Research (3) (P: MATH 2228 or MATH 2283 or equivalent)
MATH 4801. Probability Theory (3) (P: MATH 2173 or 3307)
MATH 4999. Capstone and Statistical Consulting (3) (P: MATH 4031)
PHIL 2274. Business Ethics (3) (F,S,SS) (GE:HU)

Computer Science (16 s.h.)
CSCI 2610, 2611. Introduction to computer Science II and Laboratory (4,0) (F,S,SS) (P: CSCI 2510; C for 2610; CSCI 2611; C for 2611: CSCI 2610)
CSCI 3510. Data Structures (3) (F,S,SS) (P: CSCI 2610; P/C: MATH 2427)
CSCI 3601. Computer Organization and Programming (3) (F,S) (P: CSCI 3510 or 3527)

CSCI 2300. Computer Science Survey (3) (F,S,SS)
CSCI 3300: Introduction to Algorithms and Data Structures (4) (F,S,SS) (P: CSCI 2300, 2310, 2427)
CSCI 3310. Advanced Data Structures and Data Abstraction (3) (F,S,SS) (P: CSCI 3300)

CSCI 3650. Analysis of Algorithms (3) (S,SS) P: CSCI 3310 or 3510; CSCI MATH 2427

CSCI 3526. Switching Theory and Computer Organization (3) (F,S,SS) (P: CSCI 2310 or CSCI 2610; CSCI 2427) or CSCI 3675. Organization of Programming Language (3) (F,S,SS) (P: CSCI 3310 or 3510) or MATH 4110. Elementary Complex Variables (3) (S) (P: MATH 2173)

4. Specified electives
Mathematics (9 s.h.):
Choose 9 additional s.h. in consultation with advisor from MATH 3174, 3233, 3573, 4201, 4264, 4801, 5000, 5002, 5021, 5102, 5121, 5122, 5131, 5132, 5311, 5322, or 5551.

Science (3 s.h.):
Choose 3 additional s.h. in consultation with advisor from MATH 3174, 3233, 3573, 4201, 4264, 4801, 5000, 5002, 5021, 5102, 5121, 5122, 5131, 5132, 5311, 5322, or 5551.

Statistics (9 s.h.):
Choose 3 additional s.h. from MATH 4201, 5000, 5132; BIOS 3501, 5450, 5500; DSCI 4493; ECON 3343, 4430.
Choose 6 additional s.h. from MATH 3174, 3233, 3573, 4110, 4264, 5002, 5021, 5102, 5121, 5122, 5131, 5132, 5311, 5322 or 5551.

Computer Science (12 s.h.):
Choose 3 s.h. from MATH 3174, 3233, 3573, 4201, 4264, 4801, 5000, 5002, 5021, 5102, 5121, 5122, 5131, 5132, 5311, 5322 or 5551.
Choose 9 s.h. of CSCI electives numbered above 1999, excluding 2300, 2310/2311, 2510, 2610, 2611, 3300, 3310, 3510, 3584, 3601, 3650.

5. Electives to complete requirements for graduation.

Mathematics Minor
Minimum requirement for mathematics minor is 24 s.h. of credit as follows:
1. Core ........................................................................................................................................ 18 21 s.h.
   MATH 2171. Calculus I (4) (F,S,SS) (GE:MA) (P: MATH 1083 or 1085 or 2122 with minimum grade of C)
   MATH 2172. Calculus II (4) (F,S,SS) (GE:MA) (P: MATH 2122 with a minimum grade of C or MATH 2174)
   MATH 2173. Calculus III (4) (F,S,SS) (GE:MA) (P: MATH 2172)
2. Electives acceptable for a major in mathematics ................................................................. 6-3 s.h.

Statistics Minor

(Not open to majors in Mathematics)

Minimum requirement for statistics minor is 26 s.h. of credit as follows:

1. Core ................................................................................................................................. 23 s.h.
   CSCI 5774. Programming for Research (3) (P: General course in statistics or consent of instructor)
   MATH 2171. Calculus I (4) (F,S,SS) (GE:MA) (P: MATH 1083 or 1085 or 2122 with minimum grade of C)
   MATH 2172. Calculus II (4) (F,S,SS) (GE:MA) (P: MATH 2122 with a minimum grade of C or MATH 2171)
   MATH 3256. Linear Algebra (3) (F,S,SS) (P: MATH 2172)
   MATH 3307. Mathematical Statistics I (3) (F,S) (P: MATH 2172)
   MATH 3308. Mathematical Statistics II (3) (F) (P: MATH 3307)
   MATH 5031. Applied Statistical Analysis (3) (WI) (P: MATH 2228 or 3308; 3584; or equivalent)

2. Electives (Choose from the following.) ............................................................................. 3 s.h.
   BIOS 3501. Experimental Design I (3) (P: Consent of instructor)
   BIOS 4371, 4372, 4373. Statistical Consulting I, II, III (1,1,1) (P: BIOS 3501 or equivalent or consent of instructor)
   BIOS 5450. Applied Multivariate Analysis (3) (P: BIOS 3501; MATH 3256; or equivalent or consent of instructor)
   BIOS 5500. Nonparametric Statistical Methods (3) (P: BIOS 3501 or consent of instructor)
   DSCI 4493. Statistical Quality Control (3) (F) (P: MATH 2283 or 3228 or equivalent)
   ECON 3343. Econometrics (3) (F,S) (GE:SO) (P: DSCI 2223 or CSCI 2600; ECON 2133; MATH 2283)
   ECON 4430. Business Cycles and Forecasting (3) (GE:SO) (P: ECON 3244, 3343; or consent of instructor)
   MATH 4201. Introduction to Stochastic Processes (3) (S) (P: MATH 3307 or equivalent or consent of instructor)
   MATH 5000. Introduction to Sampling Design (3) (P: MATH 3308 or 3229 or consent of instructor)
   MATH 5132. Probabilistic Methods in Operations Research (3) (P: MATH 2173, 3256, 3307; or 5801)
   MATH 5801. Probability Theory (3) (P: MATH 2173 or 3307)

Mathematics Honors Program

The mathematics honors program is open to students with exceptional mathematical ability who have completed MATH 2173. Acceptance in the program entitles the student to register for MATH 3550, 3551, 4550, 4551.

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DEPARTMENT OF PHYSICS

John Sutherland, Chairperson, N-209 Howell Science Complex

Proficiency Requirements

A minimum grade of C in PHYS 2350 and 2360 is required before a student may take any physics course for which PHYS 2360 is prerequisite.

BA in Physics

The BA is designed for students interested in employment in nontechnical fields or in graduate study in the social sciences, business, and the humanities depending on elective choices. Minimum degree requirement is 126 s.h. of credit as follows:
1. General education (See Section 4, General Education Requirements for all Baccalaureate Degree programs), including those listed below................................................................. 42 s.h.
   MATH 1065. College Algebra (3) (F,S,SS) (GE:MA) (P: Appropriate score on mathematics placement test) or equivalent

2. Foreign language through level 1004 ...........................................................................................................12 s.h.

3. Core ...................................................................................................................................................... 19 s.h.
   PHYS 1251, 1261. General Physics Laboratory (1,1) (F,S,SS) (GE:SC) (C for 1251: PHYS 1250 or 2350; C for 1261:
   PHYS 1260 or 2360)
   PHYS 2350, 2360. University Physics (4,4) (GE:SC) (C for 2350: MATH 2121 or 2171; P for 2360: PHYS 2350)
   PHYS 3700, 3701. Advanced Laboratory (3,0) (3700:WI) (S) (P: PHYS 2360)
   PHYS 4416. Modern Physics I (3) (F) (P: PHYS 2360)
   PHYS 4417. Modern Physics II (3) (S) (P: PHYS 4416)

4. Cognates............................................................................................................................................. 15 s.h.
   MATH 1083. Introduction to Functions (3) (F,S,SS) (GE:MA) (P: MATH 1065 with minimum grade of C)
   MATH 2171, 2172, 2173. Calculus I, II, III (4,4,4) (F,S,SS) (GE:MA) (P: for 2171: minimum grade of C in any
   of MATH 1083, 1085, or 2122; P for 2172: MATH 2171 with minimum grade of C or 2122 with consent of
   instructor; P for 2173: MATH 2172 with minimum grade of C)

   MATH 1083. Introduction to Functions (3) (F,S,SS) (GE:MA) (P: Consent of dept chair)
   MATH 2171. Calculus I (4) (F,S,SS) (GE:MA) (P: MATH 1083 or 1085 or 2122 with minimum grade of C)
   MATH 2172. Calculus II (4) (F,S,SS) (GE:MA) (P: MATH 2122 with a minimum grade of C or MATH 2171)
   MATH 2173. Calculus III (4) (F,S,SS) (GE:MA) (P: MATH 2172)

5. Minor and electives to complete requirements for graduation.

   BS in Physics

   The BS is a traditional physics program designed for students interested in graduate study in physics or engineering.
   Minimum degree requirement is 126 s.h. of credit as follows:

1. General education (See Section 4, General Education Requirements for all Baccalaureate Degree
   Programs), including those listed below.................................................................................................. 42 s.h.
   CHEM 1150, 1151. General Chemistry and Laboratory I (3,1) (F,S,SS) (GE:SC) (P: Chemistry placement test or passing
   grade in CHEM 0150; P/C: MATH 1065)
   CHEM 1160, 1161. General Chemistry and Laboratory II (3,1) (F,S,SS) (GE:SC) (P: CHEM 1150, 1151; C for 1160:
   CHEM 1161; C for 1161: CHEM 1160; RC: MATH 1083 or 1085)
   MATH 1065. College Algebra (3) (F,S,SS) (GE:MA) (P: Appropriate score on mathematics placement test) or equivalent

2. Core ...................................................................................................................................................... 40 s.h.
   PHYS 1251, 1261. General Physics Laboratory (1,1) (F,S,SS) (GE:SC) (C for 1251: PHYS 1250 or 2350; C for 1261:
   PHYS 1260 or 2360)
   PHYS 2350, 2360. University Physics (4,4) (GE:SC) (C for 2350: MATH 2121 or 2171; P for 2360: PHYS 2350)
   PHYS 3700, 3701. Advanced Laboratory (3,0) (3700:WI) (F) (P: PHYS 2360)
   PHYS 4120. Thermodynamics (3) (S-OY) (P: PHYS 2360)
   PHYS 4226. Mechanics I (3) (F) (P: MATH 2173; PHYS 2360)
   PHYS 4310. Modern Optics (3) (F-EY) (P: PHYS 2360)
   PHYS 4326. Electricity and Magnetism I (3) (F) (P: PHYS 2360)
   PHYS 4416. Modern Physics I (3) (F) (P: PHYS 2360)
   PHYS 4417. Modern Physics II (3) (S) (P: PHYS 4416)
   PHYS 4560. Mathematical Methods for Physics (3) (S) (P: MATH 2173; PHYS 2360)
   PHYS 4610. Electronics (3) (F-OY) (P: PHYS 2021, 2360)
   Choose 3 s.h. of PHYS electives above 2999

3. Cognates............................................................................................................................................. 18 s.h.
   MATH 1083. Introduction to Functions (3) (F,S,SS) (GE:MA) (P: MATH 1065 with minimum grade of C)
   MATH 2171, 2172, 2173. Calculus I, II, III (4,4,4) (F,S,SS) (GE:MA) (P: for 2171: minimum grade of C in any
   of MATH 1083, 1085, or 2122; P for 2172: MATH 2171 with minimum grade of C or 2122 with consent of
   instructor; P for 2173: MATH 2172 with minimum grade of C)

   MATH 1083. Introduction to Functions (3) (F,S,SS) (GE:MA) (P: Consent of dept chair)
   MATH 2171. Calculus I (4) (F,S,SS) (GE:MA) (P: MATH 1083 or 1085 or 2122 with minimum grade of C)
   MATH 2172. Calculus II (4) (F,S,SS) (GE:MA) (P: MATH 2122 with a minimum grade of C or MATH 2171)
   MATH 2173. Calculus III (4) (F,S,SS) (GE:MA) (P: MATH 2172)
MATH 4331. Introduction to Ordinary Differential Equations (3) (F,S) (P: MATH 2173)

4. Electives to complete requirements for graduation.
(Pre-engineered students should see Section 6, Undergraduate Studies: Preprofessional and Two-Year Curricula:
Two-Year Engineering Curriculum.)

BSAP (BS in Applied Physics)
The BSAP is designed for students interested in employment in technical fields or in graduate study in engineering, business, public health, medicine, environmental science, and related technical fields depending on elective choices.
Minimum degree requirement is 126 s.h. of credit as follows:

1. General education (See Section 4, General Education Requirements for all Baccalaureate Degree Programs), including those listed below................................................................. 42 s.h.
   CHEM 1150, 1151. General Chemistry and Laboratory I (3,1) (F,S,SS) (GE:SC) (P: Chemistry placement test or passing grade in CHEM 0150; P/C: MATH 1065)
   CHEM 1160, 1161. General Chemistry and Laboratory I (3,1) (F,S,SS) (GE:SC) (P: CHEM 1150, 1151; C for 1160: CHEM 1161; C for 1161: CHEM 1160; RC: MATH 1083 or 1085)
   MATH 1065. College Algebra (3) (F,S,SS) (GE:MA) (P: Appropriate score on mathematics placement test) or equivalent

2. Core ..................................................................................................................................... 28 s.h.
   PHYS 1251, 1261. General Physics Laboratory (1,1) (F,S,SS) (GE:SC) (C for 1251: PHYS 1250 or 2350; C for 1261: PHYS 1260 or 2260)
   PHYS 2350, 2360. University Physics (4,4) (GE:SC) (C for 2350: MATH 2121 or 2171; P for 2360: PHYS 2350)
   PHYS 3700, 3701. Advanced Laboratory (3,0) (3700:WI) (F) (P: PHYS 2360)
   PHYS 4310. Modern Optics (3) (P: PHYS 2360)
   PHYS 4416. Modern Physics I (3) (F) (P: PHYS 2360)
   PHYS 4417. Modern Physics II (3) (S) (P: PHYS 4416)
   PHYS 4610. Electronics (3) (F-OY) (P: PHYS 2021, 2360)
   Choose 3 s.h. of PHYS electives above 2999

3. Cognates.................................................................................................................................. 18 s.h.
   MATH 1083. Introduction to Functions (3) (F, S,SS) (GE:MA) (P: MATH 1065 with minimum grade of C)
   MATH 2171, 2172, 2173. Calculus I, II, III (4,4,4) (F,S,SS) (GE:MA) (P for 2171: minimum grade of C in any of MATH 1083, 1085, or 2122; P for 2172: MATH 2171 with minimum grade of C or 2122 with consent of instructor; P for 2173: MATH 2172 with minimum grade of C)
   MATH 1083. Introduction to Functions (3) (F,S,SS) (GE:MA) (P: Consent of dept chair)
   MATH 2171. Calculus I (4) (F,S,SS) (GE:MA) (P: MATH 1083 or 1085 or 2122 with minimum grade of C)
   MATH 2172. Calculus II (4) (F,S,SS) (GE:MA) (P: MATH 2122 with a minimum grade of C or MATH 2171)
   MATH 2173. Calculus III (4) (F,S,SS) (GE:MA) (P: MATH 2172)
   MATH 4331. Introduction to Ordinary Differential Equations (3) (F,S) (P: MATH 2173)

4. Electives to complete requirements for graduation.
(Preengineering students should see Section 6, Undergraduate Studies: Preprofessional and Two-Year Curricula:
Two-Year Engineering Curriculum.)

Physics Requirements for Students Participating in MD/7 Initiative
Students pursuing a BA or BSAP in Physics who are also participating in the MD/7 Program must meet all the above-specified requirements for their major and the math cognate. It should also be noted that students coming in under the MD/7 Program in Physics will need to have obtained prior credit for MATH1065 and MATH1085. In addition, the student will need to fulfill the pre-health concentration by taking BIOL 1100/1101, BIOL1200/1201, CHEM 1150/1151, CHEM 1160, 1161, CHEM 2750/2751 and CHEM

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MATE 3218. Teaching Mathematics in Special Education (3) (F,S,SS) (P: MATH 1065, 2127; SPED 2000; at least 1 of the following: SPED 2102, 2103, 2104; admission to upper division; RP: MATE 2129)
SCIE 3216. Teaching Science in the Elementary School (2) (F,S,SS)
   (PSYC 3225, 4333 if academic concentration other than psychology)

5. Academic concentration (See Academic Concentration, above. A maximum of 6 s.h. may count in general education requirements.).................................................................................................................. 24 s.h.
6. Electives to complete requirements for graduation.

DEPARTMENT OF MATHEMATICS AND SCIENCE EDUCATION

Ron Preston, Acting Chairperson, Austin 324-A

BS in Mathematics, Secondary Education
Credit toward a mathematics major will not be given in any MATH course with a grade less than C. See Section 7, Degree Programs, College of Education, Licensure, for NC teacher licensure requirements. Minimum degree requirement is 126 s.h. of credit as follows:

1. General education plus special requirements for licensure (See Section 4, General Education Requirements for all Baccalaureate Degree Programs), including those listed below. ................. 42 s.h.
   PHIL 1500. Introduction to Logic (3) (F,S,SS) (GE:HU) (GE:MA) (to be counted toward the humanities requirement)

2. Core .................................................................................................................. 36 s.h.
   MATE or MATH 2775. Topics in Discrete Mathematics (3) (S) (GE:MA) (P: MATH 1085)
   MATE or MATH 2935. Data Analysis (3) (S) (GE:MA) (P: MATH 1085)
   MATH 2171, 2172, 2173. Calculus I, II, III (4,4,4) (F,S,SS) (GE:MA) (P for 2171: minimum grade of C in any of MATH 1083, 1085, or 2122; P for 2172: MATH 2171 with minimum grade of C or 2122 with consent of instructor; P for 2173: MATH 2172 with minimum grade of C)
   MATH 2171, 2172, 2173. Calculus I, II, III (4,4,4) (F,S,SS) (GE:MA) (P for 2171: MATH 1083 or 1085 or 2122 with a minimum grade of C; P for 2172: MATH 2171 or 2122 with consent of instructor; P for 2173: MATH 2172)
   MATH 2300. Transition to Advanced Mathematics (3) (P: MATH 2171)
   MATH 2323. College Geometry (3) (F: P: MATH 2300 2171)
   MATH 2356. Linear Algebra (3) (F,S,SS) (P: MATH 2172)
   MATH 2363. Introduction to Modern Algebra (3) (WI) (F,S,SS) (P: MATH 2300, 3256)
   MATH 3307. Mathematical Statistics I (3) (F,S) (P: MATH 2172)
   MATH 5322. Foundations of Mathematics (3) (WI) (P: MATH 3323, 3263; or equivalent)
   Choose 3 s.h. of electives from MATH courses numbered above 2999, excluding MATH 3229, 5265, 5266, 5267, 5268

3. Professional courses ............................................................................................................ 31 s.h.
   EDUC 3200. Introduction to American Education (3) (WI)* (F,S,SS) (P: Early experience course or consent of instructor)
   EDUC 4400. Foundations of School Learning, Motivation, and Assessment (3) (P: Admission to upper division)
   MATE 2123. Early Experiences for the Prospective Teacher (1) (F,S) (P: MATH 2171)
   MATE 3004. Seminar in Secondary Mathematics Curriculum–Algebra (1) (S) (P: MATE 2123)
   MATE 3005. Seminar in Secondary Mathematics Curriculum–Geometry (1) (F) (P: MATE 2123; C: MATH 3233)
   MATE 3006. Seminar in Secondary Mathematics Curriculum–Advanced Mathematics (1) (F) (P: MATE 3004, 3005)
   MATE 4001. Technology in Secondary Mathematics Education (3) (F) (P: Admission to upper division; MATE or MATH 2775, 2935; C: MATE 4323)
   MATE 4323. The Teaching of Mathematics in High School (3) (F) (P: MATE 2123)
   MATE 4324. Internship in Mathematics (10) (S) (P: Admission to upper division; MATE 4323; C: MATE 4325; READ 3990)
   MATE 4325. Internship Seminar: Issues in Mathematics Education (1) (S) (P: Admission to upper division; MATE 4323; C: MATH 4324)
   READ 3990. Teaching Reading in the Content Areas in the Secondary School (2) (F,S,SS)
   SPED 4010. Exceptional Students in the Regular Classroom (2) (F,S) (RP: SPED 2000)

4. Electives to complete requirements for graduation.

BS in Science Education
The science education degree prepares and develops professionals in science education by offering classroom instruction and research opportunities in programs for students whose career goals are teaching science in the elementary, middle, and secondary schools, and in higher education. Undergraduate areas of preparation include the methods and processes of

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Ralph V. Rogers, Jr., Dean

COLLEGE OF TECHNOLOGY AND COMPUTER SCIENCE

The College of Technology and Computer Science comprises the Departments of Computer Science, Construction Management, Industrial Technology, and Planning.
DEPARTMENT OF COMPUTER SCIENCE
Robert Bernhardt, Interim Chairperson, Science and Technology Building

Students enrolled at East Carolina University or transferring from other institutions may be considered for admission to the Department of Computer Science provided the following departmental requirements are met. A student must have completed a minimum of 39 s.h. with a minimum cumulative 2.0 GPA and have a minimum 2.4 GPA computed on CSCI 2510, 2610, 2611.

BA in Computer Science
Credit toward a computer science major will not be given for any CSCI course with a grade less than C being used to satisfy the requirements specified in the core. Minimum degree requirement is 126 s.h. of credit as follows:
1. General education (See Section 4, General Education Requirements for all Baccalaureate Degree Programs.) ................................................................. 42 s.h.
2. Foreign language through level 1004 (preferably French, German, or Russian) ..................12 s.h.
3. Core ......................................................................................................................... 34 s.h.
   CSCI 2510. Introduction to Computer Science I (3) (F,S,SS) (P: MATH 1065 or 1066)
   CSCI 2610, 2611. Introduction to Computer Science II and Laboratory (4,0) (F,S,SS) (P: CSCI 2510; C for 2610: CSCI 2611; C for 2611: CSCI 2610)
   CSCI 3510. Data Structures (3) (F,S,SS) (P: CSCI 2610; P/C: MATH 2427)
   CSCI 3601. Computer Organization and Programming (3) (F,S) (P: CSCI 3510 or 3526)
   CSCI 3675. Organization of Programming Language (3) (F,SS) (P: CSCI 3510)
   CSCI 4200. Software Engineering I (3) (WI) (F,S) (P: CSCI 3510; CSCI major)
   CSCI 4630. Operating Systems I (3) (S,SS) (P: CSCI 3601; CSCI major)
   Choose 12 s.h. CSCI courses above 1999, excluding CSCI 2600, 3584, and 5774
4. Cognates.................................................................................................................. 6-7 s.h.
   CSCI/MATH 2427. Discrete Mathematical Structures (3) (F,S,SS) (P: MATH 1065 or 1066)
   MATH 2119. Elements of Calculus (3) (F,S,SS) (GE:MA) (P: MATH 1065 with a minimum grade of C) or MATH 2122. Calculus for the Life Science II (3) (F,S,SS) (P: MATH 2121) or MATH 2171. Calculus I (4) (F,S,SS) (GE:MA) (P: minimum grade of C in any of MATH 1083, 1085, or 2122) (P: MATH 1083 or 1085 or 2122 with a minimum grade of C)
5. Minor and electives to complete requirements for graduation.

BS in Computer Science
Credit toward a computer science major will not be given for any CSCI course with a grade less than C being used to satisfy the requirements specified in the common core, concentration area, and CSCI electives. Minimum degree requirement is 126 s.h. of credit as follows:
1. General education (See Section 4, General Education Requirements for all Baccalaureate Degree Programs), including those listed below................................................................. 42 s.h.
   COMM 2410. Public Speaking (3) (F,S,SS) (GE:FA) or COMM 2420. Business and Professional Communication (3) (F,S,SS) (GE:FA)
   PHIL 2275. Professional Ethics (3) (WI*) (F,S,SS) (GE:HU)
2. Common core ........................................................................................................... 22 s.h.
   CSCI 2510. Introduction to Computer Science I (3) (F,S,SS) (P: MATH 1065 or 1066)
   CSCI 2610, 2611. Introduction to Computer Science II and Laboratory (4,0) (F,S,SS) (P: CSCI 2510; C for 2610: CSCI 2611; C for 2611: CSCI 2610)
   CSCI 3510. Data Structures (3) (F,S,SS) (P: CSCI 2610; P/C: MATH 2427)
   CSCI 3601. Computer Organization and Programming (3) (F,S) (P: CSCI 3510 or 3526)
   CSCI 3675. Organization of Programming Language (3) (F,SS) (P: CSCI 3510)
   CSCI 4200. Software Engineering I (3) (WI) (F,S) (P: CSCI 3510; CSCI major)
   CSCI 4630. Operating Systems I (3) (S,SS) (P: CSCI 3601; CSCI major)
3. Concentration area (Choose one.) .............................................................................12 s.h.
   Applications Development:
      CSCI 2618. COBOL (3) (F: CSCI 2610)
      CSCI 3650. Analysis of Algorithms (3) (S) (P: CSCI 3510; MATH 2427)
      CSCI 3700. Database Management Systems (3) (F) (P: CSCI 3510)
      CSCI 4510. Object-Oriented Computing and Graphical User Interfaces (3) (F,S) (P: CSCI 3510)
   Systems Development:
      CSCI 3526. Switching Theory and Computer Organization (3) (F,S) (P: CSCI 2610; MATH 2427)
CSCI 3650. Analysis of Algorithms (3) (S: P: CSCI 3510; MATH 2427) or CSCI 4602. Theory of Automata and Linguistics (3) (F: P: MATH 2427; CSCI major)
CSCI 4520. Introduction to Computer Architecture (3) (S: P: CSCI 3526, 3601; CSCI major)
CSCI 4627. Procedural Languages and Compilers (3) (S: P: CSCI 3601, 3675; CSCI major)

4. Supporting area of concentration (Choose one from a. through c.)* ............................................ 12 s.h.
   a. Choose an additional 12 s.h. in MATH acceptable for a mathematics major
   b. Choose an additional 12 s.h. in ACCT and/or DSCI
   c. Choose an additional 12 s.h. in ICTN

5. Cognates........................................................................................................................................... 18-19 s.h.
   CSCI/MATH 2427. Discrete Mathematical Structure (3) (F,S) (P: MATH 1065 or 1066)
   CSCI/MATH 3584. Computational Linear Algebra (3) (F,S,SS) (P: Calculus course)
   ENGL 3880. Writing for Business and Industry (3) (WI) (F,S,SS) (P: ENGL 1200) or ITEC 3290. Technical Writing (3)
   (WI) (F,S,SS) (P: ENGL 1200)
   MATH 2119. Elements of Calculus (3) (F,S,SS) (GE:MA) (P: MATH 1065 with a minimum grade of C) or
   MATH 2122. Calculus for the Life Sciences I (3) (F,S,SS) (P: MATH 2121) or MATH 2171. Calculus I (4) (F,S,SS)
   (GE:MA) (P: minimum grade of C in any of MATH 1083, 1085, or 2122) (P: MATH 1083 or 1085 or 2122 with a
   minimum grade of C)
   MATH 2228. Elementary Statistical Methods I (3) (F,S,SS) (P: MATH 1065 or equivalent) or MATH 2283. Statistics for
   Business (3) (F,S,SS) (P: MATH 1065 or 1066 or equivalent) or MATH 3307. Mathematical Statistics I (3) (F,S) (P:
   MATH 2172)
   MATH 3229. Elementary Statistical Methods II (3) (F,S) (P: MATH 3228 or equivalent) or MATH 3308. Mathematical
   Statistics II (3) (F) (P: MATH 3307) or CSCI 5774. Programming for Research (3) (F,S) (P: General course in
   statistics or consent of instructor)

6. CSCI electives (excluding CSCI 2600, 5774) .................................................................................... 6 s.h.

7. Electives to complete requirements for graduation.
   *Requirements for 4. and 7., above, may be met by satisfying the requirements for a minor.

Computer Science Minor

Minimum requirement for computer science minor is 25 s.h. of credit as follows:

1. Core ............................................................................................................................................... 16 s.h.
   CSCI 2510. Introduction to Computer Science I (3) (F,S,SS) (P: MATH 1065 or 1066)
   CSCI 2610, 2611. Introduction to Computer Science II and Laboratory (4,0) (F,S,SS) (P: CSCI 2510; C for 2610:
   CSCI 2611; C for 2611: CSCI 2610)
   CSCI 3510. Data Structures (3) (F,S,SS) (P: CSCI 2610; P/C: MATH 2427)
   MATH 2119. Elements of Calculus (3) (F,S,SS) (GE:MA) (P: MATH 1065 with a minimum grade of C) or equivalent
   MATH 2427. Discrete Mathematical Structures (3) (F,S,SS) (P: MATH 1065 or 1066) or MATH 3256. Linear Algebra
   (3) (F,S,SS) (P: MATH 2172)

2. CSCI electives above 1999, excluding 3584 ................................................................................... 9 s.h.


PLAN 3051. Introduction to GIS in Planning (3) (F,S) (P: GEOG 3410 or consent of instructor)
PLAN 4003. Urban Form and Design (3) (S)

Mechanical Technology:
DESN 3230, 3231. Rapid Prototyping (3,0) (S OY) (P: DESN 3032, 3033, ITEC 2090, MANF 2076, 2077)
DESN 3234, 3235. Jig and Fixture Design (3,0) (F OY) (P: DESN 3032, 3033, ITEC 2090, 2091, MANF 2076, 2077)
DESN 3236, 3237. Geometric Dimensioning and Tolerancing (3,0) (F OY) (P: MATH 1065 or 1066, MATH 1074,
ITEC 3200)
MANF 2076, 2077. Introduction to Computer Numerical Control (CNC) (3,0) (F,S) (P: ITEC 2000, 2010,
DESN 2034, 2035)
MANF 3020, 3021. Introduction to Computer Integrated Manufacturing (3,0) (WI*) (F,S,SS) (P: ITEC 2000;
MANF 2020, 2021)
MANF 3300. Plant Layout and Materials Handling (3) (F)

4. Cognates ......................................................................................................................................... 23 s.h.
   FINA 2244. Legal Environment of Business (3) (F,S,SS)
   ITEC 2000. Industrial Technology Applications of Computer Systems (3) (F,S,SS)
   ITEC 3200. Introduction to Statistical Process Control (3) (F,S) (P: MATH 1065 or higher) or MATH 2228. Elementary
   Statistical Methods I (3) (F,S,SS) (P: MATH 1065 or equivalent) or MATH 2283. Statistics for Business (3) (F,S,SS)
(P: MATH 1065 or 1066 or equivalent)
ITEC 3300. Technology Project Management (3) (S) (WI) (P: ENGL 1200; ITEC 2000 or DSCI 2223)
ITEC 3800. Cost and Capital Project Analysis (3) (S) (P: MATH 1065, 2283 or ITEC 3200)
ITEC 4293. Industrial Supervision (3) (WI) (F,S) (P: Senior standing; completion of 20 s.h. of industrial technology courses)
ITEC 4300. Quality Assurance Concepts (3) (F,S,SS) (P: 18 s.h. of technology core courses)
MATH 1074. Applied Trigonometry (2) (F,SS) (P: MATH 1065)

5. Electives to complete requirements for graduation ........................................................................................................... 13 s.h.

BS in Engineering (BSE)
Admission to the university does not guarantee admission to the BSE program. Upon admission to the university, students who have 1100 SAT scores or equivalent and have completed the second year of high school algebra with a grade of B or better may apply for admission to the engineering program. Students who have an associate degree from an approved pre-engineering program will be directly admitted into the BSE program. All other students with transfer hours will be individually evaluated for program credit. Current ECU students transferring from the General College or other campus programs must have a minimum 2.5 GPA and have completed prerequisites for MATH 2171 with a grade of B or better. Entering freshmen should submit an ECU admission application package, high school transcript, and SAT and/or ACT scores for admission consideration. Associate degree students should submit transcripts and two letters of recommendations from faculty. ECU general college students should obtain permission from the program coordinator. Minimum degree requirement for the engineering program is 128 s.h. credit as follows:

1. General education requirements (See Section 4, General Education Requirements for all Baccalaureate Degree Programs.), including those listed below. ................................................................. 42 s.h.
   BIOL 1100, 1101. Principles of Biology (4,0) (F,S,SS) (GE:SC)
   CHEM 1150, 1151. General Chemistry and Laboratory I (3,1) (F,S,SS) (GE:SC) (P: CHEM placement test or passing grade in CHEM 0150; P/C: MATH 1065; C for 1150: CHEM 1151; C for 1151: CHEM 1150)
   COMM 2410. Public Speaking (3) (F,S,SS) (GE:FA) or COMM 2420. Business and Professional Communication (3) (F,S,SS) (GE:FA)
   MATH 1083. Introduction to Functions (3) (F,S,SS) (GE:MA) (MATH 1065 with minimum grade of C  Consent of dept. chair)
   PHIL 2275. Professional Ethics (3) (WI*) (F,S,SS) (GE:HU)
   PSYC 1000. Introduction to Psychology (3) (F,S,SS) (GE:SO)
   PSYC 3241. Personnel and Industrial Psychology (3) (F,S,SS) (GE:SO) (P: PSYC 1000 or 1050)

2. Engineering Foundation ............................................................................................................................................... 33 s.h.

   ICEE 1010. Integrated Collaborative Engineering I (6) (F)
   ICEE 1020. Integrated Collaborative Engineering II (6) (P/C: ICE 1010; MATH 2171)
   ICEE 2010. Integrated Collaborative Engineering III (4) (F) (P/C: ICE 1020; MATH 2172; PHYS 2350)
   ICEE 2020. Integrated Collaborative Engineering IV (4) (S) (P/C: ICE 2010; PHYS 2360)
   ICEE 3010. Engineering Systems and Problem Solving (3) (F) (P: Engineering Majors Only)
   ICEE 3020. Information System Engineering (3) (S) (P: ICEE 3010)
   ICEE 4010. Senior Capstone Design Project I (2) (F) (P: ICEE 3020)
   ICEE 4020. Senior Capstone Design Project II (3) (2) (S) (P: ICEE 4010)
   ITEC 3290. Technical Writing (3) (WI) (F,S,SS) (P: ENGL 1200)

3. Cognates ........................................................................................................................................................................... 20 s.h.
   MATH 2171. Calculus I (4) (F,S,SS) (GE:MA) (P: minimum grade of C in any of MATH 1083,1085, or 2122.) (P: MATH 1083 or 1085 or 2122 with a minimum grade of C)
   MATH 2172. Calculus II (4) (F,S,SS) (GE:MA) (P: MATH 2171 with minimum grade of C or MATH 2122 with consent of instructor) (P: MATH 2171 or MATH 2122 with consent of instructor)
   MATH 3100. Methods for Engineers/Scientists (4) (P: MATH 2172; or equivalent; or consent of instructor)
   PHYS 2350, 2360. University Physics I, II (4,4) (F,S,SS) (GE:SC) (C: MATH 2121 or 2171; P for PHYS 2360: PHYS 2350)

4. Concentrations .............................................................................................................................................................. 33 s.h.
   Systems Engineering:

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MATH: MATHEMATICS

https://author.ecu.edu/cs-acad/fsonline/cu/cu2_051.cfm
0001. Intermediate Algebra-A (2) (F,S,SS) May not be taken by students who have credit for MATH 0045, 1065, 1074, 1085, 2119, 2171, or who have passed the math placement test. May not count toward general education math requirement, certification, or degree. Remedial course in basic algebra; some sections may be taught in a lab/tutorial mode.

0045. Intermediate Algebra-B (2) May not be taken by students who have credit for MATH 0001, 1065, 1074, 1085, 2119, 2171, or who have passed the math placement test. May not count toward general education math requirement, certification, or degree. Remedial basic algebra. Some sections may be taught in lab/tutorial mode.

1050. Explorations in Mathematics (3) (F,S,SS) (GE:MA) May not count toward MATH major or minor. Fulfills general education MATH requirement for students whose major does not require a specific MATH course. Broad overview of mathematics and its relevance to life. Selected topics include at least four of the following: algebraic concepts, geometry, set theory and logic, number theory, discrete mathematics, statistics, consumer mathematics/finance, and history of mathematics.

1065. College Algebra (3) (F,S,SS) (GE:MA) May not be taken by students who have credit for MATH 1085. P: Appropriate score on math placement test. Topics include sets; linear, quadratic, polynomial, and exponential functions; inequalities; permutations; combinations; binomial theorem; and mathematical induction.

1066. Applied Mathematics for Decision Making (3) (F,S,SS) (GE:MA) Required for students planning to major in business administration or accounting. P: Appropriate score on the math placement test or approval of the dept chair. Skills in formulating models for and interpreting solutions to business word problems. Topics include linear and nonlinear equations, systems of linear equations, applications of matrix algebra, and applied basic differential calculus. No proofs included.

1067. Algebraic Concepts and Relationships (3) (F,S) (GE:MA) Same as MATE 1067 May not count toward MATH or CSCI major or minor. P: Appropriate score on math placement test. Properties of integers, rationals, real and complex numbers, and polynomials from an algebraic point of view; conjectures and intuitive proofs in number theory; properties of linear and quadratic functions. Representations of real-world relationships with physical models, charts, graphs, equations and inequalities. Emphasis on development of problem-solving strategies and abilities.

1074. Applied Trigonometry (2) (F,S,SS) Students who plan to take MATH 2171 must choose 1083 or 1085. May not be taken by students who have credit for MATH 1083 or 1085. P: MATH 1065. Practical and computational aspects of trigonometry. Properties of trigonometric functions. Use of tables, interpolation, logarithms, solution of right and oblique triangles, and applications.

1077. Pre-Calculus Concepts and Relationships (3) (S) May not count toward MATH or CSCI major or minor. P: MATH 1067. Modeling approach to study of functions (including logarithmic, exponential, and trigonometric functions), data analysis, and matrices. Foundation for future course work in calculus, finite mathematics, discrete mathematics, and statistics.

1083. Introduction to Functions (3) (F,S,SS) (GE:MA) May not be taken by students who have successfully completed MATH 1074 or MATH 1085. P: MATH 1065 with minimum grade of C. Consent of dept chair. Accelerated introduction to language of functions. Emphasis on trigonometry as a preparation for calculus sequence MATH 2171-73.

1085. Pre-Calculus Mathematics (5) (F,S,SS) (GE:MA) May not be taken by students who have credit for MATH 1074. P: MATH 1065 with minimum grade of C. Algebra and trigonometry for qualified students who plan to take calculus.

2119. Elements of Calculus (3) (F,S,SS) (GE:MA) May not receive credit for MATH 2119 after having received credit for a higher numbered calculus course. P: MATH 1065 with minimum grade of C. Elementary differentiation and integration techniques. Proofs not emphasized.

2121. Calculus for the Life Sciences I (3) (F,S,SS) (GE:MA) May not receive credit for MATH 2121 after taking MATH 2171 P: MATH 1065 or 1077 with minimum grade of C. Introductory differential calculus with biological sciences applications. Introduces differentiation of exponential and logarithmic functions. Applications to exponential biological phenomena, related rates, regions of increase and decrease, and extrema.
212. Calculus for the Life Sciences II (3) (F,S,SS) May not receive credit for MATH 2122 after taking MATH 2172. P: MATH 2121. Introductory integral calculus with biological sciences applications. Introduction to and applications of definite integrals. Introduces trigonometric functions with applications to periodic biological phenomena. Functions of several variables, partial derivatives, simple differential equations, and arithmetic of matrices and vectors.

2124. Elementary Mathematical Models (1) P: MATH 2171. Formulation and solution of various types of problems using techniques of establishing a mathematical model.

2127. Basic Concepts of Mathematics (3) (F,S,SS) (GE:MA) May not count toward MATH or CSCI major or minor. P: Appropriate score on math placement test. System of real numbers and subsystems and their properties from an algebraic viewpoint. Statistics and number theory.

2171. Calculus I (4) (F,S,SS) (GE:MA) P: minimum grade of C in any of MATH 1083, 1085, or 2122. MATH 1083 or 1085 or 2122 with a minimum grade of C. First of three-course sequence. Brief review of precalculus, limits and continuity, differentiation and its applications, and integration.

2172. Calculus II (4) (F,S,SS) (GE:MA) P: MATH 2171 with minimum grade of C or MATH 2122 with consent of instructor. Second of three-course sequence. Transcendental functions, applications of integrals, techniques of integration, and infinite series.

2173. Calculus III (4) (F,S,SS) (GE:MA) P: MATH 2172 with minimum grade of C. Third of three-course sequence. Conics, parametrized curves, polar coordinates, vectors and analytic geometry in space, partial derivatives, and multiple integrals.

2228. Elementary Statistical Methods I (3) (F,S,SS) For students with limited mathematical training. May not count toward MATH major or minor. May receive credit for one of MATH 2228, 2283. P: MATH 1065 or equivalent. Collection, systematic organization, analysis and interpretation of numerical data obtained in measuring certain traits of a given population.

2282. Data Analysis and Probability (3) (F,S) (MA) Same as MATE 2282 May not count toward MATH or CSCI major or minor. May receive credit for one of MATE or MATH 2282, 2935. P: MATE or MATH 1067. Collection of data from experiments and surveys. Organizing and representing data. Interpreting data for judging claims, making decisions, or making predictions.

2283. Statistics for Business (3) (F,S,SS) May receive credit for one of MATH 2228, 2283. P: MATH 1065 or 1066 or equivalent. Sampling and probability distributions, measures of central tendency and dispersion, hypothesis testing, Chi-square, and regression.

2300. Transition to Advanced Mathematics (3) P: MATH 2171. Proof methods including induction, naive set theory, functions and relations, cardinality, basic number theory, completeness of the real number system.

2427. Discrete Mathematical Structures (3) Same as CSCI 2427 May not count toward MATH major or minor. May receive credit for one of MATE or MATH 2775, 3237, or MATH 2427. P: MATH 1065 or 1066. Structures of discrete mathematical structures. Special emphasis is given to those structures most important in computer science. Considers practical applications of the subject.

2775. Topics in Discrete Mathematics (3) (S) (GE:MA) Same as MATE 2775 For prospective teachers of secondary school math. May receive credit for one of MATE or MATH 2775, 3237 or MATH 2427. P: MATH 1085. Selected topics include counting techniques, graph theory, difference equations, recursion, iteration, induction, and dynamical systems.

2935. Data Analysis (3) (F) (GE:MA) Same as MATE 2935 May receive credit for one of MATE or MATH 2282, 2935. P: MATH 1085. Introductory course utilizing hands-on approach to collection, representation, and interpretation of data. Topics include types of data, sampling techniques, experimental probability, sampling distributions, simulations, and hypothesis testing using collected.

3100. Mathematical Methods for Engineers and Scientists (4) (F,S,SS) May not count toward MATH major or minor. May not be taken by students who have credit for MATH 2173 or MATH 3256 or MATH 4331. P: MATH
2172; or equivalent; or consent of instructor. Functions of several variables, partial derivatives, first and second order differential equations, matrices, determinants, cofactor expansions, vector spaces, linear independence/dependence, linear transformations, eigenvalues/eigenvectors, variation of parameters.

3166. Euclidean Geometry (3) (F,S) (GE:MA) Same as MATE 3166 May not count toward MATH or CSCI major or minor. P: MATE 1067 or MATH 1065; 2127. Euclidean geometry using deductive and inductive mathematical reasoning. Formal proofs.

3174. Vector Calculus (3) P: MATH 2173. Vector algebra and vector functions of single variable. Scalar and vector fields, line and surface integrals, and multiple integrals.

3229. Elementary Statistical Methods II (3) For students with limited mathematical training. May not count toward MATH major or minor. P: MATH 2228 or equivalent. Collection, systematic organization, analysis, and interpretation of numerical data obtained in measuring certain traits of a given population.

3233. College Geometry (3) (F) P: MATH 2300 2171. Modern college geometry presented as outgrowth and extension of elementary plane geometry. Important theorems relative to nine-point circle, cross ratios, the geometry of circles, and solid geometry. Euclidean transformations discussed.

3237. Discrete Mathematics (3) (F) (GE:MA) Same as MATE 3237 May not count toward MATH or CSCI major or minor. May receive credit for one of MATE or MATH 2775, 3237 or MATH 2427. P: MATH 2121. Logic and sets, mathematical induction, and matrices. Applications of discrete mathematics in probability, linear programming, dynamical systems, social choice, and graph theory.

3239. Applied Mathematics Via Modeling (3) (GE:MA) Same as MATE 3239 May not count toward MATH or CSCI major or minor. P: MATE or MATH 2282, 3166, 3237; MATH 2122. Real world problems that can be modeled with algebra, geometry, calculus, and statistical, probabilistic, discrete, or other mathematical techniques appropriate for prospective teachers of middle school mathematics. Mathematical modeling processes examined through historical and contemporary modeling success stories. Power and limitations of mathematical modeling.


3263. Introduction to Modern Algebra (3) (WI) (F,S) P: MATH 2300, 3256. Postulation viewpoint of modern algebra. Defining postulates for mathematical system exhibited from which properties of system are derived. Principal systems studied are groups, rings, fields, each fully treated with illustrative examples.


3550, 3551. Mathematics Honors (2,1) (F,S,SS) Acceptance in program entitles student to register for MATH 3550 or 3551. P: Exceptional mathematical ability; MATH 2173 or consent of instructor.

3573. Introduction to Numerical Analysis (3) Same as CSCI 3573 P: CSCI 2510 or 2600; MATH 2119 or 2172 or equivalent. P: CSCI 2310 or CSCI 2610 or consent of instructor; MATH 2119 or 2172 or equivalent. Algorithms suitable for digital computation in areas of linear algebra, linear programming, slope finding, area finding, and nonlinear equation solution.

3584. Computational Linear Algebra (3) (F,S,SS) Same as CSCI 3584 May not count toward MATH major or minor. P: Calculus course. Introduces vectors, matrices, and determinants. Special emphasis on application of linear algebra to solution of practical problems.

4031. Applied Statistical Analysis (3) (WI) (S) P: MATH 2228 or 2283 or 3308; MATH 3256 or MATH/CSCI 3584; or equivalent; or consent of instructor. Topics include analysis of variance and covariance, experimental
design, multiple and partial regression and correlation, nonparametric statistics, and use of computer statistical packages.

4101. Advanced Calculus I (3) (F,S) P: MATH 2173, 2300; or consent of instructor. Axioms of real number system, completeness, sequences, infinite series, power series, continuity, uniform continuity, differentiation, Riemann integral, and Fundamental Theorem of Calculus.

4110. Elementary Complex Variables (3) P: MATH 2173. Complex numbers, analytic functions, mapping by elementary functions, integrals, residues, and poles.

4201. Introduction to Stochastic Processes (3) P: MATH 3307 or equivalent or consent of instructor. Fundamental theory and models of stochastic processes. Expectations and independence, sums of independent random variables, Markov chains and their limiting behavior and applications, Poisson processes, birth and death processes; and Gaussian processes.

4264. Introduction to Modern Algebra II (3) P: MATH 3263. Continuation of development of topics begun in MATH 3263. Normal subgroups, factor groups, homomorphisms, rings, ideals, quotient rings, and fields.


4331. Introduction to Ordinary Differential Equations (3) (F,S) P: MATH 2173. Linear and nonlinear differential equations.

4332. The Calculus of Finite Differences (3) P: MATH 2173. Discrete changes that take place in values of a function and its dependent variable due to discrete changes in independent variable.

4501, 4502, 4503. Independent Study (1,2,3) (F,S,SS) For advanced math students. Number of hours per week will depend on credit hours and nature of work assigned. P: MATH major; consent of dept chair. Topics supplement regular curriculum.

4550, 4551. Mathematics Honors (2,1) (F,S,SS) Acceptance in program entitles student to register for MATH 4550 or 4551. P: Exceptional mathematical ability; MATH 2173 or consent of instructor.

4774. Programming for Research (3) P: MATH 2228 or 2283 or equivalent. Emphasis on minimum-level programming skill and use of statistical packages.

4801. Probability Theory (3) (F) P: MATH 2173 or 3307. Axioms of probability, random variables and expectations, discrete and continuous distributions, moment generating functions, functions of random variables, Central Limit Theorem, and applications.

4999. Capstone and Statistical Consulting (3) (F,S) 1 hour lecture and 3 hours practicum per week. P: MATH 4031. Supervised statistical consulting experience related to prior coursework in statistics.

5000. Introduction to Sampling Design (3) (F) P: MATH 3308 or 3229 or consent of instructor. Fundamental principles of survey sampling. Data sources and types, questionnaire design, various sampling schemes, sampling and nonsampling errors, and statistical analysis.

5002. Logic for Mathematics and Computer Science (3) (S) Same as CSCI 5002 P: CSCI 3510 or MATE 3223 or 2775 or MATH 2427 or 2775 or 3265 or PHIL 3580 or equivalent. Methods of mathematical logic that have important applications in mathematics and computer science.

5021. Theory of Numbers I (3) P: MATH 3263 or consent of instructor. Topics in elementary and algebraic number theory such as properties of integers, Diophantine equations, congruences, quadratic and other residues, and algebraic integers.

5031. Applied Statistical Analysis (3) (WI) May not count toward math hours required for math MA. P: MATH 2228, 3584; or equivalent; or consent of instructor. Topics include analysis of variance and covariance,
experimental design, multiple and partial regression and correlation, nonparametric statistics, and use of computer statistical package.

5064. Introduction to Modern Algebra II (3) May not be taken for credit by those having completed MATH 6011. P: MATH 3263 or consent of instructor. Continuation of development of topics begun in MATH 3263. Normal subgroups, factor groups, homomorphism, rings, ideals, quotient rings, and fields.

5101. Advanced Calculus I (3) P: MATH 2173 or consent of instructor. Axioms of real number system, completeness, sequences, infinite series, power series, continuity, uniform continuity, differentiation, Riemann integral, Fundamental Theorem of Calculus.

5102. Advanced Calculus II (3) P: MATH 3256, 5101; or consent of instructor. Mathematical analysis of functions of several real variables. Includes limits, continuity, differentiation, and integration of multivariable functions.

5110. Elementary Complex Variables (3) May not be taken for credit by those having completed MATH 6111. P: MATH 2173. Complex numbers, analytic functions, mapping by elementary functions, integrals, residues, and poles.


5131. Deterministic Methods in Operations Research (3) P: MATH 2173; 3307 or 5801. Mathematical models; linear programming; simplex method, with applications to optimization; duality theorem; project planning and control problems; and elementary game theory.


5270. Pascal Using the Microcomputer (3) May not be taken by students who have successfully completed CSCI 2610. May not count toward MATH or CSCI major or minor. P: MATH 1065 or equivalent. Pascal language and use in problem solving utilizing a microcomputer.

5311. Mathematical Physics (3) Same as PHYS 5311 P: MATH 4331; PHYS 2360; or consent of instructor. Mathematical methods important in physics. Emphasis on application. Functions of complex variables, ordinary and partial differential equations, integrals and integral transforms, and special functions.

5322. Foundations of Mathematics (3) (WI) P: MATH 3233, 3263; or equivalent. Fundamental concepts and structural development of mathematics. Non-Euclidean geometries, logic, Boolean algebra, and set theory. Construction of complex number systems. Transfinite cardinal numbers and study of relations and functions. Topics developed as postulational.

5521. Readings and Lectures in Mathematics (3) Individual work with student.

5551. The Historical Development of Mathematics (3) P: MATH 3233; C: MATH 2172 or consent of instructor. History of mathematics from antiquity to present. Emphasis on study of significant problems which prompted development of new math. Uses computer resources and library for research of topics and solutions.

5581. Theory of Equations (3) P: MATH 2173 or consent of instructor. Topics include operations with complex numbers, De Moivre's Theorem, properties of polynomial functions, roots of general cubic and quartic equations, methods of determining roots of equations of higher degree, and methods of approximating roots.
5601. Non-Euclidean Geometry (3) P: MATH 3233 or consent of instructor. Non-Euclidean geometries, finite geometries, and analysis of other geometries from point of view of properties which remain invariant under certain transformations.

5774. Programming for Research (3) Same as CSCI 5774 For graduate student who wishes to use computer science to meet required research skills of his or her dept. May not count toward MATH major or minor. P: General statistics course or consent of instructor. Emphasis on minimum-level programming skill and use of statistical packages.

5801. Probability Theory (3) P: MATH 2173 or 3307. Axioms of probability, random variables and expectations, discrete and continuous distributions, moment generating functions, functions of random variables, Central Limit Theorem, and applications.

MATH Banked Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1063</td>
<td>College Algebra (3)</td>
</tr>
<tr>
<td>5252</td>
<td>Modern Mathematics for Elementary Teachers II (3)</td>
</tr>
<tr>
<td>5261, 5262</td>
<td>Modern Mathematics for Secondary Teachers I (3), II (3)</td>
</tr>
<tr>
<td>5301, 5302</td>
<td>Analytical Mechanics I (3), II (3)</td>
</tr>
<tr>
<td>5321, 6322</td>
<td>Applied Mathematics I, II (3,3)</td>
</tr>
<tr>
<td>5331</td>
<td>Introduction to Celestial Mechanics (3)</td>
</tr>
<tr>
<td>5610</td>
<td>Applied Analysis (3)</td>
</tr>
</tbody>
</table>

MGMT: MANAGEMENT

3202. Fundamentals of Management (3) (F,S,SS) Registration preference given to declared and intended majors with a minimum 2.5 GPA. P: ECON 2113. Organizational management, including managerial functions, understanding of individual needs and motivation, and managerial leadership.

3352. International Business (3) (F,S,SS) Registration preference given to declared and intended majors

Insert on p. 170 of 2004 – 2005 catalog:

Operations Management:
DSCI 4383. Technology in Business Operations (3) (S) P: DSCI 3123
DSCI 4493. Management and Analysis of Quality (3) (F) P: MATH 2283 or 2228 or equivalent
DSCI 4733. Project Management (3) (F,S) P: DSCI 3223
DSCI 4743. Materials Management (3) (F) P: DSCI 3123
DSCI 4763. Supply Chain Management (3) (S) P: Junior standing, minimum grade of C in MATH 2283, 2228
Choose 3 s.h. from:
DSCI 4163. Management Information Systems II (3) (F,S) P: DSCI 3063
DSCI 4293. Statistical Analysis (3) (F,S) P: MATH 1066 or 2119 or 2121 or 2171; 2283
MANF 3020, 3021. Manufacturing Processes (3) (WF) Introduction to Computer Integrated Manufacturing (3,0) (F,S,SS) P: ITEC 2090; MANF 2076, 2077

Insert on p. 269 of 2004 – 2005 catalog:

COLLEGE OF TECHNOLOGY AND COMPUTER SCIENCE

Ralph V. Rogers, Jr., Dean

The College of Technology and Computer Science comprises the Departments of Computer Science, Construction Management, Industrial Technology, Technology Systems, and Planning.

Insert on pp. 273 – 274 of 2004 – 2005 catalog:

DEPARTMENT OF INDUSTRIAL TECHNOLOGY - TECHNOLOGY SYSTEMS

Paul J. Kauffmann, Chairperson, Suite 200 Science and Technology Complex
Admission
Upon admission to the University, students may declare a major in one of the following degree programs: Design, Information and Computer Technology, Industrial Distribution and Logistics, Information and Computer Technology, or Manufacturing. The industrial technology degree programs are accredited by the National Association of Industrial Technology. The minimum degree requirement is 126 s.h. of credit.

Students who have an associate degree from an approved technical program can be admitted directly into the department’s programs but must either transfer or take courses that meet the core technical content in the programs. Although any department degree can be entered by transfer students, the BS in Industrial Technology is designed specifically to meet a broad range of needs of transfer students from community colleges. Students transferring credits without an associate’s degree will have their previous courses individually evaluated for program credit.

Those ECU students intending to transfer to an industrial technology degree program from other campus programs must have at least a 2.0 GPA.

BS in Design

The industrial technology Design program is accredited by the National Association of Industrial Technology. Minimum degree requirement is 126 s.h. credit as follows:

1. General education requirements (See Section 4, General Education Requirements for all Baccalaureate Degree Programs), including those listed below .................................................. 42 s.h.
   COMM 2410. Public Speaking (3) (F,S,SS) (GE:FA) or COMM 2420. Business and Professional Communication (3) (F,S,SS) (GE:FA)
   ECON 2113. Principles of Microeconomics (3) (F,S,SS) (GE:SO)
   MATH 1065. College Algebra (3) (F,S,SS) (GE:MA) (P: Appropriate score on mathematics placement test) or MATH 1066. Applied Mathematics for Decision Making (3) (F,S,SS) (GE:MA) (P: Appropriate score on mathematics placement test or approval of dept chair)
   PHYS 1250, 1260. General Physics (3,3) (F,S,SS) (GE:SC) (P for 1250: MATH 1065 or 1066; P for 1260: PHYS 1250)
   PHYS 1251, 1261. General Physics Laboratory (1,1) (F,S,SS) (GE:SC) (C for 1251: PHYS 1250 or 2350; C for 1261: PHYS 1260 or 2260)
   PSYC 1000. Introductory Psychology (3) (F,S,SS) (GE:SO)
   PSYC 3241. Personnel and Industrial Psychology (3) (F,S,SS) (GE:SO) (P: PSYC 1000 or 1060)

2. Core .................................................................................................................................................... 30 s.h.
   DESN 2034, 2035. Engineering Graphics I (3,0) (F,S,SS) (P: Computer-related elective or ITC 2000 or DSCI 2223)
   DESN 2036, 2037. Computer-Aided Design and Drafting (3,0) (F,S,SS) (P: DESN 2034, 2035)
   DESN 3032, 3033. Engineering Graphics II (3,0) (S) (P: DESN 2036, 2037)
   ITEC 2010. Introduction to Industry and Technology (3) (F,S,SS)
   ITEC 2054, 2055. Electricity/Electronics Fundamentals (3,0) (F,S,SS) (Formerly ELEC 2054, 2055) (P: MATH 1065 or 1066 or 1085 or 2119)
   ITEC 2080, 2081. Thermal and Fluid Systems (3,0) (F,S,SS) (P: MANF 2020)
   ITEC 2090, 2091. Electromechanical Systems (3,0) (F,S,SS) (P: ITEC 2054)
   ITEC 3290. Technical Writing (3) (WI) (F,S,SS) (P: ENGL 1200)
   ITEC 3292. Industrial Safety (3) (F,S,SS) (P: Junior standing; completion of 12 s.h. of industrial technology courses)
   MANF 2020, 2021. Materials and Processes Technology (3,0) (WI) (F,S,SS) (Formerly ITEC 2020, 2021) (P: ITEC 2000 or DSCI 2223)

3. Concentration area (Choose one) ........................................................................................................ 18 s.h.

Architectural Technology:
   DESN 3030, 3031. Architectural Drafting (3,0) (F,S,SS) (P: DESN 2034, 2035)
   DESN 3036, 3037. Architectural Design and Drafting (3,0) (F) (P: DESN 2036, 2037, 3030, 3031)
   DESN 3038, 3039. Sustainable Design (3,0) (S) (P: DESN 2036, 2037, 3030, 3031)
   PLAN 3021. Introduction to Planning Techniques (3) (F)
   PLAN 3051. Introduction to GIS in Planning (3) (F,S) (P: GEOG 3410 or consent of instructor)
   PLAN 4003. Urban Form and Design (3) (S)

Mechanical Technology:
   DESN 3230, 3231. Rapid Prototyping (3,0) (S OY) (P: DESN 3032, 3033, ITEC 2090, MANF 2076, 2077)
   DESN 3234, 3235. Jig and Fixture Design (3,0) (F OY) (P: DESN 3032, 3033, ITEC 2090, 2091, MANF 2076, 2077)
   DESN 3236, 3237. Geometric Dimensioning and Tolerancing (3,0) (F OY) (P: DESN 3032, MATH 1065 or 1066, MATH 1074, ITEC 3200 or MATH 2283)
   MANF 2076, 2077. Introduction to Computer Numerical Control (CNC) (3,0) (F,S) (P: ITC 2000, 2010, DESN 2034, 2035)
MANF 3300. Plant Layout and Materials Handling (3) (F: MANF 2020)

4. Cognates

FINA 2244. Legal Environment of Business (3) (F,S,SS)
ITEC 2000. Industrial Technology Applications of Computer Systems (3) (F,S,SS)
ITEC 3200. Introduction to Statistical Process Control (3) (F.S) (P: MATH 1065 or higher 1066 or equivalent) or MATH 2228. Elementary Statistical Methods I (3) (F,S,SS) (P: MATH 1065 or equivalent) or MATH 2283. Statistics for Business (3) (F,S,SS) (P: MATH 1065 or 1066 or equivalent)
ITEC 3300. Technology Project Management (3) (F,S) (WI) (Formerly ELEC 3300) (P: ENGL 1200; ITEC 2000 or DSCI 2223)
ITEC 3800. Cost and Capital Project Analysis (3) (S) (Formerly MANF 3800) (P: MATH 1065, 2283 or ITEC 3200)
ITEC 4293. Industrial Supervision (3) (WI) (F,S) (P: Senior standing; completion of 20 s.h. of industrial technology courses or approval of instructor)
ITEC 4300. Quality Assurance Concepts (3) (F,S,SS) (P: 18 s.h. of technology core courses ITEC 3200 or MATH 2283)

ITEC 3800. Cost and Capital Project Analysis (3) (S) (Formerly MANF 3800) (P: MATH 1065, 2283 or ITEC 3200)
ITEC 4293. Industrial Supervision (3) (WI) (F,S) (P: Senior standing; completion of 20 s.h. of industrial technology courses or approval of instructor)
ITEC 4300. Quality Assurance Concepts (3) (F,S,SS) (P: 18 s.h. of technology core courses ITEC 3200 or MATH 2283)
MATH 1074. Applied Trigonometry (2) (F,S,SS) (P: MATH 1065)

5. Electives to complete requirements for graduation ........................................... 13 s.h.

Insert on pp. 275 – 280 of 2004 – 2005 catalog:

BS in Industrial Distribution and Logistics

Minimum degree requirement is 126 s.h. of credit as follows:

1. General education requirements (See Section 4, General Education Requirements for all Baccalaureate Degree Programs), including those listed below .............................. 42 s.h.

COMM 2410. Public Speaking (3) (F,S,SS) (GE:FA) or COMM 2420. Business and Professional Communication (3) (F,S,SS) (GE:FA)
ECON 2113. Principles of Microeconomics (3) (F,S,SS) (GE:SO)
MATH 1065. College Algebra (3) (F,S,SS) (GE:MA) (P: Appropriate score on mathematics placement test)
PSYC 1000. Introductory Psychology (3) (F,S,SS) (GE:SO)
PSYC 3241. Personnel and Industrial Psychology (3) (F,S,SS) (GE:SO) (P: PSYC 1000 or 1060)
8 hours of general science.

2. Core .................................................................................................................. 48 s.h.

IDIS 2770. Industrial Distributor: Purpose and Functions (3) (F) (S) (F,S) (Formerly IDIS 3770)
IDIS 2771. Introduction to Logistics (3) (F) (S) (F,S)
IDIS 2775. Blueprint Reading and Sketching (3) (F) (S) (SS) (F,S)
IDIS 3780. Warehousing and Materials Handling (3) (F) (S) (P: IDIS 2771)
IDIS 3785: Global Logistics (3) (F) (S) (F,S) (P: IDIS 2771)
IDIS 3790. Technical Presentations for Industry (3) (F,S,SS) (Formerly ITEC 5290) (P: ITEC 2000 or DSCI 2223)
IDIS 3795. Distributor Sales (3) (S) (P: IDIS 2770)
IDIS 3800: Transportation Logistics (3) (F) (S) (F,S) (P: IDIS 2771)
IDIS 3805. Purchasing Logistics (3) (F) (S) (F,S) (P: IDIS 2771)
IDIS 3815. Supply Chain Logistics (3) (F) (F,S) (P: IDIS 2771)
IDIS 4802: Distribution Research (3) (S) (P: Senior status and consent of instructor)
ITEC 2054, 2055. Electricity/Electronics Fundamentals (3,0) (F,S,SS) (Formerly ELEC 2054, 2055) (P: MATH 1065 or 1066 or 1085 or 2119)
ITEC 2090, 2091. Electromechanical Systems (3,0) (F,S,SS) (P: ITEC 2054)
ITEC 3290. Technical Writing (3) (WI) (F,S,SS) (P: ENGL 1200)
ITEC 4300: Quality Assurance Concepts (3) (F,S,SS) (P: 18 s.h. of technology core courses ITEC 3200 or MATH 2283)
MANF 2020, 2021. Materials and Processes Technology (3,0) (WI*) (F,S,SS) (Formerly ITEC 2020, 2021) (P: ITEC 2000 or DSCI 2223)

3. Cognates........................................................................................................... 24 s.h.

ACCT 2101. Survey of Financial and Management Accounting (3) (F,S) (P: MATH 1065)
FINA 2244. Legal Environment of Business (3) (F,S,SS)
FINA 3004. Survey of Financial Management (3) (P: ACCT 2101 or 2401; ECON 2113; MATH 2283)
MATH 2283. Statistics for Business (3) (F,S,SS) (P: MATH 1065 or 1066 or equivalent)
MGMT 3202. Fundamentals of Management (3) (F,S,SS) (P: ECON 2113)
MKTG 3832. Marketing Management (3) (F,S,SS) (P: ECON 2113)
Technical or business elective (3 s.h.)
Choose 3 s.h. computer-related elective from:
DSCI 2223. Introduction to Computers (3) (F,S,SS)
4. Electives to complete requirements for graduation.

**BS in Industrial Technology**

Student must have an associate degree from an approved technical program. Minimum degree requirement is 126 s.h. of credit as follows; **Student must complete at ECU a minimum of 42 s.h. credit of upper division core and concentration courses.** Industrial technology courses completed at ECU and transfer courses must total at least 66 s.h. ITEC 3100, 4100 or any course that does not meet as a class may not be used as upper division core or concentration courses.

1. **General education requirements** (See Section 4, General Education Requirements for all Baccalaureate Degree Programs), including those listed below .................................................. 42 s.h.
   - COMM 2410. Public Speaking (3) (F,S,SS) (GE:FA) or COMM 2420. Business and Professional Communication (3) (F,S,SS) (GE:FA)
   - ECON 2113. Principles of Microeconomics (3) (F,S,SS) (GE:SO)
   - MATH 1065. College Algebra (3) (F,S,SS) (GE:MA) (P: Appropriate score on mathematics placement test) or MATH 1066. Applied Mathematics for Decision Making (3) (F,S,SS) (GE:MA) (P: Appropriate score on mathematics placement test or approval of dept chair)
   - PHYS 1250, 1260. General Physics (3,3) (F,S,SS) (GE:SC) (P for 1250: MATH 1065 or 1066; P for 1260: PHYS 1250)
   - PHYS 1251, 1261. General Physics Laboratory (1,1) (F,S,SS) (GE:SC) (C for 1251: PHYS 1250 or 2350; C for 1261: PHYS 1260 or 2260)
   - PSYC 1000. Introductory Psychology (3) (F,S,SS) (GE:SO)
   - PSYC 3241. Personnel and Industrial Psychology (3) (F,S,SS) (GE:SO) (P: PSYC 1000 or 1060)

2. **Lower Division Core** ................................................................................................................................. 60-76 s.h. Required industrial technology and technical transfer courses: Student must complete at ECU a minimum of 24 s.h. credit, 18 s.h. from 3000 level or above and 6 s.h. from 2000 level or above. Additional courses may be necessary to meet required prerequisites. Industrial technology courses completed at ECU and technical transfer courses must total 60 s.h. Courses needed to meet requirements may not include ITEC 3100, 4100 or any course that does not meet as a class. Transfer technical courses up to 24 s.h. or approved technical courses.

3. **Upper Division Core** ................................................................................................................................. 15 s.h.
   - ITEC 3200. Introduction to Statistical Process Control (3) (F,S) (P: MATH 1065 or 1066 or equivalent) or MATH 2283 Statistics for Business (3) (F,S,SS) (P: MATH 1065 or 1066 or equivalent)
   - ITEC 3290. Technical Writing (3) (WI) (F,S,SS) (P: ENGL 1200)
   - ITEC 3300. Technology Project Management (3) (WI) (F,S) (Formerly ELEC 3300) (P: ENGL 1200; ITEC 2000 or DSCI 2223 or equivalent experience)
   - ITEC 3800. Cost and Capital Project Analysis (3) (F,S) (Formerly MANF 3800) (P: MATH 1065; MATH 2283 or ITEC 3200)
   - ITEC 4293. Industrial Supervision (3) (WI) (F,S) (P: Senior standing or approval of instructor)
   - Technology courses from area of emphasis minimum of 24 s.h. (approved by department chair)

4. **Concentrations (choose one)** ..................................................................................................................... 27 s.h.

**Information and Computer Technology**

Choose nine courses from below (27 s.h.):
- ICTN 2000, Introduction to Telecommunications (3) (F) (Formerly ELEC 3000) (P: MATH 1074 or higher)
- ICTN 2900, 2901. Introduction to Network Security (3,0) (F) (P: ICTN 2154)
- ICTN 3250, 3251. Internetwork Routing Technology (3,0) (F) (Formerly ELEC 3250, 3251) (P: ICTN 2158 with a minimum grade of B or current CCNA certification)
- ICTN 3530, 3531 Network Environment II (3,0) (S) (Formerly ELEC 3530) (P: ICTN 1500)
- ICTN 3540, 3541. Network Environment III (3,0) (F) (Formerly ELEC 3540, 3541) (P: ICTN 2510, 3530)
- ICTN 3900, 3901. Web Services Management (3,0) (F) (Formerly ELEC 3900, 3901) (P: ICTN 2510, 3530)
- ICTN 4010, 4011. User Application Management and Emerging Technologies (3,0) (F) (Formerly ELEC 4010, 4011) (P: ICTN 2510, 3530)
- ICTN 4040. Communication Security (3) (S) (Formerly ELEC 4040) (P: Senior standing and ICTN 2154)
- ICTN 4064. Regulations and Policies (3) (S) (Formerly ELEC 4060) (P: ICTN 2000)
- ICTN 4150, 4151. Switching Network Technology (3,0) (F) (Formerly ELEC 4150, 4151) (P: ICTN 2158 with a minimum grade of B or current CCNA certification)
- ICTN 4200, 4201. Intrusion Detection Technologies (3,0) (F) (P: ICTN 2900)
- ICTN 4250, 4251. Enterprise Network Technology (3,0) (S) (Formerly ELEC 4250, 4251) (P: ICTN 2158 with a minimum grade of B or current CCNA certification)
ICTN 4590, 4591. Network Maintenance and Troubleshooting (3,0) (S) (Formerly ELEC 4590, 4591) (P: ICTN 3250, 4150, 4250)
ICTN 4600, 4601. Enterprise Information Technology Management (3,0) (S) (Formerly ELEC 4600) (P: ICTN 2158, 3540)
ICTN 4800, 4801. Information Assurance Technologies (3,0) (F) (P: ICTN 2510, 2900, 3530)

Industrial Distribution and Logistics
IDIS 2771. Introduction to Logistics (3, F,S)
IDIS 3785. Global Logistics (3, F,S) (P: IDIS 2771)
IDIS 3790. Technical Presentations for Industry (3, F,S,SS) (Formerly ITEC 5290) (P: ITEC 2000 or DSCI 2223)
IDIS 3795, Distributor Sales (3, S) (P: IDIS 2770)
IDIS 3800: Transportation Logistics (3, F,S) (P: IDIS 2771)
IDIS 3805. Purchasing Logistics (3, F,S) (P: IDIS 2771)
IDIS 3815. Supply Chain Logistics (3, F,S) (P: IDIS 2771)
Approved technical electives (6 s.h.)

Manufacturing Systems
ITEC 3292. Industrial Safety (3) (F,S) (P: Junior standing)
ITEC 4300. Quality Assurance Concepts (3) (F,S) (P: ITEC 3200 or MATH 2283)
MANF 3020, 3021. Introduction to Computer Integrated Manufacturing (3,0) (S) (P: ITEC 2090; MANF 2076)
MANF 3300. Plant Layout and Materials Handling (3) (F) (P: MANF 2020)
MANF 4020, 4021. Manufacturing System Planning (3,0) (F) (P: MANF 2020, 3300)
MANF 4023. Advanced Manufacturing Systems (3) (S) (P: MANF 4020)
MANF 4200. Work Methods and Ergonomic Analysis (3) (S) (P: ITEC 3292; MANF 2020)
Approved technical electives (6 s.h.)

Industrial Supervision
IDIS 2771. Introduction to Logistics (3) (F,S)
IDIS 3790. Technical Presentations for Industry (3, F,S,SS) (Formerly ITEC 5290) (P: ITEC 2000 or DSCI 2223)
IDIS 3815. Supply Chain Logistics (3, F,S) (P: IDIS 2771)
ITEC 3292. Industrial Safety (3) (F,S) (P: Junior standing)
ITEC 4300. Quality Assurance Concepts (3) (F,S) (P: ITEC 3200 or MATH 2283)
MANF 3300. Plant Layout and Materials Handling (3) (F) (P: MANF 2020)
MANF 4200. Work Methods and Ergonomic Analysis (3) (S) (P: ITEC 3292; MANF 2020)
Approved technical electives (6 s.h.)

Architectural Technology
DESN 3030, 3031. Architectural Drafting (3,0) (F,S,SS) (P: DESN 2034)
DESN 3032, 3033. Engineering Graphics II (3,0) (S) (P: DESN 2036)
DESN 3036, 3037. Architectural Design and Drafting (3,0) (F) (P: DESN 2036, 3030)
DESN 3038, 3039. Sustainable Design (3,0) (S) (P: DESN 2036, 3030)
PLAN 3021. Introduction to Planning Techniques (3) (F)
PLAN 3051. Introduction to GIS in Planning (3) (F,S) (P: GEOG 3410 or consent of instructor)
PLAN 4003, Urban Form and Design (3) (S)
Approved technical electives (6 s.h.)

Mechanical Technology
DESN 3032, 3033. Engineering Graphics II (3,0) (S) (P: DESN 2036)
DESN 3230, 3231. Rapid Prototyping (3,0) (S, OY) (P: DESN 3032; MANF 2076)
DESN 3234, 3235. Jig and Fixture Design (3,0) (F, OY) (P: DESN 3032; ITEC 2090; MANF 2076)
DESN 3236, 3237. Geometric Dimensioning and Tolerancing (3,0) (F, OY) (P: DESN 3032; MATH 1074; ITEC 3200 or MATH 2283)
MANF 2076, 2077. Introduction to Computer Numerical Control (CNC) (3,0) (F,S) (P: DESN 2034)
MANF 3020, 3021. Introduction to Computer Integrated Manufacturing (3,0) (S) (P: ITEC 2090; MANF 2076)
MANF 3300. Plant Layout and Materials Handling (3) (F) (P: MANF 2020)
Approved technical electives (6 s.h.)

3.  Cognates

ITEC 3200: Introduction to Statistical Process Control (3, F,S) (P: MATH 1065 or 1066 or equivalent) or MATH 2283, Statistics for Business (3, F,S,SS) (P: MATH 1065 or 1066 or equivalent)
MATH 1074. Applied Trigonometry (2) (F,S,SS) (P: MATH 1065)
ITEC 2000. Industrial Technology Applications of Computer Systems (3) (F,S,SS) or ITEC 3000 Internet Tools Technology (3) (F,S)

4.  Approved electives to complete requirements for graduation.
BS in Information and Computer Technology

Credit toward an Information and Computer Technology major will not be given for any ICTN course with a grade less than C. Minimum degree requirement is 126 s.h. credit as follows:

1. General education requirements (See Section 4, General Education Requirements for all Baccalaureate Degree Programs), including those listed below: 42 s.h.
   - COMM 2410. Public Speaking (3) (F,S,SS) (GE:FA) or COMM 2420. Business and Professional Communication (3) (F,S,SS) (GE:FA)
   - ECON 2213. Principles of Microeconomics (3) (F,S,SS) (GE:SO)
   - MATH 1065. College Algebra (3) (F,S,SS) (GE:MA) (P: Appropriate score on mathematics placement test) or MATH 1066. Applied Mathematics for Decision Making (3) (F,S,SS) (GE:MA) (P: Appropriate score on mathematics placement test or approval of dept chair)
   - PHYS 1250, 1260. General Physics (3,3) (F,S,SS) (GE:SC) (P for 1250: MATH 1065 or 1066; P for 1260: PHYS 1250)
   - PHYS 1251, 1261. General Physics Laboratory (1,1) (F,S,SS) (GE:SC) (C for 1251: PHYS 1250 or 2350; C for 1261: PHYS 1260 or 2260)
   - PSYC 1000. Introductory Psychology (3) (F,S,SS) (GE:SO)
   - PSYC 3241. Personnel and Industrial Psychology (3) (F,S,SS) (GE:SO) (P: PSYC 1000 or 1060)

2. Lower Division Core: 24 s.h.
   Complete an associate degree from an approved technical program and successfully obtain CCNA certification. (Note: Approved programs will have at least 24 s.h. of transferable technical course work.)

   Or complete the following courses:

   - ICTN 1500, 1501. PC Hardware (3,0) (F) (Formerly ELEC 2500, 2501)
   - ICTN 2730. Control Design (3) (S) (P: ITEC 2000 or DSCI 2223)
   - ICTN 2000. Introduction to Telecommunications (3) (F) (Formerly ELEC 3000) (P: MATH 1074 or higher)
   - ICTN 2154, 2155. Digital Communication Systems (3,0) (F) (Formerly ELEC 3154, 3155) (P: ICTN 1500)
   - ICTN 2158, 2159. Computer Network Technology (3,0) (S) (Formerly ELEC 3158, 3159) (P: ICTN 2154, 2455)
   - ICTN 2510, 2511. Network Environment I (3,0) (F) (Formerly ELEC 3510) (P: ICTN 1500)
   - ICTN 2730. Control Design (3) (S) (Formerly ELEC 2730) (P: ITEC 2000 or DSCI 2223)
   - ITEC 2000. Industrial Technology Applications of Computer Systems (3,f,S,SS) or ITEC 3000. Internet Tools Technology (3) (F) (P: DSCI 2223 or ITEC 2000 or equivalent experience) or equivalent.
   - ITEC 2054, 2055. Electricity/Electronics Fundamentals (3,0) (F,S,SS) (Formerly ELEC 2054, 2055) (P: MATH 1065 or 1066 or 1085 or 2119)

3. Upper Division Core: 21 s.h.
   - ICTN 2900, 2901. Introduction to Network Security (3,0) (F) (P: ICTN 2154)
   - ICTN 3530, 3531. Network Environment II (3,0) (S) (Formerly ELEC 3530) (P: ICTN 1500)
   - ICTN 3540, 3541. Network Environment III (3,0) (F) (Formerly ELEC 3540, 3541) (P: ICTN 2510, 3530)
   - ICTN 4040. Communication Security (3) (S) (Formerly ELEC 4040) (P: Senior standing and ICTN 2154)
   - IDIS 3790. Technical Presentations for Industry (3,F,S,SS) (Formerly ITEC 5290) (P: ITEC 2000 or DSCI 2223)
   - ITEC 3290. Technical Writing (3) (F,S) (P: ENGL 1200)
   - ITEC 3300. Technology Project Management (3) (F,S) (Formerly ELEC 3300) (P: ENGL 1200; ITEC 2000 or DSCI 2223 or equivalent experience)

4. Concentration area (Choose one): .12 s.h.

   Computer Networking:
   - ICTN 3250, 3251. Internet work Routing Technology (3,0) (F) (Formerly ELEC 3250, 3251) (P: ICTN 2158 with a minimum grade of B or current CCNA certification)
   - ICTN 4150, 4151. Switching Network Technology (3,0) (F) (Formerly ELEC 4150, 4151) (P: ICTN 2158 with a minimum grade of B or current CCNA certification)
   - ICTN 4250, 4251. Enterprise Network Technology (3,0) (S) (Formerly ELEC 4250, 4251) (P: ICTN 2158 with a minimum grade of B or current CCNA certification)
   - ICTN 4590, 4591. Network Maintenance and Troubleshooting (3,0) (S) (Formerly ELEC 4590, 4591) (P: ICTN 3250, 4150, 4250)

   Required Attempts for Industry Certification: (Student is required to register and sit for the following certification examinations, although passing such exams is not required) note: passing score not required

   - Microsoft MCP Certification and And the following 3 Cisco CCNP Areas
     - Foundations (Covers all 3 areas)
     - Or
     - Routing
     - Switching
     - Remote Access
   - Choose one examination option:
     - Microsoft MCP Certification and Cisco CCNP Foundations Certification

https://author.ecu.edu/cs-acad/fsonline/cu/cu2_051.cfm

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Information Technology:
ICTN 3900, 3901. Web Services Management (3,0) (F) (Formerly ELEC 3900, 3901) (P: ELEC ICTN 2510 and ELEC, 3530)
ICTN 4010, 4011. User Application Management and Emerging Technologies (3,0) (F) (Formerly ELEC 4010, 4011) (P: ICTN 2510 and ELEC 3530)
ICTN 4064. Regulations and Policies (3) (S) (Formerly ELEC 4060) (P: ELEC ICTN 2000)
ICTN 4600, 4601. Enterprise Information Technology Management (3,0) (S) (Formerly ELEC 4600) (P: ICTN 2158, 3540)
Required Attempts for Industry Certification (note: passing score not required)
  Cisco CCNA And
  Microsoft MCP
Industry Certification (Student is required to register and sit for the following certification examinations, although passing such exams is not required.)
  Cisco CCNA Certification and Microsoft MCP Certification

Information Security:
ICTN 4064. Regulations and Policies (3) (S) (Formerly ELEC 4060) (P: ELEC ICTN 2000)
ICTN 4200, 4201. Intrusion Detection Technologies (3,0) (F) (P: ICTN 2154) (ICTN 2900)
ICTN 4600, 4601. Enterprise Information Technology Management (3,0) (S) (Formerly ELEC 4600) (P: ICTN 2158, 3540)
ICTN 4800, 4801. Information Assurance Technologies (3,0) (F) (P: ICTN 2154) (P: 2510, 2900, 3530)
Required Attempts for Industry Certification (note: passing score not required)
  Cisco CCNA
  And
  Microsoft MCP
  And
  Comp TIA Security+
Industry Certification (Student is required to register and sit for the following certification examinations, although passing such exams is not required.)
  Cisco CCNA Certification and Microsoft MCP Certification and Comp TIA Security+

5. Cognates ........................................................................................................................................... 14 s.h.
FINA 2244. Legal Environment of Business (3) (F,S,SS)
ITEC 3200. Introduction to Statistical Process Control (3) (F,S) (P: MATH 1065 or higher 1066 or equivalent) or MATH 2283. Statistics for Business (3) (F,S,SS) (P: MATH 1065 or 1066 or equivalent)
ITEC 3800. Cost and Capital Project Analysis (3) (F,S) (Formerly MANF 3800) (P: MATH 1065 or higher 1066 or equivalent) or ACCT 2101, Survey of Financial and Managerial Accounting (3) (F,S) (P: MATH 1065 or 1066) or ACCT 2401. Financial Accounting (3) (F,S,SS) (P: MATH 1065 or 1066 or 2119 or 2121 or 2171)
ITEC 4293. Industrial Supervision (3) (W) (F) (P: Senior standing or approval of instructor) or MGMT 3202. Fundamentals of Management (3) (F,S,SS) (P: ECON 1000 or 2113)
MATH 1074. Applied Trigonometry (2) (F,S,SS) (P: MATH 1065)

6. Electives to complete requirements for graduation.

BS in Manufacturing

Minimum degree requirement is 126 s.h. of credit as follows:

1. General education requirements (See Section 4, General Education Requirements for all Baccalaureate Degree Programs), including those listed below ............................................................. 42 s.h.
   COMM 2410. Public Speaking (3) (F,S,SS) (GE:FA) or COMM 2420. Business and Professional Communication (3) (F,S,SS) (GE:FA)
   ECON 2113. Principles of Microeconomics (3) (F,S,SS) (GE:SO)
   MATH 1065. College Algebra (3) (F,S,SS) (GE:MA) (P: Appropriate score on mathematics placement test) or MATH 1066. Applied Mathematics for Decision Making (3) (F,S,SS) (GE:MA) (P: Appropriate score on mathematics placement test or approval of dept chair)
   PHYS 1250, 1260. General Physics (3,3) (F,S,SS) (GE:SC) (P for 1250: MATH 1065 or 1066; P for 1260: PHYS 1250)
   PHYS 1251, 1261. General Physics Laboratory (1,1) (F,S,SS) (GE:SC) (C for 1251: PHYS 1250 or 2350; C for 1261: PHYS 1260 or 2260)
   PSYC 1000. Introductory Psychology (3) (F,S,SS) (GE:SO)
   PSYC 3241. Personnel and Industrial Psychology (3) (F,S,SS) (GE:SO) (P: PSYC 1000 or 1060)

2. Core ............................................................................................................................................... 66 s.h.
   DESN 2034, 2035. Engineering Graphics I (3,0) (F,S,SS) (P: Computer-related elective (ITEC 2000 or DSCI 2223)
   DESN 2036, 2037. Computer-Aided Design and Drafting (3,0) (F,S,SS) (P: DESN 2034, 2035)
   DESN 3032, 3033. Engineering Graphics II (3,0) (S) (P: DESN 2034, 2035)
DESN 3236, 3237. Geometric Dimensioning and Tolerancing (3,0) (F, OY) (P: MATH 1065 or 1066, DESN 3032; MATH 1074, ITEC 3200 or MATH 2283)
ITEC 2000. Industrial Technology Applications of Computer Systems (3) (F, S, SS)
ITEC 2010. Introduction to Industry and Technology (3) (F, S, SS)
ITEC 2054, 2055. Electricity/Electronics Fundamentals (3,0) (F, S, SS) (Formerly ELEC 2054, 2055) (P: MATH 1065 or 1066 or 1065 or 2119)
ITEC 2080, 2081. Thermal and Fluid Systems (3,0) (F, S) (P: MANF 2020 C, ITEC 2000, MATH 1065)
ITEC 2090, 2091. Electromechanical Systems (3,0) (F, S, SS) (P: ITEC 2054, MATH 1065, C, ITEC 2000)
ITEC 3290. Technical Writing (3) (WI) (F, S, SS) (P: ENGL 1200)
ITEC 3292. Industrial Safety (3) (F, S, SS) (P: Junior standing; completion of 12 s.h. of industrial technology courses)
ITEC 3300. Technology Project Management (3) (F, S) (WI) (Formerly ELEC 3300) (P: ENGL 1200; ITEC 2000 or DSCI 2223)
ITEC 3800. Cost and Capital Project Analysis (3) (F, S) (Formerly MANF 3800) (P: MATH 1065, MATH 2283 or ITEC 3200)
ITEC 4293. Industrial Supervision (3) (WI) (F, S) (P: Senior standing or approval of instructor)
ITEC 4300. Quality Assurance Concepts (3) (F, S, SS) (P: 18 s.h. of technology core courses, ITEC 3200 or MATH 2283)
MANF 2020, 2021. Materials and Processes Technology (3,0) (WI*) (F, S, SS) (Formerly ITEC 2020, 2021) (P: ITEC 2000 or DSCI 2223)
MANF 2076, 2077. Introduction to Computer Numerical Control (CNC) (3,0) (F, S) (P: ITEC 2000, 2010, DESN 2034, 2035)
MANF 3020, 3021. Introduction to Computer Integrated Manufacturing (3,0) (WI*) (F, S) (P: ITEC 2090; MANF 2076, 2077)
MANF 3300. Plant Layout and Materials Handling (3) (S) (F) (P: ITEC 2000; MANF 2020, 2021)
MANF 4020, 4021. Manufacturing System Planning (3,0) (F, S) (P: ITEC 3292, 4300; MANF 2020, 2030, 2024)
MANF 4023. Advanced Manufacturing Systems (3) (F, S) (P: MANF 4020, 4024)
MANF 4200. Work Methods and Ergonomic Analysis (3) (S) (P: MANF 3300; ITEC 3292; MANF 2020)

3. Cognates .........................................................................................................................................................12 s.h.
FINA 2244. Legal Environment of Business (3) (F, S, SS)
ITEC 3200. Introduction to Statistical Process Control (3) (F, S) (P: MATH 1065 or 1066 or equivalent) or MATH 2283.
Statistics for Business (3) (F, S, SS) (P: MATH 1065 or 1066 or equivalent)
MATH 1074. Applied Trigonometry (2) (F, S, SS) (P: MATH 1065)
Choose 4 s.h. CHEM electives, excluding CHEM 0150

4. Electives to complete requirements for graduation.

Industrial Supervision Minor

The industrial supervision minor requires 24 s.h. of credit as follows:

FINA 2244. Legal Environment of Business (3) (F, S, SS)
IDIS 2771. Introduction to Logistics (3) (F, S) (P: MATH 1065; IDIS 2771)
ITEC 3200. Introduction to Statistical Process Control (3) (F, S) (P: MATH 1065 or 1066 or equivalent) or MATH 2283.
Statistics for Business (3) (F, S, SS) (P: MATH 1065 or 1066 or equivalent)
ITEC 3290. Technical Writing (3) (WI) (F, S, SS) (P: ENGL 1200)
ITEC 3292. Industrial Safety (3) (F, S, SS) (P: Junior standing; completion of 12 s.h. of industrial technology courses)
ITEC 3300. Technology Project Management (3) (WI) (F, S) (Formerly ELEC 3300) (P: ENGL 1200; ITEC 2000 or DSCI 2223 or equivalent experience)
ITEC 3800. Cost and Capital Project Analysis (3) (F, S) (Formerly MANF 3800) (P: MATH 1065; MATH 2283 or ITEC 3200)
ITEC 4293. Industrial Supervision (3) (WI) (F, S) (P: Senior standing or approval of instructor)

Insert on p. 285 of 2004 – 2005 catalog:
EDUC Education College of Education
EHST Environmental Health College of Health and Human Performance
ELEC Electricity/Electronics College of Technology and Computer Science
ELEM Elementary Education College of Education

Insert on p. 286 of 2004 – 2005 catalog:
https://author.ecu.edu/cs-acad/fsonline/cu/cu2_051.cfm
Insert on pp. 331 – 332 of 2004 – 2005 catalog:

DESN: DESIGN


2036, 2037. Computer-Aided Design and Drafting (3,0) (F,S,SS) 2 lecture and 2 lab hours per week. P: DESN 2034, 2035. Application of computer-aided design and drafting (CADD) as related to design process and development of engineering drawings and other documents. Use of CADD in various design disciplines, including architectural, electrical, mechanical, and civil.

3030, 3031. Architectural Drafting (3,0) (F,S,SS) 2 lecture and 2 lab hours per week. P: DESN 2034, 2035. Fundamental areas of residential working drawings.

3032, 3033. Engineering Graphics II (3,0) (S) 2 lecture and 2 lab hours per week. P: DESN 2036, 2037. Continuation of DESN 2036, 2037 with greater depth in application of graphics in manufacturing construction and related fields.

3036, 3037. Architectural Design and Drafting (3,0) (F) 2 lecture and 2 lab hours per week. P: DESN 2036, 2037, 3030, 3031. Practical experience in design of commercial structures from graphics perspective. Development and interpretation of working drawings.

3038, 3039. Sustainable Design (3,0) (S) 2 lecture and 2 lab hours per week. P: DESN 2036, 2037 and DESN 3030, 3031. Introduction to sustainability issues related to building technology and the pursuit of design solutions.

3230, 3231. Rapid Prototyping (3,0) (S) 2 lecture and 2 lab hours per week. P: DESN 3032, 3033, ITEC 2090, MANF 2076, 2077. Develops holistic view and initial competencies in engineering design by conceiving, designing, manufacturing, and testing system components.

3234, 3235. Jig and Fixture Design (3,0) (F) 2 lecture and 2 lab hours per week. P: DESN 3032, 3033, ITEC 2090, MANF 2076, 2077. Application of the principles of jig and fixture design and their construction.

3236, 3237. Geometric Dimensioning and Tolerancing (3,0) (F) 2 lecture and 2 lab hours per week. P: DESN 3032, MATH 1065 or 1066, MATH 1074, ITEC 3200 or MATH 2283. Introduces the concepts of Geometric Dimensioning and Tolerancing based on industry standards such as ANSI and ASME using measuring equipment, problem solving, and case studies. Provide tools for the immediate application of GD&T concepts to production specifications.

4030, 4031. Descriptive Geometry (3,0) (S) 2 lecture and 2 lab hours per week. P: DESN 3032, 3033, MATH 1074. Principles of projection, including reference system (the graphical method of solving solid analytic geometry problems).

4234, 4235. Machine and Tool Design (3,0) (F) 2 lecture and 2 lab hours per week. P: DESN 3032, 3033, MANF 2076, 2077. Application of principles of machine and tool design. Completion of designs and drawings of machines, tools, fixtures, gauges, automated clamping devices, and piercing and forming dies.

4503. Laboratory Problems: Design and Drafting (3) (F,S,SS) 6 lab hours per week. P: DESN 3030, 3031, or 3032, 3033, or consent of instructor. Independent study to gain further expertise in particular area of design and drafting.

4504. Laboratory Problems: Graphic Communication (3) (F,S,SS) 6 lab hours per week. P: Consent of dept chair. Independent study of concepts, processes, tools, and materials in graphic communication technology.

Insert on pp. 386 – 387 of 2004 – 2005 catalog:
ICTN: INFORMATION AND COMPUTER TECHNOLOGY

1500, 1501. PC Hardware (3,0) (F,S,SS) (Formerly ELEC 2500, 2501) Must be taken concurrently. 2 lecture and 2 lab hours per week. P: MATH 1065 or higher. Hardware components of PCs and BIOS and operating system options needed to support those components. Topics include interface standards, component configuration, and troubleshooting.

2000. Introduction to Telecommunications (3) (F) (Formerly ELEC 3000) P: MATH 1074 or higher. Includes computer networking. Broad view of technology and application in information technology industry.

2154, 2155. Digital Communication Systems (3,0) (F,S) (Formerly ELEC 3154, 3155) To be taken simultaneously. 2 lecture and 2 lab hours per week. P: ICTN 1500. Introduction to local-area and wide-area networks. Provides basic understanding of network concepts and router programming.

2158, 2159. Computer Networking Technology (3) (S) (Formerly ELEC 3158, 3159) To be taken simultaneously. 2 lecture and 2 lab hours per week. P: ICTN 23154. Advanced study of local-area and wide-area networks. Develops competence in designing and implementing enterprise-wide campus network using routers and switches.

2510, 2511. Network Environment I (3,0) (F) (Formerly ELEC 3510) Must be taken concurrently. 2 lecture and 2 lab hours per week. P: ICTN 1500. Network management using various NOS products. Topics include NOS setup, network resource management, user and group management, and security model.

2730. Control Design (3) (S) (Formerly ELEC 2730) P: DSCI 2223 or ITEC 2000 or equivalent experience. Technologies and applications in designing device controls applied for local area network and Internet applications. Includes software programming and lower-level interface design.

2900, 2901. Fundamental Network Security (3,0) (F) Must be taken concurrently. 2 lecture and 2 lab hours per week. P: ICTN 2154 or consent of the instructor. Computer network and information security principles, devices, and applications.

3250, 3251. Internetwork Routing Technology (3,0) (F) (Formerly ELEC 3250, 3251) To be taken simultaneously. 2 lecture and 2 lab hours per week. P: ICTN 2158 with a minimum grade of B or current CCNA certification. Advanced network routing technology in industry. Topics include routing protocols and technology, network performance consideration, and traffic control over LAN and WAN.

3530, 3531. Network Environment II (3,0) (S) (Formerly ELEC 3530) Must be taken concurrently. 2 lecture and 2 lab hours per week. P: ICTN 1500. Network management using various UNIX products, such as Linux and Solaris. Topics include NOS setup, network resource management, user and group management, and security model.

3540, 3541. Network Environment III (3,0) (F) (Formerly ELEC 3540, 3541) Must be taken concurrently. 2 lecture and 2 lab hours per week. P: ICTN 2510, 3530. Enterprise system administration using mixed vendor network operating systems, such as Linux and Microsoft. Topics include integrating networking services such as network file systems, enterprise printing administration, remote administration, and host and network security issues.

3900, 3901. Web Services Management (3, 0) (F) (Formerly ELEC 3900, 3901) 2 lecture and 2 lab hours per week. P: ICTN 23510, 3530. Current technologies that provide web services and management for organizations. Topics include web content development, web server installation and configuration, database integration, and security issues.

4000. Network Internship (3) (F,S) (Formerly ELEC 4000) Minimum of 120 contact hours at internship site. P: Senior standing. Educational collaboration between business and industry and ECU, linking theoretical and lab practice with real-world applications. Proposal, fully describing planned activities, developed around student’s educational goals and objectives.

4010, 4011. User Application Management and Emerging Technologies (3,0) (F) (Formerly ELEC 4010, 4011) 2 lecture and 2 lab hours per week. P: ICTN 3540 2510, 3530. Emerging technologies that provide flexible and secure access to enterprise information resources. Topics include wireless and WLAN technology, broadband Internet connection, storage area networks, data warehousing/mining, application support for enterprise network.

4040. Communication Security (3) (S) (Formerly ELEC 4040) P: Senior standing and ICTN 2154. Practical and comprehensive survey of network-based and Internet-based security applications and standards. Includes cryptography, encryption, hash functions, digital signatures, key exchanges, and security applications.

4064. Regulations and Policies (3) (S) (Formerly ELEC 4060) P: ICTN 23000. Government and industry regulations and policies applied to information technology industry. Broad view of impact and effectiveness of regulations and policies.

4150, 4151. Switching Network Technology (3) (F) (Formerly ELEC 4150, 4151) To be taken simultaneously. 2 lecture and 2 lab hours per week. P: ICTN 2158 with a minimum grade of B or current CCNA certification. Concepts and technology used to interconnect multiple LANs. Covers advanced switching technology and applications.
4200, 4201. Intrusion Detection Technologies (3,0) (F) Must be taken concurrently. 2 lecture and 2 lab hours per week. P: ICTN 2900. Computer network intrusion detection principles, devices, and applications.

4250, 4251. Enterprise Network Technology (3) (FS) (Formerly ELEC 4250, 4251) To be taken simultaneously. 2 lecture and 2 lab hours per week. P: ICTN 2158 with a minimum grade of B or current CCNA certification. Designs and implementation of enterprise network system in industrial environment. Includes designing and planning processes, technology and trend, network and system analysis, skill assessment and technical training, and corporate policies.

4501, 4503, 4505. Laboratory Problems (1,2,3) (F,S,SS) (Formerly ELEC 4501, 4503, 4505) 2 lab hours per week for 4501; 4 lab hours per week for 4503, 6 lab hours per week for 4505. May be repeated for credit with consent of dept chair. P: Consent of instructor. Independent study of concepts, processes, tools, and/or materials in the field of Information and Computer Technology.

4590, 4591. Network Maintenance and Troubleshooting (3,0) (FS) (Formerly ELEC 4590, 4591) Must be taken concurrently. 2 lecture and 2 lab hours per week. P: ICTN 3250, 4150, 4250. Large enterprise computer network system maintenance, support, troubleshooting, and improvement. Emphasis placed on integrated systems of various technologies for LAN, WAN, routing, and switching.

4600, 4601. Enterprise Information Technology Management (3,0) (S) (Formerly ELEC 4600) P: ICTN 2158, 3540. Capstone course with case studies on various issues about enterprise IT management. Students work on projects that address these issues.

4800, 4801. Information Assurance Technologies (3,0) (F) Must be taken concurrently. 2 lecture and 2 lab hours per week. P: ICTN 2510,2900,3530. Information assurance principles, devices, and applications. Emphasis on problems relating to systems of varied operations system technologies and computer networking technologies.

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**Insert on p. 388 of 2004 – 2005 catalog:**

**IDIS: INDUSTRIAL DISTRIBUTION**

2770. Industrial Distributor: Purpose and Functions (3) (F,S) (Formerly IDIS 3770) P: IDIS major or minor. Indepth investigation into functioning and services of electrical distributors and electrical product manufacturer personnel and their agents, consumers, purchasing managers, and buyers.

2771. Introduction to Logistics (3) (F,S) Control and flow of materials from raw materials to the consumer. Includes forecasting, procurement, inventory management, transportation, warehousing, and distribution networks.

2775. Industrial Blueprint Reading and Sketching (3) (F,S,SS) Blueprint reading principles contained in mechanical or engineering drawing.

3780. Warehousing and Materials Handling (3) (S) (F) P: IDIS 2771. Warehousing operations and management, logistics, control, productivity, and analytical tools and techniques used to analyze and solve problems related to warehouse profitability.

3785: Global Logistics (3) (F,S) P: IDIS 2771. Evaluates impact of global and third party logistics. Intercoms, global logistics strategy, inventory management, global sourcing, issues related to global logistics documents and customs, and international transportation discussed in detail.

3790. Technical Presentations (3) (F,S,SS) (Formerly ITEC 5290) P: ITEC 2000 or DSCI 2223. Investigation and utilization of tools, techniques, and technical systems for transmitting information related to problems and issues of contemporary industry.

3795. Distributor Sales (3) (S) P: IDIS 2770. Role of industrial distributor salesperson in industrial distribution supply chain. SME Distributor Sales Certification Test required.

3800. Transportation Logistics (3) (F,S) P: IDIS 2770, 2771. Comprehensive examination of critical issues involved in domestic and international transportation, including logistical network design, third party selection, transportation regulations, shipment planning, and routing and scheduling.

3805. Purchasing Logistics (3) (F,S) P: IDIS 2771. Evaluates impact of logistical operating costs, strategies used to support logistical investments, and competitive ways to reduce capital costs. Purchasing and procurement issues related to logistics, warehousing, and supply chain management discussed in detail.
3815. Supply Chain Logistics (3) (F,S) P: DIS 2771. Evaluates supply chain and its effects in logistics. Covers concepts and strategies used to design and manage supply chain, and explains relationship proper supply chain management has between industrial sales and logistics.


4802. Distribution Research (3) (S) P: Senior status and consent of instructor. Capstone course for all industrial distribution seniors. Application of new and innovative technologies used in industrial technology, industrial distribution, and logistics fields.

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Insert on pp. 392 – 393 of 2004 – 2005 catalog:

ITEC: INDUSTRIAL TECHNOLOGY

2000. Industrial Technology Applications of Computer Systems (3) (F,S,SS) Technical and managerial aspects of computer applications and information technology in industry and engineering areas.

2010. Introduction to Industry and Technology (3) (F,S,SS) Foundation for advanced study in various technology specialization areas. Emphasis on basic technical and technical managerial concepts of manufacturing, construction, and service industries. Evolution of industry and career opportunities in broad fields of industry and education.

2020, 2021. Materials and Processes Technology (3.0) (WI*) (F,S,SS) P: ITEC 2000. This course examines the factors, which influence the production and modification of materials into useful forms. Students learn about the various manufacturing processes and machinery used to convert raw materials into finished products. The course gives the student “hands on” experience with materials and processes used in industry.

2054, 2055. Electricity/Electronics Fundamentals (3.0) (F,S,SS) (Formerly ELEC 2054, 2055) 2 classroom and 2 lab hours per week. P: MATH 1065 or 1066 or 1085 or 2119. Electronic components and circuits. Study of communications and industrial control systems.


2090, 2091. Electromechanical Systems (3,0) (F,S,SS) P: ITEC 2054, 2055, C: MAATH 1065. A study of the design and analysis of electromechanical control systems. Includes the fundamentals of programmable controllers as well as practical applications of interfacing mechanical, electrical, pneumatic, and hydraulic systems and components.

3000. Internet Tools Technology (3) (F,S) P: DSCI 2223 or ITEC 2000 or equivalent experience. Experience-based introduction to Internet applications, communications, and collaboration methods for industry and other technical environments.

3100. Internship in Industrial Technology (3) (F,S,SS) Minimum of 240 hours of supervised, full- or part-time industrial or technical work experience. P: Consent of instructor and at least one semester as a full-time ECU student. First experience in technical and managerial problems of industry. Participation in weekly seminar or completion of eight concept papers.

3200. Introduction to Statistical Process Control (3,0) (F,S) P: MATH 1065 or 1066 or equivalent. Examination of statistical measures, tools, and methods employed to analyze and control variation in industrial processes. Course covers measures of central tendency and variation, frequency distributions and use of variable and attribute control charts.

3290. Technical Writing (3) (WI) (F,S,SS) P: ENGL 1200. Practice in writing about technical problems of significance to student.

3292. Industrial Safety (3) (F,S,SS) (Formerly EHST 3292) P: Junior standing, completion of 12 s.h. of industrial technology courses. Causes and prevention of occupational accidents and health hazards. Emphasis on organization and operation of safety programs and development of safety consciousness.
3300. Technology Project Management (3) (F,S) (WI) (Formerly ELEC 3300) 3 lecture hours per week. P: ENGL 1200; ITEC 2000 or DSCI 2223 or equivalent experience. Systems needs analysis identification, functional requirements analysis, IT project timelines, and system development progress metrics.

3800. Cost and Capital Project Analysis (3) (S) (Formerly MANF 3800) P: MATH 2283 or ITEC 3200. Economic analysis of technology alternatives. Valuation techniques, time value of money, cash flow analysis, cost estimation, taxes and depreciation, operations planning and control, project evaluation, accounting and budgeting tools.

4100. Internship in Industrial Technology (3) (F,S,SS) Supervised internship for student with industrial or technical experience. Minimum of 240 hours of supervised work experience. May be taken concurrently with ITEC 3100. P: ITEC 3100 or consent of instructor. Work experience and participation in weekly seminar. For students not within commuting distance of ECU, participation in the seminar may be waived in lieu of concept papers.

4293. Industrial Supervision (3) (WI) (F,S) P: Senior standing or approval of instructor. Fundamental and special techniques for supervising people in industrial or business work situation. Duties and responsibilities of supervisor. Emphasis on successful supervisory practices.

4300. Quality Assurance Concepts (3) (F,S,SS) P: 18 s.h. of technology core courses. ITEC 3200 or MATH 2283. Managerial, statistical, motivational, and technological aspects of quality control as practiced in manufacturing, construction, processing, and service industries.

5100. Internship in Industrial Technology (3) Supervised internship. P: Consent of graduate director. Placement in industrial or technical firm. Requires journal of related activities and final report.

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**Insert on pp. 397 of 2004 – 2005 catalog:**

**MANF: MANUFACTURING**

**2020, 2021. Materials and Processes Technology (3,0) (WI*) (F,S) (Formerly ITEC 2020, 2021)P: ITEC 2000 or DSCI 2223.** This course examines the factors, which influence the production and modification of materials into useful forms. Students learn about the various manufacturing processes and machinery used to convert raw materials into finished products. The course gives the student “hands on” experience with materials and processes used in industry.

2076, 2077. Introduction to Computer Numerical Control (CNC) (3,0) (F,S) 2 hours lecture and 2 hours lab per week. P: ITEC 2000, 2010—DESN 2034, 2035. Review of fundamental manual programming for numerical control machines. Topics include CNC machine types, controls, safety, and coordinate measuring systems; CNC speed and feed calculations, tooling and fixturing; and programming CNC mills and lathes; computer controlled laser cutting and engraving. This self-paced course gives the student “hands on” experience with CNC machines and simulations in virtual reality.

3020, 3021. Introduction to Computer Integrated Manufacturing (3,0) (WI*) (F,S,SS) 2 lecture and 2 lab hours per week. P: ITEC 2090, 2021, MANF 2076, 2077. This course introduces computer integrated manufacturing processes. Students will develop a basic understanding of the manufacturing processes used to make products, the application and potential benefits of automation and computer integrated manufacturing (CIM) concepts. Provides the student with information on the way computer-based systems support the operation of a manufacturing business. The course gives the student “hands on” experience with tools and systems used in industry. Special attention is given to computer-aided design (CAD), computer-aided manufacturing (CAM), industrial robots and supporting technologies including automated data capture (primarily bar code). Fundamentals concepts are reinforced using industrial software and hardware.


3800. Cost and Capital Project Analysis (3) (S) P: MATH 1065; MATH 2283 or ITEC 3200. Economic analysis of technology alternatives. Valuation techniques, time value of money, cash flow analysis, cost estimation, taxes and depreciation, operations planning and control, project evaluation, accounting and budgeting tools.

4020, 4021. Manufacturing System Planning (3,0) (F) 2 lecture and 2 lab hours per week. P: ITEC 3292, 3300; MANF 2020, 3300, 3301. Processes for manufacturing various products. Emphasis on selection criteria such as safety, material, jigs, fixtures, layout, and overall efficiency.
4023. Advanced Manufacturing Systems (3) (F,S) P: MANF 4020, 4024. Advances in technology which occur in the manufacturing sector. Focus will be on computer-based technologies which improve productivity, reduce manufacturing costs, and produce high quality products.

4200. Work Methods and Ergonomics Analysis (3) (S) P: MANF 3300ITEC 3292; MANF 2020. Work methods and study of work measurement systems. Principles of motion study, work simplification, and work measurement by direct and predetermined motion-time systems.

4502. Laboratory Problems: Production (3) (F,S) 6 lab hours per week. P: MANF 3020. Independent study of industrial manufacturing systems, processes, and concepts.

4507. Laboratory Problems: Metals (3) 6 lab hours per week. P: MANF 2076, 2077. Indepth and independent study of concepts and/or processes of metals area, its tools, and materials. Emphasis on lab work.


Catalog minutes submitted by T. D. Hudson