

General Curriculum Report #234

UNIVERSITY OF IDAHO - REGISTRAR'S OFFICE

December 3, 2004

TO: MEMBERS OF THE UNIVERSITY OF IDAHO FACULTY

The items listed below, approved by the University Curriculum Committee, will be considered to have the necessary faculty approvals unless a petition requesting further consideration of specific items is signed by five faculty members and submitted to the chair of the Faculty Council within 14 calendar days after the date of circulation. If no petition is received within 14 days, the entire report will be submitted to the president for approval and transmittal to the regents, if regents action is required. If a petition is received, the items in the report for which further consideration is requested will be referred to the Faculty Council and the remainder of the report will move forward. On items referred to it, the council may: (1) affirm the action and report it to a meeting of the university faculty, (2) amend the action and report it to a meeting of the university faculty, or (3) rescind the action. *Note:* If a petition concerns courses or curricula in the College of Letters Arts and Social Sciences or in the College of Agricultural and Life Sciences, and is signed by five faculty members of the respective college, those items will be returned to the college concerned for further consideration.

Accounting

Change the curricular requirements of the **Accounting Minor** [Effective: Summer 2005]

Acct 205 Fundamentals of Accounting or Acct 201-202 Intro to Financial Accounting & Intro to Managerial Accounting (4-6 cr)

Acct 275 Accounting Information Systems (3 cr)

Acct 310-311 Accounting for Business Decisions I-II or Acct 381 Accounting for Managers and Investors (3-4 cr)

~~Two~~ ~~C~~ Courses selected from the following to total at least 18 cr: ~~(6 cr):~~

Acct 315 Corporate Accounting and Reporting I (3 cr)

Acct 414 Corporate Accounting and Reporting II (3 cr)

Acct 415 Advanced Financial Accounting and Reporting (3 cr)

Acct 430 Accounting for Public Sector Entities (3 cr)

Acct 483 Federal and State Taxes I (3 cr)

Acct 484 Federal and State Taxes II (3 cr)

Acct 485 Estate Planning (3 cr)

Acct 486 Accounting for Management Decision Making and Control (3 cr)

Acct 492 Auditing and Controls (3 cr)

BLaw 420 Commercial Law (3 cr)

Biological and Agricultural Engineering

Change the curricular requirements of **Biological and Agricultural Engineering** (B.S.B.A.E.) [Effective: Summer 2005]

Required course work includes the university requirements (see regulation J-3) and:

BAE 142 Engineering for Living Systems (2 cr)

BAE 143 Engineering Problem Solving or CS 112 Introduction to Problem Solving and Programming (3 cr)

BAE 355 Fundamentals of Hydrologic Engineering (3 cr)

BAE 441 Instrumentation and Measurements (3 cr)

BAE 462 Electric Power and Controls (3 cr)

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And one of the following options:

A. Agricultural Engineering Option

....

B. Biological Systems Engineering Option

....

C. Environmental Engineering Option

....

D. Food and Bioprocess Engineering Option

....

E. Soil and Water Engineering Option

BAE 242 Agricultural Engineering Analysis and Design (2 cr)

BAE 352 Soil and Water Engineering (3 cr)

BAE 451 Engineering Hydrology (3 cr)

BAE 452 Environmental Water Quality (3 cr)

BAE 458 Open Channel Hydraulics (3 cr)

BAE 459 Irrigation System Design (3 cr)

CE 211 Engineering Measurements (3 cr)

~~Engr 220 Engineering Dynamics (3 cr)~~

Technical Electives (8 cr)

Soil and/or Water Engineering Electives (3 cr)

Biological Science Electives (3 cr)

Electives to total 128 cr for the degree

Biological Sciences

1. Change the grading mode of the following course [Effective: Summer 2005]

Biol 405 **Practicum in Anatomy Laboratory Teaching** (2 cr). Organization, preparation, and teaching of anatomy laboratory objectives under faculty supervision. ~~Graded P/F.~~ Prereq: perm. (Fall only).

- Change the credits for the following course [**Effective:** Summer 2005]
 Biol **508 Topics in Neuroscience** (1 cr. max arr) Seminars and discussion of current topics in neuroscience. Prereq: Grad standing.

Business

- Change the prerequisites of the following courses [**Effective:** Summer 2005]
 Bus **461 Retirement Planning and Employee Benefits** (3 cr). Study and analysis of the retirement planning process; topics include pensions, employee benefit plans and the regulatory and legislative environment for the retirement field, and the ethics of professional financial planners as it relates to retirement planning. The course is geared towards students who plan to pursue a career in the financial services industry. May involve evening exams. Prereq: Bus 340-345 or graduate standing in the College of Business and Economics ~~Bus 345~~. (Fall only)

Bus **462 Principles of Financial Planning** (3 cr). Study and analysis of the financial planning process including the assessment of investor risk profiles, construction of comprehensive personal financial statements and financial plans, ethics and responsibilities of professional financial planners, and regulation of the financial planning industry. The course is geared towards students who plan to pursue a career in the financial services industry. May involve evening exams. Prereq: Bus 340-345 or graduate standing in the College of Business and Economics. ~~Bus 345~~ (Spring only)

Bus **301 Financial Management** (3 cr). Policies and practices involved in acquisition, control, and allocation of financial resources in business organizations. May involve evening exams. Prereq: Acct 201, ~~Acct 202~~ or Acct 205, Stat 251 or 271, and Econ 202 or 272.

- Change the description of the following course [**Effective:** Summer 2005]
 Econ **272 Foundations of Economic Analysis** (4 cr). *May be used as core credit in J-3-d.* One-semester introductory course on the principles of economics, covering both micro- and macro- concepts, theory, analysis, and applications. May involve evening exams. Carries no credit after Econ 201 and 202; carries 3 credits after either Econ 201 or 202. Students who have successfully completed this course, have not completed Econ 340, and later decide to major in economics are required, in consultation with the advisor, to take either Econ 201 or 202 for 2 credits.
- Change the curricular requirements of **Finance** (B.S.Bus.) [**Effective:** Summer 2005]
 Required course work includes the university requirements (see regulation J-3), the college requirements, and the following (note: students in the Finance Major with the Financial Planning Option should consult the requirements for that option):

Acct 315 Corporate Accounting and Reporting I (3 cr)
 Bus 302 Intermediate Financial Management (3 cr)
 Bus 407 Financial Institutions (3 cr)
 Bus 409 Problems in Financial Management (3 cr)
 Econ 343 Money and Banking (may be used to fulfill college core econ requirement) (3 cr)
Finance electives: Two courses selected two from the following (6 cr):
 Bus 405 Portfolio Management (3 cr)
 Bus 408 Security Analysis (3 cr)
~~Bus 461 Retirement Planning and Employee Benefits or Bus 462 Principles of Financial Planning (3 cr)~~
 Bus 481 International Finance (3 cr)
Supporting electives: Two courses selected two from the following (6 cr):
 Acct 415 Advanced Financial Accounting and Reporting (3 cr)
 Acct 430 Accounting for Public Sector Entities (3 cr)
 Acct 486 Accounting for Management Decision Making and Control (3 cr)
 Bus 362 Real Property Appraisal or Bus 364 Insurance (3 cr)
 Bus 405 Portfolio Management (if not chosen above) (3 cr)
 Bus 408 Security Analysis (if not chosen above) (3 cr)
 Bus 421 Marketing Research and Analysis (3 cr)
 Bus 427 Services Marketing (3 cr)
Bus 461 Retirement Planning and Employee Benefits or Bus 462 Principles of Financial Planning (3 cr)
 Bus 481 International Finance (if not chosen above) (3 cr)
 Econ 352 Intermediate Microeconomic Analysis (3 cr)
 Econ 353 Quantitative Economics and Forecasting (3 cr)
 Econ 407 Public Finance or Econ 408 State and Local Government Finance (3 cr)
 Econ 453 Econometrics (3 cr)
 Stat 401 Statistical Analysis (3 cr)
 Electives to total 128 cr for the degree

- Change the curricular requirements of **Management and Human Resources** (B.S.Bus.) [**Effective:** Summer 2005]
 Required course work includes the university requirements (see regulation J-3), the college requirements, and:
 Bus 412 Human Resource Management (3 cr)
 Bus 413 Leadership and Organizational Behavior (3cr)
 Bus 418 Organization Design and Changes (3 cr)
 And one of the following emphases:

Management Emphasis

Bus 414 Entrepreneurship (3 cr)
 One of the following courses (3 cr):
 Bus 378 Project Management (3 cr)
 Bus 456 Quality Management (3 cr)
 Bus 470 Purchasing and Materials Management (3 cr)

- Bus 472 Operations Planning and Scheduling (3 cr)
 - One of the following courses (3 cr):
 - Bus 324 Buyer Behavior (3 cr)
 - Bus 420 Promotional Strategy (3 cr)
 - Bus 422 Personal Selling and Sales Force Management (3 cr)
 - Bus 425 Retail Distribution Management (3 cr)
 - Bus 426 Marketing Channels Management (3 cr)
 - Bus 427 Services Marketing (3 cr)
 - One of the following courses (3 cr):
 - Bus 302 Intermediate Financial Management (3 cr)
 - Bus 362 Real Property Appraisal (3 cr)
 - Bus 364 Insurance (3 cr)
 - Bus 407 Financial Institutions (3 cr)
 - Bus 481 International Finance (3 cr)
 - One additional course selected from those not taken in the three groups above (3 cr)
 - One of the following courses (3 cr):
 - [Anth 462 Human Issues in International Development \(3 cr\)](#)
 - [Comm 233 Interpersonal Communication \(3 cr\)](#)
 - Comm 235 Organizational Communication (3 cr)
 - Comm 331 Conflict Management (3 cr)
 - [Comm 335 Intercultural Communication \(3 cr\)](#)
 - [Comm 432 Gender and Communication \(3 cr\)](#)
 - Comm 433 Organizational Communication Theory and Research (3 cr)
 - [Comm 491 Communication and Aging \(3 cr\)](#)
 - Psyc 320 Introduction to Social Psychology (3 cr)
 - [Soc 301 Introduction to Diversity and Stratification \(3 cr\)](#)
 - [Soc 427 Race and Ethnic Relations \(3 cr\)](#)
- Electives to total 128 cr for the degree

Human Resources Management Emphasis

- Bus 416 Staffing and Compensation (3 cr)
 - Bus 441 Labor Relations (3 cr)
 - One of the following courses (3 cr):
 - Psyc 316 Industrial/Organizational Psychology (3 cr)
 - Psyc 430 Tests and Measurements (3 cr)
 - Psyc 435 Personnel Psychology (3 cr)
 - Psyc 450 Training and Performance Support (3 cr)
 - [Bus 461 Retirement Planning and Employee Benefits \(3 cr\)](#)
 - ~~One~~ [Select two](#) of the following courses [\(at least one selection must be an upper-division course\)](#) (6 cr):
 - [Anth 462 Human Issues in Human Development \(3 cr\)](#)
 - [Comm 233 Interpersonal Communication \(3 cr\)](#)
 - Comm 235 Organizational Communication (3 cr)
 - Comm 331 Conflict Management (3 cr)
 - Comm 332 Communication and the Small Group (3 cr)
 - [Comm 335 Intercultural Communication \(3 cr\)](#)
 - [Comm 432 Gender and Communication \(3 cr\)](#)
 - [Comm 491 Communication and Aging \(3 cr\)](#)
 - [Soc 301 Introduction to Diversity and Stratification \(3 cr\)](#)
 - Soc 427 Racial and Ethnic Relations (3 cr)
- Electives to total 128 cr for the degree

5. Change the curricular requirements of **Professional Golf Management Option in Marketing (B.S.Bus.)** [Effective: Summer 2005]
Required course work includes the university requirements (see regulation J-3), the college requirements, and:

- Bus 298 Internship (4 cr)
- Bus 324 Buyer Behavior (3 cr)
- [Bus 398 Internship \(6 cr\)](#)
- Bus 421 Marketing Research and Analysis (3 cr)
- Bus 424 Pricing Strategy and Tactics (3 cr)
- Bus 425 Retail Distribution Management (3 cr)
- Bus 428 Marketing Management (3 cr)
- LArc 301 Survey of Landscape Architecture & Golf Course Design (4 cr)
- PEP 305 Applied Sports Psychology (3 cr)
- PISc 302 Golf and Sports Turf Management (3 cr)
- Rec 103 Introduction to Professional Golf Management (2 cr)
- Rec 105 Teaching Golf I (2 cr.)
- Rec 150 Golf Professional Training Program, Level I (1 cr)
- Rec 205 Teaching Golf II (2 cr)
- Rec 250 Golf Professional Training Program, Level II (1 cr)
- Rec 340 Hospitality, Leisure, and Recreation Enterprises (3 cr)
- Rec 345 Hospitality, Leisure, and Recreation Enterprises Lab (1 cr)
- Rec 349 Facility Planning and Management (2 cr)
- Rec 494 Golf Program, Planning and Management (3 cr)
- One of the following communication courses (3 cr):
 - Comm 233 Interpersonal Communication (3 cr)

Comm 235 Organizational Communication (3 cr)
 Comm 331 Conflict Management (3 cr)
 Comm 332 Communication and the Small Group (3 cr)

Tier 1 Marketing Electives: One of the following courses:

Bus 420 Promotional Strategy (3 cr)
 Bus 422 Personal Selling and Sales Force Management (3 cr)
 Bus 423 Internet Marketing (3 cr)
 Bus 426 Marketing Channels Management (3 cr)
 Bus 427 Services Marketing (3 cr)
 Bus 482 International Marketing (3 cr)

~~Tier 2 Business Electives:~~

~~One upper division (300-400-level) CBE course, excluding Bus 321 (3 cr)
 Bus 398 Internship (3-6 cr)~~

*Students must meet the golf handicap of 8. In addition, PGM students will pay a golf usage fee directly to the ASUI Golf Course each semester.

Civil Engineering

- Change the description, prerequisites and co-requisite of the following course [**Effective:** Summer 2005]
CE 473 Highway Design (3 cr). Planning, ~~geometrics, location, and design of urban and rural~~ horizontal and vertical alignments, field data collection, location and design of highway systems. Demonstrated competence in the operation of electronic total stations and land development software required for permission. Two lec and one 3-hr lab a wk. Prereq: ~~CE 372, CE 360 or CE 211 and perm.~~ Coreq: CE 372.
- Drop the following courses [**Effective:** Summer 2005]
CE 316 Advanced and Route Surveys (3 cr). Advanced survey methods including state plan coordinate systems, practical astronomy, and route surveys; field layout to include meridian determination, circular curves, spirals, setting slope and grade stakes, bridge and culvert surveys. Two lec and one 3-hr lab a wk. Prereq: CE 211. (Alt/yr)

GeoE 360 Geologic Hazards (3 cr). See Geol 360.

GeoE 362 Fundamentals of Geotechnical Engineering (4 cr). See CE 360.

GeoE 400 (s) Seminar (cr arr). Prereq: perm.

GeoE 401 Field Geology and Report Writing (6 cr). See Geol 401.

GeoE 497 (s) Practicum in Tutoring (1 cr, max 2). Tutorial services performed by advanced students under faculty supervision. Graded P/F. Prereq: perm of dept.

GeoE 597 (s) Practicum (cr arr). Prereq: perm.
- Add the following cooperative course [**Effective:** Summer 2005]
CE ID&WS569 Advanced Topics in Geotechnical Engineering (2-4 cr, max 9). WSU CE 511. Soil dynamics, geotechnical earthquake engineering, theoretical soil mechanics, numerical methods in soil mechanics, and geohydrology, engineering geology, cold regions geoengineering.

CE WS549 Advanced Topics in Structural Engineering (3 cr). WSU CE 537.
- Change the title of the following cooperative course [**Effective:** Summer 2005]
CE ID&WS542 Advanced Design of Steel Structures (3 cr). WSU C E 537. Composite action, hybrid sections, plate girders, curved girders, fatigue design, splices and connections, loads, load combinations, load distribution, computer modeling and analysis. One 1-day field trip. Prereq: CE 444 or perm.

Computer Science

- Add the following courses [**Effective:** Summer 2005]
CS 336 Introduction to Information Assurance (3 cr). Introduces the confidentiality, availability and integrity goals of information systems; resistance, recognition and response categories of assurance. Focus on computer security and survivability, including cryptography, network security, general purpose operating system security and dependability and special purpose systems for high assurance security and dependability. Prereq: CS 240.

CS J424/J524 Advanced Computer Graphics (3 cr). Graphical user interfaces; rendering for realism including shading, shadows and textures; fractals; raster displays, pixmaps, and antialiasing; 3D curves and surfaces; color theory; hidden surfaces; ray tracing; games. Additional work required for graduate credit. Prereq: CS 324, Math 175. (Spring only)

CS J441/J541 Advanced Operating Systems (3 cr). Principles of contemporary operating systems for network and distributed computer systems; sequential processes, scheduling, process synchronization, device management, file systems, memory management, and protection and security. Additional work required for graduate credit. Prereq: CS 240.

CS J447/J547 Computer and Network Forensics (3 cr). Competence in using established forensic methods in the handling of electronic evidence; rigorous audit/logging and data archival practices; prevention, detection, apprehension, and prosecution of

security violators and cyber criminals; identifying and correcting computer vulnerabilities in a way that is smart, prudent, and responsible. Additional work required for graduate credit. Prereq: CS 336 and perm.

CS 524 Advanced Computer Graphics (3 cr). See CS J424/J524.

CS 547 Computer and Network Forensics (3 cr). See CS J447/J547.

CS J451/J551 Advanced Computer Architecture (3 cr). CS 551 same as ECE 541. Principles and alternatives in instruction set design; processor implementation techniques, pipelining, parallel processors, memory hierarchy, and input/output; measurement of performance and cost/performance trade-off. Additional work required for graduate credit. Prereq: CS 150, Stat 301 or perm.

- Change the prerequisites of the following course [**Effective:** Summer 2005]
CS ID&WS324 Computer Graphics (3 cr). WSU Cpt S 442. Use of the computer to define, store, manipulate, and display 2-D and 3-D objects; 2-D curvefitting and 3-D surface development. Prereq: [CS 112 and Math 160 or 170 and trig or perm CS 213 or CS 121, and Math 330.](#)

CS 481 Senior Capstone Design (4 cr). Application of formal design techniques to development of a large computer science project performed by students working in teams. Significant lab work reqd. [Prereq: CS 382 and Engr 317, or CS 480.](#)

- Change the number and prerequisites of the following course [**Effective:** Summer 2005]
~~CS ID-J423/J523~~ **J438/IDJ538 Network Security** (3 cr). [\(CS 423\)](#) WSU Cpt S 425. Practical topics in network security; policy and mechanism, malicious code; intrusion detection, prevention, response; cryptographic techniques for privacy and integrity; emphasis on tradeoffs between risk of misuse, cost of prevention, and societal issues; concepts implemented in programming assignments. Additional projects/assignments reqd for grad cr. [Recommended Preparation: Knowledge of C or C++.](#) [Prereq: CS 336.](#)

~~CS 551 Advanced Computer Architecture~~ (3 cr). ~~Same as ECE 541. Principles and alternatives in instruction set design; processor implementation techniques, pipelining, parallel processors, memory hierarchy, and input/output; measurement of performance and cost/performance trade-off~~ [See CS J451/J551.](#) [Prereq: CS 150, Stat 301 or equiv perm.](#)

- Change the number, title and prerequisites of the following course [**Effective:** Summer 2005]
~~CS J442/J542~~ **J436/J536 Computer Security** [Advanced Information Assurance Concepts](#) (3 cr). [\(CS 442\)](#) Cryptographic systems, coding and decoding of messages; network, database, and operating system security issues, capability and access-control mechanisms; current trends and research in mandatory and discretionary security policies. Additional projects/assignments reqd for grad cr. Prereq: [Stat 304](#) [CS 336.](#)

- Change the title of the following course [**Effective:** Summer 2005]
~~CS ID&WS445 Systems Program~~ **Compiler and Translator Design** (4 cr). WSU Cpt S 452. Algorithms used by the following system software: assemblers, macro-processors, interpreters, and compilers; compiler design options and code optimization; all concepts implemented in major programming assignments.

- Drop the following course [**Effective:** Summer 2005]
CS 307 History of Calculating and Computing (3 cr). Open to all students. Exploration of numerical problems that created demands for better calculating devices, from the abacus to the supercomputer. Prereq: CS 101 or 112 and upper-division standing.

- Change the curricular requirements for **Computer Science** (B.S.C.S.) [**Effective:** Summer 2005]
 Required course work includes the university requirements (see regulation J-3) and:

[Biol 115 Cells and the Evolution of Life and Biol 116 Organisms and Environments, or Chem 111 Principles of Chemistry I and Chem 112 Principles of Chemistry II, or Phys 211 Engineering Physics I and Phys 212 Engineering Physics II, or Phys 211 Engineering Physics I and Phys 213 Engineering Physics III \(8-9 cr\)](#)

- Comm 101 Fundamentals of Public Speaking (2 cr)
- CS 120 Computer Science I (4 cr)
- CS 121 Computer Science II (4 cr)
- CS 150 Computer Organization and Architecture (3 cr)
- CS 210 Computing Languages (3 cr)
- CS 240 Computer Operating Systems (3 cr)
- CS 270 System Software (3 cr)
- CS 381 Software Engineering I (3 cr)
- CS 382 Software Engineering II (3 cr)
- CS 401 Contemporary Issues in Computer Science (1 cr)
- CS 385 Theory of Computation (3 cr)
- CS 395 Analysis of Algorithms (3 cr)
- CS 481 Senior Capstone Design (4 cr)
- Engr 317 Technical Writing (3 cr)
- Math 170, 175 Analytic Geometry and Calculus I, II (8 cr)
- Math 176 Discrete Mathematics (3 cr)
- Math 330 Linear Algebra (3 cr)
- Stat 301 Probability and Statistics (3 cr)

[One of the following laboratory science sequences \(8-9 cr\):](#)

- [Biol 115 Cells and the Evolution of Life and Biol 116 Organisms and Environments \(8 cr\)](#)
- [Chem 111 Principles of Chemistry I and Chem 112 Principles of Chemistry II \(9 cr\)](#)
- [Phys 211 Engineering Physics I and Phys 212 Engineering Physics II \(8 cr\)](#)
- [Phys 211 Engineering Physics I and Phys 213 Engineering Physics III \(8 cr\)](#)

Upper-division technical electives selected to satisfy the credit distribution in these categories (15 cr):

Computer Science (12 cr) – any upper-division CS course except 499. ~~These advance courses must include one advanced sequence consisting of at least 6 credits.~~

Mathematics (3 cr) – Math 275 or any upper-division Math or Stat course except Math 400, 404, 499, and 513-519.

Science electives (4 cr)

The minimum number of credits for the degree is 128, not counting Engl 101, Math 143, and other courses that might be required to remove deficiencies.

Students majoring in computer science must earn a grade of ~~B-C~~ or better ~~with a 2.50 GPA or higher~~ in CS 120, 121, and 150 and ~~a C or better in~~ Math 176 before registration is permitted in 200 level CS courses. Students majoring in computer science must earn a grade of C or better in CS 210, 240, 270, and Math 170, 175 and 176 before registration is permitted in upper-division CS courses.

Students must consult with their advisors when selecting electives within the curriculum to insure that their career objectives are met.

Electrical and Computer Engineering

1. Change the prerequisites of the following courses [Effective: Summer 2005]

ECE 101 **Foundations of Electrical and Computer Engineering** (2 cr). Course is geared toward freshmen ECE students with little or no fundamental electrical/computer engineering knowledge and is highly interactive and hands-on; includes introductory coverage of basic signal characteristics, amplifier applications and design, fundamental circuit analysis, data analysis, digital logic and computer architecture, electromagnetics, semiconductor physics and solar cells, and VLSI, etc.; nontechnical topics relevant to freshmen will also be included. ~~Recommended Preparation~~ Coreq: Math 143 or ~~higher~~ Math 170.

ECE ~~ID&WS452~~ **Communication Systems** (3 cr). WSU EE 451. Introduction to modern communication systems; baseband pulse and data communication systems; communication channels and signal impairments; filtering and waveform shaping in the time and frequency domain; carrier-modulation for AM and FM transmission; bandpass digital and analog communication systems; comparison of system performance. Prereq: ECE ~~350450~~. (Alt/yrs)

ECE ~~480-481~~ **EE Senior Design I and II** (3 cr). ECE 481: *May be used as core credit in J-3-d*. The capstone design sequence for electrical engineering majors. Course topics include design, research, simulation, and experimental methods; specifications, prototyping, troubleshooting and verification; report writing, documentation and oral presentations. Topics are considered in the context of a major design project involving a team of students. Projects incorporate realistic engineering constraints; i.e. environmental, sustainability, manufacturability, ethical, safety, social and political considerations. Prereq for ECE 480: ECE 240, 241, 310, 311, 320, ~~321, 340, 341~~, and Stat 301, or perm. Prereq for ECE 481: ECE 330, 331, 350, 351, and 480, or perm.

2. Change the corequisite for the following course [Effective: Summer 2005]

ECE **340 Microcontrollers** (3 cr). Introduction to use of embedded microcontrollers and microprocessors; processor architecture; assembly language programming; use of development systems and/or emulators for system testing and debugging; software and hardware considerations of processor interfacing for I/O and memory expansion; programmed and interrupt driven I/O techniques. Three lec a wk. Prereq: ECE 240, ECE 241, CS 112. Coreq: ECE 341.

3. Change the curricular requirements of **Electrical Engineering** (B.S.E.E.) [Effective: Summer 2005]

Required course work includes the university requirements (see regulation J-3) and:

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Upper-division engineering science elective chosen from Engr 320, 335, 350, or CE 402 (3 cr)

~~Humanities and social sciences electives to satisfy UI requirements listed in J-3~~

Technical electives taken from upper-division Engineering, Math, Physics, and Computer Science courses. Of these eighteen credits a minimum of twelve credits must be selected from electrical engineering courses including at least nine credits from the follow courses: ECE 410, 420, 430, 440, and 450. (18 cr)

The minimum number of credits for the degree is 128, not counting Engl 101, Math 143, and other courses that might be required to remove deficiencies.

Students majoring in electrical engineering must earn a grade of P in ECE 292 and a grade of C or better in each of the following courses before registration is permitted in upper-division electrical and computer engineering courses: Chem 111, CS 112, ECE 210, 211, 212, and 213, Engr 210, and 220, Math 170, 175, 275, and 310, and Phys 211, 212. Students majoring in electrical engineering or computer engineering must meet the college requirements for admission to classes (see "Admission to Classes" under College of Engineering, part four).

Any student majoring in electrical engineering may accumulate no more than a total of 14 credits of D's and F's in mathematics, science, or engineering courses that are used to satisfy graduation requirements. Included in this number are multiple repeats of a single course or single repeats in multiple courses and courses transferred from other institutions.

Within the constraints on choice of technical electives noted above, students may choose sets of electives to develop proficiencies in certain areas of emphasis. Three such areas are currently available, one in communications, one in integrated circuit design, and one in power. The course requirements for each of these areas are described below.

4. Change the curricular requirements of **Computer Engineering** (B.S.Comp.E.) [Effective: Summer 2005]

The minimum number of credits for the degree is 128, not counting Engl 101, Math 143, and other courses that might be required to remove deficiencies.

Students majoring in computer engineering must earn a grade of C or better in each of the following courses for graduation, and before registration is permitted in upper-division engineering courses: ECE 210, 212, 240, 241, Math 170, 175, 310, Phys 211, 212. Students majoring in computer engineering must earn a grade of B or better in CS 120, 121, 150, and a C or better in Math 176 for graduation and before registration is permitted in 200-level CS courses. Students majoring in computer engineering must earn a

grade of C or better in CS 210, 240, 270, and Math 170, 175, 176 for graduation and before registration is permitted in upper-division CS courses.

Any student majoring in computer engineering may accumulate no more than a total of 14 credits of D's and F's in mathematics, science, or engineering courses that are used to satisfy graduation requirements. Included in this number are multiple repeats of a single course or single repeats in multiple courses and courses transferred from other institutions.

Fish and Wildlife Resources

1. Add the following courses [**Effective:** Summer 2005]
WLF **483 Senior Project Presentation** (1 cr). See For 483.
2. Change the curricular requirements of **Fishery Resources Minor** [**Effective:** Summer 2005]
Fish 314 Fish Ecology (3 cr)
Fish 495 Seminar (1 cr)
For/Rnge 221 Natural Resources Ecology or Biol 314 Ecology and Population Biology (3-4 cr)
Four of the following courses (12-15 cr):
Fish 414 Biol 481 Ichthyology (4 cr)
Fish 415 Limnology (4 cr)
Fish 418 Fisheries Management (4 cr)
Fish 422 Concepts in Aquaculture (3 cr)
Fish 424 Fish Health Management (4 cr)
Fish 430 Riparian Ecology and Management (3 cr)
Fish 435 Wetland Ecology and Management (3 cr)

Forest Resources

Add the following course [**Effective:** Summer 2005]

For **515 Physical Hydrology** (3 cr). A quantitative treatment of the physical processes that control water fluxes in the environment. Specific emphasis on evaporation, transpiration, snow processes and soil water flow. (Fall only, Alt/yrs)

Geography

1. Add the following courses [**Effective:** Summer 2005]
Geog **365 Political Geography** (3 cr). A survey of the geographical framework of the State and its development over the last 400 years. An examination of the ideas of geopolitics and the role of hegemony in interstate relations as well as the geographical implications of globalization are emphasized. The creation of diverse political landscapes of actual and imagined communities and their impact on ideas of nationalism and electoral behavior are also discussed. Prereq: Geog 200 or permission. (Alt/yrs)

Geog **440 The New Global Economy** (3 cr). The course will explore the structures of globalization from convergence and labor migration to trade bloc formation and regional specialization. An understanding the role of location in the creation and modification of economic landscapes will be emphasized. Recommended Prep: Econ 446. Prereq: Econ 352 and Geog 350 or permission. (Alt/yrs)

Geog **542 Spacial Statistics** (3 cr). The course focuses on the basic theory and methods of spatial statistics including spatial dependence assessment and modeling. The course will cover basic spatial data analysis, point pattern analysis, spatial autocorrelation methods as well as the analysis of lattice structures. Geographically weighted regression, spatial auto regression and the analysis of geographically continuous data using kriging methods will also be covered. Prereq: Geog 475, Math 170, Math 330, and Stat 401 or permission. (Alt/yrs)

Geog **479 Web-Based GIS** (3 cr). Use of web-based mapping sites that offer dynamic and real-time access to geographic information systems and elementary spatial analysis. How to provide maps, tabular data and satellite imagery over the web and design sites of utility to multiple users. Prereq: Geog 385, Geog 475 or perm.
2. Change the title and description of the following course [**Effective:** Summer 2005]
Geog **180 Spatial-Geospatial Graphics** (3 cr). May be used as core credit in J-3-d. An introduction to cartography and some of the tools of map-making. The course includes instruction in the graphic language of maps, map reading and interpretation, map use, and new mapping technologies. Two lec and 1 hr of lab a wk.
3. Change the title, description and prerequisites of the following course [**Effective:** Summer 2005]
Geog **470 Computer Mapping Geographic Visualization** (3 cr). An introduction to the science and art of cartography and spatial graphic representation. The theory and methods of spatial information representation are presented in the context of map design and data composition. Geographic data mining, geospatial data visualization and manipulation, representation modes and the components of cartographic implementation are discussed. Design, generation, and analysis of thematic and topographic maps using digital mapping software on various microcomputer platforms and output devices; emphasis on cartographic communication and spatial analysis of computer-generated maps. Two lec and 2 hrs of lab a wk. Prereq: Geog 380-385 or perm.
4. Drop the following course [**Effective:** Summer 2005]
Geog **280 Cartographic Production Techniques** (4 cr). Practical production and design of finished maps for publication using methods appropriate for the task; emphasis on the process of reducing real-world phenomena and spatial relationships into well designed maps that effectively convey information visually. One lec and 3 hrs of lab a wk.

Geological Sciences

1. Add the following courses [**Effective:** Summer 2005]
Hydr **J414-J514 Ground Water-Surface Water Interaction** (3 cr). Physical and chemical ramifications of interactions between ground water flow systems and surface water bodies. Particular emphasis will be placed on water supply and surface water/ground

water contamination issues. Graduate credit requires completion of an additional, separate research paper on a selected topic. Prereq: Geol 309 or Hydr 409. (Alt/hrs)

Geol **J418/J518 Geomicrobiology** (3 cr). Same as Hydr J418/J518. Explore the interactions of microorganisms with the environment, particularly soil-rock-water interactions, and how microorganisms are important to our understanding of geological and hydrological processes. Topics include ground water microbiology, subsurface microbiology and the microbiology of extreme environments. Additional work required for graduate credit. (Spring only)

Hydr **J418/J518 Geomicrobiology** (3 cr). See Geol J418/J518.

2. Change the description of the following course [**Effective:** Summer 2005]
Hydr **ID-J472/ID-J572 Groundwater Management** (3 cr). WSU C E 578. Hydrologic, ~~economic, and legal,~~ **environmental and economic** factors controlling development and management of groundwater resources. Additional projects/assignments reqd for grad cr. Prereq or coreq: Geol 309 or Hydr 463.

3. Change the number, title, recommended preparation and description of the following course [**Effective:** Summer 2005]
Geol ~~513-518 Environmental Microbiology~~ **Geomicrobiology** (3 cr). ~~Explore the interaction of microorganisms in the environment and the roles that microorganisms play in geological processes. Topics include ground water microbiology, subsurface microbiology and the microbiology of extreme environments. Recommended Preparation: Chem 111, 112, Geol 101, MMBB 250. (Geol 513) See Geol J418/J518.~~

4. Drop the following courses [**Effective:** Summer 2005]
Geol **150 Geology of the Oceans** (3 cr). Introduction to the geology of the oceans including their origins and evolution. One 1-day field trip.

Geol **306 Nature of Earth Materials** (3 cr). Characterization and use of minerals and rocks; the role of rocks and minerals in hydrological and environmental problems; use of geologic maps in the determination of spatial distribution of natural materials for land use planning. Two lec and 2 hrs of lab a wk; one 1-day field trip. Prereq: Geol 101 or 111.

Geol **350 Oceanography** (3 cr). Study of geologic features of oceans. One 8-day field trip. Prereq: Geol 101 or 111.

Geol **J412/J512 The Making of a Habitable Planet** (3 cr). Same as EnvS J412/J512. The habitability of planet earth derives from a long history originating with the origin of the universe. This class will look at the origin and evolution of our planet and culminate with human's impact on the terrestrial environment. Grad credit will require additional design, educational, or research project. Prereq: One semester of college chemistry.

Geol **420 Erosion and Sediment Control** (3 cr). See GeoE 420.

Hydr **J463/J563 Hydrogeology** (3 cr). Same as GeoE J463/J563. Equations governing single fluid flow through saturated porous media under various geologic conditions; models, general relations between flow systems and water quality, and between surface and ground water. Additional projects/assignments reqd for grad cr. Prereq: Math 275 or perm.

Hydr **ID475 Design and Construction of Water Wells** (3 cr). Same as GeoE ID-J480/ID-J580. WSU C E 506. Analysis of geologic and engineering factors important in design, construction, operation, and maintenance of water wells. Additional projects/assignments reqd for grad cr. Prereq or coreq: Geol 309 or Hydr 463.

5. Change the curricular requirements of **Geological Sciences** (B.S.) [**Effective:** Summer 2005]
Required course work includes the university requirements (see regulation J-3) and:

Chem 111 Principles of Chemistry I (4 cr)
Chem 112 Principles of Chemistry II (5 cr)
Engl 317 Technical Writing (3 cr)
~~Geog 385 GIS Primer (3 cr)~~
Geol 101 or 111 Physical Geology (4 cr)
Geol 102 Historical Geology (4 cr)
~~Geol 201 Computer Geology (2 cr)~~
Geol 249 Mineralogy and Optical Mineralogy (4 cr)
Geol 290 Field Geology I (3 cr)
Geol 324 Principles of Stratigraphy and Sedimentation (4 cr)
Geol 326 Igneous and Metamorphic Petrology (4 cr)
Geol 345 Structural Geology (3-4 cr)
Geol 422 Principles of Geophysics (3 cr)
Geol 423 Principles of Geochemistry (3 cr)
Geol 490 Field Geology II (3 cr)

And the completion of one of the following options and electives approved by the advisor to total 128 credits for the degree.

Mathematics

1. Change the prerequisites of the following courses [**Effective:** Summer 2005]

Math **215 Seminar in Topology of the Plane** (3 cr). Carries no credit after Math 411 or 471. Primary goal is to teach students to prove theorems; open and closed sets, connectedness, compactness, continuity, etc. Class size limited to 15. ~~Recommended Preparation: Math 170, 175.~~ **Prereq: Math 175 and permission.** (Fall only)

Math 326 Linear Programming (3 cr). Geometric solutions, simplex method, duality and revised simplex method, sensitivity, integer programming, applications. Recommended Preparation: Math ~~160 or 170~~175. Prereq: ~~Math 160 or 170~~-. (Spring, Alt/yrs)

Math 330 Linear Algebra (3 cr). Linear equations, matrices, linear transformations, eigenvalues, diagonalization; applications. Recommended Preparation: Math ~~160 or 170~~175. Prereq: ~~Math 160 or 170~~.

Math 346 Applied Combinatorics (3 cr). Elementary counting methods, generating functions, recurrence relations, Polya's enumeration, enumeration of graphs, trees, searching, combinatorial algorithms. Recommended Preparation: Math ~~175, Math 176 or 376 or 475~~. Prereq: ~~Math 175~~. (Spring, Alt/yrs)

Math 376 Discrete Mathematics II (3 cr). Selected topics from discrete mathematics such as graph theory, modeling, and optimization. Recommended Preparation: ~~Math 176~~Prereq: ~~Math 176 or perm~~. (Spring, Alt/yrs)

Math 386 Theory of Numbers (3 cr). Elementary number theory, including divisibility properties, congruences, and Diophantine equations. Recommended Preparation: ~~Math 143~~Prereq: ~~Math 175 or perm~~. (Spring only)

Math 411 Elementary Topology (3 cr). Metric spaces; topological spaces; compactness; connectedness, continuity. Recommended PreparationPrereq: Math 275 ~~or perm~~. (Alt/yrs)

Math 432 Numerical Linear Algebra (3 cr). Analysis of efficiency and accuracy of large linear algebra problems; special emphasis on solving linear equations and finding eigenvalues. Recommended PreparationPrereq: Math 275, 330, and knowledge of a computer language. (Fall, Alt/yrs)

Math 433 Numerical Analysis (3 cr). Analysis of numerical methods useful in solving applied problems; solution of nonlinear equations, interpolation, numerical differentiation and integration, numerical solution of differential equations. Recommended PreparationPrereq: Math 275, 330, and knowledge of a computer language. (Spring only)

Math ID&WS451 Probability Theory (3 cr). Same as Stat 451. WSU Math 443. Random variables, expectation, special distributions (normal, binomial, exponential, etc.), moment generating functions, law of large numbers, central limit theorem. Recommended PreparationPrereq or coreq: Math 275, ~~graduate standing or perm~~. (Fall only)

Math ID&WS452 Mathematical Statistics (3 cr). Same as Stat 452. WSU Math and Stat 456. Estimation of parameters, confidence intervals, hypothesis testing, likelihood ratio test, sufficient statistics. Recommended PreparationPrereq: Math 451 ~~or perm~~. (Spring only)

Math ID&WS-J453/ID&WS-J538 Stochastic Models (3 cr). Same as Stat J453/J544. WSU Stat 544. Markov chains, stochastic processes, and other stochastic models; applications. Additional projects/assignments reqd for grad cr. Recommended PreparationPrereq: Math 451 ~~or perm~~. (Spring, Alt/yrs)

Math 461-462 Abstract Algebra (3 cr). Groups, rings, and fields. Recommended pPrereq for Math 461: ~~Math 330, and~~ at least one of the following: Math 215, 286, ~~330, 390~~. Prereq for Math 462: ~~Math 461~~. (Math 461: Fall only. Math 462: Spring only)

Math 471-472 Advanced Calculus (3 cr). Topology of Euclidean n-space, limit and continuity, differentiation, integration. Recommended PreparationPrereq for Math 471: Math 275, ~~Math and~~ 215, ~~or perm~~. Prereq for Math 472: ~~Math 471 or perm~~. (Math 471: Fall only. Math 472: Spring only)

Math 480 Partial Differential Equations (3 cr). Intro to Fourier analysis, application to solution of partial differential equations; classical partial differential equations of engineering and physics. Recommended PreparationPrereq: Math 310 ~~or perm~~. (Spring, Alt/yrs)

Math 490 Introduction to Set Theory (3 cr). Set operations, functions, binary operations and relations, cardinal and ordinal numbers, axiom of choice, partially ordered sets, and Zorn's lemma. Recommended Preparation Prereq: Math 275. (Alt/yrs)

2. Change the title, credits and description for the following course [Effective: Summer 2005]

Math 301 Early Childhood Mathematics I (43 cr). Developmentally appropriate Focus on the mathematics for early childhood: numbers and operations, algebraic thinking, ~~geometry, measurement, and~~ probability ~~with an emphasis on reasoning, communication, connections, and~~ ~~statistics~~representation. ~~Emphasis will be placed on reasoning, representation, connections, and communication~~. This course is restricted to students from either the School of Family and Consumer Sciences or the College of Education. This course will not count as a 300 – level mathematics course in any major or minor in the College of Science. Prereq: One core math course. Recommended preparation: Stat 150. (Fall Only)
3. Drop the following courses [Effective: Summer 2005]

Math 161 Survey of Calculus II (3 cr). Carries no credit after Math 175. Functions of several variables, integration, probability, and infinite series; applications to business, social sciences, and the life sciences. Recommended Preparation: Math 160.

Math 255 Applied Actuarial Science I (0 cr). Review of calculus in preparation for Actuarial Exam 1. Prereq: Math 275. (Fall only)

Math 302 Early Childhood Mathematics II (3 cr). Developmentally appropriate mathematics for early childhood: geometry, measurement and statistics with an emphasis on reasoning, communication, connections, and representation. This course is restricted to students from either the School of Family and Consumer Sciences or the College of Education. This course will not count as a 300 – level mathematics course in any major or minor in the College of Science. Recommended Preparation: Math 301. (Spring Only)
4. Change the curricular requirements of **Mathematics (B.S.)** [Effective: Summer 2005]

Required course work includes the university requirements (see regulation J-3) and:

~~a. 3 credits (one course) in the Humanities in addition to the minimum university wide core requirement of 14 credits in the humanities/social sciences,*~~

~~b. 3 credits (one course) in the Social Sciences in addition to the minimum university wide core requirement of 14 credits in the humanities/social sciences,*~~

~~*Courses satisfying the humanities requirement are those dealing with the arts, literature, and philosophy. Courses satisfying the social science requirement are those courses dealing with a person's social condition including social relations, institutions, history, and participation in an organized community. Refer to online degree audit system through Web registration system or your academic advisor for a listing of appropriate courses.~~

~~A student may substitute the successful completion of an academic minor or an area of emphasis of at least 14 credits approved by the Math Department.~~

Math 170,175 and 275 Analytic Geometry and Calculus (11cr)
Math 330 Linear Algebra (3cr)

And one of the following options:

A. General Option

Math 215 Seminar in the Topology of the Plane (3 cr)
Math 461 Abstract Algebra (3 cr)
Math 471 Advanced Calculus (3 cr)
Math 462 Abstract Algebra or Math 472 Advanced Calculus (3 cr)
Math electives in courses numbered 303-499 or Stat 301 at least 6cr of which are in courses numbered 401 and above (12 cr)
Physics 211, 212 Engr Physics I, II and either Physics 213 or an upper division physics course (**except Phys 371**) with a Math 170 prerequisite (to acquaint the students with an area in which math is systematically applied; upon approval of the department, substitution of other courses to meet this requirement may be allowed (9 cr)

B. Applied–Statistics Option

CS 112 Introduction to Problem Solving and Programming or CS 120 Computer Science I (3-4 cr)
Math 451 Probability Theory (3 cr)
Math 452 Mathematical Statistics (3 cr)
Math 453 Stochastic Models (3 cr)
Stat 401 Statistical Analysis (3 cr)
Stat 423 Beginning SAS Programming (1 cr)
One course selected from the following (3-4 cr):
Stat 251 Principles of Statistics (3 cr)
Stat 271 Statistical Inference and Decision Analysis (4 cr)
Stat 301 Probability and Statistics (recommended) (3 cr)
At least two courses from the following (6 cr):
Math 395 Analysis of Algorithms (3 cr)
Math 426 Discrete Optimization (3 cr)
Math 432 Numerical Linear Algebra (3 cr)
Math 433 Numerical Analysis (3 cr)
Math 471-472 Advanced Calculus (6 cr)
At least one courses from the following (3 cr):
Stat 422 Sample Survey Methods (3 cr)
Stat 507 Experimental Design (3 cr)
Stat 510 Regression (3 cr)
Stat 514 Nonparametrics (3 cr)
Stat 521 Multivariate Analysis (3 cr)
Econ 353 Quantitative Economics and Forecasting (3 cr)
Approved electives in fields where statistics is applied (not to be in stat courses) (6 cr)

C. Applied—Computation Option

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D. Applied—Modeling Option

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E. Applied—Actuarial Science Option

Acct 201-202 Introduction to Accounting (6 cr)
Bus 301 Financial Management (3 cr)
Bus 364 Insurance (3 cr)
CS 112 Introduction to Problem Solving and Programming or CS 120 Computer Science I (3-4 cr)
Econ 201, 202 Principles of Economics (6 cr)
Math 310 Ordinary Differential Equations (3 cr)
Math 451 Probability Theory (3 cr)
Math 452 Mathematical Statistics (3 cr)

- Math 455 Applied Actuarial Science II (0 cr)
- Stat 401 Statistical Analysis (3 cr)
- Stat 423 Beginning SAS Programming (1 cr)
- At least one course selected from the following (3 cr):
 - Bus 332 Quantitative Methods in Business (3 cr)
 - Bus 405 Portfolio Management (3 cr)
 - Econ 351 Intermediate Macroeconomic Analysis (3 cr)
 - Econ 352 Intermediate Microeconomic Analysis (3 cr)
- One course selected from the following (3-4 cr):
 - Stat 301 Probability and Statistics (recommended) (3 cr)
 - Stat 251 Principles of Statistics (3 cr)
 - Stat 271 Statistical Inference and Decision Analysis (4 cr)
- One course selected from the following (3 cr):
 - Stat 433 Econometrics (3 cr)
 - Stat 510 Regression (3 cr)
 - Stat 525 Econometrics (3 cr)
 - [Econ 353 Quantitative Economics and Forecasting \(3 cr\)](#)
- Three math courses numbered above 400, excluding Math 513-519 (9 cr)

F. Applied—Operations Research Option

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Materials Science and Engineering

1. Add the following courses [**Effective:** Summer 2005]
 - MET 434 **Fundamentals of Polymeric Materials** (3 cr). See MSE 434.
2. Change the credits of the following courses [**Effective:** Summer 2005]
 - Met 101 **Introduction to Metallurgy and Materials Science** (~~4~~2 cr). Same as MSE 101. Earth resources, metallurgy, materials science, and manufacturing. (Fall only)
 - MSE 101 **Introduction to Metallurgy and Materials Science** (~~4~~2 cr). See MET 101.
3. Remove the joint listing and change the description of the following courses [**Effective:** Summer 2005]
 - Met 516 **Magnetic Materials** (3 cr). [See Met J416/J516. Study of paramagnetic, superparamagnetic, diamagnetic, ferrimagnetic, ferromagnetic, antiferromagnetic, magnetic anisotropy, magnetostriction and the effect of stress, magnetic domain and magnetization process, induced magnetic anisotropy, magnetic fine particles, magnetic thin film, magnetization dynamics, hard magnet, soft magnet, magnetic recording, magnetic head, magnetic media, magneto-optical recording.](#)
 - MSE 516 **Magnetic Materials** (3 cr). See Met [J416/J516](#).
 - MSE 525 **Electronic Materials** (3 cr). See Met [J425/J525](#).
 - Met 525 **Electronic Materials** (3 cr). [See Met J425/J525. The chemistry, physics, and materials science relating to fabrication and processing steps; materials properties and device properties; structures of electronic materials; electronic energy band; electrical properties of semiconductors; optical properties; interface; thermodynamics of compound semiconductors; semiconductor devices; optoelectronic devices; single crystal growth; amorphous silicon; control of semiconductor conductivity; dielectric materials; piezoelectronic materials; superconducting materials.](#)
4. Change the recommended preparation and prerequisites of the following course [**Effective:** Summer 2005]
 - MSE 434 **Fundamentals of Polymeric Materials** (3 cr). Basic information on polymeric materials, both fundamentals and uses. [Recommended Preparation](#)Prereq: Chem 111 and 112. (Fall only)
5. Change the recommended preparation of the following course [**Effective:** Summer 2005]
 - Met 202 **Microstructural Evaluation** (2 cr). Same as MSE 202. Techniques for preparing materials for observation and evaluation of microstructure by optical and scanning and transmission electron microscopy. One 2-hr and one 3-hr lab a wk. Recommended Preparation: [ME-264](#)Met 201.
6. Drop the following courses [**Effective:** Summer 2005]
 - MSE 450 **Digital Data Storage Systems** (3 cr). See ECE 454.
 - Met 505 **Advanced Rate Phenomena in Metallurgical Engineering** (3 cr). Same as MSE 520. Principles of rate phenomena in metallurgical engineering. Prereq: perm.
 - MSE 520 **Advanced Rate Phenomena in Metallurgical Engineering** (3 cr). See Met 505.
 - Met 528 **Advanced Engineering Ceramics** (3 cr). Same as MSE 528. Advanced materials: zirconia, alumina, silicon carbide, silicon nitride, glass ceramics, ceramic matrix composites, other miscellaneous non-oxides; advanced processing techniques: injection molding, combustion synthesis, hot isostatic pressing, superplastic forming, shock synthesis, plasma processing. Prereq: Met 527 or perm.
 - MSE 528 **Advanced Engineering Ceramics** (3 cr). See Met 528.
 - Met 205 **Introduction to Metallurgy** (3 cr). Mineral processing, hydrometallurgy, pyrometallurgy, and electrometallurgy; principles of materials science; structures, properties, and processes; phase diagrams and welding. Two lec and 1 hr of lab demonstration a wk; extra lab time reqd as assigned. Recommended Preparation: Engr 210, Math 175, Chem 112, and CS 112 or equiv.

Met 405 Industrial Minerals Processing and Design (3 cr). Equipment description, selection, and use in flowsheet design; includes crushing, grinding, screening, washing, and other classifying operations; also includes flowsheet design for industrial minerals such as sand and gravel, aggregate, limestone, and others.

Met J409/J509 Solution Mining (3 cr). Metal extraction from rubblized rock: chemistry, biology, transport, leaching kinetics, solution flow, aeration, rock permeability and alteration, leaching simulation, environmental containment, safety, metal recovery from solutions; well and reservoir technology; brine evaporation and extraction. Term paper or other additional assignments/projects reqd for grad cr. Prereq: Chem 111. (Alt/yr)

Met 509 Solution Mining (3 cr). See Met J409/J509.

Met J416/J516 Magnetic Materials (3 cr). Same as MSE J416/J516. Study of paramagnetic, superparamagnetic, diamagnetic, ferrimagnetic, ferromagnetic, antiferromagnetic, magnetic anisotropy, magnetostriction and the effect of stress, magnetic domain and magnetization process, induced magnetic anisotropy, magnetic fine particles, magnetic thin film, magnetization dynamics, hard magnet, soft magnet, magnetic recording, magnetic head, magnetic media, magneto-optical recording. Additional projects/assignments reqd for grad cr. Prereq: Sr standing, grad student, or perm.

MET ID461 Metallurgical Control and Optimization (3 cr). WSU Math and MSE 461. Basics of process control and optimization applied to metallurgical engineering.

MSE J416/J516 Magnetic Materials (3 cr). See Met J416/J516.

Met J425/J525 Electronic Materials (3 cr). Same as MSE J425/J525. The chemistry, physics, and materials science relating to fabrication and processing steps; materials properties and device properties; structures of electronic materials; electronic energy band; electrical properties of semiconductors; optical properties; interface; thermodynamics of compound semiconductors; semiconductor devices; optoelectronic devices; single crystal growth; amorphous silicon; control of semiconductor conductivity; dielectric materials; piezoelectronic materials; superconducting materials. Additional projects/assignments reqd for grad cr. Prereq: Sr standing, grad student, or perm.

MSE J425/J525 Electronic Materials (3 cr). See Met J425/J525.

Met 506 Advanced Ore Dressing (3 cr). Theories of comminution; flotation and related surface phenomena; electrical and magnetic concentration; process control. Prereq: Met 341 or perm.

Met 519 A World History of Mining, Metals, and Materials (3 cr). See Geol J419/J519.

7. Change the curricular requirements of **Materials Science and Engineering (B.S.M.S.E.) [Effective: Summer 2005]**

- Amst 301 Studies in American Culture or Phil 103 Ethics (3 cr)
- Chem 111 Principles of Chemistry I (4 cr)
- Chem 112 Principles of Chemistry II (5 cr)
- Chem 305 Physical Chemistry (3 cr)
- CS 112 Introduction to Problem Solving and Programming (3 cr)
- Econ 201 or 202 Principles of Economics or Econ 272 Foundations of Economic Analysis (3-4 cr)
- Engl 102 Essay Writing (3 cr)
- Engl 317 Technical Writing (3 cr)
- Engr 105 Engineering Graphics (2 cr)
- Engr 210 Engineering Statics (3 cr)
- Engr 240 Introduction to Electrical Circuits (3 cr)
- Engr 350 Engineering Mechanics of Materials (3 cr)
- Math 170 Analytic Geometry and Calculus I (4 cr)
- Math 175 Analytic Geometry and Calculus II (4 cr)
- Math 275 Analytic Geometry and Calculus III (3 cr)
- Math 310 Ordinary Differential Equations (3 cr)
- MSE 101 Intro to Metallurgy and Materials Science (4~~2~~ cr)
- MSE 201 Elements of Materials Science (3 cr)
- MSE 308 Thermodynamics of Materials (3 cr)
- MSE 309 Transport Phenomena for Design (4 cr)
- MSE 313 Physical Metallurgy (4 cr)
- MSE 341 Particulate Materials Processing (4 cr)
- MSE 412 Mechanical Behavior of Materials (3 cr)
- MSE 413 Phase Equilibria in Materials (3 cr)
- MSE 414 Process Design (3 cr)
- MSE 415 Materials Selection and Design (3 cr)
- MSE 417 Instrumental Analysis (3 cr)
- MSE 423 Corrosion (3 cr)
- MSE 427 Ceramic Materials (3 cr)
- MSE 430 Electronic, Optical, and Magnetic Properties of Materials (3 cr)
- MSE 432 Fundamentals of Thin Film Fabrication (3 cr)
- MSE 434 Fundamentals of Polymeric Materials (3 cr)
- Phys 211, 212 Engineering Physics I, II (8 cr)
- Stat 301 Probability and Stat or CE 402 Applied Numerical Methods for Engineers (3 cr)
- Technical electives (9 cr)
- Electives to satisfy UI requirements listed in J-3.

The minimum number of credits for the degree is ~~428~~¹³¹, exclusive of Engl 101 and mathematics courses numbered lower than Math 170.

8. Change the curricular requirements of **Metallurgical Engineering** (B.S.Met.E.) [**Effective:** Summer 2005]
Required course work includes the university requirements (see regulation J-3) and the following:

Amst 301 Studies in American Culture or Phil 103 Ethics (3 cr)
Chem 111 Principles of Chemistry I (4 cr)
Chem 112 Principles of Chemistry II (5 cr)
Chem 305 Physical Chemistry (3 cr)
~~CE 360 Fundamentals of Geotechnical Engineering (4 cr)~~
CS 112 Introduction to Problem Solving and Programming (3 cr)
Econ 201 or 202 Principles of Economics or Econ 272 Foundations of Economic Analysis (3-4 cr)
Engl 102 College Writing and Rhetoric (3 cr)
Engl 317 Technical Writing (3 cr)
Engr 105 Engineering Graphics (2 cr)
Engr 210 Engineering Statics (3 cr)
Engr 240 Introduction to Electrical Circuits (3 cr)
Engr 350 Engineering Mechanics of Materials (3 cr)
~~Engr 360 Engineering Economy (2 cr)~~
Math 170 Analytic Geometry and Calculus I (4 cr)
Math 175 Analytic Geometry and Calculus II (4 cr)
Math 275 Analytic Geometry and Calculus III (3 cr)
Math 310 Ordinary Differential Equations (3 cr)
Met 101 Intro to Metallurgy and Materials Science (~~4~~² cr)
Met 201 Elements of Materials Science (3 cr)
Met 308 Thermodynamics of Materials (3 cr)
Met 309 Transport Phenomena for Design (4 cr)
Met 313 Physical Metallurgy (4 cr)
Met 341 Particulate Materials Processing (4 cr)
Met 344 Hydroprocessing of Materials (4 cr)
Met 407 Materials Fabrication (3 cr)
Met 412 Mechanical Behavior of Materials (3 cr)
Met 413 Phase Equilibria in Materials (3 cr)
Met 414 Process Design (3 cr)
Met 415 Materials Selection and Design (3 cr)
Met 417 Instrumental Analysis (3 cr)
Met 423 Corrosion (3 cr)
Met 442 Pyroprocessing of Materials (4 cr)
Phys 211, 212 Engineering Physics I, II (8 cr)
Stat 301 Probability and Stat or CE 402 Applied Numerical Methods for Engineers (3 cr)
Technical electives (9 cr)
Electives to satisfy the UI requirements listed in J-3.

The minimum number of credits for the degree is ~~430~~¹³², exclusive of Engl 101 and mathematics courses numbered lower than Math 170.

9. Change the curricular requirements of **Materials Science and Engineering Minor** [**Effective:** Summer 2005]

MSE 201 Elements of Materials Science or ME 261 Engineering Materials (3 cr)
~~MSE 309 Metallurgical Transport Phenomena (3 cr)~~
And ~~11~~¹⁵ cr from the following courses (Note: If completing both the Metallurgical Engineering and the Materials Sciences and Engineering minors, must have ~~8~~¹² unique credits towards each minor):
~~Met 344 Hydroprocessing of Materials (4 cr)~~
MSE 313 Physical Metallurgy I (4 cr)
MSE 341 Particulate Materials Processing (4 cr)
MSE 407 Materials Fabrication (3 cr)
MSE 412 Mechanical Behavior of Materials (3 cr)
~~MSE 430 Electrical, Optical, and Magnetic Properties of Materials (3 cr)~~
~~MSE 432 Fundamentals of Thin Film Fabrication (3 cr)~~
Phys 212 Engineering Physics II (3 cr)

10. Change the curricular requirements of **Metallurgical Engineering Minor** [**Effective:** Summer 2005]

Met 201 Elements of Materials Science (3 cr)
Met 309 Metallurgical Transport Phenomena (4 cr)
And ~~11~~¹⁵ cr from the following courses (Note: If completing both the Metallurgical Engineering and the Materials Sciences and Engineering minors, must have ~~8~~¹² unique credits towards each minor):
Met 313 Physical Metallurgy I (4 cr)
Met 341 Particulate Materials Processing (4 cr)
Met 344 Hydroprocessing of Materials (4 cr)
Met 407 Materials Fabrication (3 cr)
Phys 212 Engineering Physics II (3 cr)

Mechanical Engineering

1. Add the following courses [**Effective:** Summer 2005]

ME J418/J518 Discrete System Simulation and Animation (3 cr). How to model discrete systems such as found in manufacturing. A non-procedural computer language for writing computer code will be taught. Topics include inventory control, scheduling, and optimization; animation of simulation results. Special software for the animation will be covered. Additional exercises and a major term project required for graduate credit. Prereq: ME 416: junior status or perm. ME 516: perm.

ME 543 Analysis of Thermal Energy Systems (3 cr, max arr). See ME J443/J543.

2. Change the number, joint listing and description of the following course [**Effective:** Summer 2005]
 ME ~~J443/J543~~ (s) **Analysis of Thermal Energy Systems** (3 cr, max arr). Analysis of thermal energy systems; topics vary depending on instructor and may include one or more of the following thermal systems: solar energy, refrigeration, vapor power generation, gas power generation, geothermal energy, wind energy, fuel cells, nuclear energy, thermoelectric systems, and thermionic systems. Additional assignments and a technical research report required for graduate credit. Prereq: Engr 335 and ME 345; perm reqd to repeat course for credit.
3. Change the description of the following course [**Effective:** Summer 2005]
 Engr **102 Introduction to Engineering** (2 cr). Offered summer only for students in the ~~Summer Start~~JEMS Program. Introduction to engineering ~~disciplines and careers~~career opportunities through analysis of engineering design problems; techniques for analyzing and solving engineering problems~~includes computer graphics, programming languages, economics, and statistics. May include field trips and/or projects. Credits may not count toward graduation in some departments. (Summer only).~~
4. Drop the following course [**Effective:** Summer 2005]
 ME **103 Introduction to Engineering** (2 cr). Intro to engineering career opportunities through analysis of engineering design problems; includes computer graphics, programming languages, economics, and statistics. (Summer short course for JEMS Program)
Equivalent Course: Engr 102

Statistics

1. Change the title of the following course [**Effective:** Summer 2005]
 Stat ~~251 Principles of Statistics~~Statistical Methods (3 cr). *May be used as core credit in J-3-c.* Cr is not given for Stat 251 after Stat 271 or Stat 301. Intro to statistical methods including design of statistical studies, basic sampling methods, descriptive statistics, probability and sampling distributions; inference in surveys and experiments, regression, and analysis of variance. Prereq: Math 137, 143, 160, 170, or 2 yrs of high school algebra and perm.
2. Change the number and corequisites of the following course [**Effective:** Summer 2005]
 Stat ~~ID&WS640550~~ **Regression** (3 cr). (Stat 510) WSU Stat 535. Simple multiple and polynomial regression in matrix format; estimation, testing, and prediction; stepwise and other numerical methods, examination of residuals, weighted least squares and nonlinear models. PrereqCoreq: Math 330. Stat 451 and ~~Math 330~~Stat 452.
3. Change the number and prerequisites of the following course [**Effective:** Summer 2005]
 Stat ~~ID&WS640565~~ **Computer Intensive Methods-Statistics** (3 cr). (Stat 540) WSU Stat 536. Numerical stability, matrix decompositions for linear models, methods for generating pseudo-random variates, interactive estimation procedures (Fisher scoring and EM algorithm), bootstrapping, scatterplot smoothers, Monte Carlo techniques including Monte Carlo integration and Markov chain Monte Carlo. Prereq: Stat 451, Stat 452, Math 330, and computer programming experience or perm. (Alt/yrs)
4. Change the title of the following course [**Effective:** Summer 2005]
 Stat ~~ID514 Nonparametric~~ Statistics (3 cr). WSU Stat 514. Conceptual development of nonparametric methods including one, two, and k-sample tests for location and scale, randomized complete blocks, rank correlation, and runs test; power, sample size, efficiency, and ARE. Prereq: Stat 401.
5. Change the number of the following courses [**Effective:** Summer 2005]
 Stat ~~ID&WS524519~~ **Multivariate Analysis** (3 cr). (Stat 521) WSU Stat 519. The multivariate normal, Hotelling's T², multivariate general linear model, discriminant analysis, covariance matrix tests, canonical correlation, and principle component analysis. Prereq: Stat 401.

 Stat ~~ID&WS633575~~ **Theory of Linear Models** (3 cr). (Stat 533) WSU Stat 533. Theory of least squares analysis of variance models and the general linear hypothesis; small sample distribution theory for regression, fixed effects models, variance components models, and mixed models. Prereq: Stat 452 and Math 330.

FOR THE FACULTY'S INFORMATION

Correction to General Curriculum Report 233:

Changes to Cooperative Courses Approved Since Last General Curriculum Report:

(ID = taught only at UI; WS = taught only at WSU, LC = taught only at LCSC; ID&WS = can be taught at both UI & WSU; ID&LC = can be taught at both UI & LCSC)