

491. Special Topics in Linguistic and Languages
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
R: Approval of department.
Special topics supplementing regular course offerings proposed by faculty on a group study basis.

821. Proseminar in Comparative Literature
Fall. 3(3-0) Interdepartmental with Arts and Letters, English and Romance Languages. Administered by Arts and Letters.
R: Approval of college.
History and practice of comparative literature including foundational concepts and current directions.

822. Methods of Comparative Literature
Spring. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with Arts and Letters, English, and Romance Languages. Administered by Arts and Letters.
P: AL 821 or approval of college. R: Open only to graduate students in College of Arts and Letters.
Case studies in international literary tradition, reception, and transmission. Approaches to genre and period. History and aesthetics of reception.

823. Seminar in Comparative Literary Criticism
Fall. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with Arts and Letters, English, and Romance Languages. Administered by Arts and Letters.
P: AL 822. R: Approval of college.
Theory and practice of comparative literary criticism, with attention to the development of critical approaches and to current topics in the critical literature.

825. Comparative Critical Theory
Spring. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with Arts and Letters, English, and Romance Languages. Administered by Arts and Letters.
P: AL 822 or approval of college. R: Open only to graduate students in College of Arts and Letters.
Critical theory of comparative literature, including comparative studies in rhetorical theory and discourse analysis.

863. The Literatures of Africa and the Diaspora
Spring. 3(3-0) Interdepartmental with English and Romance Languages. Administered by English.
R: Open only to graduate students in College of Arts and Letters.
Literatures of Africa and the Diaspora with emphasis on Third World critical approaches, non-canonical perspectives, and problems.

991B. Topics in Comparative Literature
Fall. 3(3-0) A student may earn a maximum of 12 credits in all enrollments for this course. Interdepartmental with English and Romance Languages. Administered by English.
R: Open only to Ph.D. students. Approval of department.
Critical approaches to genre, periodization, and influence in English and other literatures.

991D. Topics in the Literature of Africa and the African Diaspora
Spring. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with English and Romance Languages. Administered by English.
R: Approval of department.
Authors, movements, and cultures of the literature of Africa and the African diaspora.

991E. Topics in Anglophone South Asian Literature
Spring. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with English. Administered by English.
R: Open only to graduate students in College of Arts and Letters. Approval of department.
Analysis of an area of South Asian literature written in English.

LYMAN BRIGGS SCHOOL LBS

Lyman Briggs School College of Natural Science

117. College Algebra and Trigonometry
Fall. 3(3-0)
R: Open only to Lyman Briggs School majors. Designated score on mathematics placement test. Not open to students with credit in MTH 103 or MTH 110 or MTH 116 or MTH 120.
Rational and real numbers. Functions and inverses. Equations, simultaneous equations. Inequalities. Graphing. Trigonometry.

118. Calculus I
Fall, Spring. 5(5-0)
P: LBS 117 or MTH 110 or MTH 116 or designated score on mathematics placement test. R: Open only to Lyman Briggs School majors. Not open to students with credit in MTH 120 or MTH 124 or MTH 132 or MTH 152H.
Limits, continuity, differentiation, integration, and elementary applications.

119. Calculus II
Fall, Spring. 4(4-0)
P: LBS 118. R: Open only to Lyman Briggs School majors. Not open to students with credit in MTH 133 or MTH 153H or MTH 235.
Continuation of LBS 118. Further applications of one variable calculus. Infinite series. Ordinary differential equations.

125. Introduction to C Language with Applications
Spring. 3(3-0)
P: LBS 118. R: Open only to Lyman Briggs School majors. Not open to students with credit in CPS 130 or CPS 131 or CPS 230.
Computer programming using the C language and the UNIX operating system. Emphasis on scientific and mathematical applications.

126. Personal Computers and Networks
Fall, Spring. 3(3-0)
R: Open only to Lyman Briggs School majors. Not open to students with credit in CPS 100.
Selecting, installing and using personal computer software and hardware. Computer networks.

127. Introduction to FORTRAN Language with Applications
Fall. 3(3-0)
P: LBS 118 or concurrently. R: Open only to Lyman Briggs School majors. Not open to students with credit in CPS 131.
Computer programming using the FORTRAN language and the UNIX operating system with emphasis on scientific and mathematical applications.

133. Introduction to Science and Technology Studies
Fall, Spring. 4(4-0)
P: Designated score on English placement test. R: Open only to Lyman Briggs School majors. Not open to students with credit in MC 111 or MC 112 or ATL 110 or ATL 120 or ATL 125 or ATL 130 or ATL 140 or ATL 145 or ATL 150 or ATL 195H.
Instruction and practice in expository writing. Paper and report topics drawn from readings in the history, philosophy, and other areas of science and technology.

144. Biology I: Organismal Biology
Fall, Spring. 4(3-3)
R: Open only to Lyman Briggs School majors. Not open to students with credit in BS 110.
Modern biology at the organismal level of integration. Principles of genetics, evolution, ecology, and organismal diversity as interactive units.

145. Biology II: Cellular and Molecular Biology
Fall, Spring. 4(3-3)
P: LBS 144; CEM 141 or CEM 151 or CEM 181H or LBS 165 or concurrently. R: Open only to Lyman Briggs School majors. Not open to students with credit in BS 111.
Modern biology mainly at the cellular level of integration. Principles of cell structure and function are used to explain processes of bioenergetics, protein synthesis, and development.

164. Introduction to Physics and Chemistry I
Fall. 3(4-0)
P: LBS 117 or concurrently or MTH 116. R: Open only to Lyman Briggs School majors. Not open to students with credit in PHY 181B or PHY 183 or PHY 183B or PHY 231 or PHY 231B or PHY 193H.
Basic physics principles, problem solution techniques. Mechanical systems, elementary thermodynamics, vibrations and waves. Atoms and nuclei.

164L. Introductory Physics Laboratory I
Fall. 1(0-3)
P: LBS 164 or concurrently. R: Open only to Lyman Briggs School majors. Not open to students with credit in PHY 192 or PHY 251.
Techniques and instruments in the physics laboratory. Selected experiments in classical and modern physics.

165. Introduction to Chemistry and Physics I
Spring. 4(4-0)
P: LBS 164. R: Open only to Lyman Briggs School majors. Not open to students with credit in CEM 141 or CEM 152 or CEM 182H.
Chemical principles: structure and bonding, periodic properties. Stoichiometry, states of matter. Solutions, acids and bases, equilibria. Thermodynamics, kinetics.

165L. Introductory Chemistry Laboratory I
Spring. 1(0-3)
P: LBS 165 or concurrently. R: Open only to Lyman Briggs School majors. Not open to students with credit in CEM 161 or CEM 185H.
Determination of density and molecular weight. Stoichiometry. Acid-base titration, redox titration. Reaction kinetics, thermochemistry, Beer's law, freezing point depression, and equilibrium constants.

220. Calculus III
Fall, Spring. 5(5-0)
P: LBS 119. R: Open only to Lyman Briggs School majors. Not open to students with credit in MTH 234 or MTH 235 or MTH 254H or MTH 255H.
Continuation of LBS 119. Three-dimensional vector geometry, differential calculus of functions of two or three variables. Double and triple integrals, line integrals.

**Descriptions — Lyman Briggs School
of
Courses**

- 239. Topics in Science and Technology Studies**
Fall, Spring. 4(4-0)
P: LBS 133 or another Tier I writing course. R: Open only to Lyman Briggs School majors.
Topics in history, sociology, and philosophy of science and technology. Science policy.
- 246. Experimental Projects in Biology**
Spring. 1 to 3 credits. A student may earn a maximum of 5 credits in all enrollments for this course.
P: LBS 145 or BS 111; LBS 133 or another Tier I writing course. R: Open only to Lyman Briggs School majors.
Experiments, field studies. Selected problems in biology such as cell structure and metabolism, diversity, stability, evolution of natural communities, and reproductive biology.
- 266. Introduction to Chemistry and Physics II**
Fall. 3(4-0)
P: LBS 118 or concurrently, LBS 165. R: Open only to Lyman Briggs School majors. Not open to students with credit in CEM 142 or CEM 151 or CEM 181H.
Spectroscopy and symmetry. Coordination chemistry, solubility and stability constants. Electrochemistry, main group chemistry, atmospheric chemistry, organometallic chemistry. Polymers.
- 266L. Introductory Chemistry Laboratory II**
Fall. 1(0-3)
P: LBS 165L, LBS 266 or concurrently. R: Open only to Lyman Briggs School majors. Not open to students with credit in CEM 162.
Synthesis and characterization of chemical systems.
- 267. Introduction to Physics and Chemistry II**
Spring. 3(4-0)
P: LBS 118, LBS 164. R: Open only to Lyman Briggs School majors. Not open to students with credit in PHY 182B or PHY 184 or PHY 184B or PHY 232 or PHY 232B or PHY 294H.
Principles of electromagnetic theory, special relativity, quantum physics, optics, atomic and subatomic physics.
- 267L. Introductory Physics Laboratory II**
Spring. 1(0-3)
P: LBS 164L; LBS 267 or concurrently. R: Open only to Lyman Briggs School majors. Not open to students with credit in PHY 192 or PHY 252.
Selected experiments in classical and modern physics.
- 290A. Directed Study--Multidisciplinary**
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
R: Open only to Lyman Briggs School majors.
Directed studies involving at least two Lyman Briggs School curricular areas: biology, chemistry, physics, mathematics, science and technology, computer science.
- 290B. Directed Study--Biology**
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
R: Open only to Lyman Briggs School majors.
Directed studies in biology.
- 290C. Directed Study--Chemistry/Physics**
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
R: Open only to Lyman Briggs School majors.
Directed studies in chemistry and physics.
- 290D. Directed Study--Mathematics**
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
R: Open only to Lyman Briggs School majors.
Directed studies in mathematics.
- 290E. Directed Study--Science and Technology Studies**
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
R: Open only to Lyman Briggs School majors.
Directed study in science and technology studies.
- 290F. Directed Study--Computing**
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
R: Open only to Lyman Briggs School majors.
Directed studies in computing.
- 332. Technology and Culture Studies.**
Fall. 4(4-0) Interdepartmental with American Studies.
R: Open only to juniors and seniors in American Studies and Lyman Briggs School, and to graduate students in American Studies. Completion of Tier I writing requirement.
History of technology with special emphasis on the interaction of technical innovation and other elements of culture.
- 333. Topics in History of Science**
Fall, Spring. 4(4-0) A student may earn a maximum of 8 credits in all enrollments for this course.
R: Open only to juniors and seniors in Lyman Briggs School. Completion of Tier I writing requirement.
Various themes or periods in physical/biological science. May emphasize patterns of theory development, changes in explanatory aims and standards or interaction of social and cultural factors with scientific ideas, practices, instrumentation or experimentalism.
- 334. Science, Technology and Public Policy**
Spring. 4(4-0)
R: Not open to freshmen. Open only to Lyman Briggs School majors. Completion of Tier I writing requirement.
Science and technology in public policy formation considered from the perspectives of the history, philosophy, and sociology of science and technology.
- 335. The Natural Environment: Perceptions and Practices**
Spring. 4(4-0) Interdepartmental with American Studies.
R: Not open to freshmen. Open only to students in American Studies and in Lyman Briggs School. Completion of Tier I writing requirement.
American attitudes toward the natural environment and related public and private institutions.
- 347. Advances in Applied Biology**
Fall. 3(2-3)
P: ATL 110 or LBS 133; BS 111 or LBS 145. R: Not open to freshmen and sophomores. Open only to Lyman Briggs School majors.
Advances in cell and molecular biology and application: plant and animal breeding, environment, and therapeutics.
- 355. Philosophy of Technology**
Spring. 4(4-0) Interdepartmental with Philosophy.
R: Not open to freshmen. Open only to students in Lyman Briggs School and the Department of Philosophy. Completion of Tier I writing requirement.
Examination of the desirability of technology, its social forms, and its alternatives. Conventional productivist, ecological progressive, and radical humanist outlooks.
- 425. History of American and European Medicine**
Spring. 3(3-0) Interdepartmental with History. Administered by History.
R: Not open to freshmen and sophomores.
Cultural and intellectual history of medicine in the United States, Britain, and Western Europe. Institutionalization of scientific medicine. Comparative health systems and policies. Social roles of medical practitioners.
- 470. Clarion Science Fiction and Fantasy Writers' Workshop**
Summer. 4 credits.
R: Approval of school; application required.
A six week, intensive workshop for science fiction writers early in their careers. Taught by professional writers and directed by MSU faculty. Competitive admission based on review of applicant manuscripts. Enrollment limited to 15-18.
- 483. Literature and Medicine**
Spring. 3(3-0) Interdepartmental with English and Psychology. Administered by English.
R: Not open to freshmen and sophomores.
Human dimensions of medicine as seen in literature. Health, illness, mortality. Medical dilemmas. Physical and psychological self. Psychological theories used in interpreting literature.
- 490A. Advanced Directed Study--Multidisciplinary**
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
R: Not open to freshmen and sophomores. Open only to Lyman Briggs School majors.
Directed advanced studies involving at least two LBS curricular areas: biology, chemistry, physics, mathematics, science and technology studies, computing.
- 490B. Advanced Directed Study--Biology**
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
R: Not open to freshmen and sophomores. Open only to Lyman Briggs School majors.
Directed advanced studies in biology.
- 490C. Advanced Directed Study--Chemistry or Physics**
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
R: Not open to freshmen and sophomores. Open only to Lyman Briggs School majors.
Directed advanced studies in chemistry or physics.
- 490D. Advanced Directed Study--Mathematics**
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
R: Not open to freshmen and sophomores. Open only to Lyman Briggs School majors.
Directed advanced studies in mathematics.
- 490E. Advanced Directed Study--Science and Technology Studies**
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
R: Not open to freshmen and sophomores. Open only to Lyman Briggs School majors.
Directed advanced studies in Science and Technology Studies.

492. Senior Seminar
Fall, Spring. 4(4-0)
P: LBS 239 or LBS 332 or LBS 333 or LBS 334 or LBS 335 or LBS 355 or LBS 490E. R: Open only to juniors and seniors in Lyman Briggs School. Completion of Tier I writing requirement.
Selected problems in the study of science and technology as human activities, using philosophical, historical, literary, social science or interdisciplinary perspectives or methods. Development and defense of thesis paper.

493. Field Experience
Fall, Spring. 1 to 10 credits. A student may earn a maximum of 10 credits in all enrollments for this course.
R: Not open to freshmen and sophomores. Open only to Lyman Briggs School majors.
Experiential learning related to the public or private practice of science and technology.

MANAGEMENT

MGT

Department of Management The Eli Broad College of Business and The Eli Broad Graduate School of Management

302. Management and Organizational Behavior
Fall, Spring, Summer. 3(3-0)
P: EC 201 or EC 251H; ACC 201 or ACC 230 or ACC 251H. R: Open only to juniors and seniors.
Managerial roles and functions in goal-directed institutions. Organization design, analysis of organizational structure. Leadership, motivation, work attitudes, conflict management, and management of diversity.

303. Materials and Logistics Management
Fall, Spring, Summer. 3(3-0) Interdepartmental with Marketing and Logistics.
P: EC 201 or EC 251H; ACC 202 or ACC 230 or ACC 251H. R: Open only to juniors and seniors.
Role of manufacturing, operations, purchasing, sourcing, and transportation and distribution in determining organizational competitiveness. Quality, flexibility, cost, and lead time.

304. Operations and Purchasing Management
Fall, Spring, Summer. 3(3-0) Interdepartmental with Marketing and Logistics.
P: MGT 303. R: Open only to juniors and seniors.
Functions of operations and purchasing managers. Tactical issues in implementing internal and external resource plans.

306. Decisions Making Models
Spring. 3(3-0)
P: ML 317, MTH 120 or approval of department.
Quantitative techniques used for analyzing business decision situations. Optimal resource allocation decision models. Forecasting, planning, and computer simulation. Decision analysis under risk. Project management. Use of computer software.

310. Human Resource Management (W)
Fall, Spring, Summer. 3(3-0)
P: MGT 302 or concurrently. R: Open only to juniors and seniors. Completion of Tier I writing requirement.
Formulation and administration of human resource policies in the business enterprise. Personnel planning, job analysis and evaluation, staffing. Compensation and labor relations. Employee safety. Training, development, and performance appraisal. Issues of diversity and ethics.

345. Logistics Management
Spring. 3(3-0) Interdepartmental with Marketing and Logistics. Administered by Marketing and Logistics.
P: MGT 303. R: Open only to juniors and seniors in College of Business.
Activities and decisions necessary to plan, implement, and control private and public physical distribution and transportation channel systems. Physical, human, informational, and organizational system components.

401. Procurement and Supply Management
Fall, Spring, Summer. 3(3-0) Interdepartmental with Marketing and Logistics.
P: MGT 304, ML 345. R: Open only to juniors and seniors.
Strategic issues in procurement and supply management. Purchasing process, procurement cycle, purchasing research, relationships with suppliers, negotiation, and commodity planning. Cost, price, and value analysis.

402. Manufacturing Planning and Control
Fall, Spring, Summer. 3(3-0) Interdepartmental with Marketing and Logistics.
P: MGT 304, ML 345. R: Open only to juniors and seniors.
Production planning, demand management, master scheduling, materials requirements, and capacity planning. Shop floor control, computer-integrated manufacturing, and just-in-time systems.

403. Topics in Purchasing and Sourcing Management
Fall of even-numbered years. 3(3-0) Interdepartmental with Marketing and Logistics.
P: MGT 304, ML 345. R: Open only to juniors and seniors.
Current topics in sourcing and negotiation strategy such as price and cost analysis, and purchasing research techniques.

404. Topics in Operations Management
Spring of odd-numbered years. 3(3-0) Interdepartmental with Marketing and Logistics.
P: MGT 304, ML 345. R: Open only to juniors and seniors.
Managerial aspects of current issues such as total quality, computer integrated manufacturing and simultaneous engineering.

409. Business Policy and Strategic Management
Fall, Spring, Summer. 3(3-0)
P: MGT 302, MGT 303, FI 311, ML 300. R: Open only to seniors in the College of Business.
Techniques for building and maintaining consistent and effective policy and strategy. Content cuts across the major functions within a firm. Strategic integration, ethics, and international competition.

411. Organizational Staffing
Fall. 3(3-0)
P: MGT 310 or concurrently.
Job and organizational analysis. Personnel planning, recruitment, selection and placement. Employment interviewing and testing. Validation of selection procedures, EEO guidelines, and affirmative action. Diversity and ethics issues.

412. Compensation and Reward Systems
Spring. 3(3-0)
P: MGT 310 or concurrently. R: Open only to juniors and seniors.
Designing compensation systems. Job evaluation, internal and external equity. Pay-for-performance plans and financial incentives. Wage and salary surveys. Benefits administration. Diversity and ethical considerations.

413. Personnel Training and Development
Spring. 3(3-0)
P: MGT 310 or concurrently. R: Open only to juniors and seniors.
Designing and implementing training and development programs. Career stages and career planning. Needs analysis. Experimental design and program evaluation. Learning theories. Diversity and ethics issues.

414. Diversity in the Workplace
Fall. 3(3-0)
P: MGT 310 or concurrently. R: Open only to juniors and seniors.
Problems experienced in work organizations by racial, ethnic, physically handicapped, and other minorities. Awareness training for managers. Ethical issues.

442. Traffic and Transportation Management
Fall. 3(3-0) Interdepartmental with Marketing and Logistics. Administered by Marketing and Logistics.
P: MGT 304, ML 345. R: Open only to juniors and seniors in College of Business.
Analysis of purchasing and operating transportation services including carrier selection, pricing and rates, and negotiation. Managing the transportation function including consolidation, fleet management, and transportation strategies. International and intermodal distribution.

446. Physical Distribution Operations
Spring. 3(3-0) Interdepartmental with Marketing and Logistics. Administered by Marketing and Logistics.
P: MGT 304, ML 345. R: Open only to juniors and seniors in College of Business.
Analysis of distribution operations from a firm and facility perspective. Customer service strategy. Information and order processing systems. Warehouse design and operations. Material handling systems and assessment of performance.

470. Materials and Logistics Policy
Fall, Spring. 3(3-0) Interdepartmental with Marketing and Logistics. Administered by Marketing and Logistics.
P: MGT 304, ML 345, one additional course in materials and logistics management. R: Open only to juniors and seniors in College of Business and in programs for which MTA 470 is a catalog-listed requirement.
Case studies of strategic and tactical decisions in materials and logistics management. Identification and definition of problems, evaluation of integrated alternatives, and development of recommendations.

491. Special Topics in Human Resource Management
Spring of even-numbered years. 3(3-0)
P: MGT 310 or concurrently. R: Open only to juniors and seniors in the College of Business or in programs for which MGT 491 is a catalog-listed requirement.
Topics of interest to specialists in human resource management, such as advanced organizational behavior, managing labor relations, organizational development, and organizational theory and design.

493. Field Studies
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course.
R: Open only to seniors.
Program of observation, study, and work in selected business firms to supplement classroom study. Supervised independent research on special topics in Management.