

Office of the Registrar
Fall 2015 - Spring 2016

Archived COURSE DESCRIPTIONS

Information as of: April 30, 2015
For up-to-date information check
the web at: www.reg.msu.edu
Click on "Course Descriptions"



MICHIGAN STATE UNIVERSITY

East Lansing, Michigan 48824

www.msu.edu

517-355-1855

UNIVERSITY OFFICE HOURS

Administrative offices are open Monday through Friday 8:00 a.m. to 5:00 p.m. Unless posted otherwise. The University observes six legal holidays—New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving and Christmas. Offices are also closed on the Friday following Thanksgiving and the day preceding and/or following Christmas and New Year's Day.

The University reserves the right to limit enrollments and to change requirements for enrollment in both programs and courses as necessary. When enrollment limitations are imposed, every reasonable effort will be made to provide alternatives for students affected.

It is the responsibility of each student to be aware of and understand University regulations as published.

Courses are shown as they existed at the time of preparation of this publication, but are subject to change as budget adjustments, enrollment changes, and personnel changes are encountered. Some courses and certain components of a course (i.e. credits, title, etc.) listed here have effective dates later than the upcoming academic year. These are listed to assist with future planning. Students should consult with their academic adviser to learn which courses fulfill their specific degree requirements.

The web-based version of the *Course Descriptions* is updated monthly during the academic year. For up-to-date information, visit www.reg.msu.edu/Courses/search.asp.

OFFICE OF ADMISSIONS

250 Administration Building
355-8332, www.admissions.msu.edu

CAREER SERVICES NETWORK

113 Student Services Building
355-9510, www.careernetwork.msu.edu

OFFICE OF THE CONTROLLER

Student Accounts
140 Administration Building
355-3343, www.ctrl.msu.edu

COUNSELING CENTER

207 Student Services Building
355-8270, www.counseling.msu.edu

OFFICE OF FINANCIAL AID

252 Student Services Building
353-5940, www.finaid.msu.edu

THE GRADUATE SCHOOL

2nd Floor, Chittenden Hall
353-3220, www.grad.msu.edu

LIBRARIES

Main Library
353-8700, www.lib.msu.edu

OLIN HEALTH CENTER

353-4660, www.olin.msu.edu

RESIDENCE EDUCATION AND HOUSING SERVICES

G60 Wilson Hall
353-3780, www.liveon.msu.edu

OFFICE OF THE PRESIDENT

450 Administration Building
355-6560, www.president.msu.edu

OFFICE OF THE PROVOST

438 Administration Building
355-6550, www.provost.msu.edu

OFFICE OF THE REGISTRAR

150 Administration Building
355-3300, www.reg.msu.edu

RESOURCE CENTER FOR PERSONS WITH DISABILITIES

120 Bessey Hall
884-7273, www.rcpd.msu.edu

OFFICE OF THE VICE PRESIDENT FOR STUDENT AFFAIRS AND SERVICES

153 Student Services Building
355-7535, www.vps.msu.edu

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The complete listing of undergraduate, graduate-professional, and graduate level courses is located at www.reg.msu.edu/Courses/search.asp.

For information about courses offered through the Institute of Agricultural Technology, contact the Institute of Agricultural Technology in Room 120 Agriculture Hall.

COURSE NUMBERS

001-099 Non-Credit Courses

Courses with these numbers are offered by the University to permit students to make up deficiencies in previous training or to improve their facility in certain basic skills without earning credit.

For information about remedial-developmental-preparatory courses, consult the *Undergraduate Education* section of this catalog.

100-299 Undergraduate Courses

Courses with these numbers are for undergraduate students. They carry no graduate credit, although graduate students may be admitted to such courses in order to make up prerequisites or to gain a foundation for advanced courses.

For information about remedial-developmental-preparatory courses, consult the *Undergraduate Education* section of this catalog.

300-499 Advanced Undergraduate Courses

Courses with these numbers are for advanced undergraduate students. They constitute the advanced portion of an undergraduate program leading to the bachelor's degree. A graduate student may carry 400 level courses for credit upon approval of the student's major department or school. In exceptional cases, a graduate student may petition the dean of his or her college, in writing, for approval of a 300 level course for graduate credit.

VARIABLE CREDIT COURSES

For each variable credit course, the range of credits for which a student may enroll in a given semester and the maximum number of credits that a student may earn in a course with a reenrollment provision shall be specified.

COURSE LISTINGS

A 312 Mass Transfer and Separations

B Spring. 4(3-2) A student may earn a maximum of 8 credits in all reenrollments for this course. Interdepartmental with Biosystems Engineering.

C P: (CHE 201 and MTH 235 or concurrently)
RB: Knowledge of basic calculus. C: ECE 201 concurrently.
R: Open only to students in the College of Engineering. SA: EE 200

D Diffusion. Mass transfer coefficients. Design of counter-current separation systems, both stagewise and continuous. Distillation, absorption, extraction. Multicomponent separations.

To understand the characteristics of a course, consider each of the five categories depicted below.

A The course number and title and, if existent, the course number suffix (Ex: 312H or 1121). The suffixes are:

- H = Honors Course
- 1 = Type 1 Remedial-Developmental Preparatory Course
- 2 = Type 2 Remedial-Developmental Preparatory Course
- 3 = Type 3 Remedial-Developmental Preparatory Course
- 4 = Type 4 Remedial-Developmental Preparatory Course
- 5 = Type 5 Remedial-Developmental Preparatory Course

For additional information about **remedial–developmental–preparatory courses**, consult the *Academic Programs* section of the catalog.

The designation code for a **Tier II writing course** in parentheses following the course title. For additional information, refer to the statement on Writing Requirement in the *Academic Programs* section of catalog.

(W) – Tier II writing course

The diversity designation code for an **Integrative Studies** course in parentheses following the title. For additional information, refer to Integrative Studies in the *Academic Programs* section of the catalog.

- (I) – international and multicultural diversity
- (N) – national diversity
- (D) – national diversity, and international and multi cultural diversity

B Information about the semester of offering, credits and instructional model, reenrollment provision, and interdepartmental status.

The semester(s) the course is authorized to be given is identified. Lack of staff or low student enrollment may preclude offering the course every semester for which it is authorized.

The semester credits are designated to include class-hours-a week 4(3–2) where:

- 4 = Number of semester credits.
- 3 = Number of class hours a week in lecture/recitation/discussion.
- 2 = Number of class hours a week in a laboratory.

If the credit is indicated to be variable, the number of credits is to be determined at the time of enrollment. If the course is a non-credit course, the credit-equivalent is given in brackets.

Reenrollment provision is identified.
Interdepartmental course status is identified.

C Information about prior academic preparation and student access to the course.

P: Prerequisite = a course to be completed either prior to, or concurrently with, another course. A prerequisite is identified by course subject code and number. The course subject codes and corresponding names are listed on the following pages. When a student tries to enroll the Student Information System (SIS) will verify that the prerequisite is fulfilled.

RB: Recommended Background = prior academic work, experience, or other qualifications that are recommended, but not required, and which will *not* be monitored (either in SIS or by the unit). Recommended work may provide some background that will be helpful and faculty want to signal that to potential enrollees. Such background is not essential to success in the course, nor can faculty assume that students who enroll will have such knowledge.

C: Corequisite = a course that must be completed concurrently with another course. A corequisite is identified by course subject code and number. The course subject codes and corresponding names are listed on the following pages.

R: Restriction = a limitation on student access to the course. For example, a course may be available only to juniors and seniors, or to students in a specified major, department, or college.

SA: Semester Alias = a course identified as the equivalent of another course.

A student who is unsure of eligibility for enrolling in a course should contact the department, school, or college that administers the course.

D A brief description of the course.

COURSE DESIGNATIONS

Throughout the programs of study given in this section, courses are identified either by course subject codes, course numbers, and course titles (example: CSE 101 Computing Concepts and Competencies) or by course names and course numbers (example: Computer Science and Engineering 101).

Additional information about specific courses may be found in the *Course Descriptions* section of the catalog or in its frequently updated online version available at: www.reg.msu.edu/Courses.

To assist in locating information about specific courses in the *Course Descriptions*, the course subject codes are listed below in alphabetical order. For each subject code, the corresponding name is given.

SUBJECT CODES

AAAS	African American and African Studies
ABM	Agribusiness Management
ACC	Accounting
ADV	Advertising
AE	Agricultural Engineering
AESC	Applied Engineering Sciences
AFR	African Languages
AFRE	Agricultural, Food, and Resource Economics
AL	Arts and Letters
AMS	American Studies
ANP	Anthropology
ANR	Agriculture and Natural Resources
ANS	Animal Science
ANTR	Human Anatomy
ARB	Arabic
AS	Aerospace Studies
ASN	Asian Languages
AST	Astronomy and Astrophysics
AT	Institute of Agricultural Technology
ATD	Apparel and Textile Design
ATM	Agricultural Technology and Systems Management
BE	Biosystems Engineering
BLD	Biomedical Laboratory Diagnostics
BMB	Biochemistry and Molecular Biology
BME	Biomedical Engineering
BMS	BioMolecular Science
BS	Biological Science
BUS	Business
CAS	Communication Arts and Sciences
CE	Civil Engineering
CEM	Chemistry
CEP	Counseling, Educational Psychology and Special Education
CHE	Chemical Engineering
CHS	Chinese
CJ	Criminal Justice
CLA	Classical Studies
CLS	Chicano/Latino Studies
CMB	Cell and Molecular Biology
CMBA	Corporate MBA Program
CMP	Construction Management Program
COM	Communication
CSD	Communicative Sciences and Disorders
CSE	Computer Science and Engineering
CSS	Crop and Soil Sciences
CSUS	Community Sustainability
DAN	Dance
EAD	Educational Administration
EC	Economics
ECE	Electrical and Computer Engineering

ED	Education
EEO	Environmental Economics and Policy
EGR	Engineering
EM	Emergency Medicine
EMB	Executive MBA
ENE	Environmental Engineering
ENG	English
ENT	Entomology
EPI	Epidemiology
ES	Earth Science
ESL	English as a Second Language
ESP	Environmental Science and Policy
FCM	Family and Community Medicine
FI	Finance
FIM	Food Industry Management
FLM	Film Studies
FLT	Foreign Language Teaching
FM	Family Medicine
FOR	Forestry
FRN	French
FRS	Forensic Science
FSC	Food Science
FW	Fisheries and Wildlife
GBL	General Business and Business Law
GEN	Genetics
GEO	Geography
GLG	Geological Sciences
GRK	Greek
GRM	German
GSAH	Global Studies in the Arts and Humanities
GUSP	Global Urban Studies Program
HA	History of Art
HB	Hospitality Business
HDFS	Human Development and Family Studies
HEB	Hebrew
HED	Human Environment and Design
HM	Human Medicine
HNF	Human Nutrition and Foods
HRLR	Human Resources and Labor Relations
HRT	Horticulture
HST	History
IAH	Integrative Studies in Arts and Humanities
IDES	Interior Design
IM	Internal Medicine
ISB	Integrative Studies in Biological Sciences
ISE	Integrated Science Education
ISP	Integrative Studies in Physical Sciences
ISS	Integrative Studies in Social, Behavioral and Economic Sciences
ITL	Italian
ITM	Information Technology Management
JPN	Japanese
JRN	Journalism
JS	Jewish Studies
KIN	Kinesiology
LA	Landscape Architecture
LAW	MSU College of Law
LB	Lyman Briggs
LCS	Large Animal Clinical Sciences
LIN	Linguistics
LL	Linguistics and Languages
LLT	Language, Learning and Teaching
LTN	Latin
MBA	Master of Business Administration
MC	James Madison College
ME	Mechanical Engineering
MED	Medicine

MGT	Management	PRT	Portuguese
MI	Media and Information	PSC	Psychiatry
MKT	Marketing	PSL	Physiology
MMG	Microbiology and Molecular Genetics	PSY	Psychology
MS	Military Science	QB	Quantitative Biology
MSE	Materials Science and Engineering	RAD	Radiology
MTH	Mathematics	RCAH	Residential College in the Arts and Humanities
MTHE	Mathematics Education	REL	Religious Studies
MUS	Music	RET	Retailing
NEU	Neuroscience	ROM	Romance Languages
NOP	Neurology and Ophthalmology	RUS	Russian
NSC	Natural Science	SCM	Supply Chain Management
NUR	Nursing	SCS	Small Animal Clinical Sciences
OGR	Obstetrics, Gynecology, and Reproductive Biology	SME	Science and Mathematics Education
OMM	Osteopathic Manipulative Medicine	SOC	Sociology
OSS	Osteopathic Surgical Specialities	SPN	Spanish
OST	Osteopathic Medicine	SSC	Social Science
PDC	Planning, Design and Construction	STA	Studio Art
PDI	Pathobiology and Diagnostic Investigation	STT	Statistics and Probability
PED	Pediatrics	SUR	Surgery
PHD	Pediatrics and Human Development	SW	Social Work
PHL	Philosophy	TE	Teacher Education
PHM	Pharmacology and Toxicology	THR	Theatre
PHY	Physics	TSM	Technology Systems Management
PIM	Integrative Management	UGS	Undergraduate Studies
PKG	Packaging	UP	Urban Planning
PLB	Plant Biology	VM	Veterinary Medicine
PLP	Plant Pathology	WRA	Writing, Rhetoric and American Cultures
PLS	Political Science	WS	Women's Studies
PMR	Physical Medicine and Rehabilitation	ZOL	Zoology
PPL	Public Policy		