



LOUISIANA SCHOOL FOR MATH,
SCIENCE, AND THE ARTS

COURSE OFFERINGS
RETURNING STUDENTS
2011-2012

LSMSA Course Offerings

Course Request Directions

1. You must schedule at least 6 academic courses that meet both LSMSA and TOPs requirements.
2. Use this booklet to make sure you meet the prerequisites for **ALL** of your course requests.
3. Meet with your advisor to review your requests.
4. Requests must be submitted by April 15th.

*LVS Courses offerings are intended only for students needing those credits for graduation. They are based on demand and are subject to change. Please note that LVS Courses DO NOT qualify for credit under any LSMSA-College/University Articulation Agreement.

LSMSA Core 4 Curriculum Worksheet

Subject	Requirements
ENGLISH	1 unit English I 1 unit English II; and 1 unit EN210; and 1/2 unit Brit, Am, or World Lit AND 1/2 unit English elective OR 1 unit EN110; 1/2 unit EN311A and 1/2 unit English elective; and Brit or World Lit and 1/5 unit English elective
MATH	1 unit Algebra I 1 unit Geometry 1 unit Algebra II 1 unit from: Financial Math, Senior Apps in Math, Adv Math I, Adv Math II, Pre-Cal, Calculus, Prob & Stat, Discrete Math*
SCIENCE	1 unit Biology 1 unit Chemistry 2 units from Physical Sci, Integrated Sci, Physics I, Physics of Technology I, Aerospace Sci, Biology II, Chemistry II, Earth Science, Environmental Sci, Physics II, Physics of Technology II, or Anatomy & Physiology* <small>*Students may not earn credit for both Physical and Integrated Science</small>
SOCIAL STUDIES	1 unit American History 1/2 unit Civics 1/2 unit Free Enterprise 1 unit World History, Western Civ, World Geog, or AP Eur. History 1 unit from the list immediately above, Law Studies, Psychology, Sociology, or African Am. Studies
FOREIGN LANGUAGE	2 units (and 2 levels) of the same language
HEALTH	1/2 unit
PHYSICAL EDUCATION	1.5 units
ARTS	1 unit
SEMINAR IN SPECIAL TOPICS	1/4 unit per year of enrollment at LSMSA
SPECIAL PROJECTS	1/4 unit per year of enrollment at LSMSA
ELECTIVES*	4 units (2 units must be completed at LSMSA)

*Please see the TOPS Program Bulletin for rules regarding TOPS eligibility. Information is available online at www.osfa.state.la.us

*1/2 unit of Computer Science is required for TOPS through 2013. Students who have not completed this requirement before enrolling at LSMSA will be expected to complete an LSMSA Computer Science course.

Course Selection Form

Fall Semester

	Course #	Course Title	Alternate Course #	Alternate Course Title
English				
Social Studies				
Mathematics				
Science				
Foreign Lang.				
Comp. Sci./PE				
Art/Elective				
Elective				

Spring Semester

	Course #	Course Title	Alternate Course #	Alternate Course Title
English				
Social Studies				
Mathematics				
Science				
Foreign Lang.				
Comp. Sci./PE				
Art/Elective				
Elective				

The Course Selection Form must be submitted online by 4/15. You must schedule an appointment with your academic advisor in order to complete this form.

CREATIVE AND PERFORMING ARTS

MUSIC COURSES—FALL SEMESTER

MU 101 INTRODUCTION TO MUSIC THEORY I One semester (½ unit of credit). This class is designed for the student with little or no musical experience—although it is also beneficial for those students who are involved in music lessons or have played an instrument in the past. Students will study note identification, key signatures, notation, major and minor scales, chord construction, intervals, and basic music rudiments as defined by common practice music theory. There will also be an introduction to basic piano skills.

MU 123 VOICE CLASS I One semester (½ unit of credit). This class is designed for the student who has minimal or no musical skills and no previous experience with private vocal study. Students will learn basic vocal technique and musicianship including producing a safe, healthy and correct vocal sound, breath support, tonal placement, diction, and stage presence. If necessary, this course may also include basic musicianship skills such as note identification, counting, and learning to play a melody line on the piano. Students in this class will be required to sing both with the group and as a soloist in front of the class.

MU 124 VOICE CLASS II One semester (½ unit of credit).

MU 202 INTERMEDIATE PIANO CLASS I One semester (½ unit of credit). Class meets three hours per week using an electric keyboard lab to improve keyboard skills, music reading, solo and ensemble playing, and fundamentals of piano repertoire. Prerequisites: Grade of A or B in Beginning Piano II, or audition and consent of instructor.

MU 213 MUSIC COMPOSITION One semester (¼ unit of credit). Students will receive a forty-five minute lesson each week in music compositional techniques, including melody writing, harmonization, and counterpoint techniques, among others, in preparation for performance of works created by the students. In some cases, theory techniques along with sight-singing and dictation will be given instead. Prerequisites: current enrollment in music theory course and consent of instructor.

MU 233 CHORALE One semester (½ unit of credit). Louisiana School Chorale is a traditional concert choir designed to foster and develop young singers' healthy vocal technique, musicianship, and performing artistry as well as their knowledge of choral music literature. Instruction is provided for studying various styles and historical periods of choral literature, and opportunities are given for practical performing experience. All students are required to provide performance attire. Prerequisites: Vocal placement audition with instructor. All students are required to provide performance attire.

MU 254B MIXED ENSEMBLE One semester (½ unit of credit). This course is designed to offer performers opportunities to play interesting music literature in a professional setting--both chamber and as a larger group. We will play a wide range of different literature from classical to jazz to pop. This group may also participate in all LSMSA assemblies where appropriate including, but not limited to, Junior Recognition, World Peace Day, Veteran's Day, Holiday Celebration and President's Day. This is in addition to concerts presented by the Ensemble throughout the year. We also compete in various Music Festivals whenever possible. Prerequisites: Audition and consent of Instructor.

MU 272 PRIVATE VOICE One semester (¼ unit of credit). Private Voice will meet twice a week. One meeting will provide individualized instruction in producing a safe vocal sound and presenting a polished interpretation of selected vocal literature. The second meeting will provide a class during which all Private Voice students meet to study diction, IPA, some vocal literature, and other topics as appropriate to the abilities of the students. This class will also be a forum for performances and master classes, particularly by students working toward the goal of a vocal recital. Prerequisite/Co-requisite: Permission of instructor and enrollment in Chorale.

MU 274 MINOR INSTRUMENTAL STUDY One semester (¼ unit of credit). An average of five hours per week of practice for each lesson is required. The requirements for the amount of literature to be learned and memorized will vary at the discretion of the instructor depending upon the student's level. May include preparation studies for competition and recitals. Prerequisite/Co-requisite: Audition/interview with Dr. Benner and enrollment in MU254B. Enrollment will be limited, based on student auditions and available funds.

MU 283 MINOR STUDY PIANO One semester (¼ unit of credit). Students will receive a forty-five minute lesson each week to work on repertoire, technique, and overall musicianship. Students will have the opportunity to perform on student recitals. Minimum weekly practice is five hours. Prerequisites: audition and interview with instructor.

MU 301 ADVANCED MUSIC THEORY I Fall semester (½ unit of credit). Continuation of MU201. There will be a further development of common practice theory. Chromaticism will be studied. A more advanced look at chord construction will take place as well as modulation into other keys. Emphasis will be placed on music analysis—especially the chorales of J.S. Bach. The class will include a look at music history to understand how common practice music theory developed. Prerequisites: completion of MU201 or consent of instructor.

MU 374 MAJOR INSTRUMENTAL STUDY One semester (½ unit of credit). Students will receive a weekly lesson on their individual instrument and a studio class with other instrumentalists to work on repertoire, technique, overall musicianship and stage presence. The requirements for the amount of literature to be learned and memorized will vary at the discretion of the Instructor depending upon the student's level. This may include preparation studies for competitions, recitals and concerts. The course will culminate in a senior recital during the student's final semester. Minimum weekly practice is ten hours. Prerequisite/Co-requisite: Audition/interview with Dr. Benner and enrollment in MU254B. Enrollment will be limited, based on student auditions and available funds.

MU 383 MAJOR STUDY PIANO One semester (½ unit of credit). Students will receive either two forty-five minute lessons or one 1-hour lesson and a studio class each week (depending on enrollment) to work on repertoire, technique, and overall musicianship. The course will culminate in a senior recital during the student's final semester. Students are to participate in festivals, recitals, and competitions. Minimum weekly practice is ten hours. Prerequisites: Audition and interview with instructor.

MU 401 ADVANCED MUSIC THEORY III Fall semester (½ unit of credit). Continuation of MU302. The main concentration here will be on 20th-century music theories and techniques by looking at the music of seven various composers. Emphasis will be placed on more complex music analysis seeing where music has gone since the breakdown of common practice theory. Prerequisites: completion of MU302 or consent of instructor.

MUSIC COURSES—SPRING SEMESTER

MU 123 VOICE CLASS I See fall semester description.

MU 124 VOICE CLASS II One semester (½ unit of credit).

MU 201 INTRODUCTION TO MUSIC THEORY II Spring semester (½ unit of credit). Continuation of skills begun in MU101 leading to traditional music theory defined by common practice theory. Students will continue learning chord construction, identification, melody, tertian harmony, and simple harmonization. Four part writing will also be introduced at this time. We will continue basic skills involved with piano. Prerequisites: completion of MU 101 or consent of instructor.

MU 203 INTERMEDIATE PIANO CLASS II One semester (½ unit of credit). Continuation of skills begun in Int. Piano I. Prerequisites: Grade of A or B in Intermediate Piano I, or audition and consent of instructor.

MU 213 MUSIC COMPOSITION See fall semester description.

MU 233 CHORALE See fall semester description.

MU 254B WIND ENSEMBLE See fall semester description.

MU 272 PRIVATE VOICE See fall semester description.

MU 274 MINOR INSTRUMENTAL STUDY See fall semester description.

MU 283 MINOR STUDY PIANO See fall semester description.

MU 302 ADVANCED MUSIC THEORY II Spring semester (½ unit of credit). Continuation of MU301. We will discuss the pros and cons of common practice theory as it is applied through the Romantic Period. Selected composers will be discussed in connection on how they propelled music forward. Emphasis will be placed on more complex music analysis—especially works of Chopin and others who are not easily explained through c.p.p.t. Prerequisites: completion of MU301 or consent of instructor.

MU 372 VOCAL RECITAL One semester (¼ unit of credit). Students selected by the voice faculty to enroll in Vocal Recital must be co-enrolled in MU 272 and will be expected to perform regularly in the weekly class. In preparation for a public recital, students will be expected to prepare their music to the highest level, to create an artistically integrated senior recital, and to prepare translations and program notes for the recital. Prerequisite/Co-requisite: Permission of instructor and enrollment in MU 272.

MU 374 MAJOR INSTRUMENTAL STUDY See fall semester description.

MU 383 MAJOR STUDY PIANO See fall semester description.

MU 402 ADVANCED MUSIC THEORY IV Spring semester (½ unit of credit). Continuation of MU401. Continuation of 20th-century music theories and techniques. A more in-depth analysis will be presented by analyzing music by various composers who are significant figures in 20th-century music. Prerequisites: completion of MU301 or 401 or consent of instructor.

THEATRE COURSES—FALL SEMESTER

TH 103 ACTING I One semester (½ unit of credit). The course deals with the actors' media: sensory responsiveness, bodily movement, and voice. Practice in scene study, culminating in a fully staged duet scene employing set, costumes, props, and sound effects.

TH 113 STAGE PRODUCTION One semester (½ unit of credit). A practicum course in which the skills for technical theatre are taught and applied. Students in this class will assume primary responsibility for Repertory Theatre productions and may be required to assist with concerts, recitals, and assemblies. May be repeated for credit. Prerequisite: permission of instructor.

TH 213 STAGECRAFT One semester (½ unit of credit). Students in this class will learn the basic theory and principles of stage, set, and costume design, and may gain hands-on experience by assisting Theatre Repertory Productions. After completing this course, students may apply for enrollment in Stage Production, TH 113.

TH 323 REPERTORY THEATRE One semester (½ unit of credit). An advanced theatrical performing group open only by audition. Production performance accompanies course. Prerequisites: Acting I at LSMSA and consent of the instructor.

THEATRE COURSES—SPRING SEMESTER

TH 103 ACTING I See fall semester description.

TH 113 STAGE PRODUCTION See fall semester description.

TH 203 ACTING II One semester (½ unit of credit). Work in characterization and children's theatre. The course includes original scene writing and performance in a major production. Recommended for theatre students in the Spring semester of their senior year. Prerequisites: Acting I at LSMSA and consent of the instructor.

TH 213 STAGECRAFT See fall semester description.

TH 323 REPERTORY THEATRE See fall semester description.

VISUAL ARTS COURSES—FALL SEMESTER

Exploring the Visual Arts (AR 103) is a prerequisite for all other Visual Arts courses, except for Photography and Digital Media I. If a student's portfolio has passed the Visual Arts audition, that student may, by written permission of the visual arts faculty, move on to taking upper-level courses.

AR103 EXPLORING THE VISUAL ARTS One semester (½ unit of credit). Exploring the Visual Arts introduces students to a variety of art materials and techniques while learning the basic elements and principles of art and design. It is the gateway course to the Visual Arts Curriculum. Students will learn tools, techniques, materials, technology, and application of various art forms, subject areas, and careers. Projects will include two and three-dimensional art.

AR 150 DRAWING & PAINTING I One semester (½ unit of credit). Drawing & Painting I develops skills in the production, applying the fundamental elements and principles of fine art and design. Students will produce a body of work that shows personal exploration and also artistic philosophy, art criticism, and art history. Students will solve challenging problems in two-dimensional media, effectively transferring their own ideas, feelings, and statements into visual statements of artistic merit. Prerequisite: AR 103 or consent of the instructor.

AR 250 DRAWING & PAINTING II One semester (½ unit of credit). Drawing & Painting II continues the development of skills taught in Drawing & Painting I. Prerequisite: Drawing & Painting I.

AR 153 BLACK AND WHITE PHOTOGRAPHY One semester (½ unit of credit). Theory and basic skills in making the photographic image. Small cameras, lenses, filters; lighting techniques, light meters; darkroom procedure. Photographic composition; film developing; print processing. Each participant must have their own camera that has adjustable settings or manual override.

AR 170 DIGITAL MEDIA I One semester (½ unit of credit). Digital Media I introduces students to graphic design, illustration, animation, digital photography, and sound elements of art making. Students will explore the use of digital media through a series of projects using Graphic, Video, and Sound Editing software.

AR 270 DIGITAL MEDIA II One semester (½ unit of credit). Digital Media II continues the development of skill taught in Digital Media I. The course allows students to develop a relationship between their own, original ideas and the language associated with technology and a digital arts environment. Prerequisite: AR170.

AR244A METHODS OF MATERIALS One semester (½ unit of credit). This course will be an introduction to mixed media applications. Students will learn a variety of different techniques and the application of these techniques to both sculptural and two-dimensional surfaces. Techniques will include transfer methods, the use of found objects, and a contemporary approach to sculpture which will include installation works. The students will participate in a variety of non-traditional ways of approaching their works which is intended to build artistic and creative confidence. A variety of historic and contemporary artists will be looked at throughout the semester as students discuss the various strategies to bring these concepts into the development of their own work. Prerequisite: AR103.

AR 344 SCULPTURE I One semester (½ unit of credit). Students learn the basic skills of three-dimensional design through the use of a variety of materials and techniques. Materials such as clay, wood, metal, stone, and found objects will be incorporated into the semester's projects. Throughout the semester the students will be introduced to a variety of historic and contemporary sculptors while discussing the strategies of a variety of artists. Prerequisite: AR 103 or consent of the instructor.

AR 345 SCULPTURE II One semester (½ unit of credit). Sculpture II continues the development of skills taught in Sculpture I. Prerequisite: Sculpture I.

FA 101 SURVEY OF THE ARTS I: AESTHETIC PERSPECTIVES OF WESTERN ART One semester (½ unit of credit). A chronological overview of the arts in Western Civilization from Ancient Greece to the Neoclassical era, with emphasis on the aesthetic philosophy prevalent in these various epochs.

FA 103 CONTEMPORARY ISSUES IN AESTHETICS One semester (½ unit of credit). This course will concern itself with aesthetic issues and various approaches in dealing with such matters. In so doing, a number of complex and controversial matters will be addressed: Theories of art that attempt to define art; art and ethics; censorship of artworks and the social responsibility of the artist; art, politics, and religion; art, propaganda, and commercialism; the creative process, originality, and artist's intent.

VISUAL ARTS COURSES—SPRING SEMESTER

AR 103 EXPLORING THE VISUAL ARTS See fall semester description.

AR 153 BLACK AND WHITE PHOTOGRAPHY See fall semester description.

AR 150 DRAWING & PAINTING I See fall semester description.

AR 250 DRAWING & PAINTING II See fall semester description.

AR 155 DESIGN I One semester (½ unit of credit). Discovery through design, with a wide variety of materials and assignments.

AR 255 DESIGN II One semester (½ unit of credit). Design II continues the development of skills taught in Design I. Prerequisite: Design I.

AR 160 ARCHITECTURE I One semester (½ unit of credit). Architecture I is designed to give students an understanding of residential functional and aesthetic design. The course revolves around designing a vacation home for a particular family on a specific lot and information related to that design. Elements of the course include principles of design, architectural history, technical drafting, sketching, computer design, and model building. Prerequisite: AR 103 or consent of the instructor.

AR 260 ARCHITECTURE II One semester (½ unit of credit). Architecture II continues the development of skills taught in Architecture I. Students will learn how to organize complex ideas into original and useful designs. Prerequisite: Architecture I.

AR 170 DIGITAL MEDIA I See fall semester description.

AR 270 DIGITAL MEDIA II See fall semester description.

AR 206 PRINTMAKING I One semester (½ unit of credit). Printmaking I provides students a series of projects introducing them to the craft of fine art printmaking by creating portfolio quality pieces while developing a vocabulary of their own artistic ideas. Projects will include relief printing, wood cut, and silk screen techniques. Prerequisite: AR 103 or consent of the instructor.

AR 207 PRINTMAKING II One semester (½ unit of credit). Printmaking II continues the development of skills taught in Printmaking I. In addition to demonstration and technical assignments, students will view historic and contemporary examples of quality prints and will analyze, and discuss specific artworks, identify cultural sources, processes, and the role of printmaking artists. Prerequisite: Printmaking I.

AR 334 CERAMICS I One semester (½ unit of credit). Ceramics I is intended for students who have a basic understanding of the elements and principles of design and would like to study ceramics for the first time. It is a comprehensive

introduction to the craft of clay working. The primary emphasis is on studio work leading to a portfolio of finished pieces by the end of the semester. Prerequisite: AR 103 or consent of the instructor.

AR 335 CERAMICS II One semester (½ unit of credit). Ceramics II continues the development of skills taught in Ceramics I. In addition to demonstrations and technical assignments, students will also view historic and contemporary examples of fine ceramic art. Prerequisite: Ceramics I.

A 102 SURVEY OF THE ARTS II: AESTHETIC PERSPECTIVES OF WESTERN ART One semester (½ unit of credit). A continuation of FA101, beginning with the Romantic era and continuing to the present.

DANCE COURSES—FALL SEMESTER

Course numbers may be repeated for credit with the consent of the instructor. Students must purchase appropriate dance clothing (\$30 - \$40 maximum).

DA 103 BALLET I One semester (½ unit of credit). This course is designed to introduce ballet to the beginner through a complete ballet barre, adage, pirouette combinations, across-the-floor exercises, petite, and grand allegro. Defining ballet terms, learning body alignment, musicality, and grace are also covered.

DA 113 JAZZ DANCE I One semester (½ unit of credit). This style takes the beginning student through the qualities of power, sharpness, and quickness. The student will learn body control, musicality, dynamics, projection, and performance.

DA 123 MODERN DANCE I One semester (½ unit of credit). This style utilizes long lines, angularity, and large movement both powerful and lyrical. The student will learn body alignment and control, rhythmical movement, and performance quality.

DA 203 BALLET II One semester (½ unit of credit). This is an advanced course designed to enhance and accelerate the progress of the trained ballet dancer. Prerequisite: Consent of Department Chair.

DANCE COURSES—SPRING SEMESTER

DA 103 BALLET I See fall semester description.

DA 203 BALLET II See fall semester description.

DA 213 JAZZ DANCE II One semester (½ unit of credit). No prerequisites.

DA 223 MODERN DANCE II One semester (½ unit of credit). No prerequisites.

DANCE COURSES—YEAR LONG

DA 401 DANCE REPERTORY Yearlong (1 unit of credit). This course is designed to offer the trained dancer an opportunity to rehearse and perform in a professional type setting with the Impulse Dance Theatre repertory company. The company holds an annual main-stage concert and tours the state performing with other dance companies both private and college, and produces "lecture demonstrations." Prerequisites: Audition and consent of instructor.

COMPUTER SCIENCE

The following Computer Science courses have no prerequisites:

- CS 111 Digital Design
- CS 113 Programming in C++ through game design
- CS 133 Introduction to Programming in Python

The following courses have course prerequisites, or co-requisites:

- CS212 Database Driven Web Development requires CS 111 or CS 113
- CS 213 Data Structures requires CS 113
- CS 211 Advanced Digital Design requires CS 111 or CS 113
- CS 311 JAVA requires CS 113

COMPUTER SCIENCE COURSES—FALL SEMESTER

CS 111 DIGITAL DESIGN: FOUNDATIONS OF WEB DESIGN One semester (1/2 unit of credit). A project-based course that teaches digital communication skills in the context of the professional web design and development process using current industry software. Specific attention is paid to developing concepts and principles for thorough, effective design using industry standards. Students should have a good understanding of Windows and be able to access computer files across a network. The course is designed for students who are interested in designing and developing Internet content.

CS 113 PROGRAMMING IN C++ THROUGH GAME-DESIGN One semester (½ unit of credit). An introduction to game algorithms and computer programming using the C++ language, today's game industry standard. Students will develop core skills to begin programming with C++ specifically as it relates to games and user-interactivity, by being introduced to topics such as: basic C++ syntax, arithmetic operations, decision making using fuzzy logic, I/O, looping, arrays, generating random numbers, program modularization, and most importantly object-oriented programming. Students will gain hands-on experience by completing projects that design standard games such as, but not limited to Tic-Tac-Toe, Hang-Man, and Blackjack. Designed for students with some exposure to computers and who are interested in learning a programming language.

CS 133 INTRODUCTION TO PROGRAMMING IN PYTHON. One semester (½ unit of credit). An introduction to algorithms and problem solving using the Python language. The course will explore the basic concepts of programming and computer science by introducing the student to decision structures, loops, lists, dictionaries, classes, and graphics using Python. Students will gain hands-on experience developing programs and games starting with simple problems and progressing to more complex solutions. Students will be able to write simple graphic programs and games using OpenGL libraries. Python is a powerful language that does not have the complexity of C++ and Java. Python is used by many companies including Google and Industrial Light & Magic. No prerequisites.

CS 212 DATABASE DRIVEN WEB DEVELOPMENT One semester (½ unit of credit). This course will take students from creating basic HTML and CSS layouts to developing interactive web sites using PHP and MySQL. Students will create their own Blog, web-based calendar, and shopping cart web sites. Emphasis will be on server-side development and database concepts. Students will use a variety of open-source software to complete their projects. Prerequisites: CS111, CS113, CS115, or CS123.

CS 311 PROGRAMMING IN JAVA. One semester (½ unit of credit). This course will evolve rapidly from examining the basic syntax of the JAVA language—a programming language that is superior to other languages with regards to advanced special effects for dynamic web design and online game programming. Topics covered will include writing applets and applications to generate both basic and customized GUI components, mouse and keyboard event handling, animation with sound, graphics in JAVA using the 2D API, multithreading and thread-synchronization. Advanced topics will include introduction to 3D graphics and interactive game programming involving AI, Client-Server architecture and design. Prerequisite: CS 113 or CS 115 (A or B recommended) or consent of instructor.

COMPUTER SCIENCE COURSES—SPRING SEMESTER

CS 111 DIGITAL DESIGN: FOUNDATIONS OF WEB DESIGN See fall semester description.

CS 113 PROGRAMMING IN C++ THROUGH GAME-DESIGN See fall semester description.

CS 133 INTRODUCTION TO PROGRAMMING IN PYTHON. See fall semester description.

CS 211 ADVANCED DIGITAL DESIGN One semester (½ unit of credit). This course will focus on creating interactive web applications and games using Flash and other design tools. The course will focus on user interface design and efficient programming practices to create functional applications. Prerequisite: CS 113, CS 115, CS 123, CS 111, or consent of instructor.

CS 213 DATA STRUCTURES One semester (½ unit of credit). The course will involve an in-depth study of searching, sorting, and manipulation of data objects using algorithms of varying complexities. Students will be taught to measure the speed and efficiency of algorithms using mathematical tools such as the big-O analysis. The focus of this course will be on computer science theory and software engineering principles, including creation of data structures, modularization, data encapsulation, information hiding, data abstraction, analysis of algorithms, and as well as developing robust software design techniques. Students will also gain experience in applying data structures such as linked lists, stacks, queues, and trees to game-design, and game-programming using the Bloodshed DevC++ IDE. Prerequisite: CS 113 or CS 115 (A or B recommended or consent of instructor).

BUSINESS/FINANCE COURSES

BA101 INTRODUCTION TO BUSINESS Fall semester (½ unit of credit). A survey course designed to introduce students to the principles and functions of business. The various functional areas of business will be discussed: economic systems, forms of business ownership, small business, management, human relations, marketing, accounting, finance, stock market, and business law.

BA201 INTRODUCTION TO FINANCIAL ACCOUNTING Spring semester (½ unit of credit). Accounting is the language of business. This course will explore the concepts and principles of accounting with an emphasis on Financial Accounting. Students will understand how to complete Balance Sheets, Income Statements, Journal Entries, Trial Balances, and other accounting reports. Prerequisites: BA101 or consent of the instructor.

SS 113A MICROECONOMICS Fall semester (½ unit of credit). This course surveys the economics principles governing the behavior of households and businesses in the markets for goods and services. It examines the role of price in the allocation of scarce resources and the distribution of wealth that is the product of economic activity. SS 113A is offered in alternate semesters with SS 113B. Either course satisfies the state's Free Enterprise requirement.

SS 113B MACROECONOMICS Spring semester (½ unit of credit). This course surveys the economic principles governing the behavior of the aggregate economy. It explains how fiscal and monetary policies create price level stability and economic growth. SS 113B is offered in alternate semesters with SS 113A. Either course satisfies the state's Free Enterprise requirement.

ENGLISH

ENGLISH COURSES—YEAR-LONG

EN 110 INTRODUCTION TO ENGLISH AT LSMSA. One year (1 unit of credit; Sophomore English). This course is an introductory writing and literature course for sophomores. The course will emphasize expository writing, vocabulary, and rhetorical strategies. Grammatical principles will also be covered, and some exposure to literature will be included. Written work will include both in- and out-of-class essays, as well as other assignments to be determined by the instructor.

EN 210 COMPOSITION/MAJOR THEMES IN LITERATURE. One year (1 unit of credit; Junior English). The primary aim of English 210 is to develop students' practical writing skills. In the fall semester students write formal essays on topical subjects, and in the spring they read literature and write about it. The EN210 course breaks down artificial boundaries between literature courses, blending materials now offered separately in American Literature and British Literature. The course is conveniently organized into various units on fiction, poetry, and drama. Each student is asked to master the relevant critical terminology for each unit and to incorporate it into his or her essays and class discussions.

ENGLISH COURSES—FALL SEMESTER

EN 302 STUDIES IN THE ENGLISH LANGUAGE One semester ($\frac{1}{2}$ unit of credit; Senior English). English 302 focuses on the English language, examining it from both the historical and modern points of view. It includes investigations into the origins of English words and phrases, slang, dialects, semantics, etc. The central topic of the course will vary from year to year, depending upon the interests of the instructor and the students. One year, for example, it may concentrate on the various spoken dialects in the United States; another year it may focus on a comparison of Standard British and American English; and still another year it may trace the evolution of American (or British) English from Shakespeare's time to the present.

EN 304G STUDIES IN BRITISH FANTASY One semester ($\frac{1}{2}$ unit of credit). Lewis Carroll, C. S. Lewis and J.R.R. Tolkien are three British authors whose lives and works connect in interesting ways. All three were Oxford professors who expressed complex philosophical and spiritual views through the medium of children's books. Tolkien's and Lewis's works reveal a common interest in myth-making and Christian exegesis, while Carroll resembles Tolkien in his curiosity about the rules and the logic of language. Carroll paved the way in his Alice books for using child-like fantasies as a vehicle for defining man and his place in the world and, about a hundred years later, Tolkien moved on from the children-oriented Hobbitt to a more adult and experimental form of fantasy in his Lord of the Rings. In this course, we will trace the thematic and artistic continuities in these writers' works, and explore the biographical context that allowed them to interact and influence one another.

EN 304H CONTEMPORARY IRISH WOMEN POETS One semester ($\frac{1}{2}$ unit of credit). The purpose of this course is to expose students to the depth and breadth of poetry being written by Irish women today. Through our study of such well-known (in Ireland, at least) poets as Eavan Boland, Nuala Ni Dhomhnaill, Medbh McGuckian, Paula Meehan, Rita Ann Higgins, and Sara Berkeley, among others, we will explore the ways that questions of feminism, tradition, motherhood,

domesticity, and politics are addressed in these poets' work. We will also investigate the ways in which these women embrace and/or rebel against the prevailing masculine tradition of Irish poetry (using W.B. Yeats as the central representative of that tradition.) Students will keep a journal of daily reading responses; they will write three papers of approximately 1000-1200 words each, and they will take a midterm and a final. They will also be responsible for leading a 15-minute class discussion of a poem of their choice.

EN 311A AMERICAN LITERATURE One semester (½ unit of credit). This class is normally taught as a selected survey course, which covers major periods from the colonial days through the late twentieth century. Students can expect to be exposed to multiple literary genres, including prose fiction, prose non-fiction, poetry and drama. Authors covered in any given semester might include, but are not limited to, the following: Jonathan Edwards, Phyllis Wheatley, Anne Bradstreet, Benjamin Franklin, Nathaniel Hawthorne, Henry David Thoreau, Walt Whitman, Emily Dickinson, Kate Chopin, Frederick Douglass, Edith Wharton, William Faulkner, Langston Hughes, Gwendolyn Brooks, Marianne Moore and Robert Frost.

EN 311B BRITISH LITERATURE One semester (½ unit of credit). This class is normally taught as a selected survey course, which covers major periods from the Middle Ages to the twentieth century. Students can expect to be exposed to multiple literary genres, including prose fiction, prose non-fiction, poetry, the epic, and drama. Authors/works covered in any given semester might include, but are not limited to, the following: Beowulf, Sir Gawain and the Green Knight, Chaucer, Shakespeare, Donne, Milton, Ben Johnson, Swift, Pope, Samuel Johnson, Blake, Wordsworth, Charlotte Bronte, Emily Bronte, Browning, Dickens, Hardy, Woolf, Lawrence and Auden.

EN 322 STUDIES IN FICTION One semester (½ unit of credit). In any given semester, this course might examine short fiction, novels, or a combination of the two. Because each instructor will be tailoring the class to his or her strengths and interests, the precise content of the course will vary from semester to semester. Whatever the content, students can count on exposure to the works of multiple authors writing in different periods, genres, or points of view. Class will include discussion of both the technical and thematic connections between works and authors, hopefully giving students some sense of the range of possibilities offered by prose fiction.

EN 401A CREATIVE WRITING: POETRY AND CREATIVE NON-FICTION One semester (½ unit of credit). This class will concentrate on the two genres of poetry and creative non-fiction (also known as the personal essay). What these two genres have in common is that they both, more often than not, concentrate on the unique perspective of the narrative "I." Both stress the personal, reflective, and the idiosyncratic point of view of the speaker, whether that point of view represents the author, a created persona, or a narrative voice somewhere in between the two.

EN 403A ADVANCED CREATIVE WRITING: POETRY AND CREATIVE NON-FICTION One semester (½ unit of credit). This class is a continuation of English 401A. Students in this class will continue to develop and refine the skills required for poetry and creative nonfiction, and will be expected to perform at a demonstrably higher level than the students in the earlier, introductory course. Prerequisite: English 401A.

ENGLISH COURSES—SPRING SEMESTER

EN 311A AMERICAN LITERATURE See fall semester description.

EN 311B BRITISH LITERATURE See fall semester description.

EN 311W WORLD LITERATURE One semester (½ unit of credit). This course will introduce students to masterpieces of world literature not presently included in the offerings of British and American Literature.

EN 401B CREATIVE WRITING: FICTION AND DRAMATIC WRITING One semester (½ unit of credit). This class will concentrate on the two genres of prose fiction and dramatic writing, the latter of which will be subdivided into writing for stage and writing for screen. Although works in these two genres are often personal or autobiographical in nature, they also usually focus on the interaction of two or more people and—especially in the case of dramatic writing—represent multiple points of view. Thus, they tend to be more public and less introspective than the genres of poetry and creative non-fiction, stressing a collective experience rather than an individual's perception.

EN 403B ADVANCED CREATIVE WRITING: FICTION AND DRAMATIC WRITING One semester (½ unit of credit). This class is a continuation of English 401B. Students in this class will continue to develop and refine the skills required by fiction and dramatic writing, and will be expected to perform at a demonstrably higher level than the students in the earlier, introductory course. Prerequisite: English 401B.

EN 402 ADVANCED EXPOSITORY WRITING One semester (½ unit of credit; Senior English). This course will provide students further opportunity to practice traditional forms of expository writing and will, in addition, introduce them to such forms as the informal essay and journalistic essay, as well as to scientific writing and technical writing.

EN 412A SHAKESPEARE One semester (½ unit of credit). Although the specific focus of this class might change from one semester to the next, students in EN412 will study selection of plays and poetry, and will examine Shakespeare's work in terms of its historical context, its reception, its criticism, and its influence. A regular feature of this class is discussion of recent film adaptations of Shakespeare's plays.

EN 412C SYLVIA PLATH (1932-1963) AND TED HUGHES (1930-1998) One semester (½ unit of credit). This class will focus both on Plath and Hughes as individual poets and on the ways in which each influenced the other. Although we will spend some time considering their personal relationship and their biographies, the course will focus mainly on the poetry of each author, both separately and in combination, with an eye to their individual influences and their influences on each other. Plath and Hughes both established individual careers, although during the seven years of their marriage (1956-1963), Hughes was by far the better known poet. Plath's career did not truly establish itself until after her death in 1963. What were the intersections—both professional and personal—between their lives and work?

IS 315 LITERATURE AND SCIENCE One semester (½ unit of credit). This course will examine the influence of scientific ideas (including Copernicus, Galileo, Newton, Darwin, and Einstein) on the works of English and American authors. Also consideration will be given to the influence of literary and philosophical works on science. Students will develop individual projects based on defining the relationship between literature and science in the works of an author. Can count as English or Humanities credit.

FOREIGN LANGUAGE

FOREIGN LANGUAGE COURSES—YEARLONG (UNLESS OTHERWISE NOTED)

FL 110 ACCELERATED FRENCH I Yearlong (1 unit of credit). Emphasis in this course is placed on the acquisition of basic language skills: speaking, listening, comprehension, reading, and writing. Students acquire a base vocabulary and learn the simple grammatical constructions needed for essential communication. Cultural aspects of the people are also introduced.

FL 120 ACCELERATED SPANISH I Yearlong (1 unit of credit). Emphasis in this course is placed on the acquisition of basic language skills: aural comprehension, pronunciation, oral and written communication, and reading comprehension. Students acquire a base vocabulary and learn the simple grammatical constructions needed for essential communication. Geography of Hispanic countries and cultural aspects of the people are also introduced.

FL 130 ACCELERATED LATIN I Yearlong (1 unit of credit). Students will begin the study of Latin grammar and will be introduced to the reading of Latin prose and Latin prose composition. Emphasis will be placed on the study of ancient Roman history, culture, and classical mythology to help students understand the context of their reading. Latin I will also include some study of English derivatives and will assist in vocabulary building.

FL 140 ACCELERATED GERMAN I Yearlong (1 unit of credit). Emphasis in this course is placed on the acquisition of basic language skills: speaking, aural comprehension, reading, and writing. Students acquire a fundamental vocabulary and learn basic grammatical concepts. One hour per week is devoted to German history and culture.

FL 150 RUSSIAN I Yearlong (1 unit of credit). Emphasis in this course is placed on the acquisition of basic language skills: speaking, aural comprehension, reading, and writing. Students acquire a fundamental vocabulary and learn basic grammatical concepts. One hour per week is devoted to Russian history and culture.

FL 210 ACCELERATED FRENCH II Yearlong (1 unit of credit). While emphasis on basic language skills is continued, the students' competency in the language is further increased by reading short texts; oral discussion of material read by the class; greater use of the language in everyday conversational situations; and creative expressions that may take the form of written compositions and oral reports. Most of the basic grammatical constructions of the language are learned. Prerequisite: FL 110 or consent of Department Chair.

FL 220 ACCELERATED SPANISH II Yearlong (1 unit of credit). While emphasis on basic skills is continued, the students' competency in the language is further increased by reading short texts; greater use of the language; oral discussion of material read by the class; and creative expression which may take the form of written compositions, oral reports, and short skits. Most of the grammatical constructions are learned. Prerequisite: Beginning Spanish (or Spanish I) or consent of Department Chair.

FL 230 ACCELERATED LATIN II Yearlong (1 unit of credit). Students will complete their study of the fundamentals of Latin grammar and will continue to build their

Latin vocabulary and reading skills. An introduction to Latin literature will be added to the ongoing study of Roman history, culture, and classical mythology. Emphasis on the understanding of English derivatives and vocabulary building will continue. Prerequisite: Latin I or consent of Department Chair.

FL 240 ACCELERATED GERMAN II Yearlong (1 unit of credit). This course is a continuation of German I, wherein the students' competency in the language is increased by exposure to a wider vocabulary and more complex grammatical aspects. Greater emphasis is placed upon the reading of German texts and listening to lectures in German on German History and culture. Prerequisite: German I or consent of Department Chair.

FL 250 RUSSIAN II Yearlong (1 unit of credit). This course is a continuation of Russian 1 wherein the students' competency in the language is increased by exposure to a wider vocabulary and more complex grammatical aspects. Greater emphasis is placed upon the reading of Russian texts on Russian History and culture. Prerequisite: Russian I or consent of Department Chair.

FL 310 ACCELERATED FRENCH III Yearlong (1 unit of credit). This course continues the development of skills in oral, written, and aural French. The fine points of grammar, complex verb tenses, and idiomatic expressions are treated in depth, with emphasis on using these structures in composition and conversation. A variety of literary excerpts are read and combined with culture units of French speaking countries. Prerequisite: FL 210 and consent of instructor.

FL 320 ACCELERATED SPANISH III Yearlong (1 unit of credit). A high interest multi-faceted approach employing video, interactive computer program, and text. At this level, students should already have mastered all tenses, the subjunctive mood, and the major grammatical concepts, and now get maximum opportunity to practice putting this knowledge to use in meaningful conversation and written expression. Practice in aural comprehension, vocabulary assimilation, and reading strategy skills are enhanced. Prerequisite: FL 220 and consent of instructor.

FL 340 ADVANCED GERMAN Yearlong (1 unit of credit). Following a review of the material covered in the previous year, this course will present all remaining elements of German grammar, and will address many aspects of syntax and idiomatic speech. Consequently, greater emphasis will be placed on oral and aural communication as well as the reading of modern German texts. Prerequisite: consent of instructor.

FL 350 ADVANCED RUSSIAN Yearlong (1 unit of credit). Following a review of the material covered in the previous year, this course will present all remaining elements of Russian grammar, and will address many aspects of syntax and idiomatic speech. Consequently, greater emphasis will be placed on oral and aural communication as well as the reading of modern Russian texts. Prerequisite: consent of instructor.

FL 430A ADVANCED LATIN: PROSE Yearlong (1 unit of credit). A course designed to review and deepen the students' knowledge of basic Latin grammar, introduce them to advanced grammar concepts, and to build Latin vocabulary through the reading of classical Latin prose, with emphasis on the works of Livy, Cicero, and/or other Republican and Golden Age prose authors. This course will also include study activities in Roman history, culture, and classical mythology. Prerequisite: consent of instructor.

FL 620C MODERN AND CONTEMPORARY PENINSULAR AND LATIN AMERICAN THEATRE Yearlong (1 unit of credit). This course is an overview of modern and contemporary Peninsular and Latin American Theatre. Students in this class will read, in Spanish, a total of six plays (three each semester), three by Peninsular playwrights, and three by Latin American authors. These plays will be the topic for class discussions and essays IN SPANISH; these (discussions and essays) together with preparation of the readings will be the basis for student assessment. Participation in public presentation of a one-act play to the LSMSA community will be strictly voluntary, and a means of getting bonus points or extra-credit in this class. The class will be conducted entirely in Spanish. Prerequisites: FL320, or Spanish Placement Test, or consent of instructor.

FL 704 DIRECTED INDEPENDENT STUDY One semester (¼ or ½ unit of credit). The amount of credit will be determined by the Registrar and faculty sponsor; may not be used to fulfill the Foreign Language graduation requirement). The course is designed for students desiring study of a Foreign Language not possible within the classroom curriculum. Students must write a description of the proposed work and find a member of the Foreign Language faculty who agrees to serve as director. May be repeated for additional credit. Topics currently offered include, but are not limited to, the following:

- FL 704A ADVANCED FRENCH
- FL 704B ADVANCED SPANISH
- FL 704C ADVANCED CLASSICAL STUDIES
- FL 704D ADVANCED GERMAN
- FL 704E ADVANCED RUSSIAN
- FL 704I ADVANCED LATIN

HISTORY AND SOCIAL SCIENCE

HISTORY AND SOCIAL SCIENCE COURSES—FALL SEMESTER

AH 111 ADVANCED AMERICAN HISTORY TO 1865 One semester (½ unit of credit). This course is designed to explore U.S. History from the period of colonization through Reconstruction. To accomplish this objective, we will explore how very different and divided colonies grew into the United States and how major events, both foreign and domestic, shaped the nation during the eighteenth and nineteenth centuries. Major themes to be explored will include the development of a national identity, increasing democratization, the market revolution, and sectionalism.

AH 212 MILITARY HISTORY OF THE UNITED STATES I One semester (½ unit of credit). A survey of American military history from colonial times to the start of the 20th Century, the course will discuss the evolution of the army. Prerequisite: American History or consent of instructor.

AH 243 AMERICAN GOVERNMENT AND POLITICS One semester (½ unit of credit). This course is designed to give the student an understanding of American constitutional government; political beliefs and behavior of citizens; political parties and pressure groups; institutions and institutional processes of the national government; and the statutes and development of civil rights and civil liberties. This course fulfills the state requirement for Civics.

EH 121 ANCIENT AND MEDIEVAL HISTORY One semester (½ unit of credit). A survey of western civilization including the Mesopotamian Near East, Ancient Greece and Rome, the development of Carolingian Europe and Feudalism, Commercialism and the rise of towns, and the Renaissance and Reformation. Emphasis is on the development of political institutions, social conditions, and the history of ideas. Students work with primary source materials as well as scholarly journals in the course. [May be taken as an elective alone or out of sequence with EH 121.] Satisfies the Western Civilization requirement when taken with EH 122.

EH 231 HISTORY OF TUDOR-STUART ENGLAND One semester (1/2 unit of credit). In-depth examination of English history for the three centuries after the 1485 installation of the Tudor Dynasty. Emphasis will be placed on the evolution of the island kingdom from the peripheral backwater of European civilization to become the world's wealthiest, most powerful, and most influential nation by the year 1783. Basic themes include the persistence of received traditions, the evolution of constitutional government, the influence of religion, the rise of capitalist economy, the impact of foreign policy, and the acquisition of the empire.

PS 212 CONSTITUTIONAL DEVELOPMENT One semester (½ unit of credit). This course is designed to introduce the student to the United States Constitution. Emphasis will be placed on its origin as an idea and as fundamental law. The course will examine the development of government and the rights of its citizens.

SS 144 INTRODUCTION TO PSYCHOLOGY One semester (½ unit of credit). A survey course with emphasis on introducing student to the history and basic theories of psychology and human behavior. Prerequisite: consent of Department Chair.

SS 101C LVS CIVICS One semester (½ unit of credit). LVS Civics is an online course designed to introduce high school students to basic Civics concepts. It is a government course that explains how the U.S. government works at all levels and branches, describes the role of American citizenship, and examines issues such as political parties, the U.S. legal system, economics and foreign policy and how they relate to U.S. Government.

SS 101F LVS FREE ENTERPRISE One semester (½ unit of credit). LVS Free Enterprise is an online course designed to introduce high school students to basic economic concepts. The course will focus on economic issues, topics, and terms including macroeconomics and microeconomics. The course will also discuss economic systems particularly the American economic system and the role of producers and consumers within each system. The course will emphasize the significance and need of economic interdependence and decision making of individuals, households, businesses, and governments throughout the world.

WH 121 WORLD HISTORY I One semester (½ unit of credit). This course will provide students with a foundation in some of the important issues in World History. Students will develop the ability to preserve a coherent sense of the past and present when they study particular human societies in a more detailed way by raising questions about human groups, and their place in the history of nature, the planet, and the universe. Because of its sweep, this course will focus on the tensions between the local, regional, and global, and the comparison of variations on common patterns. In particular, the class will examine how regions have been interconnected and affected one another, how systemic forces—particularly economic—have shaped various regions of the world. When taken with WH 122 World History II in the spring semester, these courses satisfy the World History requirement of the State Board Honors Curriculum and the Regent’s Scholar Award.

WH 244H HISTORY OF THE MODERN MIDDLE EAST One semester (½ unit of credit). This is a survey course designed to give a historical understanding of the political and social changes in the Middle East in the 19th and 20th centuries. Topics to be covered include the decline of the Ottoman Empire, imperialism, the rise of nationalism, and the creation of modern states and societies. Throughout the course we will examine the effects of these changes on social groups, such as women, workers, and peasants.

HISTORY AND SOCIAL SCIENCE COURSES—SPRING SEMESTER

AH 112 ADVANCED AMERICAN HISTORY SINCE 1865 One semester (½ unit of credit). This course is designed to explore U. S. History from Reconstruction through the 1980’s. To accomplish this objective, we will explore how the United States recreated itself in the wake of the Civil War and how major events, both foreign and domestic, shaped the nation in which we now live. Major themes to be explored will include the growth of federal power, increasing democratization, the expansion of industrial capitalism, and the emergence of the United States as a world power.

AH 213 MILITARY HISTORY OF THE UNITED STATES II One semester (½ unit of credit). A survey of America at war from 1900 to the present with an emphasis on the evolution of the army. Prerequisite: American History or consent of instructor.

AH 243 AMERICAN GOVERNMENT See fall semester description.

AH 244F U.S. IN SOUTHEAST ASIA One semester (½ unit of credit). Examines the role of the United States in Vietnam. After a brief survey of Vietnamese history and the French involvement, the course turns to how the United States became progressively mired in the Vietnam War. A major component of the course is a reflection on the effects of the war to American domestic policies and politics.

AH 250B LEGAL HISTORY: BIOETHICS AND THE LAW One semester (½ unit of credit). This course will focus on Bioethics and the Law, which really is the intersection of science, ethics and the law. This course will exam the development of American legal history in this field by examining specific cases and scholarly articles related to a variety of topics. The course will begin with a discussion of federalism, and struggles between the national government and the states regarding the law relating to bioethics. Key concepts to be covered include the right to privacy; the past and present of sterilization; modern forms of reproduction, from surrogacy to in vitro fertilization; the doctor-patient relationship, including tort liability and informed consent; the right to refuse care and right-to-die arguments; new technology that relates to genetic research and ownership of life; death and organ transplantation. The course will be a combination of lecture and discussion. Students will be asked to read selections from legal opinions and legal criticism. Frequent class discussion will analyze these legal documents.

EH 122 MODERN HISTORY One semester (½ unit of credit). A survey of western civilization from the Seventeenth Century to the present. Emphasis is on the development of modern politics including the study of absolutism and constitutionalism, the French Revolution, Industrial Revolution, Socialism, Nationalism, and Imperialism. Also considered are the social conditions and intellectual developments of the modern era. Students work with primary source materials and scholarly journals. [May be taken as an elective alone or out of sequence with EH 121.]

EH 244A EUROPEAN INTELLECTUAL HISTORY SINCE 1600 One semester (½ unit of credit). The colloquium-style course will examine major European intellectual movements, influences, and controversies from the age of Descartes to twentieth-century Existentialism. Students will read exclusively from primary source material as a basis for daily class discussion. The course is designed to provide a source-based understanding of the essential preoccupations and debates that shaped the evolution of the fundamental ideas of western philosophy, scientific theory, the debate over epistemology and certainty, the battle between religion and reason, and the lute of evolutionary and historical explanatory models, positivism, and the crisis of irrationalism.

SS101C LVS CIVICS See fall semester description.

SS101F LVS FREE ENTERPRISE See fall semester description.

SS 144 INTRODUCTION TO PSYCHOLOGY See fall semester description.

SS 244C GENDER STUDIES One semester (1/2 unit of credit). This is a seminar course deigned to explore the connection between changing ideas about gender and the shaping of American public and private life from the colonial period to the present. Topics to be covered include the cultural and social forces that produced

the concept of separate sphere in the 18th and 19th centuries, and how definitions of social and economic success and failure were based on gender. Other topics include the changing role of work, home life, and leisure in shaping male and female identities, the immigration, race and the media of ideals of gender.

SS 244E ABRAHAMIC FAITHS One semester (1/2 unit of credit). An examination of the tenets and practices of major western faith traditions—Judaism, Christianity, and Islam—as reflected in their sacred texts and from their historical and cultural contexts.

WH 122 WORLD HISTORY II See fall semester description.

WH 244C STRATEGY & DIPLOMACY OF THE GREAT POWERS SINCE 1789 One semester (1/2 unit of credit). Great Power relations from the end of the eighteenth century to the present. A unifying theme of the course will be the continuous development over time of the Great Power system and the nature of the foundations of state power. Investigation into this larger question will necessitate attention to the specifics of diplomacy of individual European Great Powers, the rise of non-European “flank” powers, Great Power military strategies in peace time and war, the intimate connection between diplomacy and industrial and financial strength, and the significance of technological advance upon diplomatic choices, warfare, and the strategic balance.

MATHEMATICS

The Bold Faced Courses denote that the course is the prerequisite course for the next level of courses. It is recommended that students should have earned at least a B in the prerequisite course(s) to take the next level course. Students may take Trigonometry concurrently with the second semester of College Algebra upon approval of the division. Exceptions may be made at the discretion of the instructor.

LEVEL I

College Algebra Accelerated College Algebra Geometry

LEVEL II

Trigonometry Precalculus Discrete Mathematics Probability and Statistics

LEVEL III

Calculus I

LEVEL IV

Calculus II Modern Algebra Linear Algebra Graph Theory Topology
Chaos Theory Quantitative Business Analysis

LEVEL V

Calculus III Differential Equations

MATH COURSES—YEAR-LONG

MA 120 COLLEGE ALGEBRA Year-long (1 unit of credit). This course, or Algebra II, is a prerequisite for all subsequent math courses. Topics may include, but are not limited to the following: axioms & properties provable from the axioms, functions & modeling, linear equations, systems of linear & non-linear equations & inequalities, quadratic functions & complex numbers, exponential & logarithmic functions, rational functions, radicals, higher degree polynomial functions, sequences & series, quadratic relations, and data analysis.

MATH COURSES—FALL SEMESTER

MA 100G LVS GEOMETRY One semester (1 unit of credit). Geometry is the study of visual patterns and the use of these patterns to describe the physical universe. Students' understanding of the properties of real numbers become a base for building reasoned geometric arguments. Course topics include methods of reasoning, construction, the coordinate plane, and types of measurement. Properties and applications of lines, triangles, quadrilaterals, and similarity will be studied. Appropriate use of technology is provided through the use of graphing calculators and computer based constructions. Traditional geometric constructions are also included. Prerequisite: Algebra I.

MA 121 ACCELERATED COLLEGE ALGEBRA One semester ($\frac{1}{2}$ unit of credit). This course is designed to cover the topics of College Algebra, but at a faster

pace. Students who have already taken Algebra II should not take Accelerated College Algebra unless advised to do so by the mathematics department. Trigonometry or Precalculus is the course that should follow Algebra II.

MA 203 TRIGONOMETRY One semester ($\frac{1}{2}$ unit of credit). May be taken concurrently with College Algebra second semester if A or B was earned in first semester. Trigonometry may be taken concurrently with Precalculus. Topics include a thorough treatment of the trig functions, including graphs, radian measure, unit circle, identities, trig equations, solving triangles, laws of sines and cosines, area, vectors, and applications. Additional topics may include polar coordinates, DeMoivre's theorem, and complex numbers. Prerequisite: Algebra II or College Algebra.

MA 223 PRECALCULUS One semester ($\frac{1}{2}$ unit of credit). Precalculus may be taken concurrently with Trigonometry. Topics selected for Precalculus are the topics that the math faculty believe are most needed for calculus. Topics include an intensive treatment of functions described as follows: general theory of functions; linear, quadratic, and general polynomial functions; solving polynomial equations; solving other types of equations; limit of a function; graphs of common functions and translations; inverse functions; theory of equations; and rational functions. Other topics include exponentials and logarithms, sequences, and series. Prerequisite: Algebra II or College Algebra.

MA 243 PROBABILITY AND STATISTICS One semester ($\frac{1}{2}$ unit of credit). This course is a study of the collection and tabulation of data, bar charts, graphs, sampling, measures of central tendency and variability, regression and correlation, statistical distributions, discrete and continuous probability/distributions, hypothesis testing, and applications to various fields. Prerequisite: Algebra II, College Algebra or consent of Department Chair.

MA 303 CALCULUS I One semester ($\frac{1}{2}$ unit of credit, four days a week). Topics include limit of a function, continuity, differentiation (including formal definition, derivative rules, implicit derivatives, derivatives of trig, and inverse trig functions), curve sketching, max/min and related rate problems, introduction to integration, and the fundamental theorem of calculus. Prerequisites: Trigonometry and Precalculus (A or B recommended or consent of Department Chair).

MA 403 CALCULUS II One semester ($\frac{1}{2}$ unit of credit, four days a week). Topics include indefinite integrals, definite integrals and the fundamental theorem, area under a curve, area between curves, volumes by disks, washers, and shells, length of a plane curve, surface area, average value of a function, numerical techniques, L'Hopital's Rule, transcendental functions, techniques of integration, and improper integrals. Additional topics may include conic sections, hyperbolic functions, techniques of integration, and improper integrals. Additional topics may include conic sections, hyperbolic functions, and polar coordinates. Prerequisite: Calculus I (A or B recommended) or consent of Department Chair.

MA 421 MODERN ALGEBRA One semester ($\frac{1}{2}$ unit of credit). This is an introductory course in the study of group theory. Because the subject is theoretical mathematics, emphasis will be placed on logic and proof. After a review of logic and set theory, the following topics will be explored: Properties of the integers, groups, semigroups, subgroups, Z_n , nZ , product groups, Abelian groups, cyclic groups, finite permutation groups, Lagrange's Theorem, homomorphisms, isomorphisms, normal subgroups, and Cayley's Theorem. Emphasis will also be placed on students learning to read and comprehend mathematical literature and to express mathematical ideas clearly. (Offered alternate years). Prerequisite:

Calculus I (A or B recommended or consent of coordinator).

MA 461 CHAOS THEORY One semester ($\frac{1}{2}$ unit of credit). This is an introductory course to chaotic dynamical systems. It is an opportunity to introduce students to some contemporary ideas in mathematics. It can also serve as a connection between calculus courses and the more demanding real analysis courses by introducing abstraction. Topics covered include but are not limited to the following: history of dynamics, iteration, orbits, graphical analysis, fixed points, periodic points, bifurcations, chaos, symbolic dynamics, Sarkoovskii's Theorem, the Schwarzian derivative, fractals, quadratic functions, complex functions, basins of attractions, Julia sets, and the Mandelbrot Set. The computer and graphing calculator will be used extensively. Prerequisite: Calculus I (A or B recommended) or consent of Department Chair.

MA 503 CALCULUS III One semester ($\frac{1}{2}$ unit of credit). This course is a study of polar coordinates, hyperbolic functions, parametric equations, sequences, series, vectors, functions of several variables and their derivatives, and multiple integrals with applications. Prerequisite: Calculus II (A or B recommended) or consent of Department Chair.

MATH COURSES—SPRING SEMESTER

MA 100G GEOMETRY (LVS) See fall semester description.

MA 203 TRIGONOMETRY See fall semester description.

MA 223 PRECALCULUS See fall semester description.

MA 243 PROBABILITY AND STATISTICS See fall semester description.

MA 262 DISCRETE MATHEMATICS One semester ($\frac{1}{2}$ unit of credit). This course examines various topics of discrete mathematics, that is, topics involving mathematics of countable sets. These topics include but are not limited to the following: social choice (fair division, election theory, apportionment), matrices as mathematical models (Leslie Model, Markov Chains), counting (fundamental principles of counting, combinations, permutations, partitions, binomial coefficients), probability, graph theory (Euler circuits and paths, Hamiltonian paths, trees, spanning trees, graph coloring), and recursion. Emphasis will be placed on applications of mathematics in "real life" problems. Thus, students will be expected to engage in mathematical exploration and experimentation. The use of the graphing calculator's probability, graphing, and matrix features as tools of problem solving will be stressed. Prerequisites: Algebra II or College Algebra, and consent of Department Chair. This is a senior-only course.

MA 303 CALCULUS I See fall semester description.

MA 403 CALCULUS II See fall semester description.

MA 422 TOPOLOGY One semester ($\frac{1}{2}$ unit of credit). This course is an introduction to point-set topology. After a review/introduction to logic, set theory, and proof, students will examine the set of Real Numbers in light of their usual topological structure to gain a deeper understanding of limits and continuity in calculus. Other topologies on \mathbb{R} will be introduced and their corresponding effects on limit and continuity notions will be investigated by students. Topics to be covered include but are not limited to the following: axioms of Topology, open sets, closed sets, limit points, subspaces, finite product spaces, homomorphisms, separation

properties, compactness, connectedness, and metric spaces. Emphasis will also be placed on students learning to read and comprehend mathematical literature and to express mathematical ideas clearly. (Offered alternate years). Prerequisite: Calculus I (A or B recommended or consent of Department Chair).

MA 443 LINEAR ALGEBRA One semester ($\frac{1}{2}$ unit credit). This course is a study of matrices, linear equations, dot products, cross products, geometrical proofs using vectors, determinates, n -dimensional space, vector spaces, subspaces, linear transformations, inner product spaces, eigenvalues, eigenvectors, diagonal-ization, and applications. Prerequisite: Calculus I (A or B recommended or consent of Department Chair).

MA 503 CALCULUS III See fall semester description.

MA 523 DIFFERENTIAL EQUATIONS One semester ($\frac{1}{2}$ unit of credit). This course is a study of ordinary differential equations, including existence and uniqueness of solutions, linear equations with constant and variable coefficients, differential operators, systems of equations, series solutions, nonlinear equations and bifurcations, Laplace transform, and applications. Prerequisite: Calculus II (A or B recommended) or consent of Department Chair.

MASS COMMUNICATION

MC 100 MANAGEMENT FOR PRINT PUBLICATION - (Yearbook) Yearlong (1/2 unit of credit). A survey of writing, layout, and management for print services.

MC 102 TECHNIQUES FOR PRINT MEDIA PRODUCTION - (Newspaper) One semester (1/4 unit of credit). A survey of newspaper production including writing, layout, and distribution.

SCIENCE

SCIENCE COURSES—FALL SEMESTER

*Both semesters of a sequential course must be completed with a passing grade to apply toward any Core 4 Science curriculum requirements.

***BI 110L INTRODUCTION TO BIOLOGY** One semester ($\frac{1}{2}$ unit of credit). The first semester of a two-part general biology course, exclusively for students without prior credit in an introductory-level biology. Students will learn how to apply the scientific method to understanding principles and major processes of biology including cell biology, genetics, systematics, and the human body. Includes a one and one-half hour laboratory (BI 111L).

***BI 111L INTRODUCTION TO BIOLOGY LABORATORY**

***BI 201L CELL AND GENETICS** One semester ($\frac{1}{2}$ unit of credit). The first semester of a two-part upper level biology course designed for students who have already taken biology. This course will cover advanced topics in biology including introductory biochemistry, cell structure and physiology, and advanced genetics. Includes a one and one-half hour laboratory (BI 221L). Prerequisite: One unit of biology prior to enrolling at LSMSA. Students will not earn credit for both BI 110L/BI120L and BI 201L/BI 202L.

***BI 221L CELL AND GENETICS LABORATORY**

BI 231L MICROBIOLOGY One semester ($\frac{1}{2}$ unit of credit). An introduction to the science of microbiology including the historical development and future challenges of the discipline, as well as the classification of microorganisms, bacterial cultivation techniques, environmental microbiology, and the control of microorganisms. Includes a two-hour laboratory. Prerequisites: One-half unit of biology at LSMSA, biology pre-test score, or consent of Department Chair; and one unit of chemistry.

BI 264L ECOLOGY One semester ($\frac{1}{2}$ unit of credit). Discussions and readings in the inter-relationships of organisms and their environments. Topics will include population growth, demography, predator-prey interactions, aquatic ecology and biodiversity. Includes a one and one-half hour laboratory that will emphasize ecological principles through a combination of field and laboratory exercises. Prerequisites: One unit of biology at LSMSA, or biology pre-test score, or consent of Department Chair; and one unit of chemistry.

BI 321 GENETICS One semester ($\frac{1}{2}$ unit of credit). Introduction to the basic principle of genetics. Outlines of the major aspects of classical, molecular, population, and evolutionary genetics. Classical genetics - Mendelian patterns of inheritance and genetic crosses. Population genetics, allele frequencies, probabilities of statistical analysis. Chromosomal basis of heredity, mitosis and meiosis, recombination, sex chromosomes and chromosome abnormalities, chemical nature of the gene, genetic code, mutation, and polymorphisms, and recombinant DNA technology. Prerequisite: One unit of a biology course at LSMSA; SC 300, or consent of Department Chair.

BI 704 INDEPENDENT RESEARCH One semester ($\frac{1}{4}$ - $\frac{1}{2}$ unit of credit). Any independent project to be contracted between the student and a biology faculty member. The project can be of any form (field, laboratory, written, or combination of these) that is decided upon by the student and faculty member. Prerequisites:

One unit of biology and consent of contracting faculty member.

***CH 101L ACCELERATED CHEMISTRY I** One semester ($\frac{1}{2}$ unit of credit). This is the first semester of an introductory chemistry course offered at LSMSA. Topics to be covered will include measurements, atomic theory, the concept of energy, and quantum chemistry. This course is accompanied by a one and one-half hour laboratory (CH 111L).

***CH 111L ACCELERATED CHEMISTRY I LABORATORY** One semester ($\frac{1}{4}$ unit of credit). This is a one semester course that accompanies CH 101L. Students will perform experiments each week and learn how to write laboratory reports to support their data. Experiments will be chosen in line with the concepts taught in CH 101L.

***CH 201L ACCELERATED CHEMISTRY II** One semester ($\frac{1}{2}$ unit of credit). This is the first semester of a two-part intermediate level chemistry course. Placement of students in this course is dependent on scores from LSMSA math and science pretests. Topics to be covered include measurements, atomic theory, mass-mole relationships, thermochemistry, bonding theories, and quantum chemistry. This course will be accompanied by a one and one-half hour laboratory (CH 211L). Prerequisites: Placement from math and science pretest scores and/or consent of Department Chair.

***CH 211L ACCELERATED CHEMISTRY II LABORATORY** One semester ($\frac{1}{4}$ unit of credit). This is a one semester course that accompanies CH 201L. Students will perform experiments each week and learn how to write laboratory reports to support their data. Experiments will be chosen in line with the concepts taught in CH 201L.

CH 314L ORGANIC CHEMISTRY One semester ($\frac{1}{2}$ unit of credit). A college-level organic chemistry course covering the study of nomenclature, functional groups, chemical and physical properties, mechanism of reactions, and applications of organic compounds. Includes a two-hour laboratory. Prerequisites: One unit of chemistry at LSMSA and consent of instructor.

CH317 BIOCHEMISTRY I One semester ($\frac{1}{2}$ unit of credit). A survey of biological molecules. Chemistry of carbohydrates, proteins, lipids, and nucleic acids will be covered, with an emphasis on the chemistry and function of enzymes. Protein structure will be considered. Prerequisites: 1 unit of chemistry and 1 unit of biology.

***PH 101L ACCELERATED PHYSICS I** One semester ($\frac{1}{2}$ unit of credit). PH 101L is the first-semester course in college physics that emphasizes problem-solving skills and fundamental concepts in the areas of vectors, kinematics, Newton's laws, conservation of energy, collisions, and rotation. This course will be accompanied by a one and one-half hour laboratory (PH 111L). Prerequisite: Trigonometry or trigonometry may be taken in the fall semester as a co-requisite.

***PH 111L ACCELERATED PHYSICS I LABORATORY** One semester ($\frac{1}{4}$ unit of credit). This is a one semester laboratory that accompanies PH 101L. Students apply concepts taught in PH 101L to conduct experiments and analyze the results thereof, closely following the college model. Suggested prerequisite: Computer Applications or fluency with Microsoft Excel.

PH 121 STEM PROBLEM-SOLVING & REASONING One semester ($\frac{1}{2}$ unit of credit). We will cover a wide variety of problem-solving and reasoning skills with

applications primarily in science, technology, engineering, and mathematics (STEM). Problem-solving strategies will include algebraic solutions, visualization skills, geometric proofs, pattern recognition, mathematical and scientific puzzles, data analysis, experimental problems, technology problems, applied problems, and numerical modeling. Reasoning skills will include deductive logic, constructing proofs, abstract thinking, critical reasoning, mathematically-motivated conceptual reasoning, process of elimination, and multiple choice reasoning skills. Prerequisites: None.

***PH 201L ACCELERATED PHYSICS II** One semester ($\frac{1}{2}$ unit of credit). A college-level physics course, at a level between PH 101L and PH 301L, focused on problem-solving and fundamental concepts in the areas of vectors, kinematics, Newton's laws, conservation of energy, collisions, and rotation. This course will be accompanied by a one and one-half hour laboratory (PH 211L). Prerequisite: Precalculus or consent of instructor.

***PH 211L ACCELERATED PHYSICS II LABORATORY** One semester ($\frac{1}{4}$ unit of credit). This is a one semester laboratory that accompanies PH 201L. Students apply concepts taught in PH 201L to conduct experiments and analyze the results thereof, closely following the college model. Prerequisite: Computer Applications or fluency with Microsoft Excel.

PH 203L INTRODUCTION TO ASTRONOMY One semester ($\frac{1}{2}$ unit of credit). This course is designed for students who are interested in physics but want to approach it from an astronomical perspective. Students will learn many traditional physics concepts through an astronomical perspective. Other topics include the history of astronomy, celestial coordinates, the moon, planets, stellar evolution, and the chemical processes of star formation. Through the laboratory component of this course students will learn basic observational techniques. Students completing this course are automatically eligible to take the Observational Astronomy and Astrophotography course. Co-requisite: Trigonometry.

***PH 301L ACCELERATED PHYSICS III** One semester ($\frac{1}{2}$ unit of credit). A calculus-based physics course for solving problems in the areas of vectors, kinematics, Newton's laws, conservation of energy, collisions, and rotation. The course will be accompanied by a one and one-half hour laboratory (PH 311L). Prerequisites: Calculus I and Calculus II (Calculus II may be taken concurrently).

***PH 311L ACCELERATED PHYSICS III LABORATORY** One semester ($\frac{1}{4}$ unit of credit). This is a one semester laboratory that accompanies PH 301L. Students apply concepts taught in PH 101L to conduct experiments and analyze the results thereof, closely following the college model. Computer Applications or fluency with Microsoft Excel.

PH 402L MODERN PHYSICS Spring semester ($\frac{1}{2}$ unit of credit). A problem-solving course covering topics from special relativity, quantum mechanics, and selected topics from one or more of the following areas: atomic physics, particle physics, and nuclear physics. Includes a one and one-half hour laboratory. Prerequisites: PH 301L and Calculus II, or consent of the Department Chair.

PH 704 INDEPENDENT RESEARCH One semester ($\frac{1}{4}$ - $\frac{1}{2}$ unit of credit). any independent project to be contracted between the student and a physics faculty member. The project can be of any form (laboratory, written, or both) that is decided upon by the student and faculty member. Prerequisites: one unit of physics and consent of Department Chair.

SC 244W ROBOTICS One semester (½ unit of credit). Students will assemble the Mindstorm NXT Robot, learn the functions of its sensors, and then program it to do increasingly complex tasks. Tasks begin with maneuvering the robot away from obstacles, along lines, and between the walls of a maze. More advanced tasks include moving objects, picking up objects and placing them into a container, and monitoring a room to photograph any objects that move in the room. We will learn the physics behind the robot. No prerequisites for this course.

SC 302 SCIENCE SEMINAR Fall Semester (¼ unit of credit). This course will provide students information and direct experience on making oral technical presentations. Students will attend presentations by distinguished visiting science speakers and make a 20-minute presentation on their summer research or an approved science topic. Prerequisite: completion of SC300 or approval of instructor.

SCIENCE COURSES—SPRING SEMESTER

***BI 120L INTRODUCTION TO BIOLOGY** One semester (½ unit of credit). The second semester and a continuation of BI 110L. Includes a one and one-half hour laboratory (BI 122L). Prerequisite: Completion of BI 110L.

***BI 122L INTRODUCTION TO BIOLOGY LABORATORY**

***BI 202L EVOLUTION AND BIODIVERSITY** One semester (½ unit of credit). The second semester and a continuation of BI 201L. This course will cover advanced topics in biology, including the emergence and maintenance of biodiversity, mechanisms of selection in evolution, and systematics. Includes a one and one-half hour laboratory (BI 222L). Prerequisite: Completion of BI 201L.

***BI 222L EVOLUTION AND BIODIVERSITY LABORATORY**

BI 263L BOTANY One semester (½ unit credit). Introduction to the study of plants. Includes plant cell biology, morphology, physiology, photosynthesis and classification. Ecology, food production, wood production and ornamental plants will be discussed. Includes one and one-half hour lab that will meet weekly. Prerequisite: One-half unit of biology at LSMSA, or biology pre-test score, or consent of instructor.

BI 331 EMBRYOLOGY One semester (½ unit of credit). Discussions and readings in Embryology. Both invertebrate and vertebrate animals will be studied, with a focus on mammals. Topics will include a reproductive anatomy, endocrinology, gamete formation and fertilization along with embryo development. Classic and current scientific literature related to topics covered in class will be included. Prerequisites: one unit biology at LSMSA, SC300, one unit of Chemistry; or consent of instructor.

BI 332 ANIMAL BEHAVIOR One semester (½ unit of credit). This course will examine the adaptive significance of animal behavior. Topics will include communication, reproduction, foraging, predator avoidance, and sociality. A wide taxonomic spectrum, from invertebrates to vertebrates will be covered. Prerequisites: One unit of biology at LSMSA; SC 300; or consent of instructor.

BI 704 INDEPENDENT RESEARCH See fall semester description.

***CH 102L ACCELERATED CHEMISTRY I** One semester (½ unit of credit). This course is a continuation of CH 101L. Topics to be covered include light and energy,

bonding, chemical kinetics, and equilibria. This course will be accompanied by a one and one-half hour laboratory (CH 111L).

***CH 112L ACCELERATED CHEMISTRY I LABORATORY** One semester ($\frac{1}{4}$ unit of credit). This is a one semester course that supports CH 102L. Students will perform experiments each week to support the concepts taught in CH 102L. Laboratory reports will be written each week by the students to support their data. Experiments will be chosen in line with the concepts taught in CH 102L.

***CH 202L ACCELERATED CHEMISTRY II** One semester ($\frac{1}{2}$ unit of credit). This course is a continuation of CH 201L. Topics to be covered include molecular structure, gas theories, intermolecular forces, chemical kinetics, equilibria, thermodynamics, and electrochemistry. This course will be accompanied by a one and one-half hour laboratory (CH 212L).

***CH 212L ACCELERATED CHEMISTRY II LABORATORY** One semester ($\frac{1}{4}$ unit of credit). This is a one semester course that accompanies CH 202L. Students will perform experiments each week to support the concepts taught in CH 202L. Laboratory reports will be written each week by the students to support their data. Experiments will be chosen in line with the concepts taught in CH 202L.

CH251 APPLIED CHEMISTRY AND ENGINEERING One semester ($\frac{1}{2}$ unit of credit). This course is designed to focus on practical application of chemistry and chemical engineering concepts. Topics that will be covered include energy sources, refinery applications, catalysis (kinetics), oil and gas system corrosion, reactor design and types, material and heat balances, and field analysis/troubleshooting. Prerequisites: 1 year of LSMSA Chemistry and consent of instructor.

CH 313L ANALYTICAL CHEMISTRY. Spring semester - odd years. ($\frac{1}{2}$ unit of credit). This course will survey the qualitative and quantitative analysis of chemical compounds and the changes they undergo. Such topics may include: precipitation, gravimetric, titrimetric, spectroscopic, melting point, physical and chemical properties, basic statistics, chromatography, electrochemistry, extraction, and complexation. Includes a two-hour laboratory. Prerequisite: 1 year of chemistry, completion of Precalculus, and consent of instructor.

CH401 BIOCHEMISTRY II One semester ($\frac{1}{2}$ unit of credit). A detailed study of major biological pathways, including glycolysis, oxidative phosphorylation, photosynthesis, amino acid metabolism, and lipid metabolism. A study of the catalytic mechanisms of key reactions within the pathways. Prerequisites: Organic Chemistry or Biochemistry.

***PH 102L ACCELERATED PHYSICS I** One semester ($\frac{1}{2}$ unit of credit). A continuation of PH101L with additional topics including oscillations, waves, sound, electricity, magnetism, and optics. This course will be accompanied by a one and one-half hour laboratory (PH 112L). Prerequisite: Satisfactory completion of PH 101L.

***PH 112L ACCELERATED PHYSICS I LABORATORY** One semester ($\frac{1}{4}$ unit of credit). This is a one semester course that accompanies PH 102L, a continuation of PH 111L. Students will conduct experiments each week, which apply concepts learned in PH 102L.

PH 115 EVERYDAY PHYSICS, FROM BLUE SKIES TO RAINBOWS One semester ($\frac{1}{2}$ unit of credit). In this course students will be introduced to the physics of everyday phenomena involving light, sound, heat, motion, gravity, atoms, nuclei, electricity,

and magnetism. We also discuss the latest developments in relativity, chaos, Black holes, quantum mechanics, and nuclear physics. Co-requisite: An algebra class. This is an elective course that does not have a lab.

PH122 NUMERICAL MODELING IN STEM One semester ($\frac{1}{2}$ unit of credit). Real-world problems are generally much more complicated than the simplified problems that we teach STEM lecture courses that illustrate the main concepts and problem-solving strategies. Almost all real-world practical problems of primary interest to the professional STEM community involve numerical solutions, modeling, and simulations. We will explore various techniques of numerical approximations and solutions, such as root-finding, and the basic ideas of numerical modeling and simulation. We will also consider numerical errors and error growth and consider the limitations of numerical work. Many of the assignments can be completed using Excel; programming experience is not required. Prerequisites: None.

***PH 202L ACCELERATED PHYSICS II** One semester ($\frac{1}{2}$ unit of credit). A continuation of PH 201L with additional topics including oscillations, waves, sound, electricity, magnetism, and optics. This course will be accompanied by a one and one-half hour laboratory (PH 212L).

***PH 212L ACCELERATED PHYSICS II LABORATORY** One semester ($\frac{1}{4}$ unit of credit). This is a one semester course that accompanies PH 202L, a continuation of PH 211L. Students will conduct experiments each week, which apply concepts learned in PH 202L.

PH 244D CLASSICAL MECHANICS One semester ($\frac{1}{2}$ unit of credit). This problem-solving course covers chaos, the calculus of variations, the Lagrangian and Hamiltonian formulations, non-inertial reference frames (including rotational motion), the central force problem, and numerical simulations. Prerequisites: Physics 301L and Calculus II.

***PH 302L ACCELERATED PHYSICS III** One semester ($\frac{1}{2}$ unit of credit). A continuation of PH 301L with additional topics including oscillations, waves, sound, electricity, magnetism, and optics. This course will be accompanied by a one and one-half hour laboratory (PH 312L). Prerequisite: Satisfactory completion of PH 301L.

***PH 312L ACCELERATED PHYSICS III LABORATORY** One semester ($\frac{1}{4}$ unit of credit). This is a one semester laboratory that accompanies PH 302L, a continuation of PH 311L. Students will conduct experiments each week, which apply concepts learned in PH 302L.

PH 704 INDEPENDENT RESEARCH See fall semester description.

SC 244W ROBOTICS See fall semester description.

SC 300 SCIENCE RESEARCH METHODS One semester ($\frac{1}{4}$ unit credit). This course is designed as an orientation course for aspiring science students. Topics will be presented including the philosophy of science, writing and presenting a research poster or paper, and statistical methods. This course will meet once per week, and it will be taught by several LSMSA science faculty members, with the objective of exposing students to different teaching styles and requirements. SC 300 is highly recommended for any student that is considering a career in science. Prerequisite: $\frac{1}{2}$ unit of LSMSA science.

SCIENCE COURSES—YEAR-LONG

*A student failing either lecture or lab fails the course and must repeat both to earn credit for the course.

***BI 280L HUMAN ANATOMY AND PHYSIOLOGY** Yearlong (1 unit of credit). A systemic approach to the study of the human body at the molecular, cellular, histological, organ, and system levels. Homeostasis and relationships between structure and function are emphasized. This course will be of value to students interested in the medical profession as well as those who simply wish to understand more about how the body functions. Includes a two-hour laboratory (BI 281L). Prerequisites: One unit of biology at LSMSA, or biology pre-test score, or consent of Department Chair; and one unit of chemistry.

HEALTH AND PE

ALL COURSES OFFERED IN FALL AND SPRING SEMESTERS

HE 113 HEALTH AND WELLNESS One semester (½ unit of credit). Designed to encourage and promote lifestyles based on the importance of wellness through vigorous activities and good health habits. Topics shall include, but are not limited to, the following: a) health risks and their relationships to the quality of life and longevity, b) physical activity, c) weight control, d) cardio-respiratory conditioning, e) stress control, f) basic physiology, and g) nutrition.

PE 113 BODY MOVEMENT One semester (½ unit of credit). Increasing cardiovascular endurance and strengthening core muscles by developing qualities of power, sharpness and quickness of movement. The student will learn body control, dynamics, and projection of movement.

PE 123 RHYTHMIC EXERCISE AND CONTROL One semester (½ unit of credit). The student will learn body alignment and control through exercise and rhythmical movement. Endurance and strengthening of the whole body are emphasized.

PE 135L LIFETIME RECREATIONAL ACTIVITIES/SPORTS One semester (½ unit of credit). This course is designed to teach a variety of lifelong skills and activities to provide students with knowledge that is needed to stay physically active and healthy throughout life. Furthermore, this course is provided to give students a positive way of being physically and mentally active in life. Activities included in this class may include (due to weather, availability, and class choice): dynamic warm-ups, agility training, yoga, tiger-ball, volley-games, tennis, bowling, water safety, water activities, and frisbee games. Cooperation with other students in class will be needed in order for class to get through activities.

PE 135S KARATE One semester (½ unit of credit). Beginning training program in taekwondo. Knowledge of techniques, traditional forms, one-step sparring, self defense applications, and semi-freestyle sparring is emphasized. Opportunity to advance rank.

PE 153A WEIGHT/CARDIO TRAINING One semester (½ unit of credit). The importance of strength, conditioning, and flexibility is quite evident in today's society in living a healthy life. The goals of this class are to provide an all around knowledge to the details of a safe, efficient, and productive strength training program. Safety, time efficiency, and intensity will be the backbone of our weight training class. Students will be given the knowledge to be able to improvise with facility availability and equipment while getting the best results possible in the shortest amount of time.

PE 153C CORE TRAINING One semester (½ unit of credit). The core consists of the abdominals, low back, obliques, and hips, and is the center of all movement, which means core training is extremely important. A strong core may help prevent hip and lower back injuries (which are common among taller people and age), as well as enhance performance in movement. This course will provide student with a great knowledge in all forms of core exercises while implementing a high intense and fun environment. Students will be challenged and will be expected to push each other to perform to the best of his or her ability.