**JAPN 501 Skills Development in Speaking and Listening 0 Units**
*(Also listed as English as a Second Language 501, Speech Communication 501, and all foreign language classes offered by the Intercultural Studies Division. All foreign language classes listed will have a course number of 501. Student may enroll in only one department for credit.)*
*Five to fifty hours laboratory per quarter.*
*(No limit on repeatability for 0 unit classes.)*
*No grade (NG) course.*
Provides opportunities for students to practice and develop speech communication skills in a laboratory setting.

**JAPN 502 Cross-cultural Partners 0 Units**
*(Also listed as English as a Second Language 502, English Writing 502, Speech Communication 502, and all foreign language classes offered by the Intercultural Studies Division. All foreign language classes listed will have a course number of 502. Student may enroll in only one department for credit.)*
*Five to fifty hours laboratory per quarter.*
*(No limit on repeatability for 0 unit classes.)*
*No grade (NG) course.*
Provides opportunities to practice listening and speaking skills with peers and to develop cross-cultural understanding.

## Journalism

**JOUR 2 Mass Communication and Its Impact On Society 4 Units**
*(See general education pages for the requirement this course meets.)*
*Advisory: English Writing 1A or English as a Second Language 5.*
*Four hours lecture.*
A survey of the mass media and measurement of its impact on culture and society. Mass media effects on global and American institutions. Theories of mass communications in the context of each medium: books, newspapers, magazines, movies, radio, recordings, television and the Internet. Ethical and legal implications of media and their effects on the individual and society. Influences of the media on gender, ethnic and minority issues.
(CAN JOUR 4)

**JOUR 21A News Writing and Reporting 3 Units**
*Prerequisite: Ability to keyboard; English Writing 1A or English as a Second Language 5.*
*Three hours lecture.*
Instruction and practice in reporting and the fundamentals of news writing, with analysis of typical news stories. Concentration on the language and style of news writing; organization and structure of news stories; the lead and basic story types. Practical writing experience.

**JOUR 21B Feature Writing and Reporting 3 Units**
*Prerequisites: Ability to keyboard; English Writing 1A or English as a Second Language 5.*
*Three hours lecture.*
Fundamentals in feature writing for newspapers and magazines with instruction and practice in profile, human interest, consumer and interpretive news features. Practical experience in interviewing, writing special story types and revising. Freelancing a story for publication.

**JOUR 21C Newspaper Writing and Reporting 3 Units**
*Prerequisites: Journalism 21B.*
*Two hours lecture, three hours laboratory.*
Continued application of writing and reporting principles to more advanced writing assignments. Introduction to publications law. Special projects and individual writing conferences. Practical writing experience and public affairs reporting.

## Journalism Production

Students are encouraged to enroll in only one of the 60 series courses per quarter; any deviation must be approved in advance by the instructor. San Jose State University will accept for journalism credit no more than 12 per quarter units in the Journalism 60 series. Any course in the series is open to non-journalism majors. While previous publications experience is desirable, it is not mandatory. See description of individual course for prerequisites.

**JOUR 60 Editorial Board 2 Units**
*Advisory: English Writing 1A or English as a Second Language 5.*
*One hour lecture, three hours laboratory, plus two hours by arrangement.*
*(May be taken six times for credit.)*
Enrollment limited to major editors of the school paper. Board interprets established policy and supervises production of the student newspaper, La Voz.

**JOUR 61 Newspaper Staff 3 Units**
*Prerequisite: Ability to typewrite.*
*Advisory: Journalism 21A or 21B.*
*Nine hours laboratory.*
*(May be taken six times for credit.)*
Practical experience in covering and reporting news and features as members of the college newspaper staff. Staff includes reporters, editors, photojournalists and graphic artists.

**JOUR 62 Newspaper Freelancing 1 Unit**
*Three hours laboratory.*
*(May be taken six times for credit.)*
Practical experience contributing as a freelancer tot he college newspaper as a reporter, copy editor, columnist, graphic artist, photographer or other freelance position.

**JOUR 63 Newspaper Advertising Staff 1 Unit**
*Three hours laboratory.*
*(May be taken six times for credit.)*
Experience in advertising as it relates to the college newspaper. Combines functions of advertising and business management. Introduction to advertising sales, design, production and billing.

**JOUR 64 Press Photo Bureau 2 Units**
*Advisory: Photography 2.*
*One hour lecture, three hours laboratory.*
*(May be taken three times for credit.)*
An introduction to news photography. Students help meet the needs of the weekly newspaper, the area press and the Public Information Office of De Anza College.

**JOUR 66W Special Topics in Journalism 1 Unit**
**JOUR 66X 2 Units**
**JOUR 66Y 3 Units**
**JOUR 66Z 4 Units**
*One hour lecture for each unit of credit. Complexity of topic determines number of units assigned.*
*(Any combination of Journalism 66W, 66X, 66Y and 66Z may be taken up to six times, not to exceed 18 units, as long as the topics/projects are different each time.)*
*Pass-No Pass (P-NP) course.*
Intensive study and analysis of a special topic in Journalism. Subjects vary.

**JOUR 70W Special Projects in Journalism 1 Unit**
**JOUR 70X 2 Units**
**JOUR 70Y 3 Units**
**JOUR 70Z 4 Units**
*One hour lecture for each unit of credit. Complexity of project determines number of units assigned.*
*(Any combination of Journalism 70W, 70X, 70Y, and 70Z may be taken up to six times, not to exceed 18 units, as long as the topics/projects are different each time.)*
*Pass-No Pass (P-NP) course.*
Special research, writing or study projects in Journalism as determined in consultation with the department chair.

**JOUR 500 Journalism and Publications Skills Laboratory 0 Units**
*Corequisites: Journalism 500 students must also enroll in any Journalism or Technical Communications course, or English Writing 65.*
*Hours determined by student attendance.*
*(No limit on repeatability for 0 unit classes.)*
*No grade (NG) course.*
Provides students an opportunity for individualized learning as an expansion of regular classes in journalism and other publication classes. Students use the newsroom/computer laboratory to complete class assignments, conduct research via the Internet, and work collaboratively in small groups. Students must have basic computer skills familiarity with Internet resources. Faculty and laboratory instructional associates provide guidance to students.

## Korean

**KORE 1 Elementary Korean 5 Units**
*(Formerly Korean 91.)*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Five hours lecture, one hour laboratory.*
Intensive oral practice of basic, everyday language functions, written practice, including Hangul, to further understand grammatical and syntactical structures. Introduction to basic Korean historical and cultural aspects. Language laboratory practice to reinforce pronunciation, grammar and syntax.

**KORE 2 Elementary Korean 5 Units**
*(Formerly Korean 92.)*
*Prerequisite: Korean 1 or one year of high school Korean.*
*Five hours lecture, one hour laboratory.*
Further development of material presented in Korean 1. Intensive oral practice broadening the functions presented in Korean 91 and adding new ones. Greater emphasis on student generated discussion. Written practice to further understanding of the underlying grammatical and syntactical structures. Language laboratory practice to reinforce pronunciation grammar and syntax.

**KORE 3 Elementary Korean 5 Units**
*(Formerly Korean 93.)*
*Prerequisite: Korean 2 or two years of high school Korean.*
*Five hours lecture, one hour laboratory.*
Further development of material presented in Korean 1 and 2. Continuation of elementary language skills for oral and written communication in targeted language functions, with focus on greater structural accuracy and communicative competence. Language laboratory practice to reinforce pronunciation, grammar and syntax.

**KORE 4 Intermediate Korean 5 Units**
*(Formerly Korean 94.)*
*Prerequisite: Korean 3 or three years of high school Korean.*
*Five hours lecture, one hour laboratory.*
Review of grammar and discussion of grammatical features beyond the elementary level. Development of reading, writing, speaking and listening skills at the first intermediate level. Reading and discussion of texts dealing with Korean literature, arts, history and culture. Language laboratory practice.

**KORE 5 Intermediate Korean 5 Units**
*(Formerly Korean 95.)*
*Prerequisite: Korean 4.*
*Five hours lecture, one hour laboratory.*
Review of grammar and discussion of grammatical features beyond the elementary level. Development of reading, writing, speaking and listening skills at the second intermediate level. Reading and discussion of texts dealing with Korean literature, arts, history and culture. Language laboratory practice.

**KORE 6 Intermediate Korean 5 Units**
*(Formerly Korean 96.)*
*Prerequisite: Korean 5.*
*Five hours lecture, one hour laboratory.*
Continuation of Korean 95. Review of grammar and discussion of grammatical features beyond the elementary level. Development of reading, writing, speaking and listening skills at the third intermediate level. Reading and discussion of texts dealing with Korean literature, arts, history and culture. Language laboratory practice.

**KORE 501 Skills Development in Speaking and Listening 0 Units**
*(Also listed as English as a Second Language 501, Speech Communication 501, and all foreign language classes offered by the Intercultural Studies Division. All foreign language classes listed will have a course number of 501. Student may enroll in only one department for credit.)*
*Five to fifty hours laboratory per quarter.*
*(No limit on repeatability for 0 unit classes.)*
*No grade (NG) course.*
Provides opportunities for students to practice and develop speech communication skills in a laboratory setting.

**KORE 502 Cross-cultural Partners 0 Units**
*(Also listed as English as a Second Language 502, English Writing 502, Speech Communication 502, and all foreign language classes offered by the Intercultural Studies Division. All foreign language classes listed will have a course number of 502. Student may enroll in only one department for credit.)*
*Five to fifty hours laboratory per quarter.*
*(No limit on repeatability for 0 unit classes.)*
*No grade (NG) course.*
Provides opportunities to practice listening and speaking skills with peers and to develop cross-cultural understanding.

## Language Arts

**LART 100 Integrated Reading and Writing 10 Units**
*Prerequisites: Qualifying score on Reading and Writing placement test or successful completion of Language Arts 200, or Reading 201, and/or English Writing 100A.*
*Corequisite: Language Arts 100 students must also enroll in Language Arts 170 or English Writing 160 and Reading 101.*
*Ten hours lecture.*
*Pass-No Pass (P-NP) course.*
Integration of reading and writing skills necessary for success in college level courses. Emphasis on analysis and criticism of assigned readings and written responses to critical questions about those readings.

**LART 170 Reading and Writing Practice 1 Unit**
*Prerequisites: Qualifying score on English placement test or successful completion of English Writing 100A/150 and Reading 201/202.*
*Corequisites: Language Arts 170 students must also enroll in English Writing 100B and/or Reading 100, or Language Arts 100.*
*Two hours lecture-laboratory.*
*(May be taken twice for credit.)*
*Pass-No Pass (P-NP) course.*
Integration of reading and writing skills necessary for college level reading and essay writing. Includes critical thinking, inferential reading comprehension, and analytical response essay writing.

**LART 200 Developing Reading and Writing Connections 10 Units**
*Credit course - Does not apply to De Anza Associate Degree.*
*(Not open to students who have completed Reading 201 and/or English Writing 100A.)*
*Prerequisite: Qualifying score on Reading and Writing placement test.*
*Ten hours lecture.*
*(May be taken twice for credit.)*
*Pass-No Pass (P-NP) course.*
Development of reading and writing abilities to the level necessary to be successful in Reading 100 and English Writing 100B. Comprehension of assigned readings. Writing focused on a central idea, developed with specific examples, organized according to a reasonably clear progression of ideas and largely free of major grammatical, syntactic, usage and diction errors.

## Learning Assistance

**LRNA 98 Tutor Training 1 Unit**
*Credit course - Does not apply to De Anza Associate Degree.*
*Advisory: Must be selected to work as a De Anza tutor.*
*One hour lecture.*
*Pass-No Pass (P-NP) course.*
Required of all De Anza group and individual tutors during their first quarter of tutoring. Strategies and communications skills to help peer tutors conduct productive, effective, and fun tutoring sessions. Experience reflecting on instructional and learning theory and practicing theory-based tutoring techniques. Strategies for working with students from diverse backgrounds and with various learning styles. Self-reflection and peer feedback on actual tutoring sessions.

**LRNA 99 Supervised Practicum 1 Unit**
**LRNA 99W 2 Units**
*Credit course - Does not apply to De Anza Associate Degree.*
*Prerequisites: Learning Assistance 98 (may be taken concurrently), or previous equivalent experience.*
*Two hours lecture-laboratory for each unit of credit.*
*(Learning Assistance 99 may be taken twice for credit. Learning Assistance 99W may be taken only once for credit.)*
*Pass-No Pass (P-NP) course.*
Provides tutors with supervised practice tutoring in either one-on-one instruction or in small groups.

**LRNA 100 Supervised Learning Assistance 0 Units**
*Non-credit course - Does not apply to De Anza Associate Degree.*
*Two hours lecture-laboratory.*
*(No limit on repeatability for 0 unit classes.)*
*Pass-No Pass (P-NP) course.*
Learning assistance to students in need of special supplemental instruction for specific courses.

## Learning Center

**LCEN 4 Principles of Library Research 3 Units**
*(Not open to students with credit in Learning Center 101 and/or 141.)*
*Advisory: English Writing 100A and Reading 201 (or Language Arts 200), or English as a Second Language 161, 162 and 163.*
*Three hours lecture.*
In-depth analysis of resources available in an academic library's print and electronically networked collection, including the methodology for its effective utilization.

**LCEN 50 Introduction to Online Research 1 Unit**
*Advisory: English Writing 100A and Reading 201 (or Language Arts 200), or English as a Second Language 161, 162 and 163.*
*Two hours lecture-laboratory.*
This course will teach skills needed to find, evaluate, and use information found on the Internet and other electronic databases.

**LCEN 51 Business Resources on the World Wide Web 1 Unit**
*Advisories: English Writing 100A and Reading 201 (or Language Arts 200), or English as a Second Language 161, 162 and 163; experience with Macintosh or Windows operating systems.*
*Two hours lecture-laboratory.*
Locate, examine, and evaluate business-related sites available on the World Wide Web.

**LCEN 53 Advanced Internet Search Techniques 1 Unit**
*Advisory: English Writing 100A and Reading 201 (or Language Arts 200), or English as a Second Language 161, 162 and 163; experience with Macintosh or Windows operating systems.*
*Two hours lecture-laboratory.*
Go beyond general web searching to find the best information available on your topic. Learn to refine and focus your search and use specialized search tools available on the World Wide Web.

**LCEN 101 Introduction to Library Skills 1 Unit**
*(Not open to students with credit in Learning Center 4 or 141).*
*One hour lecture.*
Introduction to the use of print and electronic resources in an academic library.

**LCEN 141 Information Resources in the Social Sciences 1 Unit**
*(Not open to students with credit in Learning Center 4 or 101.)*
*One hour lecture.*
Introduction to useful resource materials and reference books in the Social Sciences.

**LCEN 500 Learning Resources Supervised Skills Development 0 Units**
*Credit course - Does not apply to De Anza Associate Degree.*
*Hours determined by student attendance.*
*(No limit on repeatability for 0 unit classes.)*
*No grade (NG) course.*
Provides students with individualized instruction related to their classroom assignments. Students will receive instruction in the content area of their assignments, on locating learning resources appropriate to their specific curricular needs, and on applying appropriate learning skills to specific curricular areas. Supervised individualized study through tutoring, computer assisted instruction, audio visual programs, and other media materials.

## Linguistics

**LING 1 Introduction to Linguistics 4 Units**
*(See general education pages for the requirement this course meets.)*
*Advisory: English Writing 1A or English as a Second Language 5.*
*(Also listed as English Literature 25. Student may enroll in either department, but not both, for credit.)*
*Four hours lecture.*
Introduction to the nature of language. Origin and development of spoken and written languages, how people learn languages, and how languages change, with emphasis on the history of English. Basics of linguistic description including systems of phonetics and phonology, semantics, morphology and syntax. Study of general linguistic principles as they apply across languages.

## Mandarin

**MAND 1 Elementary Mandarin 5 Units**
*Five hours lecture, one hour laboratory.*
Intensive pronunciation and tonal drills. Oral and written practice in vocabulary and grammar. Conversation. Simple reading and writing of characters. Language laboratory practice.

**MAND 2 Elementary Mandarin 5 Units**
*(See general education pages for the requirement this course meets.)*
*Prerequisites: Mandarin 1.*
*Five hours lecture, one hour laboratory.*
Continuation of essentials of grammar and syntax. Intensive oral and written drill. Selected prose readings. Conversation and composition. Language laboratory practice.

**MAND 3 Elementary Mandarin 5 Units**
*Prerequisites: Mandarin 2.*
*Five hours lecture, one hour laboratory.*
Continuation of Mandarin 2. Intensive practice in reading and writing.

**MAND 4 Intermediate Chinese 5 Units**
*(Formerly Mandarin 94.)*
*Prerequisite: Mandarin 3.*
*Five hours lecture, one hour laboratory.*
Reading, writing, and spoken Mandarin at the intermediate level. Grammar and idiomatic usage, aspects of Chinese culture and customs.

**MAND 5 Intermediate Chinese 5 Units**
*(Formerly Mandarin 95.)*
*Prerequisite: Mandarin 4.*
*Five hours lecture, one hour laboratory.*
Review of previous vocabularies and of grammatical structures. Continuation of training to develop skills in writing, reading Chinese, and speaking Mandarin on the intermediate level. Grammar will be continuously emphasized to improve writing skills and to support the spoken language. Idiomatic usage and aspects of Chinese culture and customs will also be emphasized.

**MAND 6 Intermediate Chinese 5 Units**
*(Formerly Mandarin 96.)*
*Prerequisite: Mandarin 5.*
*Five hours lecture, one hour laboratory.*
Continuation of reading, writing Chinese and spoken Mandarin at the intermediate level; further idiomatic usage and understanding of grammar, aspects of Chinese culture and customs in greater depth.

**MAND 90A Introductory Mandarin (First Quarter) 3 Units**
*Three hours lecture, one hour laboratory.*
Intensive drills in the patterns and idioms of daily speech will be supported by sufficient grammar to give flexibility in the spoken language.

**MAND 90B Introductory Mandarin (Second Quarter) 3 Units**
*Prerequisites: Mandarin 90A or equivalent.*
*Three hours lecture, one hour laboratory.*
Continuation of Mandarin 90A.

**MAND 90C Introductory Mandarin (Third Quarter) 3 Units**
*Prerequisites: Mandarin 90B or equivalent.*
*Three hours lecture, one hour laboratory.*
Continuation of Mandarin 90B.

**MAND 501 Skills Development in Speaking and Listening 0 Units**
*(Also listed as English as a Second Language 501, Speech Communication 501, and all foreign language classes offered by the Intercultural Studies Division. All foreign language classes listed will have a course number of 501. Student may enroll in only one department for credit.)*
*Five to fifty hours laboratory per quarter.*
*(No limit on repeatability for 0 unit classes.)*
*No grade (NG) course.*
Provides opportunities for students to practice and develop speech communication skills in a laboratory setting.

**MAND 502 Cross-cultural Partners 0 Units**
*(Also listed as English as a Second Language 502, English Writing 502, Speech Communication 502, and all foreign language classes offered by the Intercultural Studies Division. All foreign language classes listed will have a course number of 502. Student may enroll in only one department for credit.)*
*Five to fifty hours laboratory per quarter.*
*(No limit on repeatability for 0 unit classes.)*
*No grade (NG) course.*
Provides opportunities to practice listening and speaking skills with peers and to develop cross-cultural understanding.

## Manufacturing and CNC Technologies

**MCNC 56 Special Projects in Manufacturing and CNC 1 Unit**
**MCNC 56X 2 Units**
**MCNC 56Y 3 Units**
*(Formerly Manufacturing and Design Technology 56, 56X,Y.)*
*Prerequisites: Approved special projects contract and appropriate technical background to support the completion of project objectives.*
*Three hours laboratory for each unit of credit.*
*(Any combination of Manufacturing and CNC 56, 56X, and 56Y may be taken up to six times, not to exceed 18 units, as long as the topics/projects are different each time.)*
Projects advancing student's knowledge and experience in a selected area of Manufacturing and Machining.

**MCNC 62A Technical Calculations 2 Units**
*(Formerly Manufacturing and Design Technology 62A.)*
*Advisory: English Writing 100A and Reading 201 (or Language Arts 200), or English as a Second Language 161, 162 and 163.*
*Four hours lecture-laboratory.*
The application of fundamental mathematics to various fields of technology including machining, automotive, sheet metal, and similar disciplines. Review and development of arithmetic skills, introduction of basic algebraic concepts and metric conversion. The use of a scientific calculator in problem solving will be emphasized.

**MCNC 62B Technical Calculations 2 Units**
*(Formerly Manufacturing and Design Technology 62B.)*
*Prerequisites: Manufacturing and CNC 62A.*
*Four hours lecture-laboratory.*
The application of fundamental mathematics to various fields of technology including machining, automotive, mechanical drafting, sheet metal, nursing and similar disciplines. Review and development of algebraic skills, plane geometry, geometric constructions, and trigonometric concepts. The use of a scientific calculator in problem solving is essential.

**MCNC 63A Automotive Mechanisms 3 Units**
*(Formerly Manufacturing and Design Technology 63A.)*
*Prerequisite: Approved Manufacturing and CNC Course Sequence Contract.*
*Advisories: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4); Mathematics 101 or 112.*
*(Also listed as Automotive Technology 53A. Student may enroll in either department, but not both, for credit.)*
*Six hours lecture-laboratory.*
The application of physical principles to the operation of mechanical, hydraulic, and hydromechanical systems, using an applied physics technique.

**MCNC 63B Automotive Electromechanical Systems 2 Units**
*(Formerly Manufacturing and Design Technology 63B.)*
*Prerequisites: Approved Manufacturing and CNC Course Sequence Contract.*
*Advisories: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4); Mathematics 101 or 112.*
*(Also listed as Automotive Technology 53B. Student may enroll in either department, but not both, for credit.)*
*Four hours lecture-laboratory.*
*(Any combination of Automotive Technology 53B and Manufacturing and CNC 63B may be taken three times for credit.)*
Electrical theories, testing and measuring procedures, circuit construction and schematic interpretation. Application of the principles of magnetism. Fundamentals of operation of semiconductors in electronic devices and controls.

**MCNC 63C Robotics and Automated Assembly Equipment 3 Units**
*(Formerly Manufacturing and Design Technology 63C.)*
*Advisory: English Writing 100A and Reading 201 (or Language Arts 200), or English as a Second Language 161, 162 and 163.*
*Three hours lecture.*
Robotics: classifications, uses, configurations, drive methods, sensors, controls, computer hardware and software, vision systems and applications for industry and manufacturing.

**MCNC 64 Manufacturing Materials and Processes 4 Units**
*(Formerly Manufacturing and Design Technology 64.)*
*Advisories: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4); Manufacturing and CNC 62A or Mathematics 101 or 112.*
*Two hours lecture, four hours lecture-laboratory.*
Applied materials and process analysis, materials and process selection techniques. The role of metals, polymers, ceramics and composites in the casting, molding, forging, forming, machining, joining, and heat and surface treatment processes.

**MCNC 70 Basic Machine Tools and Processes 2 Units**
*(Formerly Manufacturing and Design Technology 70.)*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Four hours lecture-laboratory.*
*(May be taken three times for credit.)*
Basic measuring tools and practice, basic machine operations including pedestal grinders, drill presses, saws, lathes and milling machines. Bench work such as filing, layout, use of taps and dies. Care and maintenance of hand and machine tools and shop safety.

**MCNC 71 Introduction to Machining and CNC Processes 4 1/2 Units**
*Advisory: English Writing 100A and Reading 201 (or Language Arts 200), or English as a Second Language 161, 162 and 163.*
*Nine hours lecture-laboratory.*
Manufacturing lab safety. Precision measuring tools and practices. Basic manual machine operations: pedestal grinders, drill presses, saws, lathes and milling machines. Threads: types, applications and use of taps and dies. Computer Numerical Control (CNC) mills: axis moves, cutters, tooling, basic setup and controller functions. Cutter and machine speed and feed calculations.

**MCNC 71A Machine Practice (Lathes, Drills and Measurement) 4 1/2 Units**
*(Formerly Manufacturing and Design Technology 71A.)*
*Prerequisite: Manufacturing and CNC 70 with a grade of C or better.*
*Advisories: English Writing 100A and Reading 201 (or Language Arts 200), or English as a Second Language 161, 162 and 163; Manufacturing and CNC 62A.*
*Nine hours lecture-laboratory.*
Use of basic measuring tools. Fundamental operations of various types of lathes including speeds and feeds, principles of work-holding devices, setups, thread types and production, chip formation theory, and taper turning. Drill press operations, milling and part operations planning.

**MCNC 71B Machine Practice (Milling, Saws and Measurement) 4 1/2 Units**
*(Formerly Manufacturing and Design Technology 71B.)*
*Prerequisites: Manufacturing and CNC 70 with a grade of C or better.*
*Advisory: Manufacturing and CNC 71A.*
*Nine hours lecture-laboratory.*
Fundamental operations of milling machines including cutter types and geometry, indexing, rotary table and speed and feed calculations. Inspection practices relating to sine bars, compound angle plates and thread measurement. Power saws and electrical discharge machining theory and operations. Metal turning.

**MCNC 71C Introduction to Computer- Aided Numerical Control Machine Tools 4 1/2 Units**
*(Formerly Manufacturing and Design Technology 71C.)*
*Prerequisites: Manufacturing and CNC 71A and 71B with a grade of C or better.*
*Nine hours lecture-laboratory.*
Mill and lathe tool path programming using word address format. Numerical control systems and components including machine controller functions and operation. Calculation for mill and lathe cutter compensation. Basic mill setups, zero point location and tool length offsets. Manual machining operations.

**MCNC 71D Tool Design and Tool Room Practices 4 1/2 Units**
*(Formerly Manufacturing and Design Technology 71D.)*
*Prerequisites: Manufacturing and CNC 71C with a grade of C or better.*
*Nine hours lecture-laboratory.*
Introduction to jig and fixture design for computer-aided manufacturing including location and clamping methods and computation of fits and allowances. Tool room practices such as jig boring and abrasive machining including surface, form and cylindrical grinding.

**MCNC 71E Introduction to Die and Mold Design 4 1/2 Units**
*(Formerly Manufacturing and Design Technology 71E.)*
*Prerequisites: Manufacturing and CNC 71D with a grade of C or better.*
*Nine hours lecture-laboratory.*
Fundamental design and construction of basic types of sheet metal stamping and bending dies. Tool steel types and applications. Introduction to plastic molding processes.

**MCNC 72 Applied Geometric Inspection Dimensioning and Tolerancing (ANSI Y14.5m); Coordinate Measuring Machines (CMM) 3 Units**
*(Formerly Manufacturing and Design Technology 72.)*
*Advisories: English Writing 100A and Reading 201 (or Language Arts 200), or English as a Second Language 161, 162 and 163; experience in blueprint reading.*
*Six hours lecture-laboratory.*
Interpretation of specifications and inspection procedures related to current ASME Y 14.5 Geometric Dimensioning and Tolerancing (GD&T) standards. Applications and capabilities of precision measuring tools, including the computer-aide Coordinate Measuring Machine (CMM), used in manufacturing environments to inspect discrete complex parts. Machine and inspected part setup for measuring form, orientation, and position callouts.

**MCNC 72A Basic Mechanical Inspection 2 Units**
*(Formerly Manufacturing and Design Technology 72A.)*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Four hours lecture-laboratory.*
Introduction to general mechanical inspection procedures, use and care of basic precision measuring tools including calibration and appropriate application. Comparative measurement and application of tolerances.

**MCNC 72C Blueprint Reading: Geometric Dimensioning and Tolerancing (ANSI and ISO Standards) 3 Units**
*(Formerly Manufacturing and Design Technology 72C.)*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Three hours lecture.*
Interpretation of multi-view engineering blue prints, visualization techniques, auxiliary and section views. Appraisal of revision columns, title blocks, and bill of materials. Introduction to geometric dimensioning and tolerancing (GD&T) using ANSI and ISO standards.

**MCNC 72E Introduction to ISO 9000 Quality Standards 3 Units**
*(Formerly Manufacturing and Design Technology 72E.)*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Three hours lecture.*
New requirement for American Industry: Background of ISO 9000 standard, what is ISO 9000, how did standards develop, why have they become so important, the ISO 9000 registration process, documentation, independent auditing requirement, what does certification mean, ISO 9000 and quality systems, what are the benefits, review the standards, internal auditing.

**MCNC 73A Introduction to Computer-Aided Numerical Control Machine Tool Programming and Operation 5 Units**
*(Formerly Manufacturing and Design Technology 73A.)*
*Prerequisite: Manufacturing and CNC 71B or equivalent machining experience.*
*Four hours lecture, three hours laboratory.*
Mill and lathe tool path programming using word address format. Program entry and editing using a microcomputer based language. Numerical control systems and components including machine controller functions and operation. Calculation for mill and lathe and cutter compensation. Basic mill setups, zero point location and tool length offsets.

**MCNC 73B Computer-Aided Numerical Control Machine Programming and Operation 4 Units**
*(Formerly Manufacturing and Design Technology 73B.)*
*Prerequisites: Manufacturing and CNC 71C or 73A or equivalent.*
*Three hours lecture, three hours laboratory.*
Advanced mill and lathe tool path programming using word address format. Subroutines and mirror image. Program entry and editing using a microcomputer based language. Machine controller functions and operations. Calculation for mill and lathe cutter compensation. Mill and lathe setups for production.

**MCNC 73C Computer Numerical Contro Programming (CAD/CAM Based) 4 Units**
*(Formerly Manufacturing and Design Technology 73C.)*
*Prerequisite: Basic understanding of mill and lathe operations.*
*Three hours lecture, three hours laboratory.*
*(May be repeated for credit as long as two years have elapsed since last enrollment.)*
Programming fundamentals using a microcomputer CAD/CAM numerical control language. Three axis mill programming; lathes. Part geometry definition and conversion to machining operations through the use of tool coordinate, program macro, subroutine, and loop statements.

**MCNC 74 Machining and Manufacturing Processes 4 Units**
*(Formerly Manufacturing and Design Technology 74.)*
*Four hours lecture.*
The processes, tools and shop practices involved with manufacturing and machining. Design requirements as dictated by manufacturing and machining processes and capabilities. Mechanical items as they relate to design, manufacturing and machining will be oversewed including bearings, key ways and threaded fasteners.

**MCNC 74A Survey of Computer Drawings 2 Units**
*(Formerly Manufacturing and Design Technology 54E.)*
*Advisory: English Writing 100A and Reading 201 (or Language Arts 200), or English as a Second Language 161, 162 and 163.*
*Four hours lecture-laboratory.*
*(May be taken twice for credit if software is different each time.)*
Principles and applications of computer drawings using industry standard software. Emphasis on 3-D and articulated drawings.

**MCNC 74B Survey of Computer Aided Design (CAD) 2 Units**
*(Formerly Manufacturing and Design Technology 54F.)*
*Credit course - Does not apply to De Anza Associate Degree.*
*Advisories: English Writing 100A and Reading 201 (or Language Arts 200), or English as a Second Language 161, 162 and 163; Mathematics 200 or 210 or equivalent.*
*Four hours lecture-laboratory.*
Principles and applications of computer aided design (CAD) using industry standard software. Emphasis on 2D drawings.

**MCNC 75A Introduction to Computer-Aided Numerical Control (CNC) Programming and Operation; Mills 4 1/2 Units**
*Advisory: Manufacturing and CNC 71 or experience in machining processes; English Writing 100A and Reading 201 (or Language Arts 200), or English as a Second Language 161, 162 and 163.*
*Nine hours lecture-laboratory.*
Introduction to mill tool path programming using G and M code format. CNC systems and components including machine controller functions and operations. Program entry, editing, and back plotting. Calculation for mill and lathe cutter compensation. Precision inspection techniques and basic mill setups, including cutting tool selection, and work holding.

**MCNC 75B Computer-Aided Numerical Control (CNC) Programming and Operation; Lathes, Advanced Mills 4 1/2 Units**
*Prerequisite: Manufacturing and CNC 75A with a grade of C or better or equivalent.*
*Nine hours lecture-laboratory.*
Introduction to lathe tool path programming using word address format, including coordinate system, cutter compensation and canned cycles. Advanced mill programming; sub programs, work coordinate system and use of macros. Program entry, editing, and back plotting. Machine controller functions and operations. Single point threading and Unified thread form classes and measurement. Cutting tool insert selection.

**MCNC 76A CAD/CAM Based Computer Numerical Control Programming Using Mastercam 4 1/2 Units**
*(Student may receive credit for one Manufacturing and CNC 76 course with an A through E designation.)*
*Advisory: Basic understanding of mill and lathe operations; English Writing 100A and Reading 201 (or Language Arts 200), or English as a Second Language 161, 162 and 163.*
*Nine hours lecture-laboratory.*
Three-axis mill programming; creating part geometry, defining tools and tool paths, and using post-processors to produce word-address format programs.

**MCNC 76F Advanced CAD/CAM Based Computer Numerical Control Programming Using Mastercam 4 1/2 Units**
*(Student may receive credit for one Manufacturing and CNC 76 course with an F through J designation.)*
*Prerequisite: Manufacturing and CNC 76A.*
*Nine hours lecture-laboratory.*
Advanced programming procedures using wireframe, surface and solid models. Editing, post-processing, verifying and running programs on CNC machines.

**MCNC 77 Machining Practices Using Conventional Machine Tools, Tool Design, Abrasive Machining 4 1/2 Units**
*Prerequisites: Manufacturing and CNC 71 with a grade of C or better or equivalent.*
*Nine hours lecture-laboratory.*
Advanced machining practices using conventional machine tools. Introduction to fixture design including location and clamping methods and computation of fits and allowances. Abrasive machining.

**MCNC 78 Introduction to Industrial Controllers (PLC) 3 Units**
*(Formerly Manufacturing and Design Technology 78.)*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Six hours lecture-laboratory.*
*(May be repeated for credit as long as two years have elapsed since last enrollment.)*
Basic principles and practical applications of Programmable Logic Controllers (PLCs). conversion of relay ladder diagrams to PLC programs; designing PLC programs for practical industrial applications; utilizing peripheral devices such as recorders, input/output modules, CRT, and printers; execute programs in the laboratory controlling the simulated operation of typical industrial control systems.

**MCNC 100 Open Computer Lab 1/2 Unit**
**MCNC 100X 1 Unit**
**MCNC 100Y 1 1/2 Units**
**MCNC 100Z 2 Units**
*(Formerly Manufacturing and Design Technology 100, 100X-Z.)*
*Corequisite: Manufacturing and CNC 100 and 100X-Z students must also enroll in another Manufacturing and CNC course.*
*Three hours laboratory for each unit of credit.*
*(Any combination of Manufacturing and CNC 100, 100X, 100Y, and 100Z may be taken up to six times, not to exceed 18 units.)*
*Pass-No Pass (P-NP) course.*
Use of Manufacturing and CNC labs for those who need/desire more time to complete application assignments.

## Materials Management

**MATL 50A Fundamentals of Purchasing 3 Units**
*(Formerly Purchasing 50A.)*
*Advisory: English Writing 100A and Reading 201 (or Language Arts 200), or English as a Second Language 161, 162 and 163.*
*Three hours lecture.*
Basic principals and methods of procurement in business and government. Organization and operation of a purchasing department. Sources, service, quantity, and legal aspects of purchasing.

**MATL 50B Purchasing Management 3 Units**
*(Formerly Purchasing 50B.)*
*Advisory: English Writing 100A and Reading 201 (or Language Arts 200), or English as a Second Language 161, 162 and 163.*
*Three hours lecture.*
Purchasing departments organizational format; techniques for purchasing services; supplier management; legal considerations; relationship between purchasing and other business functions of a corporation.

**MATL 53 Business Negotiation 3 Units**
*(Formerly Purchasing 53.)*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Language 4.*
*(Also listed as Business 53. Student may enroll in either department, but not both, for credit.)*
*Three hours lecture.*
Problem solving through the use of principled negotiation. Planning, issue recognition, and strategies in negotiating and resolving business conflicts.

**MATL 54 Contract Administration 3 Units**
*(Formerly Purchasing 54.)*
*Advisory: English Writing 100A and Reading 201 (or Language Arts 200), or English as a Second Language 161, 162 and 163; Mathematics 200 or 210.*
*Three hours lecture.*
Administration of contracts in the modern industrial economy. Post-award administration and management of contracts. Emphasis on understanding the rights and obligations of the parties to a contract, and the process toward successful completion.

**MATL 55 Contracts for Buyers 3 Units**
*(Formerly Purchasing 55.)*
*Advisory: English Writing 100A and Reading 201 (or Language Arts 200), or English as a Second Language 161, 162 and 163.*
*Three hours lecture.*
Basic principles of a purchase agreement and methods of negotiation contract clauses. Emphasis on terms and conditions of the purchase order.

**MATL 56 Logistics 3 Units**
*(Formerly Purchasing 56.)*
*Advisory: English Writing 100A and Reading 201 (or Language Arts 200), or English as a Second Language 161, 162 and 163; Mathematics 200 or 210.*
*Three hours lecture.*
The study of material from its inception on planning-forecasting through its receipt, storage, protection, material handling, picking, packaging, transport, distribution, to the consumer. Emphasis on understanding the logistic pipeline from raw material to consumption and its impact on modern society.

**MATL 57 Principles of Pricing 3 Units**
*(Formerly Purchasing 57A.)*
*Advisory: English Writing 100A and Reading 201 (or Language Arts 200), or English as a Second Language 161, 162 and 163; Mathematics 200 or 210.*
*Three hours lecture.*
Basic principles and theory of pricing as they relate to the purchasing function in industry, including in-depth studies of pricing policies and disciplines. Stresses the definition, recognition, and clarification of cost elements.

**MATL 81 Production Control and Inventory Management 3 Units**
*(Formerly Purchasing 81.)*
*Advisory: English Writing 100A and Reading 201 (or Language Arts 200), or English as a Second Language 161, 162 and 163; Mathematics 200 or 210.*
*(Also listed as Business 81. Student may enroll in either department, but not both, for credit.)*
*Three hours lecture.*
The principles of production and inventory control in a manufacturing environment.

**MATL 100V Topics in Materials Management 1/2 Unit**
**MATL 100W 1 Unit**
**MATL 100X 2 Units**
**MATL 100Y 3 Units**
**MATL 100Z 4 Units**
*(Formerly Purchasing 97V-97Z.)*
*Prerequisite: Background or experience in purchasing appropriate to the topic.*
*One hour lecture for each unit of credit.*
*(Any combination of Materials Management 100V, 100W, 100X, 100Y, and 100Z may be taken up to six times, not to exceed 18 units, as long as the topics/ projects are different each time.)*
A planned program of exposure to actual purchasing practices designed to broaden students' perspective. Concepts and theories as applied to the specific topic.

# Mathematics

**MATH 1A Calculus 5 Units**
*(See general education pages for the requirement this course meets.)*
*Prerequisites: Mathematics 49B (with a grade of C or better); and satisfactory score on Calculus Readiness Test within the past calendar year.*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Five hours lecture.*
Fundamentals of differential calculus.
(MATH 1A + 1B = CAN MATH 18) (MATH 1A + 1B + 1C = CAN MATH SEQ B) (MATH 1A + 1B + 1C + 1D = CAN MATH SEQ C)

**MATH 1B Calculus 5 Units**
*(See general education pages for the requirement this course meets.)*
*Prerequisites: Mathematics 49B and Mathematics 1A, both, with a grade of C or better; or equivalent.*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Five hours lecture.*
Fundamentals of integral calculus.
(MATH 1A + 1B = CAN MATH 18) (MATH 1A + 1B + 1C = CAN MATH SEQ B) (MATH 1A + 1B + 1C + 1D = CAN MATH SEQ C)

**MATH 1C Calculus 5 Units**
*(See general education pages for the requirement this course meets.)*
*Prerequisites: Mathematics 1B with a grade of C or better; or equivalent.*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Five hours lecture.*
Infinite series, lines and surfaces in three dimensions, vectors in two and three dimensions, parametric equations of curves, derivatives, and integrals of vector functions.
(CAN MATH 20) (MATH 1A + 1B + 1C = CAN MATH SEQ B) (MATH 1A + 1B + 1C + 1D = CAN MATH SEQ C)

**MATH 1D Calculus 5 Units**
*(See general education pages for the requirement this course meets.)*
*Prerequisites: Mathematics 1C with a grade of C or better; or equivalent.*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Five hours lecture.*
Partial derivatives, optimization of multivariable functions, multiple integration, calculus of vector functions and vector fields.
(CAN MATH 22) (MATH 1A + 1B + 1C + 1D = CAN MATH SEQ C)

**MATH 2A Differential Equations 5 Units**
*(Formerly Mathematics 2C.)*
*(See general education pages for the requirement this course meets.)*
*Prerequisites: Mathematics 1D with a grade of C or better.*
*Five hours lecture.*
Ordinary differential equations and selected applications.
(CAN MATH 24)

**MATH 2B Linear Algebra 5 Units**
*(See general education pages for the requirement this course meets.)*
*Prerequisites: Mathematics 1D with a grade of C or better.*
*Five hours lecture.*
Linear algebra and selected topics of mathematical analysis.
(CAN MATH 26)

**MATH 10 Elementary Statistics and Probability 5 Units**
*(See general education pages for the requirement this course meets.)*
*Prerequisites: Mathematics 105 or 114 with a grade of C or better; or qualifying score on Intermediate Algebra Placement Test within the past calendar year.*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Five hours lecture.*
Introduction to data analysis making use of graphical and numerical techniques to study patterns and departures from patterns. The student studies randomness with an emphasis on understanding variation, collects information in the face of uncertainty, checks distributional assumptions, tests hypotheses, uses probability as a tool for anticipating what the distribution of data may look like under a set of assumptions, and uses appropriate statistical models to draw conclusions from data. The course introduces the student to applications in engineering, business, economics, medicine, education, the sciences, and other related fields. The use of technology (computers or graphing calculators) will be required in certain applications.
(CAN STAT 2)

**MATH 11 Finite Mathematics 5 Units**
*(See general education pages for the requirement this course meets.)*
*Prerequisites: Qualifying score on Intermediate Algebra Placement Test within the past calendar year; or Mathematics 105 or 114 with a grade of C or better.*
*Five hours lecture.*
Set theory, Venn diagrams, counting principles, mathematics of finance, probability, matrices, systems of linear equations, linear programming, game theory. Applications to business and social science.
(CAN MATH 12)

**MATH 12 Introductory Calculus for Business and Social Science 5 Units**
*(See general education pages for the requirement this course meets.)*
*Prerequisites: Mathematics 11.*
*Five hours lecture.*
Introduction to limits, differentiation, and integration of single variable functions. Differentiation of multivariate functions. Applications in business, economics and social science.
(CAN MATH 34)

**MATH 22 Discrete Mathematics 5 Units**
*(See general education pages for the requirement this course meets.)*
*Prerequisites: Mathematics 49A with a grade of C or better, or equivalent.*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Five hours lecture.*
Elements of discrete mathematics with applications to computer science. Topics include methods of proof, mathematical induction, logic, sets, relations, graphs, combinatorics, and Boolean algebra.
(CAN CSCI 26)

**MATH 23 Engineering Statistics 5 Units**
*(See general education pages for the requirement this course meets.)*
*Prerequisites: Mathematics 1C with a grade of C or better.*
*Five hours lecture.*
Collection and analysis of information; discrete, continuous, cumulative, and joint probability distribution functions; statistical inference; experimental design; fitting equations to data. Assorted applications from a variety of engineering situations.

**MATH 44 Introduction to Contemporary Mathematics 5 Units**
*(See general education pages for the requirement this course meets.)*
*Prerequisites: Qualifying score on the Intermediate Algebra Placement Test within the past calendar year; or Mathematics 105 or 114 with a grade of C or better.*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Five hours lecture.*
A survey of selected topics from contemporary mathematics, including problem solving techniques and connections between mathematics and culture. Includes a selection of introductory topics from symmetry; graph theory; chaos and fractals; topology; number theory; geometry; combinatorics and counting; the mathematics of social choice; data analysis, probability and statistics.

**MATH 46 Mathematics for Elementary Education 5 Units**
*(Formerly Mathematics 63.)*
*(See general education pages for the requirement this course meets.)*
*Prerequisites: Mathematics 105 or 114 with a grade of C or better.*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*(Also listed as Education 46. Student may enroll in either department, but not both, for credit.)*
*Five hours lecture.*
Introduction to the discipline of mathematics as the use of logical, quantitative, and spatial reasoning in the abstraction, modeling, and problem-solving of real world situations, and its origins and applications, for elementary school teaching. Mathematical reasoning and problem solving strategies, theory of sets, integers and integral number theory, rationals and proportion, real numbers, decimal notation, and measurement.

**MATH 49A Pre-Calculus Algebra 5 Units**
*(See general education pages for the requirement this course meets.)*
*Prerequisite: Mathematics 51 with a grade of C or better.*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Five hours lecture.*
Polynomial, rational, exponential and logarithmic functions, graphs, solving equations; conic sections.

**MATH 49B Pre-Calculus Algebra 5 Units**
*(See general education pages for the requirement this course meets.)*
*Prerequisite: Mathematics 49A with a grade of C or better.*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Five hours lecture.*
Systems of equations and inequalities, vectors, lines and planes, sequences and series, polar coordinates.

**MATH 51 Trigonometry 5 Units**
*(See general education pages for the requirement this course meets.)*
*Prerequisites: Qualifying score on the Intermediate Algebra Placement Test within the past calendar year; or Mathematics 105 or 114 with a grade of C or better.*
*Five hours lecture.*
The theory of trigonometric functions and their applications.
(CAN MATH 8)

**MATH 77 Special Projects in Mathematics 1 Unit**
**MATH 77X 2 Units**
**MATH 77Y 3 Units**
*(Formerly Mathematics 40, 40X, and 40Y.)*
*Three hours laboratory for each unit of credit.*
*(Any combination of Mathematics 77, 77X, and 77Y may be taken up to six times, not to exceed 18 units, as long as the topics/projects are different each time.)*
*Pass-No Pass (P-NP) course.*
Individual special reading or study projects in mathematics.

**MATH 101 Elementary Algebra 5 Units**
*(Student may not receive credit for both Mathematics 101 and 104.)*
*Prerequisites: Qualifying score on Math Placement Test within the last calendar year; or Mathematics 200 or 210.*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Five hours lecture; or four hours lecture, two hours lecture-laboratory.*
Fundamental algebraic operations on real numbers and real variables with emphasis on linear functions and equations, polynomials, rational expressions and equations, and their applications.

**MATH 104 Applied Algebra Plus 7 Units**
*(Student may not receive credit for both Mathematics 101 and 104.)*
*Prerequisite: Qualifying score on the Math Placement Test within the last calendar year; or Mathematics 200 or 210.*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4):*
*Seven hours lecture; or five hours lecture, four hours lecture-laboratory.*
Fundamental algebraic operations on real numbers and real variables with emphasis on linear functions and equations, polynomials, rational expressions and equations, plane geometry, elementary trigonometry and their applications as they relate to applied technologies.

**MATH 105 Intermediate Algebra 5 Units**
*(See general education pages for the requirement this course meets.)*
*(Student may not receive credit for both Mathematics 105 and 114.)*
*Prerequisites: Qualifying score on Math Placement Test within the last calendar year; or Mathematics 101 with a grade of C or better; or Mathematics 104 with a grade of C or better.*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Five hours lecture; or four hours lecture, two hours lecture-laboratory.*
Examination of quadratic, radical, exponential and logarithmic functions and their graphs, real and complex solutions of quadratic equations, and sequences and series. Concepts will be studied graphically, symbolically, numerically, and verbally.

**MATH 112 College Math Preparation Level 2: Beginning Algebra 5 Units**
*Prerequisite: Qualifying score on the Math Placement Test within the last calendar year; or Mathematics 210 with a grade of C or better.*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Five hours lecture or; Four hours lecture and three hours lab or; Four hours lecture and two hours lecture-laboratory.*
Application of linear functions, quadratic functions and linear systems to problems. Emphasis on the development of models or real world applications and interpretation of their characteristics.

**MATH 114 College Math Preparation Level 3: Intermediate Algebra 5 Units**
*(Student may not receive credit for both Mathematics 105 and 114.)*
*Prerequisite: Qualifying score on the Math Placement Test within the last calendar year; or Mathematics 112 with a grade of C or better.*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Five hours lecture; or four hours lecture and three hours laboratory; or four hours lecture and two hours lecture-laboratory.*
Application of exponential and logarithmic functions, rational functions, and sequences and series to problems. Emphasis on the development of models of real world applications and interpretation of their characteristics.

**MATH 149A Academic Excellence in Precalculus Mathematics 1 Unit**
*Credit course - Does not apply to De Anza Associate Degree.*
*Corequisite: Mathematics 149A students must also enroll in Mathematics 49A.*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Three hours laboratory.*
*Pass-No Pass (P-NP) course.*
Critical thinking for mathematics in a precalculus setting: cooperative learning/study techniques, concept development and use of technology.

**MATH 149B Academic Excellence in Precalculus Mathematics 1 Unit**
*Credit course - Does not apply to De Anza Associate Degree.*
*Corequisite: Mathematics 149B students must also enroll in Mathematics 49B.*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Three hours laboratory.*
*Pass-No Pass (P-NP) course.*
Critical thinking for mathematics in a precalculus setting: cooperative learning/study techniques, concept development and use of technology.

**MATH 161L Academic Excellence in Calculus 1 Unit**
*Credit course - Does not apply to De Anza Associate Degree.*
*Corequisite: Mathematics 161L students must also enroll in Mathematics 1A.*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Three hours laboratory.*
*Pass-No Pass (P-NP) course.*
Critical thinking for mathematics in a calculus setting: cooperative learning/study techniques, concept development and use of technology.

**MATH 200 Pre-Algebra 4 Units**
*Credit course - Does not apply to De Anza Associate Degree.*
*Four hours lecture.*
*Pass-No Pass (P-NP) course.*
Properties of numbers, arithmetic operations, fractions, decimals, percents, signed numbers, equations and applications. Introduction to algebra.

**MATH 210 College Math Preparation Level 1: Pre-Algebra 5 Units**
*(Formerly Mathematics 110.)*
*Credit course - Does not apply to De Anza Associate Degree.*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Five hours lecture or; four hours lecture and three hours laboratory or; four hours lecture, two hours lecture-laboratory.*
Use of basic arithmetic in application problems, estimation, the real number system, variables and linear equations, graphs of linear equations and the Cartesian coordinate system, the concept of function.

**MATH 250 Math Review and Applications for Health Professionals 1/2 Unit**
*Credit course - Does not apply to De Anza Associate Degree.*
*Prerequisites: Qualifying score on Math Placement Test within the last calendar year; or Mathematics 101 or 112 with a grade of C or better.*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*One hour lecture-laboratory.*
*(May be taken six times for credit.)*
*Pass-No Pass (P-NP) course.*
Review of basic mathematics with emphasis on applications to nursing and health related fields. Conversion within and between numerical systems.

**MATH 500 Mathematics Assistance for Success 0 Units**
*Five hours laboratory.*
*(No limit on repeatability for 0 unit classes.)*
*No Grade (NG) course.*
Provides information and assistance to students in mathematics. Laboratories, workshops and related instructional activities are designed to provide the skills needed in mathematical critical thinking, analysis, problem solving, writing, and in the use of technology.

# Meteorology

**MET 10 Weather Processes 4 Units**
*(See general education pages for the requirement this course meets.)*
*Prerequisite: Mathematics 101 or 112.*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Four hours lecture.*
Introduction to the principles of the science of meteorology including: history of the science; origin, evolution and structure of the atmosphere; major atmospheric variables that determine weather; global and local wind circulation; air masses and frontal systems; birth and development of extratropical and tropical cyclones and associated severe weather phenomena; weather map analysis and interpretation; objective techniques used by meteorologists to forecast weather.

**MET 50L Meteorology Laboratory 1 Unit**
*(Formerly Meteorology 10L.)*
*(See general education pages for the requirement this course meets.)*
*Prerequisite: Mathematics 101 or 112.*
*Corequisite or Prerequisite: Meteorology 50L students must also enroll in, or have already completed, Meteorology 10.*
*Advisory: English Writing 100B and Reading 100 (or Language Arts 100), or English as a Second Language 24 and 72 (or English as a Second Language 4).*
*Three hours laboratory.*
Introductory weather lab in which students work with observational data, graphics products, charts and instruments used by synoptic meteorologists to forecast weather. Lab sessions will include current weather products downloaded from the American Meteorological Society's ,úOnline Weather Studies,ù homepage which has been specifically designed for this course and from De Anza College's automated rooftop weather station. Students will practice the analysis and decision-making skills employed by meteorologists to diagnose air patterns, understand air motions and predict future atmospheric conditions.

# Military Science

## (Army Reserve Officers Training Corps)

For information on Army ROTC courses, please see Military Studies in this catalog/schedule.

# Military Studies

Military Studies includes the following: Military Science (Army Reserve Officer's Training Corps [ROTC]), Aerospace Studies (Air Force ROTC), and Naval Science (Naval ROTC). Army ROTC courses are offered at Santa Clara University. Aerospace Studies are offered at San Jose State University. The Naval/Marine ROTC program is offered at the University of California at Berkeley; however, it does not have a community college component at this time.

**NOTE**: Lower division ROTC programs are open to all students and there is no military obligation incurred. However, ROTC scholarships and military commissions do have specific qualifications and commitments. While all students are eligible to take ROTC courses, not all students who take ROTC courses will be eligible for either a scholarship or a military commission.

**REGISTRATION NOTE:** To register from a community college for ROTC courses, please contact Mission College or West Valley College. De Anza College does not currently provide for ROTC registration for De Anza College students. For further information, please contact the Biological and Health Sciences Division (408) 864-8773.

## Aerospace Studies

## (Air Force Reserve Officers Training Corps)

The Air Force Reserve Officer Training Program (Air Force ROTC) at San Jose State University offers a high quality educational experience structured for all college students. It gives students the opportunity to learn excellent leadership and management skills while training to become a commissioned officer in the Air Force. Academic instruction includes Air Force organization, history, officer skills, leadership and management, and national security policy and issues. Students find out first hand what the Air Force has to offer for scholarships while they are in school and what career opportunities await them after graduation with a Bachelors Degree.

For direct information on the Air Force ROTC program at San Jose State University, contact the Aerospace Studies Department at San Jose Sate University at (408) 924-2960.

## Military Science

## (Army Reserve Officers Training Corps)

The Army Reserve Officer Training Program (Army ROTC) program at Santa Clara University offers a high quality educational experience open to all students. The program is designed to develop men's and women's management skills and leadership abilities for successful careers in both the corporate world and the military. Instruction is conducted on and off the Santa Clara University campus. All courses offered by the Military Science Department are fully accredited and applicable toward fulfilling academic requirements for graduation at Santa Clara University. Through this voluntary program, Santa Clara University offers all eligible students the opportunity to obtain an officer's commission in the U.S. Army Reserve, National Guard, or active Army, while earning their college degree.

For direct information on the Army ROTC program at Santa Clara University, contact the Department of Military Science at Santa Clara University at (408) 554-4033.