

LSOP-207 Intro Plunger Lift 2 cr.

An introduction of plunger lift systems and operation. Safety will be strictly enforced. Prerequisites: Completion of MATH-095 and ENGL-095 or appropriate Math and English Accuplacer scores. Offered: Spring. Faculty Permission Required.

LSOP-226 Adv Separator Valve Training II 1 cr.

Students will receive comprehensive training involving the repairing and operation of separator and other common surface equipment valves and used in the oil and gas industry. Safety will be strictly enforced. Prerequisites: Completion of MATH-095 and ENGL-095 or appropriate Math and English Accuplacer scores. Offered: All.

LSOP-230 Theory of Line Locating 0.50000

Students will receive basic theory training in theory of line locating inclusive of buried utility lines and well location flow lines in partnership with industry. PowerPoint presentation, lecture and minimal equipment training. Students will be required to understand and retain information provided by Lecture and PowerPoint presentation and be able to walk long distances inclusive of steep inclines. Also must be able to perform basic math functions. Safety will be strictly enforced. Offered: On Demand. Faculty Permission Required.

LSOP-281 Cooperative Work Experience II 9 cr.

Students will be employed either by using a temporary employment agency or a sponsoring company in the oil and gas industry which will provide relevant learning experiences that are directly related to the student's most recent classroom/laboratory experiences. The student will be supervised and evaluated by his/her industry supervisor. Safety will be strictly enforced. Offered: All. Faculty Permission Required.

MACHINE SHOP

MASH-115 Machine Shop Blueprint Reading 3 cr.

Introduction to language of lines, sketching, print reading, and interpreting detailed working drawings. Offered: Fall & Spring.

MASH-116 Basic Machine Shop 4 cr.

The course is an introduction to the machine shop environment. Operations of the drill press, band saw, lathe, layout operations, and tool identification will be covered. Will also include basic lathe and general machining operations. Corequisites: MASH-117, MASH-118, MASH-119. Offered: Fall & Spring.

MASH-117 Machinist Measurements 3 cr.

Course will cover measurement methods used in the machining industry. All measuring devices and methods used in the machining industry will be covered. Corequisites: MASH-116. Offered: Fall & Spring.

MASH-118 Basic Lathe Operations 4 cr.

Course will cover basic tooling and lathe operations. Carbide and HSS turning tool uses are focused on. Feeds and spindle speeds are emphasized throughout the course. Prerequisites: MASH-117. Offered: Fall & Spring.

MASH-119 Single Point Threading 3 cr.

The study and application of single point threading on engine

lathe. Tool grinding, fundamentals of threading, thread nomenclature, machine setup, spindle speeds, tool geometry, HSS, braised carbide and insert threading tools will be covered. Corequisites: MASH-118. Offered: Fall & Spring.

MASH-122 Basic Milling Operations 4 cr.

Course covers basic milling operation, milling machine nomenclature, controls and applications of face milling, side milling, shoulder milling, vise indication, head indication, speeds, feeds and depth of cuts. Prerequisites: MASH-119. Offered: Fall & Spring.

MASH-123 Machining Calculations 3 cr.

Course demonstrates the fundamentals of feeds and speeds to machine operators. Feeds and speeds for HSS, solid carbide, and insert tooling are covered and applied for both lathes and mills. Corequisites: MASH-122. Offered: Fall & Spring.

MASH-124 Precision Surface Grinding 4 cr.

Course is the introduction to precision grinding fundamentals and operation of equipment. Machine safety, setup, basic grinding operations, coolants, stone dressing, and proper wheel selection are covered in the course. Prerequisites: MASH-123. Offered: Fall & Spring.

MASH-129 Tool Grinding 3 cr.

Course pays close attention to the grinding, sharpening, and dressing of a variety of different cutting tools. Different tool geometries are examined and used for the corresponding materials being machined. Corequisites: MASH-124, MASH-122, MASH-123. Offered: Fall & Spring.

MASH-206 Advanced Lathe Operations 4 cr.

Course develops increased accuracy on the lathe for more challenging operations. This will include external and internal turning, precision boring, indication of odd shaped objects in 4-jaw chuck, and precision thread cutting. Prerequisites: MASH-129. Offered: Fall & Spring.

MASH-207 Specialized Machining Operations 3 cr.

Students will apply turning, milling, and precision surface grinding knowledge to manufacture larger and more complex projects. New machining practices will be covered throughout the course that will apply to real world jobs. Corequisites: MASH-206. Offered: Fall & Spring.

MASH-208 Advanced Milling Operations 4 cr.

Course covers the study of applications of advanced milling operations on vertical and horizontal milling machines. Includes key way cutting, gear cutting, index head use, precision boring, and precision milling. Prerequisites: MASH-207. Offered: Fall & Spring.

MASH-209 Machine Shop Maintenance 3 cr.

Course covers maintenance and repair of manual lathes and milling machines. Students will be in charge of all maintenance items and repairs in the Machine Shop. Other topics will include jigs and fixtures on both milling machines and lathes. Corequisites: MASH-208. Offered: Fall & Spring.

MASH-212 Advanced Machining Techniques 4 cr.

Course is a collaboration of previously learned machining

techniques and processes. Complex projects are made using all equipment in the shop necessary to complete projects. Prerequisites: MASH-209. Offered: Fall & Spring.

MASH-213 Basic CNC Machining 3 cr.
Fundamentals of Computer Numerically Controlled (CNC) machining are studied. Basic machine set-up, programming and machine nomenclature are covered. Corequisites: MASH-212. Offered: Fall & Spring.

MASH-216 Advanced Single Point Threading 4 cr.
Advanced single point threading covers advanced techniques in single point threading to include, internal, external, double lead, triple lead, left hand threads, and cutting threads on CNC equipment. Prerequisites: MASH-213. Offered: Fall & Spring.

MASH-217 CAD-CAM Machining 3 cr.
Study and application of CAD-CAM systems in the machine shop. Students will learn how to create CNC programs using off line software. Corequisites: MASH-216. Offered: Fall & Spring.

MATHEMATICS

MATH-050 Fundamental Mathematics 3 cr.
Basic addition, subtraction, multiplication, division of whole numbers, fractions and workshops to overcome math and test taking anxiety. S/U grading (RR Option). Students allowed two attempts to complete the course. Offered: All.

MATH-095 Pre-Algebra 4 cr.
Instructs the student on the basic operations of arithmetic applied to whole numbers, integers, fractions and decimals. Topics include measurement conversions, scientific notation, percents, ratios and proportions, basic geometry, formulas and the introduction of variable expressions and linear equations. (RR option course). Prerequisites: Completion of MATH-050 or appropriate Math Accuplacer score. Offered: All.

MATH-096 Introductory Algebra 4 cr.
Instructs students in the knowledge of algebra involving linear content; equations, functions and inequalities in one variable and two variables. This course demonstrates simplifying and solving methods. Topics such as expressions, equations, functions, exponents, two and three-dimensional geometric shapes, linear systems, polynomials, and factoring are also introduced. Prerequisites: Completion of MATH-095 with a minimum grade of C or appropriate Math Accuplacer score. Offered: All.

MATH-113 Applied Math for Vocational Studies 3 cr.
Instructs students in the knowledge of addition, subtraction, multiplication and division of whole numbers, fractions and decimals. Topics also include ratios and proportions, percents, standard and metric measurements and conversions. Basic fundamentals of algebra, operations of rational numbers, algebraic expressions, solving equations, formulas, geometry and trigonometric concepts of sine, cosine, tangent and the Pythagorean Theorem. This course emphasizes application models required in vocational programs. Prerequisites: Completion of MATH-095 with a minimum grade of C or appropriate Math Accuplacer score. Offered: All.

MATH-114 Math for Health Careers 3 cr.
This course introduces the computational skills needed to study in health careers programs. Topics include operations on fractions, decimals, percents, as well as the use of formulas, ratio and proportion, and measurement. Students will solve word problems specific to medication orders. Prerequisites: Completion of MATH-095 or appropriate Math Accuplacer score. Minimum grade C. Offered: All.

MATH-115 Intermediate Algebra-Applications 4 cr.
Instructs students in the knowledge of algebra involving nonlinear content including expressions, equations, functions and inequalities. This course emphasizes simplifying and solving methods for polynomial, quadratic, rational, absolute value, radical, exponential, and logarithmic expressions and equations. Prerequisites: Completion of MATH-096 or appropriate Math Accuplacer score. Minimum Grade C. Offered: All.

MATH-116 Math for High Tech Careers 3 cr.
Instructs students in the knowledge of mathematics related to the electronics field. Topics include: scientific calculations, conversions, methods of algebra leading to solving and manipulation of formulas, relations, functions including logarithmic and exponential, radicals, fundamentals of trigonometry involving angular and circular functions, vectors and phasors. Prerequisites: Completion of MATH-096 or appropriate Math Accuplacer score. Minimum grade C. Offered: Fall & Spring.

MATH-121 Mathematics for the Elementary Teacher 3 cr.
A development of the properties, concepts, and logical reasoning of the arithmetic of whole numbers. Topics include problem solving techniques, set theory, numeration systems, algorithms of arithmetic in base ten and other bases, estimation and mental computation techniques, and number theory. Prerequisites: MATH 115 or higher, minimum grade C. Offered: Fall & Spring.

MATH-122 Math for Elementary Teacher II 3 cr.
A development of the properties, concepts, and logical reasoning of (1) the arithmetic of real numbers, (2) statistics, and (3) probability. Topics include fractions, decimals, ratios, proportions, percent, integers, rational numbers, real numbers, algebra, statistics, and probability. Prerequisites: Complete MATH-121 with a C or better. Offered: Fall & Spring.

MATH-130 Conceptual Mathematics 3 cr.
This course covers a variety of practical mathematical concepts for non-science majors. Topics include set theory, geometry, counting methods, probability, statistics, and finance. Critical thinking and problem solving skills are stressed. Prerequisites: Completion of MATH-096 or appropriate Math Accuplacer score. Minimum Grade C. Offered: All.

MATH-160 College Algebra 3 cr.
Instructs students in the knowledge of linear, piecewise, quadratic, polynomial rational, inverse, exponential, and logarithmic functions; function topics include finding the average rate of change, analyzing graphs, graphing using transformations, finding roots in the real and complex number systems, and constructing functions to model real-world applications. Other topics include systems of linear equations and inequalities, matrices, linear