**Math - Associate Studies (2030)**

2030:130 Mathematics for Allied Health (3 Credits)
Prerequisite: placement test, 2010:52, 2010:54, 2010:57, or 2010:84 with a grade of C or better. The real number system, systems of measurement, conversions, linear equations, factoring, quadratic equations, graphing, linear systems, organizing data, averages, standard deviation, the normal distribution.

2030:151 Technical Mathematics I (2 Credits)

2030:152 Technical Mathematics II (2 Credits)
Prerequisite: 2030:151 with a grade of C- or better or placement test. Variation, equations of lines, Cramer's rule, right triangle trigonometry, oblique triangles, radian measure, and complex numbers.
Gen Ed: Tier 1 - Quantitative Reasoning

2030:153 Technical Mathematics III (2 Credits)
Prerequisite: 2030:152 with a grade of C- or better or placement test. Factoring, algebraic fractions, exponents and radicals, equations with radicals, equations in quadratic form, functions, their properties and graphs, exponential and logarithmic functions.
Gen Ed: Tier 1 - Quantitative Reasoning

2030:154 Technical Mathematics IV (3 Credits)
Prerequisite: 2030:153 with a grade of C- or better or placement test. Functions and their graphs, polynomial and rational functions, polynomial equations, graphs of trigonometric functions, trigonometric identities and equations, analytic geometry, complex numbers in polar form.
Gen Ed: Tier 1 - Quantitative Reasoning

2030:161 Mathematics for Modern Technology (4 Credits)
Prerequisite: Placement test or completion of 2010:052, 2010:054, 2010:057, or 2010:084 with a grade of C or better. Lines, linear regression, sets, counting, basic probability, basic statistics, binomial and normal distributions, mathematics of finance, symbolic logic, arguments, logic circuits.
Gen Ed: Tier 1 - Quantitative Reasoning

2030:216 Applied Finite Mathematics (3 Credits)
Prerequisite: 2030:153 with a grade of C- or better, or placement test.
Number systems, integer rings, finite fields, number theory algorithms, prime numbers and primality tests, factoring, and random number.

2030:255 Technical Calculus I (3 Credits)
Prerequisite: 2030:154 with a grade of C- or better or placement test. The derivative, applications of the derivative, derivatives of the trigonometric, logarithmic and exponential functions. Integration by antidifferentiation.
Gen Ed: Tier 1 - Quantitative Reasoning; Tier 3 - Critical Thinking

2030:260 Advanced Trigonometry (2 Credits)
Prerequisite: 2030:153 or equivalent with a grade of C- or better, or placement test. Horizontal circular curves, vertical curves, and spherical triangles.

2030:290 Special Topics: Associate Studies Mathematics (1-4 Credits)
(May be repeated with a change in topic) Prerequisite: Permission. Selected topics on subject areas of interest in associate studies.

2030:345 Technical Data Analysis (2 Credits)
Prerequisite: [2030:154 or 2030:216] with a grade of C- or better. Data summarization including graphic representation, numerical measures, introduction to probability, confidence intervals and hypothesis testing.

2030:356 Technical Calculus II (3 Credits)
Prerequisite: 2030:255 or equivalent with a grade of C- or better, or placement test. Methods and applications of integration, first and second order differential equations and applications, series expansion, Laplace transform, partial derivatives, and double integrals.
Gen Ed: Tier 1 - Quantitative Reasoning

2030:361 Applied Cryptography (3 Credits)
Prerequisite: A grade of C- or better in either 2030:154 or 2030:216. Symmetric cryptography, modular arithmetic, stream and block ciphers, random numbers, Advanced Encryption Standard, public-key cryptography, key exchange, digital signatures, hash functions, message authentication.

2030:461 Applied Cryptanalysis (3 Credits)
Prerequisite: 2030:361 with a grade of C or better. Cryptanalysis concepts; cryptanalysis of symmetric and public key cryptosystems, key exchange systems, and digital signatures; hash function collision resistance; cryptanalysis with quantum computer.

2030:480 Advanced Topics in Technical Mathematics (2 Credits)
Prerequisite: 2030:255 or equivalent with a grade of C- or better, or placement test. Matrices, introduction to series, partial derivatives, least squares adjustments, topics in astronomy, and coordinate systems.