

MANAGEMENT

MGT 120 Principles of Management (3)

3 hours lecture per week

MGT 120 is an introduction to the principles and concepts of management including managerial functions, motivation, leadership, and decision making.

Upon successful completion of MGT 120, the student should be able to:

1. Explain roles, responsibilities, and accountability of managers in the organization in relation to the functions of management.
2. Describe the importance of communicating rules and procedures through the use of formal and informal notifications.
3. Identify how manager's role creates, manages, and impacts the organizational culture, business operations, and employees.
4. Describe the importance of ethics in business and identify strategies to encourage ethical behavior by managers and employees.

MGT 122 Human Relations in Management (3)

3 hours lecture per week

MGT 122 is an introduction to the basic concepts of individual, group, and organizational human behavior as they affect human relations, performance, and productivity within the workplace.

Upon successful completion of MGT 122, the student should be able to:

1. Identify change-management and conflict resolution strategies to manage a diverse workforce.
2. Apply leadership and management models to motivate individual and group behavior to maximize performance in the workforce.
3. Identify strategies that address the challenges of interfacing technology and employees.

MGT 124 Human Resource Management (3)

3 hours lecture per week

MGT 124 is an introduction to principles, organizations, and techniques of personnel administration including procurement, placement, improvement of performance, management, labor relations, remuneration, security, and other human resource functions.

Upon successful completion of MGT 124, the student should be able to:

1. Identify Federal and State employment laws related to management when implementing personnel decisions such as hiring, disciplining and terminating employees.
2. Appraise the ethical, social and legal impacts of following and enforcing policies, rules, and procedures especially when "downsizing" or "right-sizing" an organization.
3. Analyze the impact of globalization and diversity on human resource management while addressing the employees' compensation and benefits package.
4. Identify the differences between union and nonunion organizations, and describe the importance of union/management relations.

MATHEMATICS

MATH 32 Statway I (4) Fall

4 hours lecture per week

Comment: Letter grade only. MATH 32 may not be audited. MATH 32 may not be taken credit/no credit. A TI-83+ or TI-84 graphing calculator is required. MATH 32 is offered in the fall semester only.

MATH 32 consists of statistical methods integrated with algebraic tools to prepare students to analyze processes encountered in society and the workplace. The course provides an introduction to algebra and descriptive statistics utilizing an integrated approach. MATH 32 is the first course in a two course sequence.

Upon successful completion of MATH 32, the student should be able to:

1. Recognize characteristics of a well-designed statistical process and possible source of bias.
2. Articulate and interpret various statistics such as mean, median, mode, range, variance and standard deviation.
3. Draw and interpret various graphs, such as pie graph, bar graph, dotplot, histogram and relative frequency histogram.
4. Draw a scatter diagram, calculate and interpret the corresponding correlations. Use residual to determine if a line is an appropriate model and make a prediction using least squares regression line if feasible.

5. Calculate the probability involving a discrete, a continuous or a standard normal distribution.
6. Examine and model linear relationships in the context of a real-world problem.
7. Identify and interpret slope and intercepts in the context of a word problem.

MATH 75X Introduction to Mathematical Reasoning (4)

2 hours lecture, 4 hours lecture/lab per week

Comment: Credit/no credit default (letter grade available upon request). MATH 75X may not be audited. A scientific calculator is required.

MATH 75X prepares students for MATH 100, MATH 111, and MATH 115. Course topics include ratio and percent, unit conversion, graphs, data interpretation, basic algebra, solving linear equations, and working with formulas with special emphasis on pattern recognition and problem solving. Students looking to switch from a non-STEM pathway to a STEM pathway may also use this course as a prerequisite for MATH 82.

Upon successful completion of MATH 75X, the student should be able to:

1. Read and write numbers using appropriate place values.
2. Use rounding for estimating sums, differences, products, and quotients.
3. Identify the commutative, associative, identity, inverse, and distributive properties.
4. Perform the basic operations (add, subtract, multiply, and divide) with signed rational numbers.
5. Convert among fractions, decimals, percents, and proportions.
6. Evaluate formulas using the correct order of operations with expressions involving signed numbers and absolute values.
7. Perform dimensional analysis.
8. Use scientific notation.
9. Compute area, perimeter, and volume of various 2- and 3-dimensional figures in applications.
10. Solve direct and inverse variation problems.
11. Solve relative change/error problems.
12. Translate problem situations into symbolic representations and use these representations to solve problems.
13. Interpret inequalities appropriately.
14. Use and interpret function notation particularly as it relates to graphic and tabular data.
15. Solve and graph linear equations.
16. Use various graphical representations of data to uncover important patterns and to interpret these patterns in a real-world context.
17. Understand basic sets including the use of Venn diagrams and/or intersections and unions.
18. Compute basic probabilities.
19. Find the mean, median, and mode.
20. Summarize and interpret data using statistical measures.
21. Develop critical thinking and problem solving strategies.
22. Work effectively in groups and communicate mathematics both orally and in writing.
23. Use appropriate technology to solve problems of all types.
24. Practice college success skills.

MATH 78 College Math Companion (1)

1 hour lecture per week

Prerequisite(s): Qualification for MATH 78.

Corequisite(s): MATH 100 or MATH 115.

Comment: MATH 78 is to be taken concurrently with MATH 100 or MATH 115. MATH 78 grading is credit/no credit only. MATH 78 may not be audited. MATH 78 may not be taken for a letter grade.

MATH 78 provides students concurrently enrolled in MATH 100 or MATH 115 with support with special emphasis on pattern recognition and problem solving. Course topics are tailored to the concurrent course and may include ratio and percent, unit conversion, graphs, data interpretation, basic algebra, solving linear equations, and working with formulas.

Upon successful completion of MATH 78, the student should be able to:

1. Demonstrate mathematical reasoning skills needed to successfully complete a companion college math course (currently MATH 100, or MATH 115).

MATH 82 Algebraic Foundations (4)

4 hours lecture per week

Prerequisite(s): Credit in MATH 75X or a grade of "C" or higher in MATH 75X or qualification for MATH 82 or qualification for a higher-level mathematics course.

Comment: Grading is credit/no credit by default (letter grades available upon request). MATH 82 may not be audited. A scientific calculator is required.

MATH 82 prepares students for MATH 103. MATH 82 covers elementary algebra topics. Topics include linear equations and inequalities, graphing, linear systems, properties of exponents, operations on polynomials, factoring, rational and radical expressions and equations, quadratic equations, and applications.

Upon successful completion of MATH 82, the student should be able to:

1. Perform operations with polynomials.
2. Solve linear equations.
3. Solve linear literal (formula) equations.
4. Solve linear inequalities.
5. Solve systems of linear equations in two variables by substitution, elimination, and graphing.
6. Demonstrate proficiency in set builder and interval notation to identify solutions to problems.
7. Demonstrate proficiency in the Cartesian coordinate system to answer related question.
8. Graph linear equations using a table of values, by slope-intercept form, and by using intercepts.
9. Graph and identify equations of horizontal and vertical lines.
10. Identify parallel and perpendicular lines.
11. Write the equation of a line in $y = mx + b$ form.
12. Graph parabolas using a table of values.
13. Simplify expressions with integer exponents using the product, power and quotient rules.
14. Use scientific notation.
15. Factor polynomials.
16. Use the Pythagorean theorem.
17. Perform operations on rational expressions.
18. Simplify complex fractions.
19. Solve rational equations.
20. Simplify expressions with rational exponents using the product, power and quotient rules.
21. Perform operations on square roots.
22. Solve quadratic equations by the quadratic formula, factoring, and square root property.
23. Solve application problems involving linear equations, quadratic equations, and systems of equations.
24. Solve radical equations (squaring both sides once).

MATH 88 College Algebra Companion (2)

2 hours lecture per week

Prerequisite(s): Qualification for MATH 88.

Corequisite(s): MATH 103.

Comment: MATH 88 is to be taken concurrently with MATH 103. Grading for MATH 88 is credit/no credit only. MATH 88 may not be taken for a letter grade. MATH 88 may not be audited.

MATH 88 provides students with supplemental algebra instruction that directly supports the topics covered in MATH 103 (College Algebra). Course topics are tailored to MATH 103 and may include linear equations and inequalities, graphing, linear systems, properties of exponents, operations on polynomials, factoring, rational and radical expressions and equations, quadratic equations, and applications. This is a C/NC course.

Upon successful completion of MATH 88, the student should be able to:

1. Demonstrate algebra skills needed to be successful in MATH 103.

MATH 100 Survey of Mathematics (3) KCC AA/FQ

3 hours lecture per week

Prerequisite(s): A grade of "C" or higher in MATH 75X or qualification for MATH 100; and qualification for ENG 22 or qualification for ESOL 94.

Comment: Students will need a scientific calculator for MATH 100.

MATH 100 is a survey of important concepts in algebra, logical structure, numerical systems, financial mathematics, and probability and statistics, designed to acquaint non-specialists with examples of mathematical reasoning, and to develop an appreciation and understanding of their historical development and of the relationship of mathematics to the modern world.

Upon successful completion of MATH 100, the student should be able to:

1. Use basic techniques in symbolic logic to draw deductive conclusions in simple situations.
2. Solve some problems in finance, including compounded interest, annuity, installment payments etc. using scientific calculators.
3. Identify the concepts of permutations and combinations and be able to apply those concepts in real situations.
4. Demonstrate knowledge of probability and statistics by solving simple statistical problems.

MATH 103 College Algebra (3) KCC AA/FQ

3 hours lecture per week

Prerequisite(s): A grade of "C" or higher in MATH 82 or qualification for MATH 103.

Recommended preparation: Qualification for ENG 100 or qualification for ESL 100.

Comment: A scientific calculator is required.

MATH 103 extends topics introduced in the elementary algebra sequence and prepares students for precalculus. Instruction includes units on algebraic simplification of polynomial, rational, exponential, and radical expressions, as well as solving equations and

inequalities involving absolute value, polynomial, rational, exponential, and radical expressions, and the graphing of lines and parabolas. The topic of functions is introduced early and integrated throughout the subject matter of the course.

Upon successful completion of MATH 103, the student should be able to:

1. Interpret, model, and solve problems involving linear functions.
2. Perform standard mathematical operations to simplify intermediate algebraic (linear, quadratic, rational, and radical) expressions.
3. Solve intermediate algebraic equations, inequalities, and systems.
4. Graph and interpret linear and quadratic algebraic equations.
5. Use knowledge and techniques in this course in solving applied problems.

MATH 111 Mathematics for Elementary Teachers I (3)

3 hours lecture per week

Prerequisite(s): Qualification for ENG 100; and a grade of "C" or higher in MATH 75X or qualification for MATH 100.

MATH 111 gives prospective elementary education majors the depth of understanding necessary to teach mathematics in the elementary classroom. Topics will include numbers, operations on sets, patterns, functions and algebra. Emphasis will be on understanding, communication, problem solving, representing mathematical ideas, and reasoning and proof.

Upon successful completion of MATH 111, the student should be able to:

1. Explain ways of representing numbers, relationships among numbers, and number systems.
2. Perform various operations on sets; union, intersection, etc.
3. Identify and describe various types of patterns and functional relationships.
4. Use symbolic forms to represent, model, and analyze mathematical situations.
5. Solve a variety of problems.
6. Communicate mathematical ideas verbally, in writing, and through mathematical representations to various audiences.
7. Apply appropriate mathematical reasoning to justify solution paths to various problems.

MATH 112 Mathematics for Elementary Teachers II (3) KCC AA/FQ

3 hours lecture per week

Prerequisite(s): A grade of "C" or higher in MATH 111.

MATH 112 gives prospective elementary education majors the depth of understanding necessary to teach mathematics in the elementary classroom. Topics will include representations of and operations on the natural numbers, integers, rational numbers and real numbers, and properties of those operations. Emphasis will be on communication, connections to other parts of mathematics, problem solving, representations, and reasoning and proof.

Upon successful completion of MATH 112, the student should be able to:

1. Demonstrate various representations of Natural numbers and Integers.
2. Define the operations on Natural numbers and Integers.
3. Identify, describe, and demonstrate the proper use of the properties of operations on Natural numbers and Integers.
4. Demonstrate various representations of Rational and Real numbers.
5. Define the operations on Rational and Real numbers.
6. Identify, describe, and demonstrate the proper use of the properties of operations on Rational and Real numbers.
7. Apply appropriate mathematical reasoning to justify solution paths to various problems.
8. Solve a variety of problems.
9. Communicate mathematical ideas verbally, in writing, and through mathematical representations to various audiences.
10. Demonstrate mathematical literacy and fluency.

MATH 115 Introduction to Statistics and Probabilities (3) KCC AA/FQ

3 hours lecture per week

Prerequisite(s): Credit in MATH 75X or credit in MATH 82 or qualification for MATH 100 or qualification for MATH 103 or qualification for MATH 111 or qualification for MATH 115 or qualification for a higher-level mathematics course; and qualification for ENG 22 or qualification for ESOL 94 or qualification for ENG 100 or qualification for ESL 100 or qualification for a higher-level English course.

Comment: A TI-84 calculator is required.

MATH 115 offers a study of elementary probability and statistics, including standard deviation, calculations and inferences about means and proportions, normal distributions and linear correlation. This course applies these mathematical theories to everyday life, exploring the reasonableness and limitations of statistical results from qualitative and quantitative data.

Upon successful completion of MATH 115, the student should be able to:

1. Articulate and interpret various descriptive statistics, such as mean, median, mode, range, variance and standard deviation.
2. Draw and interpret various graphs, such as frequency histograms, bar graphs and cumulative frequency histograms.
3. Solve probability problems involving the concepts of independent events, mutually exclusive events and conditional probability.
4. Calculate probabilities involving normal random variables.

5. Determine and interpret (for large samples) confidence interval estimates of population means and proportions.
6. Draw a scatter diagram, determine and draw the corresponding regression line, and calculate and interpret the corresponding correlation coefficient.

MATH 132 Statway II (3) KCC AA/FQ Spring

3 hours lecture per week

Prerequisite(s): A grade of "C" or higher in MATH 32.

Comment: Letter grade only. MATH 132 may not be audited. MATH 132 may not be taken credit/no credit. TI 83 or TI 84 graphing calculator is required. MATH 132 is offered in the spring semester only. Please note that MATH 132 satisfies the Statistics requirement for the UH Manoa Nursing Program and the FQ Lower Division MATH requirement for transferring to Business Administration with a concentration in Accounting at UH West O`ahu.

MATH 132 students study statistical methods integrated with algebraic tools in order to prepare students to analyze processes encountered in society and the workplace. The MATH 132 course provides an introduction to algebra and descriptive statistics utilizing an integrated approach.

Upon successful completion of MATH 132, the student should be able to:

1. Use sampling distributions to reason on population claims.
2. Construct point estimates and confidence intervals to estimate population means and population proportions.
3. Construct point estimates and confidence intervals for the difference in two population proportions.
4. Conduct statistical tests and interpret results for claims on population means.
5. Conduct statistical test and interpret results for claims on paired sample means and independent sample means.
6. Execute the Chi-Square test for one-way tables.
7. Execute the Chi-Square test for independence and homogeneity in two-way tables.
8. Make connections from various types of statistical analysis to real-world problems.
9. Reason using language, structure of algebra, modeling and statistical testing to investigate, represent and solve real-world problems.
10. Use the Central Limit Theorem (CLT) to infer the normality of the sampling distribution of sample means.

MATH 135 Precalculus: Elementary Functions (3) KCC AA/FQ

3 hours lecture per week

Prerequisite(s): A grade of "C" or higher in MATH 103 or appropriate placement score.

Comment: Students will need a scientific calculator for MATH 135.

MATH 135 investigates linear, quadratic, polynomial, rational, exponential, logarithmic functions and related topics. MATH 135 is the first part of the precalculus sequence in mathematics.

Upon successful completion of MATH 135, the student should be able to:

1. Apply definitions of functions, inverse functions, and composite functions.
2. Show familiarity with all principles involving linear functions.
3. Find roots, evaluate, sketch and solve inequalities involving polynomial functions.
4. Graph rational functions using the concepts of asymptotes.
5. Apply definitions and principles of logarithmic and exponential functions.
6. Use knowledge and techniques of this course in solving applied problems.

MATH 140 Precalculus: Trigonometry and Analytic Geometry (3) KCC AA/FQ

3 hours lecture per week

Prerequisite(s): A grade of "C" or higher in MATH 135 or KCC Placement Test recommendation of MATH 140.

Comment: A scientific calculator is required for MATH 140.

MATH 140 studies trigonometric functions, analytic geometry, polar coordinates, vectors, and related topics. This course is the second part of the precalculus sequence.

Upon successful completion of MATH 140, the student should be able to:

1. Solve problems in Plane Trigonometry.
2. Graph trigonometric functions and their inverses.
3. Relate vectors with trigonometric functions.
4. Simplify algebraic expressions involving complex numbers.
5. Relate functional and geometric properties of conic sections.
6. Use knowledge and techniques in this course in solving applied problems.

MATH 215 Applied Calculus I (4) KCC AA/FQ

4 hours lecture per week

Prerequisite(s): A grade of "C" or higher in MATH 140 or qualification for MATH 205 or qualification for MATH 241.

Recommended Preparation: ENG 100 and BIOL 171.

Comment: A scientific calculator is required for MATH 215.

MATH 215 teaches basic calculus concepts; differentiation, differential equations and integration with applications directed primarily to the life sciences. Some applications to computer science are included.

Upon successful completion of MATH 215, the student should be able to:

1. Solve routine problems in differential and integral calculus.
2. Apply ideas of calculus and differential equations to understanding some biological processes in Hawai'i.
3. Apply ideas of calculus to understanding some topics in computer science.

MATH 241 Calculus I (4) KCC AA/FQ

4 hours lecture per week

Prerequisite(s): A grade of "C" or higher in MATH 140 or qualification for MATH 205 or qualification for MATH 241.

Comment: Students will need a scientific calculator for MATH 241.

MATH 241 focuses on limits and continuity, techniques and applications of differentiation of algebraic and trigonometric functions, and an introduction to integration.

Upon successful completion of MATH 241, the student should be able to:

1. Apply the concept of limit.
2. Differentiate polynomial and trigonometric functions and sums, products, quotients, roots, and compositions of polynomial and trigonometric functions.
3. Use differential calculus to sketch curves and to solve applied problems.
4. Integrate functions by approximation and by use of antiderivatives.
5. Use integral calculus to determine area and to solve applied problems.

MATH 242 Calculus II (4) KCC AA/FQ

4 hours lecture per week

Prerequisite(s): A grade of "C" or higher in MATH 205 or a grade of "C" or higher in MATH 241 or a grade of "C" or higher in an equivalent course.

Comment: Students will need a scientific calculator for MATH 242.

MATH 242 is the second course in the calculus sequence, which focuses on techniques of integration and on integrals of specific functions and their applications. MATH 242 explores infinite series.

Upon successful completion of MATH 242, the student should be able to:

1. Differentiate and integrate elementary transcendental functions.
2. Integrate functions using special methods.
3. Apply L'Hospital's Rule and evaluate improper integrals.
4. Determine the convergence of infinite sequences and series and approximate functions with Taylor polynomials.
5. Use the techniques developed in this course to solve applied problems.

MATH 243 Calculus III (4)

4 hours lecture per week

Prerequisite(s): A grade of "C" or higher in MATH 206 or a grade of "C" or higher in MATH 242.

Comment: Students will need a scientific calculator for MATH 243.

MATH 243 prepares students for Calculus IV. Topics include differential calculus on functions of several variables, polar coordinates functions and vector valued functions.

Upon successful completion of MATH 243, the student should be able to:

1. Graph and find areas and arc lengths in polar coordinates.
2. Perform calculations and demonstrate the geometric aspects of vector algebra, including the dot product and cross product.
3. Graph parametric curves (vector-valued functions) and understand motion in space, including concepts of velocity, acceleration, tangent and normal vectors, and curvature.
4. Analyze functions of several variables and surfaces, using concepts of planes, quadric surfaces, cross-sections, level curves, and limits.
5. Use partial differentiation to analyze functions of several variables, finding gradients, tangent planes, extreme values and saddle points.

MATH 244 Calculus IV (4) KCC AA/FS

4 hours lecture per week

Prerequisite(s): A grade of "C" or higher in MATH 231 or a grade of "C" or higher in MATH 243.

Comment: Students will need a scientific calculator for MATH 244.

MATH 244 is the fourth course in the calculus sequence, which focuses on multiple integrals, line and surface integrals and

applications, and an introduction to ordinary differential equations.

Upon successful completion of MATH 244, the student should be able to:

1. Integrate in multiple variables using rectangular, cylindrical, and spherical coordinates, and the concept of volume.
2. Find moments and centers of mass of laminae and solids.
3. Integrate using changes of variables and the Jacobian.
4. Evaluate line integrals, using concepts of work, conservative fields, potential functions, path-independence, and Green's Theorem in the plane.
5. Evaluate surface integrals, using concepts of flux, the Divergence Theorem, and Stokes's Theorem.
6. Solve ordinary differential equations that are separable, first-order linear, or second-order linear.

MECHANICAL ENGINEERING

ME 213 Introduction to Engineering Design (3)

2 hours lecture, 3 hours lab per week

Prerequisite(s): A grade of "C" or higher in PHYS 170 or consent of instructor.

Comment: Letter grade only. ME 213 may not be audited. ME 213 may not be taken credit/no credit. ME 213 is designed for pre-engineering students who intend to transfer to a four-year engineering program and major in Mechanical Engineering.

ME 213 is an introductory experience in communication, presentation, professional ethics, social responsibility, engineering economics, quality control, and computer-aided drafting. Teamwork and a project are required. The goal of the course is to learn the design process and associated skills in teamwork, communication, and computing, to recognize the role of fundamentals in design and problem solving, and to be exposed to different examples of engineering projects, disciplines, and careers.

Upon successful completion of ME 213, the student should be able to:

1. Use scientific knowledge to explore, compare, and analyze engineering design solutions.
2. Employ analytical reasoning as part of a team to identify engineering design problems, requirements, limitations, and goals.
3. Utilize computer-aided design (CAD) to evaluate prototype solutions and perform engineering design reviews.
4. Effectively communicate background research and design solutions via oral presentations and written reports.

MEDICAL ASSISTING

MEDA 101 Understanding the Ambulatory Care Patient (1)

3 hours lecture per week for 5 weeks

Prerequisite(s): Acceptance into the Certificate of Achievement in Medical Assisting program or acceptance into the Associate in Science degree in Medical Assisting program.

Comment: MEDA 101 is offered in the fall semester only. Letter grade only. MEDA 101 may not be taken credit/no credit. MEDA 101 may not be audited. MEDA 101 was formerly a component of MEDA 100.

MEDA 101 provides a knowledge base for the medical assistant's interaction with ambulatory care patients. It covers basic principles of psychology and human growth and development.

Upon successful completion of MEDA 101, the student should be able to:

1. Discuss the application of basic principles of psychology in dealing with patients of various backgrounds and medical conditions.
2. Describe possible ways of dealing with noncompliant patients.
3. Discuss stages of human growth and development in relation to medical conditions.
4. Explain variations in selected health conditions at different life stages.
5. Discuss the role of culture in health and wellness.
6. Discuss the role of family and support systems in health care among different cultures.

MEDA 102 Communication in the Medical Office (1)

3 hours lecture per week for 5 weeks

Prerequisite(s): Acceptance into the Certificate of Achievement in Medical Assisting program or acceptance into the Associate in Science degree in Medical Assisting program.

Comment: MEDA 102 is offered in the fall semester only. Letter grade only. MEDA 102 may not be taken credit/no credit. MEDA 102 may not be audited.

MEDA 102 focuses on communication in the medical office/ambulatory care setting.

Upon successful completion of MEDA 102, the student should be able to:

1. Adapt communications to individual's ability to understand.
2. Communicate patient instructions clearly and effectively.
3. Use appropriate terminology in communicating with other health care team members.
4. Recognize and respond effectively to verbal, nonverbal, and written communications.
5. Use professional telephone technique.
6. Use electronic technology to receive, organize, prioritize, and transmit information.

MEDA 103 Math Applications in the Medical Office (3) Fall

3 hours lecture per week for 5 weeks

Prerequisite(s): Acceptance into the Certificate of Achievement in Medical Assisting program or acceptance into the Associate in Science degree in Medical Assisting program.

Comment: MEDA 103 is offered in the fall semester only. Letter grade only. MEDA 103 may not be taken credit/no credit. MEDA 103 may not be audited. MEDA 103 was formerly a component of MEDA 100.

MEDA 103 is an introductory course that focuses on applications of basic mathematical principles in the medical office/ambulatory care setting.

Upon successful completion of MEDA 103, the student should be able to:

1. Use applicable mathematical principles to solve problems in the medical office.
2. Convert measurements from one system to another.
3. Perform drug dosage calculations.

MEDA 104 Basic Nutrition for the Medical Assistant (1)

1 hour lecture per week

Prerequisite(s): Acceptance into the Certificate of Achievement in Medical Assisting program or acceptance into the Associate in Science degree in Medical Assisting program.

Comment: MEDA 104 is offered in the fall semester only. Letter grade only. MEDA 104 may not be audited. MEDA 104 may not be taken credit/no credit. MEDA 104 was formerly a component of MEDA 100.

MEDA 104 is an introductory course that identifies the relationship of food and nutrition to health. It covers the application of basic nutrition principles to personal well-being and the importance of nutrition in preventing chronic diseases.

Upon successful completion of MEDA 104, the student should be able to:

1. Identify nutrients, their functions and use of dietary supplements.
2. Utilize the food pyramid and current dietary guidelines in planning a healthy diet and special dietary needs.
3. Explain the relationship between nutrition and chronic diseases.

MEDA 111 Medical Assisting Science I (4) Fall

4 hours lecture per week

Prerequisite(s): Acceptance into the Certificate of Achievement in Medical Assisting program or acceptance into the Associate in Science degree in Medical Assisting program.

Comment: MEDA 111 is offered in the fall semester only. Letter grade only. MEDA 111 may not be audited. MEDA 111 may not be taken Credit/No Credit.

MEDA 111 covers basic concepts of human anatomy and physiology as well as medical terminology related to the body as a whole and to each major body system.

Upon successful completion of MEDA 111, the student should be able to:

1. Name and locate the parts and state the major functions of the human organ systems: integumentary, skeletal, muscular, nervous, endocrine, cardiovascular, respiratory, digestive, urinary, and reproductive.
2. Define medical terms related to the body as a whole.
3. Define and use word parts to build medical terms.
4. Apply knowledge of word parts, analyze and define medical terms associated with the systems of the human body and related diagnostic, surgical, and treatment procedures and disease conditions.
5. Recognize and apply terminology pertaining to injuries and disease processes.

MEDA 121 Clinical Medical Assisting I (1) Fall

1 hour lecture per week

Prerequisite(s): Acceptance into the Certificate of Achievement in Medical Assisting program or acceptance into the Associate in Science degree in Medical Assisting program.

Corequisite(s): MEDA 121L.

Comment: MEDA 121 is offered in the fall semester only. Letter grade only. MEDA 121 may not be audited. MEDA 121 may not be taken credit/no credit. MEDA 121 was formerly a component of MEDA 120.

MEDA 121 provides principles of basic clinical care skills as an assistant to a physician in an ambulatory care facility setting.

Upon successful completion of MEDA 121, the student should be able to:

1. Explain basic ambulatory care concepts and principles in the performance of back office duties.
2. Discuss routine patient care/diagnostic procedures to assess the health status of patients.
3. Explain the role of the medical assistant in preparation of back office, equipment and supplies to facilitate the smooth flow of patients through the clinic and/or physician's office.
4. Discuss the role and responsibilities of the medical assistant in preparing the patient for specific examinations and medical procedures.
5. Discuss principles of aseptic technique and infection control.
6. Discuss the role of the medical assistant in assisting the physician to carry out specific examinations and procedures.
7. Describe procedures for screening and following up on patient test results.
8. Employ electronic media to access information about clinical medical assisting principles and methods.

MEDA 121L Clinical Medical Assisting Lab I (1) Fall

3 hours lab per week

Prerequisite(s): Acceptance into the Certificate of Achievement in Medical Assisting program or acceptance into the Associate in Science degree in Medical Assisting program.

Corequisite(s): MEDA 121.

Comment: MEDA 121L is offered in the fall semester only. Letter grade only. MEDA 121L may not be audited. MEDA 121L may not be taken credit/no credit. MEDA 121L was formerly a component of MEDA 120L.

MEDA 121L provides instruction and lab practice in preparing for and performing office procedures and diagnostic tests and follow-up care.

Upon successful completion of MEDA 121L, the student should be able to:

1. Apply basic ambulatory care concepts and principles with entry-level proficiency in the performance of duties in the back office.
2. Demonstrate routine patient care procedures to assist the physician in the examining room.
3. Apply aseptic techniques and infection control in the back office.
4. Demonstrate sterilization/disinfection of instruments and supplies.
5. Assemble and record medical data from patients.
6. Prepare patients for exams and/or treatments.
7. Measure and record vital signs, height and weight.

MEDA 122 Clinical Medical Assisting II (1) Spring

1 hour lecture per week

Prerequisite(s): Acceptance into the Certificate of Achievement in Medical Assisting program or acceptance into the Associate in Science degree in Medical Assisting program.

Corequisite(s): MEDA 122L.

Comment: MEDA 122 is offered in the spring semester only. Letter grade only. MEDA 122 may not be audited. MEDA 122 may not be taken credit/no credit. MEDA 122 was formerly a component of MEDA 120.

MEDA 122 prepares the student to carry out clinical care procedures as an assistant to a physician in an ambulatory care facility setting.

Upon successful completion of MEDA 122, the student should be able to:

1. Describe routine patient care/diagnostic procedures to assess the health status of patients including vision testing, hearing testing, electrocardiography.
2. Examine the role of the medical assistant in facilitating the smooth flow of patients through the clinic and/or physician's office.
3. Discuss the role and responsibilities of the medical assistant in preparing the patient for specific examinations and medical procedures.
4. Discuss the role of the medical assistant in assisting the physician to carry out specific examinations and procedures.
5. Explain the role of the medical assistant in screening and following up on patient test results.
6. Describe quality assurance practices applicable to the medical office.
7. Express the importance of radiation safety principles and practices in preparing patients for imaging and related procedures.
8. Use electronic media to access information about clinical medical assisting principles and methods.

MEDA 122L Clinical Medical Assisting Lab II (1) Spring

3 hours lab per week

Prerequisite(s): Acceptance into the Certificate of Achievement in Medical Assisting program or acceptance into the Associate in Science degree in Medical Assisting program.

Corequisite(s): MEDA 122.

Comment: MEDA 122L is offered in the spring semester only. Letter grade only. MEDA 122L may not be audited. MEDA 122L may not be taken credit/no credit. MEDA 122L was formerly a component of MEDA 120L.

MEDA 122L provides instruction and lab practice in preparing for and performing routine and specialty medical office procedures, diagnostic tests, in-office/ambulatory surgical procedures, and follow-up care.

Upon successful completion of MEDA 122L, the student should be able to:

1. Demonstrate back office duties with entry-level proficiency.
2. Dramatize routine patient care procedures to assist the physician in the examining room in simulated lab situations.
3. Demonstrate screening and follow up procedures related to patient test results in simulated lab situations.
4. Demonstrate compliance with quality assurance practices applicable in the medical office.
5. Perform hearing and vision screening.
6. Perform single-channel or multi-channel electrocardiography.
7. Demonstrate instructing patients in follow-up care/procedures in simulated lab situations.

MEDA 143 Administrative Medical Assisting I (3) Fall

6 hours lecture/lab per week

Prerequisite(s): Acceptance into the Certificate of Achievement in Medical Assisting program or acceptance into the Associate in Science degree in Medical Assisting program.

Comments: MEDA 143 is offered in the fall semester only. Letter grade only. MEDA 143 may not be taken credit/no credit. MEDA 143 may not be audited. MEDA 143 was formerly a component of MEDA 140. Supplies required for MEDA 143 include a USB data storage device, printer paper, manila folder and optional 3-ring binder. Students should also have a medical dictionary. Approximate cost of additional supplies \$30.

MEDA 143 presents basic concepts and applications of computers and computer systems in administrative medical assisting practice. The course provides beginning instruction in administrative medical assisting practice and in the front office.

Upon successful completion of MEDA 143, the student should be able to:

1. Identify, describe, and use basic computer application programs used in medical assisting.
2. Accurately process and communicate information in a medical office using keyboarding, proofreading, and editing skills.
3. Perform basic administrative medical assisting functions.
4. Schedule, coordinate, and monitor appointments, inpatient admissions and outpatient procedures.
5. Input, obtain, and process accurate data for various medical office applications.
6. Demonstrate ergonomically correct "touch" keyboarding techniques with a minimum keyboarding rate of 30 gross words a minute with good accuracy.
7. Organize and file patient's medical records.
8. Compose professional/business letters, memoranda, and other forms of written communication documents.
9. Demonstrate telephone techniques.
10. Perform an office inventory and demonstrate routine maintenance of office equipment with documentation.
11. Ethically handle confidential medical data.
12. Develop an environmental, personal (patient and employee) safety, and evacuation plan for a physician's office.

MEDA 152 Medical Assisting Science II (4) Spring

4 hours lecture per week

Prerequisite(s): Acceptance into the Certificate of Achievement in Medical Assisting program or acceptance into the Associate in Science degree in Medical Assisting program.

Comment: MEDA 152 is offered in the spring semester only. Letter grade only. MEDA 152 may not be audited. MEDA 152 may not be taken credit/no credit.

MEDA 152 covers basic concepts and characteristics of disease processes; etiology, methods of control, and development of selected diseases from each major body system and application of principles to the function of a medical practice. MEDA 152 also includes an overview of the broad scope of pharmacology, and a survey of medications commonly used in the prevention, diagnosis, and treatment of diseases.

Upon successful completion of MEDA 152, the student should be able to:

1. Identify and discuss basic concepts, principles, and characteristics of disease processes.
2. Recognize and apply terminology pertaining to injuries and disease processes.
3. Identify and discuss the etiology of selected diseases from each of the major body systems.
4. Identify and discuss methods of external control and treatment of known diseases.
5. Apply knowledge of disease processes and conditions to the smoother functioning of a medical office or clinic.
6. Interpret abbreviations and symbols accurately as they relate to drug administration.
7. Discuss standards and legislation as they related to selected drugs.

8. Use appropriate references for obtaining drug information.
9. Identify drugs commonly used in the prevention, diagnosis, and treatment of disease.
10. Discuss current status of pharmaceuticals commonly used in immunizations for the prevention of specific diseases.
11. Identify major drug classifications, and drugs within each classification, commonly used in treatment of specific disease conditions encountered in the medical office.
12. Cite specific action, side effects, and responsibilities related to use of all pharmaceuticals discussed in class.

MEDA 163 Administrative Medical Assisting II (3) Spring

6 hours lecture/lab per week

Prerequisite(s): Acceptance into the Certificate of Achievement in Medical Assisting program or acceptance into the Associate in Science degree in Medical Assisting program.

Comments: MEDA 163 is offered in the spring semester only. Letter grade only. MEDA 163 may not be taken credit/no credit. MEDA 163 may not be audited. MEDA 163 was formerly a component of MEDA 140 and MEDA 140L. Supplies required include a USB data storage device, printer paper, manila folder and optional 3-ring binder. Students should also have a medical dictionary. Approximate cost \$30.

MEDA 163 provides further instruction in administrative medical assisting practice and the application of computers in medical assisting in the front office, administrative practice including transcription of medical reports and documentation, coding, and maintaining patient records and accounts.

Upon successful completion of MEDA 163, the student should be able to:

1. Accurately submit claims, obtain reimbursement, and monitor third-party reimbursement.
2. Perform basic procedural and diagnostic coding.
3. Manage accounts payable and process payroll.
4. Proficiently apply computer systems in maintaining patient records and accounts.
5. Apply knowledge of medical terminology and transcription skills in processing medical data.
6. Document and maintain accounting and banking records.
7. Develop and maintain fee schedules.
8. Manage renewals of business and professional insurance policies.
9. Manage personnel benefits and maintain records.
10. Perform marketing, financial, and strategic planning.
11. Transcribe reports dealing with terminology, disease conditions, and procedures related to various body systems and medical specialties.

MEDA 175 Administration of Medications (1) Spring

2 hours lecture/lab per week

Prerequisite(s): Acceptance into the Certificate of Achievement in Medical Assisting program or acceptance into the Associate in Science degree in Medical Assisting program.

Comment: MEDA 175 is offered in the spring semester only. Letter grade only. MEDA 175 may not be audited. MEDA 175 may not be taken credit/no credit. MEDA 175 was formerly PHRM 115.

MEDA 175 provides instruction in the application of basic concepts required for medication administration: choice of equipment, proper technique, hazards and complications, patient care; performance of intramuscular, subcutaneous, and intradermal injections; preparation and administration of oral medications; immunizations.

Upon successful completion of MEDA 175, the student should be able to:

1. Apply the basic concepts required for medication administration.
2. Solve conversion problems within and among the following systems: household, metric, and apothecary.
3. Interpret abbreviations and symbols accurately as they relate to drug administration.
4. Discuss legislation relating to drug administration.
5. Calculate pharmaceutical equations correctly.
6. Apply the specific rules of safe drug administration.
7. Prepare and administer oral, ophthalmic, otic, nasal, and parenteral preparations in simulated lab situations.

MEDA 201 Medical Law and Ethics (2) Spring

2 hours lecture per week

Prerequisite(s): Acceptance into the Certificate of Achievement in Medical Assisting program or acceptance into the Associate in Science degree in Medical Assisting program.

Comment: MEDA 201 is offered in the spring semester only. Letter grade only. MEDA 201 may not be taken credit/no credit. MEDA 201 may not be audited.

MEDA 201 focuses on legal and ethical responsibilities in patient care and management: laws pertaining to medical practice and medical assistants, application of medical ethics in performance of duties.

Upon successful completion of MEDA 201, the student should be able to:

1. Correlate laws that affect medical practice and the practice of Medical Assistants.
2. Discuss basic concepts of medical ethics in relationships with physicians, patients and co-workers as applied to the

- performance of duties as a Medical Assistant.
3. Use electronic media to gain knowledge of basic concepts of laws and medical ethics in the practice of Medical Assistants.

MEDA 210 Medical Assisting Critique (1) Summer

2 hours lecture per week for 10 weeks

Prerequisite(s): Acceptance into the Certificate of Achievement in Medical Assisting program or acceptance into the Associate in Science degree in Medical Assisting program.

Corequisite(s): MEDA 215.

Comment: MEDA 210 is offered in the summer semester only. Letter grade only. MEDA 210 may not be audited. MEDA 210 may not be taken credit/no credit.

MEDA 210 provides an analytical approach to the correlation of theory and learned skills to practical experience in the delivery of quality patient care in the ambulatory healthcare setting.

Upon successful completion of MEDA 210, the student should be able to:

1. Discuss knowledgeable the responsibilities of the Medical Assistant as a health care team member in the delivery of quality patient care.
2. Describe standards of performance of entry-level skills and proficiency in all aspects of a beginning professional medical assistant.
3. Correlate basic ambulatory patient care concepts and principles to analyze, synthesize, and evaluate patient situations in the externship experience.
4. Describe potential ethical and legal ramifications of both medical and economic aspects of patient management.
5. Discuss applicable laws, safety standards, record maintenance, quality patient care and education in regard to patient situations in the externship experience.
6. Effectively use electronic media to apply knowledge about medical assisting principles, practices, and methods.
7. Identify problem areas in clinical practice, discuss possible ways to solve them, and select the best one using problem solving methods, effective communication skills, and active participation in class.
8. Perform satisfactorily in objective testing of in-depth knowledge of illness/wellness, medical care objectives and/or philosophies and the role of the Medical Assistant in procedures for diagnosis, examination, and treatment of the ambulatory patient.
9. Select and complete individual projects; seek out and pursue avenues for professional development.
10. Compile a procedure manual as a guide and reference for a medical office.
11. Review and prepare for certification as a Professional Medical Assistant.

MEDA 215 Externship (5) Summer

A total of 225 hours clinical experience

Prerequisite(s): Acceptance into the Certificate of Achievement in Medical Assisting program or acceptance into the Associate in Science degree in Medical Assisting program.

Corequisite(s): MEDA 210.

Comment: MEDA 215 is offered in the summer semester only. Letter grade only. MEDA 215 may not be audited. MEDA 215 may not be taken credit/no credit. Students are expected to provide their own uniforms, shoes, and stethoscope and to provide for their own transportation to and from clinical site.

MEDA 215 provides clinical experience for the development of professional characteristics as a practicing Medical Assistant.

Upon successful completion of MEDA 215, the student should be able to:

1. Function as a clinical professional and demonstrate professional characteristics expected of a beginning practicing Medical Assistant.
2. Apply basic ambulatory patient care concepts and principles with entry-level proficiency in the performance of his/her duties in the administrative and clinical areas.
3. Perform routine patient care procedures to assist the physician in examination and treatment rooms.
4. Perform simple laboratory diagnostic tests to assist the physician in the health appraisal of patients.
5. Prepare the back office, equipment and supplies to facilitate the smooth flow of patients through the clinic and/or physician's office.
6. Perform routine front office procedures to assist the physician in the care (health appraisal) of patients.
7. Prepare the front office, equipment and supplies to facilitate the smooth functioning of this area.
8. Apply the working knowledge by which the law affects a medical practice and himself/herself specifically as a Medical Assistant.
9. Apply the basic concepts of medical ethics and economics in relationships with the physician, patients and co-workers in the performance of identified duties as a Medical Assistant.

MEDA 230 Advanced Clinical Healthcare Computer Technology and Information Systems (3)

3 hours lecture per week

Prerequisite(s): Acceptance into the Certificate of Competence in Medical Assisting Healthcare Practice Management program or acceptance into the Associate in Science degree in Medical Assisting program or consent of instructor.

Comment: Letter grade only. MEDA 230 may not be audited. MEDA 230 may not be taken credit/no credit.

MEDA 230 introduces students to healthcare computer technology and information systems. The course focuses on computer software, hardware communications technology and developing an understanding of fundamental computer based applications that are the building blocks of health and medical information systems. A range of health informatic applications and systems are discussed including electronic patient records and patient-care decision support tools. The course examines the impact of information technology on healthcare professionals and systems with special attention to issues surrounding use and safety, and the long term impact of health information technology. The course also explores the design and evaluation of health information systems, selection of health information technology and systems and emerging applications in healthcare informatics.

Upon successful completion of MEDA 230, the student should be able to:

1. Describe administrative, clinical and special purpose applications of computer technology in healthcare.
2. Discuss the variety of ways in which information can be applied in healthcare delivery and management settings.
3. Demonstrate methods that can be used to design and evaluate healthcare computer technology and information systems that meet the users' needs.
4. Perform the use of an electronic medical record system in both ambulatory and administrative environments.

MEDA 260 Healthcare Information Requirements and Standards (3)

3 hours lecture per week

Prerequisite(s): Acceptance into the Certificate of Competence in Medical Assisting Healthcare Practice Management program or acceptance into the Associate in Science degree in Medical Assisting program or consent of instructor.

Comment: Letter grade only. MEDA 260 may not be audited. MEDA 260 may not be taken credit/no credit.

MEDA 260 introduces students to healthcare information requirements and standards, classification of health data, clinical vocabularies and medical terminology. The course focuses on the primary standards used in healthcare in the United States and other nations. The course also explores the relationship between healthcare standards and the emerging area of electronic health records. This course also identifies the need for standards to ensure structured and interoperable data exchange across healthcare tasks and settings.

Upon successful completion of MEDA 260, the student should be able to:

1. Identify the principles of healthcare reform.
2. Discuss and define the different compliance regulations and standards.
3. Identify the primary elements or key aspects of industry compliance agreements.
4. Describe the major concepts of quality in healthcare.

MEDA 271 Professional Medical Coding (5) Spring

5 hours lecture per week

Prerequisite(s): Satisfactory completion of the Certificate of Achievement in Medical Assisting program or acceptance into the Certificate of Competence in Medical Assisting Healthcare Practice Management program or acceptance into the Associate in Science degree in Medical Assisting program or consent of instructor.

Comment: MEDA 271 is offered in the spring semester only. Letter grade only. MEDA 271 may not be audited. MEDA 271 may not be taken credit/no credit. This course is based on the American Association of Professional Medical Coders (AAPC) Professional Medical Coding Curriculum. Students are required to pay for the AAPC's Student Membership Fee and the Certification Examination Fee. For current costs refer to <https://www.aapc.com/>. Students should purchase the following Coding Textbooks prior to the course start (Current editions of the ICD-10-CM, CPT and HCPCS.)

MEDA 271 provides detailed instruction in the application of an internationally accepted set of codes for the specific description of any medical procedure to treat a condition or injury to substantiate claims for reimbursement from third-party payers.

Upon successful completion of MEDA 271, the student should be able to:

1. Identify the purpose of the CPT®, ICD-9-CM Volumes 1 & 2, ICD-10-CM Volumes 1 & 2, and HCPCS Level II code books.
2. Understand and apply the official ICD-9-CM and ICD-10-CM coding guidelines.
3. Identify differences between ICD-9-CM and ICD-10-CM guidelines.
4. Apply coding conventions when assigning diagnoses and procedure codes.
5. Identify the information in appendices of the CPT® manual.
6. Explain the determination of the levels of E/M services.
7. Code a wide variety of patient services using CPT®, ICD-9-CM, ICD-10-CM, and HCPCS Level II codes.
8. List the major features of HCPCS Level II Codes.
9. Provide practical application of coding operative reports and evaluation and management services.

MEDA 281 Health Data Organization and Administration (3)

3 hours lecture per week

Prerequisite(s): Acceptance into the Certificate of Competence in Medical Assisting Healthcare Practice Management program or acceptance into the Associate in Science degree in Medical Assisting program or consent of instructor.

Comment: Letter grade only. MEDA 281 may not be audited. MEDA 281 may not be taken credit/no credit.

MEDA 281 focuses on healthcare data organization and administration in both the administrative and ambulatory care settings. Health data concepts include types of health data, access, retention and use. The course explores healthcare database management and

administration, data exchange, and querying data for report generation. This course also introduces statistical uses of data, the use of data for healthcare business application, performance management, patient safety and principles of healthcare data analysis and administration.

Upon successful completion of MEDA 281, the student should be able to:

1. Identify the basic principles of structuring an effective chart for accounts to ensure accounting accuracy.
2. Define the policies, principles and denials related to physician reimbursement.
3. Describe how to effectively manage the revenue cycle management model.
4. Identify human resource management responsibilities in the medical setting.
5. Describe the provider recruiting and the credentialing process.

MEDA 290 Healthcare Delivery Systems and Leadership (3) Summer

3 hours lecture per week

Prerequisite(s): Acceptance into the Certificate of Competence in Medical Assisting Healthcare Practice Management program or acceptance into the Associate in Science degree in Medical Assisting program or consent of instructor.

Comment: Letter grade only. MEDA 290 may not be audited. MEDA 290 may not be taken credit/no credit. MEDA 290 is offered in the Summer semester only.

MEDA 290 introduces students to the techniques used in leadership and management of individuals, groups, offices and departments in physician offices, clinics, hospitals, home care and nursing home settings or organizations. The topics covered in the course include decision making, problem solving, leadership, power, influence, communication, coordination and change management for individuals, work groups and office departments.

Upon successful completion of MEDA 290, the student should be able to:

1. Describe how to motivate people and discuss the tools and techniques used in management.
2. Explain the various levels of providers, places of service and patient-care flow processes.
3. Describe how to effectively communicate and manage individuals and groups within and across the organization.
4. Identify the principles of marketing in a physician's practice.
5. Describe management change, disaster planning and business continuity.

MEDA 295 Healthcare Practice Management Externship (3) Summer

22.5 clinical hours per week for 6 weeks

Prerequisite(s): Acceptance into the Certificate of Competence in Medical Assisting Healthcare Practice Management program or acceptance into the Associate in Science degree in Medical Assisting program or consent of instructor.

Comment: MEDA 295 is offered in the summer semester only. Letter grade only. MEDA 295 may not be audited. MEDA 295 may not be taken credit/no credit. Uniforms, shoes and stethoscopes previously used in the MEDA 215 Externship course from the 1st year of the MEDA Associate Degree program are required. Transportation to and from the clinical site is the responsibility of the student.

MEDA 295 provides the beginning practicing medical assistant with clinical experience to develop professional characteristics as a healthcare practice manager.

Upon successful completion of MEDA 295, the student should be able to:

1. Function as a medical assisting clinical professional in a healthcare practice setting.
2. Demonstrate professional characteristics expected of a beginning practicing Medical Assistant in the role of a healthcare practice manager.

MEDICAL LABORATORY TECHNICIAN

MLT 100 Introduction to the Clinical Laboratory (2)

4 hours lecture/lab per week

Prerequisite(s): Credit or concurrent enrollment in BIOL 130.

Comment: MLT 100 may not be audited.

MLT 100 is an introduction to the field of medical technology, with instruction in basic laboratory skills including phlebotomy.

Upon successful completion of MLT 100, the student should be able to:

1. Demonstrate knowledge of clinical laboratory organizations and the roles of various laboratory personnel within the organization.
2. Perform basic laboratory techniques.
3. Demonstrate use of basic laboratory instruments and equipment.
4. Demonstrate competence in obtaining blood specimens.
5. Demonstrate ability to effectively interact with patients, hospitals and laboratory personnel.
6. Describe quality control in the clinical laboratory.

MLT 100B Phlebotomy Practicum (1)

A total of 40 clinical hours per semester

Prerequisite(s): Acceptance into the MLT program; and credit or concurrent enrollment in MLT 100.

Comment: Letter grade only. MLT 100B may not be taken for credit/no credit. MLT 100B may not be audited.

MLT 100B offers the clinical application of the skills and knowledge learned in MLT 100. Forty hours will be spent in an affiliated clinical laboratory collecting and processing specimens for the laboratory.

Upon successful completion of MLT 100B, the student should be able to:

1. Effectively select and utilize vacutainers, syringes and butterflies to obtain venous blood samples.
2. Perform a minimum of 50 successful, unaided venipunctures after choosing the appropriate supplies for each sample.
3. Perform a minimum of 5 successful, unaided fingersticks after choosing the appropriate supplies for each sample.
4. Explain and follow the basic rules and regulations essential for safe and accurate phlebotomy.
5. Process specimens accurately, according to the procedures set in the specific clinical laboratory.
6. Exhibit appropriate interpersonal skills with patients, coworkers and other health care personnel in person and on the telephone.
7. Explain the policies and use the procedures in the clinical laboratory to assure quality in the obtaining of blood specimens.
8. Exhibit a professional demeanor while performing phlebotomist duties.

MLT 107 Clinical Microbiology I (3)

6 hours lecture/lab per week

Prerequisite(s): Acceptance into the Associate in Science degree in Medical Laboratory Technician program and a grade of "C" or higher in MLT 100 and a grade of "C" or higher in MICR 130; or consent of MLT Program Director.

Comment: Letter grade only. MLT 107 may not be taken credit/no credit. MLT 107 may not be audited. MLT 107 may not be repeated for additional credit. Students will be expected to purchase latex or vinyl gloves for this course.

MLT 107 will provide the basic laboratory experience in Clinical Microbiology, including slide preparation, gram stain and isolating bacteria in order to identify the organisms.

Upon successful completion of MLT 107, the student should be able to:

1. Make smears of bacterial cultures, stain and identify the cellular characteristics of bacteria by color, shape and arrangement.
2. Streak a culture plate for isolation of bacteria and describe colonial morphology.
3. Explain the collection and proper handling of specimens received in a clinical microbiology lab and list pathogens and non-pathogens found in each specimen.
4. Perform laboratory exercises on selected bacterial organisms to define characteristic and biochemical reactions useful in identification of bacteria.
5. Identify the bacteria in an unknown specimen with 100% accuracy.
6. Utilize the safety precautions necessary in the Clinical Microbiology laboratory.

MLT 108 Hematology (5)

10 hours lecture/lab per week

Prerequisite(s): Acceptance into the Associate in Science degree in Medical Laboratory Technician program and a grade of "C" or higher in MLT 100.

Comment: Letter grade only. MLT 108 may not be taken credit/no credit. MLT 108 may not be audited. MLT 108 may not be repeated for additional credit.

MLT 108 will enable the students to learn the basics of human red and white blood cell structure and function and the theoretical aspects behind the enumeration and identification of the blood cells, as well as the diseases associated with these cells. The basic techniques of red and white blood cell counting and microscopic identification, as well as hemoglobin and hematocrit determinations are included. The student will also learn specialized hematology techniques and instrumentation and coagulation procedures, as well as safety and quality control.

Upon successful completion of MLT 108, the student should be able to:

1. List the different types of human blood cells: Erythrocytes, Thrombocytes, Leukocytes (Neutrophils, Lymphocytes, Monocytes, Eosinophils, Basophils).
2. Identify the following cells under the microscope: Erythrocytes, Leukocytes, and Thrombocytes.
3. Describe the theory behind the following laboratory procedures: a) Hemoglobin, b) Hematocrit, c) Manual cell counting, d) Differential count, e) Sedimentation rate.
4. List the normal values for erythrocytes, leukocytes, and thrombocytes.
5. Define and identify the various inclusion bodies found in red and white blood cells and the conditions in which they occur.
6. Describe the clinical significance of and differences among the various hemoglobins.
7. Summarize the facets of hemostasis and their interrelationship.
8. Discuss the coagulation mechanism, its stages, and each factor involved in coagulation.
9. List and describe coagulation abnormalities and the laboratory results associated with each disorder.
10. Describe and discuss the fibrinolytic system.

11. Identify microscopically the cellular picture and describe the following disease states: Anemias (macrocytic, normocytic, microcytic, hemolytic), Polycythemia, Pancytopenias, Leukemias, Lymphomas, Multiple Myeloma.
12. Operate and maintain equipment applicable to hematology and coagulation laboratories.
13. Perform the following laboratory procedures within + 2 standard deviations: Prothrombin time, Activated Partial Thromboplastin time, Thrombin time, Fibrinogen titer.
14. Perform the following tests with 100% accuracy: Sickle cell test, Fibrin split products, Clot retraction.
15. Perform the appropriate quality control procedures for Hematology.
16. Utilize the safety precautions necessary in the Hematology laboratory.

MLT 112 Clinical Biochemistry I (3)

6 hours lecture/lab per week

Prerequisite(s): Credit or concurrent enrollment in both CHEM 162 and 162L and acceptance into the Associate in Science degree in Medical Laboratory Technician program; or consent of MLT Program Director.

Comment: Letter grade only. MLT 112 may not be taken credit/no credit. MLT 112 may not be audited.

MLT 112 introduces principles of clinical biochemistry pertaining to testing for chemical constituents in blood and body fluids. It covers general biochemistry of metabolism, carbohydrates, protein and enzymes. Student will practice techniques for spectrophotometry, glucose, protein, and protein fractionation and enzyme analysis.

Upon successful completion of MLT 112, the student should be able to:

1. Integrate knowledge of the theoretical principles of clinical biochemistry in laboratory diagnosis.
2. Describe the metabolic pathways basic to the physiology of the human body.
3. Describe the collection and handling of all clinical specimens to be processed for clinical chemistry.
4. Describe the function, structure, mode of action, and clinical significance of glucose, protein and protein fractions.
5. Describe the theory underlying laboratory procedures for glucose, glycosylated glucose, protein, albumin and protein fractionation by electrophoresis and chromatography.
6. Correlate abnormalities of blood and urine chemistry associated with glucose and protein determinations.
7. Explain enzyme kinetics and relate the concept to laboratory testing for enzymes.
8. Calculate and prepare percent, normal and molar solutions and dilutions of concentrated solutions.
9. Calculate mean and standard deviation and apply basic statistics to quality control in the chemistry laboratory.
10. Choose the appropriate statistical formula for determining reliability of clinical chemistry assays.
11. Perform the following manual clinical chemistry determinations on serum, plasma or urine within +/- two standard deviations of the stated value of the sample: a. Glucose, b. Total Protein, c. Albumin, d. Protein Electrophoresis, e. Other protein fractionation.
12. Operate and maintain according to standardized procedures and describe the principle of spectrophotometry.
13. Utilize and calibrate serological and volumetric pipettors and micropipettors.
14. Prepare written laboratory reports on each procedure performed and each instrument used.
15. Perform all tests utilizing appropriate safety measures as stated in safety manuals.
16. Organize their work in an orderly manner and maintain the laboratory area in a clean, working condition.

MLT 118 Body Fluids (1)

2 hours lecture/lab per week

Prerequisite(s): Acceptance into the MLT program and grade of "C" or higher MLT 100; or consent of the program director.

Comment: Letter grade only. MLT 118 may not be taken credit/no credit. MLT 118 may not be audited. MLT 118 may not be repeated for additional credit. The MLT program provides students with personal protective equipment.

MLT 118 is the study of body fluids, other than blood. The course focuses on basic principles and procedures of the chemical and cellular analysis of various body fluids.

Upon successful completion of MLT 118, the student should be able to:

1. List the basic principles underlying routine laboratory procedures in the analysis of various body fluids.
2. Describe normal and abnormal chemical and cellular constituents of various body fluids.
3. Perform chemical and macroscopic analysis of urine.
4. Identify normal and abnormal structures in the microscopic analysis of various body fluids.
5. Perform laboratory techniques utilizing necessary safety and quality control procedures.

MLT 204 Immunohematology (2)

Prerequisite(s): A grade of "C" or higher in MICR 161 and a grade of "C" or higher in MLT 108; or consent of MLT program director.

Comment: Letter grade only. MLT 204 may not be taken credit/no credit. MLT 204 may not be audited.

This course will include the principles of Blood Banking, donor-patient testing, and antibody identification in human blood. Inheritance and transfusion problems will be discussed, as well as disease states affected by antigen-antibody reactions on blood cells.

Upon successful completion of MLT 204, the student should be able to:

1. Describe the red cell antigens and the characteristics of their corresponding antibodies.
2. Identify the causes of transfusion reactions, hemolytic disease of the newborn and hemolytic anemia.

3. Describe the clinical significance of antibody and antiglobulin testing.
4. List donor qualifications.
5. Accurately determine the ABO and Rh type of blood specimens and identify atypical antibodies.
6. Accurately perform crossmatch procedures with donor and patient blood specimens.

MLT 207 Clinical Microbiology II (3)

6 hours lecture/lab per week

*Prerequisite(s): Acceptance into the Associate in Science degree in Medical Laboratory Technician program **and** a grade of “C” or higher in MLT 107; **or** consent of MLT Program Director.*

Comment: Letter grade only. MLT 207 may not be taken credit/no credit. MLT 207 may not be audited. Students will be expected to purchase latex or vinyl gloves for this MLT 207 course.

MLT 207 includes the study of microorganisms and parasites as they relate to human disease. MLT 207 will provide the advanced laboratory experience in Clinical Microbiology, including a continuation of MLT 107 techniques and parasitology and mycology lab techniques.

Upon successful completion of MLT 207, the student should be able to:

1. Identify unknown cultures of medically significant bacteria to genus and species level and determine antibiotic susceptibility.
2. Describe the technique used to collect, handle, and/or preserve specimens received in the laboratory for parasite examination.
3. List and describe methods of concentrating stool specimens for parasites.
4. Identify the most commonly found parasites to genus and species upon observation of appropriate material.
5. List and describe: methods of preparing fungal smears and culturing fungi; collection and handling of specimens for fungal examination; and media used in the isolation and identification of fungi.
6. Utilize the safety precautions necessary in the Clinical Microbiology laboratory.

MLT 211 Clinical Microscopy (1)

2 hours lecture/lab per week

*Prerequisite(s): A grade of “C” or higher in MLT 108 **and** a grade of “C” or higher in MLT 118; **and** a grade of “C” or higher in MLT 107 **or** consent of MLT program director.*

Comment: MLT 211 may not be audited.

MLT 211 will provide the student with additional experience in identifying microscopic elements in blood and body fluids prior to participating in the clinical rotations.

Upon successful completion of MLT 211, the student should be able to:

1. Identify the parts of a microscope and perform preventative maintenance and make minor repairs.
2. Identify Erythrocytes, Leukocytes, Thrombocytes, urinary casts, urinary crystals, bacteria, yeast and parasites under the microscope with at least 90 percent accuracy.
3. Perform the appropriate quality control and safety procedures for analysis of blood and body fluids.

MLT 212 Clinical Biochemistry II (4)

*Prerequisite(s): Acceptance into the MLT program **or** consent of MLT program instructor; **and** a grade of “C” or higher in MLT 112 **or** consent of MLT program director.*

Comment: Letter grade only. MLT 212 may not be taken credit/no credit. MLT 212 may not be audited.

MLT 212 will cover the principles of clinical biochemistry as it pertains to testing for chemical constituents in blood and body fluids. This advanced level course will include lipid chemistry, acid-base balance, diagnostic enzymes, endocrinology, chemistry of body systems instrumentation and recent advances in clinical chemistry. The student will learn the techniques for analyzing blood and body fluids for diagnosis of various disease states by manual and automated methods.

Upon successful completion of MLT 212, the student should be able to:

1. Describe the function, structure, mode of action and clinical significance of each of the following chemical substances: electrolytes, blood gases, non-protein nitrogen, lipids, clinically significant enzymes, hormones – steroid, protein & peptide.
2. Describe the theory behind the preceding laboratory procedures and list the normal values associated with each.
3. Correlate abnormalities of blood and urine chemistry associated with: altered acid base balance, kidney disease, liver disease, heart disease, neurological system disorders, endocrine and reproductive system disorders, bone and muscle disease, neoplasms.
4. Describe the mode of action, clinical significance and methods for determining therapeutic drugs and drugs of abuse.
5. List and describe tumor markers found in blood and body fluids.
6. List the substances measured to determine fetal maturity and the clinical significance of each test.

7. Perform the following manual clinical chemistry determinations on serum, plasma or urine with +/- two standard deviations of the stated value of the sample: cholesterol, triglyceride & HDL, salicylate, AST, ALT, ALP, CK, LD, amylase, lipase, electrolytes, and immunoassays.
8. Operate and maintain according to standardized procedures and describe the principles of the following instruments: Ion selective electrode Atac 2000, Pointe 180, Gilford Stasar, Ortho Vitros II, and Dade Dimension.
9. Prepare written laboratory reports on each procedure performed and each instrument used.
10. Perform all tests utilizing appropriate safety measures as stated in safety manuals.
11. Organize their work in an orderly manner and maintain the laboratory area in clean, working condition.

MLT 240 Seminar (1)

1 hour lecture per week

Prerequisite(s): MLT 108 and MLT 118 and MLT 204 and MLT 207 and MLT 211 and MLT 212; or consent of MLT program director.

Corequisite(s): MLT 242B and MLT 242C and MLT 242D and MLT 242E.

Comment: Letter grade only. MLT 240 may not be taken credit/no credit. MLT 240 may not be audited. MLT 240 is offered in the Spring semester only.

MLT 240 is a seminar in which students discuss clinical experiences and other topics related to clinical laboratory medicine.

Upon successful completion of MLT 240, the student should be able to:

1. Provide a critical assessment of the clinical laboratory science as a career choice.
2. Communicate ideas relevant to laboratory medicine to his/her peers.
3. Describe skills for lifelong learning.
4. Answer at least 70% of the questions asked on a comprehensive medical laboratory technician exam correctly.
5. Present a two hour seminar for his/her peers on a topic relevant to laboratory medicine as a career choice.
6. Prepare a resume for obtaining a position in a clinical laboratory.
7. Describe the basic requirements for a successful job interview.

MLT 242B Clinical Rotation II – Blood Bank (2)

A total of 90 hours clinical practice per semester

Prerequisite(s): A grade of "C" or higher in MLT 204 or consent of MLT program director.

Corequisite(s): MLT 240.

Comment: Letter grade only. MLT 242B may not be taken for credit/no credit. MLT 242B may not be audited. MLT 242B is offered in the Spring semester only.

MLT 242B is the application of knowledge and skills learned in MLT 204. The work is performed in affiliated clinical laboratories.

Upon successful completion of MLT 242B, the student should be able to:

1. Transfer knowledge and skills learned in MLT 204 to the clinical laboratory.
2. Interact effectively with patients and laboratory personnel.
3. Integrate theoretical and technical knowledge to solve laboratory problems in Blood Bank.

MLT 242C Clinical Rotation II – Chemistry (4)

A total of 180 hours clinical practice per semester

Prerequisite(s): A grade of "C" or higher in MLT 112; and a grade of "C" or higher in MLT 212 or consent of MLT program director.

Corequisite(s): MLT 240

Comment: Letter grade only. MLT 242C may not be taken for credit/no credit. MLT 242C may not be audited. MLT 242C is offered in the Spring semester only.

MLT 242C is the application of knowledge and skills learned in MLT 112 and MLT 212. The work is performed in affiliated clinical laboratories.

Upon successful completion of MLT 242C, the student should be able to:

1. Transfer knowledge and skills learned in MLT 112 and MLT 212 to the clinical laboratory.
2. Interact effectively with patients and laboratory personnel.
3. Integrate theoretical and technical knowledge to solve laboratory problems in Clinical Chemistry.

MLT 242D Clinical Rotation II – Microbiology (4)

A minimum of 180 hours clinical practice per semester

Prerequisite(s): A grade of "C" or higher in MLT 107; and a grade of "C" or higher in MLT 207 or consent of MLT program director.

Corequisite(s): MLT 240

Comment: Letter grade only. MLT 242D may not be taken for credit/no credit. MLT 242D may not be audited. MLT 242D is offered in the Spring semester only.

MLT 242D is the application of knowledge and skills learned in MLT 107 and MLT 207. The work is performed in affiliated clinical laboratories.

Upon successful completion of MLT 242D, the student should be able to:

1. Transfer knowledge and skills learned in MLT 107 AND MLT 207 to the clinical laboratory.
2. Interact effectively with patients and laboratory personnel.
3. Integrate theoretical and technical knowledge to solve laboratory problems in Microbiology.

MLT 242E Clinical Rotation II – Hematology (4)

A minimum of 180 hours clinical practice per semester

Prerequisite(s): A grade of "C" or higher in MLT 108 and a grade of "C" or higher in MLT 118; and a grade of "C" or higher in MLT 211 or consent of MLT program director.

Corequisite(s): MLT 240

Comment: Letter grade only. MLT 242E may not be taken for credit/no credit. MLT 242E may not be audited. MLT 242E is offered in the Spring semester only.

MLT 242E is the application of knowledge and skills learned in MLT 108, MLT 118, and MLT 211. The work is performed in affiliated clinical laboratories.

Upon successful completion of MLT 242E, the student should be able to:

1. Transfer knowledge and skills learned in MLT 108, MLT 118, and MLT 211 to the clinical laboratory.
2. Interact effectively with patients and laboratory personnel.
3. Integrate theoretical and technical knowledge to solve laboratory problems in Hematology.

MLT 242F Clinical Rotation II – General (4)

A total of 180 hours clinical practice per semester

Prerequisite(s): A grade of "C" or higher in MLT 108 and a grade of "C" or higher in MLT 118 and a grade of "C" or higher in MLT 211 and a grade of "C" or higher in MLT 107 and a grade of "C" or higher in MLT 207 and a grade of "C" or higher in MLT 112 and a grade of "C" or higher in MLT 212; or consent of MLT program director.

Corequisite(s): MLT 240

Comment: Letter grade only. MLT 242F may not be taken for credit/no credit. MLT 242F may not be audited. MLT 242F is offered in the Spring semester only.

MLT 242F is the application of knowledge and skills learned in MLT 107, MLT 108, MLT 112, MLT 118, MLT 207, MLT 211, and MLT 212. The work is performed in affiliated clinical laboratories.

Upon successful completion of MLT 242F, the student should be able to:

1. Transfer knowledge and skills learned in MLT 107, MLT 108, MLT 112, MLT 118, MLT 207, MLT 211, and MLT 212 to the clinical laboratory.
2. Interact effectively with patients and laboratory personnel.
3. Perform testing in multiple sections of the laboratory as a generalist.
4. Integrate theoretical and technical knowledge to solve laboratory related problems.

MICROBIOLOGY

MICR 130 General Microbiology (3) KCC AA/DB and KCC AS/NS

3 hours lecture per week

Recommended Preparation: MATH 82 or an equivalent course; and CHEM 100 or CHEM 151 or CHEM 161 or BIOC 141.

MICR 130 covers the fundamentals of microbiology with an emphasis on the biology of microorganisms and a study of how microbes affect people, property and the environment. Broad aspects of biochemistry, genetics, molecular biology, physiology, host-parasite relationships, infectious diseases, immunology, public health, epidemiology, food microbiology, and environmental microbiology will be covered.

Upon successful completion of MICR 130, the student should be able to:

1. Describe the organization of life at the cellular and subcellular levels.
2. Describe the main characteristics of bacteria such as their morphology, growth, reproduction and classification.
3. Describe in general terms, the fundamental biochemistry of bacterial metabolism and compare it to eukaryotic cell metabolism.
4. Describe the basic principles of molecular genetics as they relate to cell division, mutation, genetic engineering, bacterial virulence, and antibiotic resistance.

5. Describe the fundamental principles of the host-parasite relationship both in health and in disease.
6. Describe the components of the human immune system and evaluate how these components interact to generate an immune response.
7. Express and describe the growth characteristics of bacterial culture logically and in mathematical terms.
8. Classify and describe the major, common infectious diseases of humans.
9. Describe the methods of controlling microbes that are used to prevent disease transmission, food spoilage, and the destruction of other items of commercial importance.
10. Read and critique microbiology articles in the popular press and in professional health science journals.

MICR 140 General Microbiology Lab (2) KCC AA/DY

4 hours lecture/lab per week

Prerequisite(s): A grade of "C" or higher or concurrent enrollment in MICR 130 or consent of instructor.

Recommended Preparation: MATH 82.

MICR 140 covers the fundamental laboratory aspects of microbiology with a public health and medical emphasis.

Upon successful completion of MICR 140, the student should be able to:

1. Accurately use various measuring methods and instruments, the metric system and scientific notation in routine laboratory exercises and experiments.
2. Effectively use and properly care for the compound microscope, including the oil immersion lens, in laboratory exercises and experiments.
3. Accurately prepare, examine and interpret various stained slide specimens including gram stained, capsule stained, endospore stained and flagella stained specimens.
4. Demonstrate and properly execute aseptic technique while handling bacterial cultures and infectious specimens.
5. Evaluate the ubiquity of microbes as part of our normal flora and as present in the environment.
6. Demonstrate, evaluate and rationalize the principles and the techniques used to control microorganisms such as antibiotics, preservatives and the chemical and physical disinfecting and sterilizing agents.
7. Enumerate and evaluate the bacteria in biological, food, water and environmental samples and mathematically project the growth characteristics of these bacteria.
8. Demonstrate, evaluate and predict the effect of different habits and personal hygiene practices on human normal flora and on pathogenic microbes.
9. Demonstrate and evaluate the nutritional requirements and characteristics of the various medically important bacteria.
10. Demonstrate the ability to isolate, maintain and identify common bacteria.

MICR 161 Immunology and Protein Chemistry (2) KCC AA/DY

4 hours lecture/lab per week

Prerequisite(s): A grade of "C" or higher or concurrent enrollment in MICR 130 or a grade of "C" or higher or concurrent enrollment in BIOL 171; and a grade of "C" or higher or concurrent enrollment in MICR 140 or a grade of "C" or higher or concurrent enrollment in MLT 107 or a grade of "C" or higher or concurrent enrollment in BIOL 171L; and a grade of "C" or higher or concurrent enrollment in CHEM 161 and a grade of "C" or higher or concurrent enrollment in CHEM 161L. Prerequisites may be waived by the consent of instructor.

MICR 161 lecture/laboratory course covers the fundamental aspects of both immunology and protein chemistry as it is performed in clinical, research and biotechnology laboratories.

Upon successful completion of MICR 161, the student should be able to:

1. Describe the structure and function of the human immune system and its cellular and molecular components
2. Describe the structure and chemistry of proteins, with special emphasis on the immunoglobulins.
3. Describe the principles underlying antigen antibody reactions.
4. Demonstrate proficiency in performing a variety of immunoassays including agglutination, precipitation, ELISA, and fluorescent antibody procedures.
5. Explain the principles of electrophoresis and perform various electrophoretic separations.
6. Explain the principles and perform fundamental protein fractionation, separation and purification techniques such as salt fractionation, size exclusion chromatography and ion exchange chromatography.
7. Describe the principles underlying immunization strategies particularly as they relate to the production of monoclonal antibodies.
8. Describe the principles involved in developing screening assays for monoclonal antibody production; then, coat plates with candidate antigens and perform the assays.

MICR 230 Molecular Biology (3) KCC AA/DY

6 hours lecture/lab per week

Prerequisite(s): A grade of "C" or higher or concurrent enrollment in MICR 130 or a grade of "C" or higher or concurrent enrollment in BIOL 171; and a grade of "C" or higher or concurrent enrollment in MICR 140 or a grade of "C" or higher or concurrent enrollment in MLT 107 or a grade of "C" or higher or concurrent enrollment in BIOL 171L; and a grade of "C" or higher or concurrent enrollment in CHEM 161 or a grade of "C" or higher or concurrent enrollment in a higher-level chemistry course; and a grade of "C" or higher or concurrent enrollment in CHEM 161L or a grade of "C" or higher or concurrent enrollment in a higher-level chemistry lab course.

Comment: The research-intensive nature of this course limits student enrollment to two attempts of the course. MICR 230 may not be audited. MICR 230 may be taken for a letter grade or credit/no credit only. MICR 230 articulates with BIOL 275L. Research Intensive courses are enriched courses that employ the scientific method in a student-centered, inquiry-based research model. These are intensive courses that provide opportunities for students to develop critical and independent thinking through experimentation. Final presentations (such as one or more of the following: research paper, PowerPoint and/or poster presentation in class, at a conference or recorded) will be required of all student participants. Special Approval: Instructor Approval.

MICR 230 serves as an introduction into the world of molecular biology, with a particular emphasis on recombinant DNA techniques. Fundamental concepts covered will include: microbial manipulation, genetic modification, biomolecule isolation/characterization and biotechnology methodology.

Upon successful completion of MICR 230, the student should be able to:

1. Describe the structure and function of proteins, nucleic acids, and macromolecular complexes in cellular processes.
2. Describe the regulation of gene activity in prokaryotes and eukaryotes.
3. Describe the basic principles and techniques of molecular biology, including the contemporary tools to generate recombinant DNA.
4. Operate basic molecular biology laboratory equipment, including but not limited to: spectrophotometers, electrophoresis equipment, centrifuges and thermal cyclers.
5. Isolate and quantitate chromosomal and/or plasmid DNA from living cells.
6. Perform and analyze restriction enzyme digestions, ligations, and amplifications of DNA.
7. Analyze DNA and amino acid sequence data using bioinformatics portals.

MICR 240 Cell Biology and Tissue Culture (2) KCC AA/DY

4 hours lecture/lab per week

Prerequisite(s): A grade of "C" or higher or concurrent enrollment in MICR 130 or a grade of "C" or higher or concurrent enrollment in BIOL 171; and a grade of "C" or higher in MICR 140 or a grade of "C" or higher in MLT 107 or a grade of "C" or higher in BIOL 171L; and a grade of "C" or higher in both CHEM 161 and CHEM 161L or a grade of "C" or higher in both CHEM 162 and CHEM 162L or a grade of "C" or higher in both CHEM 272 and CHEM 272L or a grade of "C" or higher in both CHEM 273 and CHEM 273L. Prerequisites may be waived by the consent of instructor.

Comment: MICR 240 is cross-listed as BIOL 275L.

MICR 240 is a lecture/laboratory course that covers cell biology and the essential principles important to the cultivation and study of cells in tissue culture. Through lectures and laboratory experiments students will acquire a fundamental understanding of the biochemistry of the cell. Students will also acquire competence in tissue culture and experience with modern advances in biotechnology and recombinant DNA technology.

Upon successful completion of MICR 240, the student should be able to:

1. Demonstrate proficiency in aseptic technique and in all of the basic procedures used in tissue culture and in a cell biology laboratory.
2. Describe the basic principles of protein chemistry and molecular biology and apply these principles in the design and interpretation of experiments utilizing enzymatic reactions, PCR, electrophoresis and immunoassays.
3. Describe in detail the organization of life at the cellular and subcellular levels.
4. Describe the structure and function of biological membranes and demonstrate an understanding of the processes which occur at the cell surface.
5. Describe in detailed and specific terms the fundamental catabolic and anabolic metabolic processes that occur at the cellular level.
6. Describe and experimentally manipulate the cytoskeleton particularly as it relates to intracellular traffic, cytokinesis and cell motility.
7. Describe and debate the ethical issues surrounding existing and proposed research and applications using living cells.

MOBILE INTENSIVE CARE TECHNICIAN

MICT 151 Clinical Paramedicine I (0.62)

A total of 28 clinical hours per semester

*Prerequisite(s): Acceptance into the Certificate of Achievement in Mobile Intensive Care Technician program **and** a grade of "C" or higher in ENG 100; **and** a grade of "C" or higher in MATH 103 **or** a grade of "C" or higher in MATH 115 **or** a grade of "C" or higher in MATH 135 **or** a grade of "C" or higher in MATH 140 **or** a grade of "C" or higher in MATH 205 **or** a grade of "C" or higher in MATH 241; **and** a grade of "C" or higher in HLTH 125; **and** a grade of "C" or higher in both BIOL 130 and BIOL 130L **or** a grade of "C" or higher in all PHYL 141 and PHYL 141L and PHYL 142 and PHYL 142L **or** a grade of "C" or higher in all ZOOL 141 and ZOOL 141L and ZOOL 142 and ZOOL 142L.*

Corequisite(s): MICT 152.

Comment: Credit/no credit grading only. MICT 151 may not be audited. MICT 151 may not be taken for a letter grade. A current State of Hawai'i Emergency Medical Technician (EMT) License and American Heart Association (AHA) Basic Life Support (BLS) certification are required.

MICT 151 provides an opportunity to apply and practice content and skills learned in MICT 152. It is a hands-on skills experience in advanced life support at clinical facilities including major hospitals and metropolitan ambulances. In addition to clinical skills, students also refine their written, verbal and non-verbal communication skills. The students are integrated into a professional health care culture.

Upon successful completion of MICT 151, the student should be able to:

1. Apply basic principles of EMS Systems and patient safety.
2. Perform basic evaluation and management techniques of patients with a focus on scene size-up and the primary assessment.
3. Perform basic techniques of history-taking and physical examination (secondary assessment) with a focus on assessment of the airway, respiratory, and circulatory systems.
4. Recognize signs that identify unstable patients including patients with an inadequate airway, respiratory distress or failure, and/or shock.
5. Perform assessment and management of adequate and inadequate airway, ventilation, and/or respiration by safely and effectively performing appropriate use of supplemental oxygen therapy, techniques of establishing a patient airway, and artificial ventilation.
6. Perform cardiac monitoring and able to interpret basic cardiac arrhythmias.
7. Apply the basic principles of pharmacology and primary emergency medications.
8. Display verbal (and non-verbal) therapeutic communication techniques.
9. Integrate anatomical and medical terminology and abbreviations into written and oral communication with colleagues and other healthcare professionals.
10. Display professionalism and demonstrate the roles and responsibilities of a paramedic, including (but not limited to) integrity, empathy, self-motivation, appearance/hygiene, communication, teamwork/diplomacy, respect, patient advocacy, and careful delivery of service.

MICT 152 Fundamentals of Paramedicine I: Recognition of Critical Patients (3.15)

A total of 94.5 hours lecture/lab per semester

*Prerequisite(s): Acceptance into the Certificate of Achievement in Mobile Intensive Care Technician program **and** a grade of "C" or higher in ENG 100; **and** a grade of "C" or higher in MATH 103 **or** a grade of "C" or higher in MATH 115 **or** a grade of "C" or higher in MATH 135 **or** a grade of "C" or higher in MATH 140 **or** a grade of "C" or higher in MATH 205 **or** a grade of "C" or higher in MATH 241; **and** a grade of "C" or higher in HLTH 125; **and** a grade of "C" or higher in both BIOL 130 and BIOL 130L **or** a grade of "C" or higher in all PHYL 141 and PHYL 141L and PHYL 142 and PHYL 142L **or** a grade of "C" or higher in all ZOOL 141 and ZOOL 141L and ZOOL 142 and ZOOL 142L.*

Corequisite(s): MICT 151.

Comment: Letter grade only. MICT 152 may not be audited. MICT 152 may not be taken credit/no credit. A current State of Hawai'i Emergency Medical Technician (EMT) License and American Heart Association (AHA) Basic Life Support (BLS) certification are required.

MICT 152 is the first of six courses in the theory and laboratory practice of advanced life support knowledge and skills used in the assessment and treatment of adult patients with medical conditions requiring prehospital emergency care.

Upon successful completion of MICT 152, the student should be able to:

1. Describe basic principles of EMS Systems and patient safety.
2. Define basic evaluation and management techniques of patients with a focus on scene size-up and the primary assessment.
3. Define basic techniques of history-taking and physical examination (secondary assessment) with a focus on the airway, respiratory, and circulatory systems.
4. List signs that identify unstable patients including patients with an inadequate airway, respiratory distress or failure, and/or shock.
5. Prioritize assessment and management of adequate and inadequate airway, ventilation, and/or respiration.
6. Describe appropriate use of supplemental oxygen therapy, techniques of establishing a patient airway, and artificial ventilation.
7. Perform cardiac monitoring and able to interpret basic cardiac arrhythmias.

8. Define the basic principles of pharmacology and primary emergency medications.
9. Demonstrate verbal (and non-verbal) therapeutic communication techniques.
10. Give examples of using anatomical and medical terminology and abbreviations in written and oral communication.
11. Display professionalism and identifies the roles and responsibilities of a paramedic, including (but not limited to) integrity, empathy, self-motivation, appearance/hygiene, communication, teamwork/diplomacy, respect, patient advocacy, and careful delivery of service.

MICT 161 Clinical Paramedicine II: Cardiac Cath Lab and ED Experience (1.06)

A total of 48 clinical hours per semester

Prerequisite(s): Acceptance into the Certificate of Achievement in Mobile Intensive Care Technician program and a grade of "C" or higher in ENG 100; and a grade of "C" or higher in MATH 103 or a grade of "C" or higher in MATH 115 or a grade of "C" or higher in MATH 135 or a grade of "C" or higher in MATH 140 or a grade of "C" or higher in MATH 205 or a grade of "C" or higher in MATH 241; and a grade of "C" or higher in HLTH 125; and a grade of "C" or higher in both BIOL 130 and BIOL 130L or a grade of "C" or higher in all PHYL 141 and PHYL 141L and PHYL 142 and PHYL 142L or a grade of "C" or higher in all ZOO 141 and ZOO 141L and ZOO 142 and ZOO 142L.

Corequisite(s): MICT 162.

Comment: Credit/no credit grading only. MICT 161 may not be audited. MICT 161 may not be taken for a letter grade. A current State of Hawai'i Emergency Medical Technician (EMT) License and American Heart Association (AHA) Basic Life Support (BLS) certification are required.

MICT 161 is the second of six clinical courses that provides hands-on skills experience in advanced life support at clinical facilities including major hospitals and metropolitan ambulances. In addition to clinical skills, students also refine their written, verbal and non-verbal communication skills. The students are integrated into a professional health care culture.

Upon successful completion of MICT 161, the student should be able to:

1. Integrate assessment findings, principles of epidemiology, anatomy/physiology, and pathophysiology to formulate a field impression and implement a comprehensive treatment/disposition plan for patients with common medical complaints.
2. Integrate fundamental knowledge of causes and pathophysiology into the management of cardiac arrest, peri-arrest states, shock, and respiratory failure/arrest.
3. Safely and effectively perform designated advanced life support skills in patients with medical illnesses.
4. Perform a comprehensive history and physical examination to identify factors affecting the health and needs of a patient.
5. Demonstrate advanced history-taking skills, interview techniques, how to integrate therapeutic communication techniques, and adapt line of inquiry based on findings and presentation.
6. Apply History and Physical Examination findings to evaluate acute medical illnesses.
7. Perform adequate reassessment.
8. Apply appropriate treatment modalities of cardiac arrhythmias.
9. Define basic principles of 12-Lead EKG interpretation.
10. Safely perform medication administration.
11. Describe statutory responsibilities, legal actions, and healthcare regulation.
12. Describe basic principles of reporting and documenting assessment findings and interventions in the patient care record.
13. Describe provider safety and well-being including standard precautions, disease transmission, injury prevention, and stress management.
14. Implement patient safety and advocacy during evaluation and management of patients.

MICT 162 Fundamentals of Paramedicine II: Advanced Evaluation and Management of Acute Medical Illnesses (3.08)

A total of 92.5 hours lecture/lab per semester

Prerequisite(s): Acceptance into the Certificate of Achievement in Mobile Intensive Care Technician program and a grade of "C" or higher in ENG 100; and a grade of "C" or higher in MATH 103 or a grade of "C" or higher in MATH 115 or a grade of "C" or higher in MATH 135 or a grade of "C" or higher in MATH 140 or a grade of "C" or higher in MATH 205 or a grade of "C" or higher in MATH 241; and a grade of "C" or higher in HLTH 125; and a grade of "C" or higher in both BIOL 130 and BIOL 130L or a grade of "C" or higher in all PHYL 141 and PHYL 141L and PHYL 142 and PHYL 142L or a grade of "C" or higher in all ZOO 141 and ZOO 141L and ZOO 142 and ZOO 142L.

Corequisite(s): MICT 161.

Comment: Letter grade only. MICT 162 may not be audited. MICT 162 may not be taken credit/no credit. A current State of Hawai'i Emergency Medical Technician (EMT) License and American Heart Association (AHA) Basic Life Support (BLS) certification are required.

MICT 162 is the second of six courses in the theory and laboratory practice of advanced life support knowledge and skills used in the assessment and treatment of adult patients with medical conditions requiring prehospital emergency care.

Upon successful completion of MICT 162, the student should be able to:

1. Describe how assessment findings, principles of epidemiology, anatomy/physiology, and pathophysiology are applied to formulate a field impression and create a comprehensive treatment/disposition plan for patients with common medical complaints.
2. Integrate fundamental knowledge of causes and pathophysiology into the management of cardiac arrest, peri-arrest states, shock, and respiratory failure/arrest.
3. Prioritize advanced history-taking skills, interview techniques, how to integrate therapeutic communication techniques, and adapt line of inquiry based on findings and presentation.

4. Apply History and Physical Examination findings to evaluate acute medical illnesses.
5. Prioritize when and how to perform reassessment.
6. Perform a comprehensive history and physical examination to identify factors affecting the health and needs of a patient.
7. Determine routes and methods of safe medication administration.
8. Demonstrate designated advanced life support skills in patients with medical illnesses.
9. Recognize appropriate treatment modalities for cardiac arrhythmias.
10. Define basic principles of 12-Lead EKG interpretation.
11. Describe statutory responsibilities, legal actions, and healthcare regulation.
12. Describe basic principles of reporting and documenting assessment findings and interventions in the patient care record.
13. Describe provider safety and well-being including standard precautions, disease transmission, injury prevention, and stress management.
14. Describe importance of patient safety and advocacy during evaluation and management of patients.

MICT 170 Fundamentals of Paramedicine III: Advanced Evaluation and Management of Special Patient Populations (2.06)

A total of 62 hours lecture/lab per semester

*Prerequisite(s): Acceptance into the Certificate of Achievement in Mobile Intensive Care Technician program **and** a grade of "C" or higher in ENG 100; **and** a grade of "C" or higher in MATH 103 **or** a grade of "C" or higher in MATH 115 **or** a grade of "C" or higher in MATH 135 **or** a grade of "C" or higher in MATH 140 **or** a grade of "C" or higher in MATH 205 **or** a grade of "C" or higher in MATH 241; **and** a grade of "C" or higher in HLTH 125; **and** a grade of "C" or higher in both BIOL 130 and BIOL 130L **or** a grade of "C" or higher in all PHYL 141 and PHYL 141L and PHYL 142 and PHYL 142L **or** a grade of "C" or higher in all ZOO 141 and ZOO 141L and ZOO 142 and ZOO 142L.*

Corequisite(s): MICT 171.

Comment: Letter grade only. MICT 170 may not be audited. MICT 170 may not be taken credit/no credit. A current State of Hawai'i Emergency Medical Technician (EMT) License and American Heart Association (AHA) Basic Life Support (BLS) certification are required.

MICT 170 is the third of six courses in the theory and laboratory practice of advanced life support knowledge and skills used in the assessment and treatment of special populations patients with medical and trauma conditions requiring prehospital emergency care.

Upon successful completion of MICT 170, the student should be able to:

1. Describe how assessment findings, principles of epidemiology, anatomy/physiology, and pathophysiology (including life span development) are applied to formulate a field impression and develop a comprehensive treatment/disposition plan for acute patients in pediatric, neonatal, obstetric, and other special patient populations.
2. Integrate comprehensive knowledge of causes and pathophysiology into the management of cardiac arrest/ peri-arrest states, shock, airway or respiratory failure/arrest in pediatric, neonatal, geriatric, obstetric, and other special patient populations.
3. Define appropriate adjustments of emergency medications for use in special patient populations.
4. Demonstrate designated advanced life support skills in special patient populations.
5. Identify cardiac arrhythmias associated with special patient populations.
6. Describe appropriate communication strategies for patients with respect to various ages, needs, or cultures.

MICT 171 Clinical Paramedicine III: Experience in Special Patient Populations (1.6)

A total of 72 clinical hours per semester

Corequisite(s): MICT 170.

Comment: Credit/no credit grading only. MICT 171 may not be audited. MICT 171 may not be taken for a letter grade. A current State of Hawai'i Emergency Medical Technician (EMT) License and American Heart Association (AHA) Basic Life Support (BLS) certification are required.

MICT 171 is the third of six clinical courses that provides hands-on skills experience in advanced life support at clinical facilities including major hospitals and metropolitan ambulances. In addition to clinical skills, students also refine their written, verbal and non-verbal communication skills. The students are integrated into a professional health care culture.

Upon successful completion of MICT 171, the student should be able to:

1. Integrate assessment findings with principles of epidemiology, anatomy/physiology, and pathophysiology (including life span development), to formulate a field impression and implement a comprehensive treatment/disposition plan for acute patients in pediatric, neonatal, obstetric, and other special patient populations.
2. Integrate comprehensive knowledge of causes and pathophysiology into the management of cardiac arrest/ peri-arrest states, shock, airway or respiratory failure/arrest in pediatric, neonatal, geriatric, obstetric, and other special patient populations.
3. Safely perform emergency medication administration in special patient populations.
4. Safely and effectively perform designated advanced life support skills in special patient populations.
5. Apply appropriate treatment modalities of cardiac arrhythmias.
6. Apply appropriate communication strategies for patients with respect to various ages, needs, or cultures.

MICT 180 Fundamentals of Paramedicine IV: Advanced Evaluation and Management of Trauma Patients (2.76)

A total of 83 hours lecture/lab per semester

*Prerequisite(s): Acceptance into the Certificate of Achievement in Mobile Intensive Care Technician program **and** a grade of "C" or higher in ENG 100; **and** a grade of "C" or higher in MATH 103 **or** a grade of "C" or higher in MATH 115 **or** a grade of "C" or higher in MATH 135 **or** a grade of "C" or higher in MATH 140 **or** a grade of "C" or higher in MATH 205 **or** a grade of "C" or higher in MATH 241; **and** a grade of "C" or higher in HLTH 125; **and** a grade of "C" or higher in both BIOL 130 and BIOL 130L **or** a grade of "C" or higher in all PHYL 141 and PHYL 141L and PHYL 142 and PHYL 142L **or** a grade of "C" or higher in all ZOOL 141 and ZOOL 141L and ZOOL 142 and ZOOL 142L.*

Corequisite(s): MICT 181.

Comment: Letter grade only. MICT 180 may not be audited. MICT 180 may not be taken credit/no credit. A current State of Hawai'i Emergency Medical Technician (EMT) License and American Heart Association (AHA) Basic Life Support (BLS) certification are required.

MICT 180 is the fourth of six courses in the theory and laboratory practice of advanced life support knowledge and skills used in the assessment and treatment of adult patients with trauma and behavioral health conditions requiring prehospital emergency care.

Upon successful completion of MICT 180, the student should be able to:

1. Describe how to use assessment findings with principles of epidemiology, anatomy/physiology, and pathophysiology to formulate a field impression and develop a comprehensive treatment/disposition plan for acutely injured patients and behavioral health emergencies.
2. Integrate assessment findings with comprehensive knowledge of the causes and pathophysiology into the management of shock, respiratory failure/arrest in injured patients.
3. Recognize high-risk trauma patients and recommends appropriate strategies for evaluation and management of unstable patients including transport decisions.
4. Describe scene size-up, primary & secondary assessment, and reassessment of injured patients.
5. Define use of emergency medications in treatment of injured patients.
6. Demonstrate designated advanced life support skills in injured patients.
7. Identify cardiac arrhythmias associated with injured patients.

MICT 181 Clinical Paramedicine IV: ED and EMS Management of Trauma Patients (1)

A total of 40 clinical hours per semester

Corequisite(s): MICT 180.

Comment: Credit/no credit grading only. MICT 181 may not be audited. MICT 181 may not be taken for a letter grade. A current State of Hawai'i Emergency Medical Technician (EMT) License and American Heart Association (AHA) Basic Life Support (BLS) certification are required.

MICT 181 is the fourth of six clinical courses that provides hands-on skills experience in advanced life support at clinical facilities including major hospitals and metropolitan ambulances. In addition to clinical skills, students also refine their written, verbal and non-verbal communication skills. The students are integrated into a professional health care culture.

Upon successful completion of MICT 181, the student should be able to:

1. Integrate assessment findings with principles of epidemiology, anatomy/physiology, and pathophysiology to formulate a field impression and implement a comprehensive treatment/disposition plan for acutely injured patients and behavioral health emergencies.
2. Integrate assessment findings with comprehensive knowledge of the causes and pathophysiology into the management of shock, respiratory failure/arrest in injured patients.
3. Identify high-risk trauma patients and recommend strategies for evaluation and management of unstable patients including transport decisions.
4. Apply knowledge of scene size-up, primary and secondary assessment, and reassessment in injured patients.
5. Safely perform emergency medication administration in injured patients.
6. Perform designated advanced life support skills in injured patients.
7. Apply appropriate treatment modalities of cardiac arrhythmias in injured patients.

MICT 190 Paramedic Operations (1.75)

A total of 52.5 hours lecture/lab per semester

*Prerequisite(s): Acceptance into the Certificate of Achievement in Mobile Intensive Care Technician program **and** a grade of "C" or higher in ENG 100; **and** a grade of "C" or higher in MATH 103 **or** a grade of "C" or higher in MATH 115 **or** a grade of "C" or higher in MATH 135 **or** a grade of "C" or higher in MATH 140 **or** a grade of "C" or higher in MATH 205 **or** a grade of "C" or higher in MATH 241; **and** a grade of "C" or higher in HLTH 125; **and** a grade of "C" or higher in both BIOL 130 and BIOL 130L **or** a grade of "C" or higher in all PHYL 141 and PHYL 141L and PHYL 142 and PHYL 142L **or** a grade of "C" or higher in all ZOOL 141 and ZOOL 141L and ZOOL 142 and ZOOL 142L.*

Corequisite(s): MICT 191.

Comment: Letter grade only. MICT 190 may not be audited. MICT 152 may not be taken credit/no credit. A current State of Hawai'i Emergency Medical Technician (EMT) License and American Heart Association (AHA) Basic Life Support (BLS) certification are required.

MICT 190 is the fifth of six courses in the theory and laboratory practice of advanced life support knowledge and skills used in the assessment and treatment of patients in multiple casualty, Crime/Tactical scenes, and hazardous material conditions requiring prehospital emergency care. The course also will focus on extrication, ground and air ambulance operations, and quality improvement.

Upon successful completion of MICT 190, the student should be able to:

1. Describe how a comprehensive history and physical examination is used to identify factors affecting the health of an emergency patient.
2. Formulate a field impression based on an analysis of comprehensive assessment findings, anatomy, physiology, pathophysiology, and epidemiology.
3. Describe use of monitoring devices in the evaluation and management of patients of all ages.
4. Define principles of medical Incident Command Systems (ICS).
5. Prioritize evaluation and management of multiple patients and multiple casualty incidents.
6. Describe basic principles of Ground Ambulance EMS Operations, Crime/Tactical scene considerations, Hazardous Materials, and Quality Improvement in EMS.
7. Describe Air Ambulance operations and basic physiological effects of flight.
8. Demonstrate designated advanced life support skills in patients of all ages.
9. Describe sensitive communication strategies for patients of various ages, needs, or cultures.

MICT 191 Clinical Paramedicine V: Intensive Care Experience and Advanced EMS Applications (1.77)

A total of 80 clinical hours per semester

Corequisite(s): MICT 190.

Comment: Credit/no credit grading only. MICT 191 may not be audited. MICT 191 may not be taken for a letter grade. A current State of Hawai'i Emergency Medical Technician (EMT) License and American Heart Association (AHA) Basic Life Support (BLS) certification are required.

MICT 191 is the fifth of six clinical courses that provides hands-on skills experience in advanced life support at clinical facilities including major hospitals and metropolitan ambulances. In addition to clinical skills, students also refine their written, verbal and non-verbal communication skills. The students are integrated into a professional health care culture.

Upon successful completion of MICT 191, the student should be able to:

1. Perform a comprehensive history and physical examination to identify factors affecting the health and health needs of an emergency patient.
2. Formulate a field impression based on an analysis of comprehensive assessment findings, anatomy, physiology, pathophysiology, and epidemiology.
3. Integrate the use of monitoring devices in the evaluation and management of patients of all ages.
4. Demonstrate principles of medical Incident Command Systems (ICS).
5. Prioritize evaluation and management of multiple patients and multiple casualty incidents.
6. Apply basic principles of Ground Ambulance EMS Operations, Crime/Tactical scene considerations, Hazardous Materials, and Quality Improvement in EMS.
7. Describe Air Ambulance operations and basic physiological effects of flight.
8. Safely and effectively perform designated advanced life support skills in patients of all ages.
9. Demonstrate appropriate communication strategies for patients with respect to various ages, needs, or cultures.

MICT 203 Clinical Paramedicine VI: Comprehensive Application of EMS Skills (1.6)

A total of 72 clinical hours per semester

Corequisite(s): MICT 205.

Comment: Credit/no credit grading only. MICT 203 may not be audited. MICT 203 may not be taken for a letter grade. A current State of Hawai'i Emergency Medical Technician (EMT) License and American Heart Association (AHA) Basic Life Support (BLS) certification are required.

MICT 203 is the sixth and final clinical course that provides hands-on skills experience in advanced life support on metropolitan ambulances. In addition to clinical skills, students also refine their written, verbal and non-verbal communication skills. The students are integrated into a professional health care culture.

Upon successful completion of MICT 203, the student should be able to:

1. Integrate assessment findings with principles of epidemiology, anatomy/physiology, and pathophysiology to formulate a field impression and implement a comprehensive treatment/disposition plan for acutely ill or injured patients.
2. Apply critical-thinking, appropriate medical decision-making, and teamwork in the evaluation and management of patients.
3. Make appropriate decisions and adjustments as part of a treatment plan intended to mitigate the emergency, provide symptom relief, and improve the patient's overall health.
4. Recognize abnormal EKG findings and implement appropriate treatment.
5. Safely perform emergency medication administration.
6. Demonstrate use of appropriate communication techniques with team members and other healthcare professionals.
7. Perform the role of a team leader (as well as a team member) of an advanced life support emergency call and ensure the safety of the rescuers and others during an emergency.
8. Accurately report and document assessment findings and interventions.

MICT 205 Comprehensive Paramedicine (1.88)

A total of 56.5 hours lecture/lab per semester

Prerequisite(s): A grade of "B" or higher in MICT 190.

Corequisite(s): MICT 203.

Comment: Letter grade only. MICT 205 may not be audited. MICT 205 may not be taken credit/no credit. A current State of Hawai'i Emergency Medical Technician (EMT) License and American Heart Association (AHA) Basic Life Support (BLS) certification are required.

MICT 205 is the sixth and final course in the theory and laboratory practice of advanced life support knowledge and skills used in the assessment and treatment of adult and special population patients with medical and trauma conditions requiring prehospital emergency care. This course is the last didactic course before students move on to internship. It brings together the knowledge, skills, and experiences that have occurred in previous courses.

Upon successful completion of MICT 205, the student should be able to:

1. Integrate assessment findings with principles of epidemiology, anatomy/physiology, and pathophysiology to formulate a field impression and implement a comprehensive treatment/disposition plan for acutely ill or injured patients.
2. Integrate comprehensive knowledge of causes and pathophysiology into the management of cardiac arrest and peri-arrest states, shock, and respiratory failure/arrest.
3. Make appropriate decisions and adjustments as part of a treatment plan intended to mitigate the emergency, provide symptom relief, and improve the patient's overall health.
4. Demonstrate the role of a team leader (as well as a team member) of an advanced life support emergency call and ensure the safety of the rescuers and others during an emergency.
5. Apply critical-thinking, appropriate medical decision-making, and teamwork in the evaluation and management of patients.
6. Demonstrate proficiency in recognizing abnormal EKG findings and appropriate treatment.
7. Apply knowledge of pharmacologic principles, medication administration, and emergency medications.
8. Describe a basic history of EMS.
9. Demonstrate awareness of emerging topics in EMS.
10. Identify basic research principles used to interpret literature and advocate evidence-based practice.
11. Integrate fundamental knowledge of public health and epidemiology including public health emergencies, health promotion, and illness/injury prevention.
12. Describe basic legal and ethical principles and advanced directives.
13. Prioritize reporting and documenting assessment findings and interventions.
14. Describe end-of-life issues, and dealing with death and dying.

MICT 320 Paramedic Internship I (4.5)

A total of 202.5 clinical hours per semester

Prerequisite(s): Credit in MICT 151 and a grade of "B" or higher in MICT 152 and credit in MICT 161 and a grade of "B" or higher in MICT 162 and a grade of "B" or higher in MICT 170 and credit in MICT 171 and a grade of "B" or higher in MICT 180 and credit in MICT 181 and a grade of "B" or higher in MICT 190 and credit in MICT 191 and credit in MICT 203 and a grade of "B" or higher in MICT 205.

Comment: Credit/no credit grading only. MICT 320 may not be audited. MICT 320 may not be taken for a letter grade. A current State of Hawai'i Emergency Medical Technician (EMT) License and American Heart Association (AHA) Basic Life Support (BLS) certification are required.

MICT 320 provides the initial experience as a MICT intern on an advanced life support emergency ambulance. It is the first rotation of the required series of rotations. Each student is assigned one on one with a preceptor/mentor and monitored by an instructor.

Upon successful completion of MICT 320, the student should be able to:

1. The minimum expectation in this course/rotation is for the student to perform the following competencies regularly on single and multi-system calls with little or no prompting necessary.
 - a. Display professional behavior while interacting with patients, family, and other providers in a culturally sensitive manner.
 - b. Recognize critical (unstable airway, breathing, circulation, acute mental status change or other time-limited) situations.
 - c. Provide appropriate non-invasive treatment (as a minimum) for problems identified in the primary survey.
2. The minimum expectation in this course/rotation is for the student to perform the following competencies adequately at times but may frequently require significant intervention in key areas.
 - a. Identify complaint(s)/reason(s) for call; and obtain pertinent history in a timely manner, utilizing the best available sources of history.
 - b. Perform appropriate and timely physical exam relevant to the presenting symptoms; and recognize abnormal findings.
 - c. Analyze history and physical exam findings well and make appropriate decisions regarding treatment, extrication, disposition, timing, and resource utilization.
 - d. Perform necessary advanced life support procedures and psychomotor skills competently.
 - e. Perform verbal communications (e.g. radio reports) that are accurate, organized, concise, and received well by others, and written documentation that is accurate, organized, and thorough.
 - f. Demonstrate confidence as a team leader; and perform adequately under duress.

MICT 330 Paramedic Internship II (4.5)

A total of 202.5 clinical hours per semester

Prerequisite(s): Credit in MICT 320.

Comment: Credit/no credit grading only. MICT 330 may not be audited. MICT 330 may not be taken for a letter grade. A current State of Hawai'i Emergency Medical Technician (EMT) License and American Heart Association (AHA) Basic Life Support (BLS) certification are required.

MICT 330 is the second of four internship courses as a MICT intern on an advanced life support emergency ambulance. It is the second rotation of the required series of rotations. Each student is assigned one on one with a preceptor/mentor and monitored by an instructor.

Upon successful completion of MICT 330, the student should be able to:

1. The minimum expectation in this course/rotation is for the student to perform the following competencies regularly on single and multi-system calls with little or no prompting necessary.
 - a. Display professional behavior while interacting with patients, family, and other providers in a culturally sensitive manner.
 - b. Recognize critical (unstable airway, breathing, circulation, acute mental status change or other time-limited) situations.
 - c. Provide appropriate non-invasive treatment (as a minimum) for problems identified in the primary survey.
2. The minimum expectation in this course/rotation is for the student to perform the following competencies adequately on most cases with occasional prompting necessary.
 - a. Identify complaint(s)/reason(s) for call; and obtain pertinent history in a timely manner, utilizing the best available sources of history.
 - b. Perform appropriate and timely physical exam relevant to the presenting symptoms; and recognize abnormal findings.
3. The minimum expectation in this course/rotation is for the student to perform the following competencies adequately at times but may frequently require significant intervention in key areas.
 - a. Analyze history and physical exam findings well and make appropriate decisions regarding treatment, extrication, disposition, timing, and resource utilization.
 - b. Perform necessary advanced life support procedures and psychomotor skills competently.
 - c. Perform verbal communications (e.g. radio reports) that are accurate, organized, concise, and received well by others, and written documentation that is accurate, organized, and thorough.
 - d. Demonstrate confidence as a team leader; and perform adequately under duress.

MICT 340 Paramedic Internship III (4.5)

A total of 202.5 clinical hours per semester

Corequisite(s): MICT 330.

Comment: Credit/no credit grading only. MICT 340 may not be audited. MICT 340 may not be taken for a letter grade. A current State of Hawai'i Emergency Medical Technician (EMT) License and American Heart Association (AHA) Basic Life Support (BLS) certification are required.

MICT 340 is the third of four internship courses as a MICT intern on an advanced life support emergency ambulance. It is the third rotation of the required series of rotations. Each student is assigned one on one with a preceptor/mentor and monitored by an instructor.

Upon successful completion of MICT 340, the student should be able to:

1. The minimum expectation in this course/rotation is for the student to perform the following competencies regularly on single and multi-system calls with little or no prompting necessary.
 - a. Display professional behavior while interacting with patients, family, and other providers in a culturally sensitive manner.
 - b. Recognize critical (unstable airway, breathing, circulation, acute mental status change or other time-limited) situations.
 - c. Provide appropriate non-invasive treatment (as a minimum) for problems identified in the primary survey.
 - d. Identify complaint(s)/reason(s) for call; and obtain pertinent history in a timely manner, utilizing the best available sources of history.
 - e. Perform appropriate and timely physical exam relevant to the presenting symptoms; and recognize abnormal findings.
2. The minimum expectation in this course/rotation is for the student to perform the following competencies adequately on most cases with occasional prompting necessary.
 - a. Analyze history and physical exam findings well and make appropriate decisions regarding treatment, extrication, disposition, timing, and resource utilization.
 - b. Perform necessary advanced life support procedures and psychomotor skills competently.
 - c. Perform verbal communications (e.g. radio reports) that are accurate, organized, concise, and received well by others, and written documentation that is accurate, organized, and thorough.
 - d. Demonstrate confidence as a team leader; and perform adequately under duress.

MICT 360 Paramedic Internship IV (4.5)

A total of 202.5 clinical hours per semester

Corequisite(s): MICT 340.

Comment: Credit/no credit grading only. MICT 360 may not be audited. MICT 360 may not be taken for a letter grade. A current State of Hawai'i Emergency Medical Technician (EMT) License and American Heart Association (AHA) Basic Life Support (BLS) certification are required.

MICT 360 is the last of four internship courses as a MICT intern on an advanced life support emergency ambulance. It is the fourth rotation of the required series of rotations. Each student is assigned one-on-one with a preceptor/mentor and monitored by an instructor.

Upon successful completion of MICT 360, the student should be able to:

1. The minimum expectation in this course/rotation is for the student to perform the following competencies regularly on single and multi-system calls with little or no prompting necessary.
 - a. Display professional behavior while interacting with patients, family, and other providers in a culturally sensitive manner.
 - b. Recognize critical (unstable airway, breathing, circulation, acute mental status change or other time-limited) situations.
 - c. Provide appropriate non-invasive treatment (as a minimum) for problems identified in the primary survey.
 - d. Identify complaint(s)/reason(s) for call; and obtain pertinent history in a timely manner, utilizing the best available sources of history.
 - e. Perform appropriate and timely physical exam relevant to the presenting symptoms; and recognize abnormal findings.
 - f. Analyze history and physical exam findings well and make appropriate decisions regarding treatment, extrication, disposition, timing, and resource utilization.
 - g. Perform necessary advanced life support procedures and psychomotor skills competently.
 - h. Perform verbal communications (e.g. radio reports) that are accurate, organized, concise, and received well by others, and written documentation that is accurate, organized, and thorough.
 - i. Demonstrate confidence as a team leader; and perform adequately under duress.

MUSIC

MUS 106 Introduction to Music Literature (3) KCC AA/DH and KCC AS/AH

6 hours lecture/lab per week

MUS 106 introduces students to western music literature with an emphasis on developing listening skills. Through listening and classroom critiques and analysis, all types of music are surveyed from Gregorian Chant to contemporary genres. Attendance at three (3) varying concerts is required.

Upon successful completion of MUS 106, the student should be able to:

1. Identify masterpieces of classical music repertoire.
2. Distinguish the salient compositional characteristics between several stylistic periods in music/art history including representative composers from each period that help place unfamiliar repertoire into familiar periods.
3. Contrast/compare music of any type (i.e. classical, ethnic, popular, seasonal) for texture, rhythm, form, melodic contour, harmonic orientation and time of composition.
4. Contrast/compare the live performances seen during the semester.
5. Define the elements that make up classical performance tradition and etiquette.

MUS 107 Music in World Cultures (3) KCC AA/FGC and KCC AS/AH

3 hours lecture per week

MUS 107 is an introduction to the field of ethnomusicology in which historical, religious, social, and political aspects of society are studied in relationship to its music traditions and culture. In addition to these aspects, the musical elements of each culture are analyzed for the types of instruments, form/structure, context, activities, and music aesthetics.

Upon successful completion of MUS 107, the student should be able to:

1. Describe the role of music in the different cultures of Asia, Southeast Asia, Africa and the Americas.
2. Describe the distinctive aural features and music aesthetics of a music culture.
3. Describe the historical, religious, social and political aspects of a society that contribute to the development of a music culture.
4. Identify the areas of those music cultures studied.
5. Describe the validity of other music traditions.

6. Contrast/compare your own music traditions within the broader context of other music traditions.

MUS 108 Fundamentals of Western Music (3) KCC AA/DA and KCC AS/AH

3 hours lecture per week

MUS 108 enables students to learn how to read and write music. Notational principles will be learned as a mode of communication. The roles of the composer, performer, and listener will be explored.

Upon successful completion of MUS 108, the student should be able to:

1. Identify and write the basic components of Western music notation: major, minor, and chromatic scales, key signatures, intervals, chords and chord symbols, and chord progressions using primary chords I, IV, and V7.
2. Notate and read basic melodic and rhythmic patterns in both simple and compound meters.
3. Write lyrics that correspond appropriately to natural accents of rhythmic values and patterns studied in class.
4. Write examples of possible basic harmonization for simple melodies.
5. Define the roles of composer, performer, and listener.
6. Identify aurally those melodic intervals studied in class.
7. Write major and minor triads in root position from any given note.
8. Play the piano functionally: play basic scales and arpeggios, chords and chord progressions, and beginning-level pieces studied in class.
9. Compose a short song in lead-sheet format, and perform it for the class.

MUS 114 College Chorus (2) KCC AA/DA

4 hours lecture/lab per week

Comment: MUS 114 is repeatable for a maximum of six credits.

MUS 114 is a performance-orientated course for all students interested in singing in a large ensemble. The selected repertoire is drawn from a range of classical, popular (jazz, musical theatre), and Polynesian/ethnic choral literature. Rehearsal and performing practices as well as basic music reading are included in the course of study. An extra-curricular concert is scheduled at the end of the semester. Previous choral experience is not required.

Upon successful completion of MUS 114, the student should be able to:

1. Interpret and perform basic rhythmic and sight-reading skills.
2. Apply the principles of ensemble singing through rehearsals and performances.
3. Perform the chosen repertoire with stylistic and musical accuracy, and musicality.
4. Identify and resolve the problems of performance in a variety of physical settings.
5. Apply performance etiquette.

MUS 121B Voice I (2) KCC AA/DA

1 hour lecture, 2 hours lecture/lab per week.

Prerequisite(s): Ability to carry a tune on pitch.

MUS 121B introduces solo singing skills. Concepts and skills introduced in the class include proper breath control and support, developing and discovering vocal production and potential, basic musicianship, song interpretation, and the basic principles of performing.

Upon successful completion of MUS 121B, the student should be able to:

1. Apply the principles of tone production, efficient utilization of the breathing apparatus, posture and body awareness,
2. Identify the vocal and music requirements in singing classical repertoire.
3. Perform a series of vocal solos applying the vocal techniques/concepts demonstrated in class.
4. Recognize basic music notation.
5. Demonstrate performance etiquette as a performer and an audience member.

MUS 121C Piano I (2)

4 hours lecture/lab per week

Comment: MUS 121C is repeatable for a maximum of four credits.

MUS 121C introduces concepts of learning how to play the piano, and is the first of a multi-course/multi-path sequence. Music reading, technique and basic principles of performance will be explored.

Upon successful completion of MUS 121C, the student should be able to:

1. Identify music terminology and major key signatures.
2. Play major scales, arpeggios and chords.

3. Play first-level literature with proper technique.
4. Analyze music and music performance.

MUS 121D Guitar 1 (2) KCC AA/DA

1 hour lecture, 2 hours lecture/lab per week

Comment: MUS 121D is repeatable for a maximum of four credits. MUS 121D may not be audited. Each student must supply their own acoustic guitar (classical or steel string).

MUS 121D introduces the student to the basic principles of playing the acoustic guitar. The course provides a comprehensive study of the rudiments of music, guitar notations, finger style techniques, small ensemble literature, solo playing and accompaniment style playing. In-class practices and lectures involve developing a practice routine to prepare for the performance aspects of the course. At the end of the semester, students will select a song and performance style sharing the music making experience with an end-of-semester public recital.

Upon successful completion of MUS 121D, the student should be able to:

1. Tune the guitar properly using the relative tuning method.
2. Produce good tone and sound projection with proper left-hand and right-hand mechanics.
3. Read, write, and play the basic rudiments of music.
4. Read, write, and perform from modern staff notation and popular chord notation.
5. Discern and critique various style interpretations.
6. Show basic playing skills: right-hand picking techniques, chord progressions, major and minor scales, arpeggios, etudes/song exercises.
7. Perform elementary solo pieces, singing with accompaniment style playing, and ensemble literature in a public recital.

MUS 121Z 'Ukulele 1 (2) KCC AA/DA

1 hour lecture, 2 hours lecture/lab per week

Comment: MUS 121Z is repeatable for a maximum of four credits.

MUS 121Z introduces the student to the basic principles of playing the 'ukulele. Concepts and skills introduced in the class include: basic musicianship, tuning, chord identification and progressions, basic strumming techniques, and the principles of accompanying and performing.

Upon successful completion of MUS 121Z, the student should be able to:

1. Tune their own instruments properly using the tuning by ear method.
2. Play the basic chord progressions.
3. Clap, write, and count aloud various rhythmic patterns.
4. Identify and perform basic strumming techniques.
5. Identify and perform basic strumming patterns.
6. Locate and name the notes on the fretboard.
7. Read and perform from 3 forms of notation for the 'ukulele (modern staff notation, chord notation and tablature).
8. Perform major and minor scales.
9. Identify and perform standard Hawaiian repertoire specifically written for the 'ukulele.
10. Select, modify, and perform music of other genres to the 'ukulele.
11. Examine the importance of the 'ukulele in the Hawaiian music culture and island history.

MUS 122B Voice II (2)

1 hour lecture, 2 hours lecture/lab per week

Prerequisite(s): A grade of "C" or higher in MUS 121B or consent of instructor.

MUS 122B is the second of a three-semester sequence in learning solo singing skills as a class. Four vocal styles (classical, jazz, ethnic, and country western) are explored and studied to experience the different vocal and musical skills required for each genre. Performances of each style are required.

Upon successful completion of MUS 122B, the student should be able to:

1. Identify and distinguish between various vocal styles and musical terms, and levels of musicianship.
2. Identify the origin and development of ethnic vocal music studied.
3. Give examples of intermediate level vocal techniques: diction, tone production, and breath control through actual performances and in descriptive writing.
4. Sing at an intermediate level solo vocal literature in a public recital.
5. Identify the different modes of accompaniment for all the vocal styles studied.

MUS 122Z 'Ukulele II (2) KCC AA/DA and AS/AH

1 hour lecture, 2 hours lecture/lab per week

Prerequisite(s): MUS 121Z with a grade of "C" or higher.

MUS122Z is a continuation of MUS121Z. The course places increased emphasis on note reading and standard notation. Students utilize music theory knowledge for arranging and harmonizing melodies. Development and expansion of 'ukulele techniques.

Upon successful completion of MUS 122Z, the student should be able to:

1. Read and utilize standard notation.
2. Harmonize and arrange melodies.
3. Play in an ensemble setting.
4. Play solo literature utilizing fingerpicking techniques.

MUS 170 Music as Therapy (3) KCC AA/DH and KCC AS/AH

3 hours lecture per week

MUS 170 is an introductory course in understanding music as a therapeutic tool, both as an arts therapy profession, and as a process integrated into other health care fields. Students will explore the diverse applications and approaches to the therapeutic power of music, personally, professionally, clinically, scientifically, experientially and educationally. The course will include extensive media, weekly readings, weekly discussion posts, module quizzes, final exam and final project.

Upon successful completion of MUS 170, the student should be able to:

1. Identify the nature of music therapy and its role in health care.
2. Identify and describe the variety of populations served by music therapy and other related music fields.
3. Describe and interpret the human responses to music.
4. Describe the pathways of music between different parts of the brain and the human response to music.
5. Identify and interpret the historical development of music and sound therapy.
6. Define basic terminology used in music therapy and related creative arts therapy fields.
7. Discuss basic musical skills (instrumentally and vocally) applicable for therapeutic purposes.

MUS 183 Ear-provisation: Piano by Ear (2) KCC AA/DA Spring

4 hours lecture/lab per week

Prerequisite(s): MUS 121C or consent of instructor.

Recommended Preparation: MUS 108.

Comment: MUS 183 is repeatable for a maximum of six credits. MUS 183 is offered in the Spring semester only.

MUS 183 is designed to teach students the rudiments of how to play the piano by ear, as well as learn the basics for improvisation at the keyboard. These two main goals will be achieved by exploring how to listen strategically and respond to cues. Developing recognition of melodic distances (intervals) and patterns, rhythmic patterns, chord structure, root movement of bass line (by step, by 3rd, by 4th), articulation (variation in touch) styles, dynamic contrast, a variety of standard musical forms, logical fingering principles, and issues in pedaling will be studied both aurally and experientially at the keyboard. The main focus will be on developing a "seeing" ear (rather than seeing music and then reading it/ playing it). Five-finger positions, major/ minor scales and arpeggios, chromatic scale, whole tone scale, pentatonic scales, key signatures (identifying and building), and triads vs. suspended / 7th / 9th / 11th/ 13th chords will be covered, as well as the exploration of artistic gesture and sharing music with/ relating to an audience. This course focuses on developing a new skill set for "readers" of music, thus enhancing the enjoyment of playing the piano for personal satisfaction, increased self-esteem, and pleasure.

Upon successful completion of MUS 183, the student should be able to:

1. Play opening song motifs in at least three different keys for each interval studied (both ascending and descending forms) within an octave, for greater learning retention.
2. Play, identify aurally, and accurately transcribe intervals within an octave (given the starting note, in both ascending and descending forms).
3. Tap back and accurately transcribe short rhythmic patterns in both simple (2/4, 3/4, and 4/4) and in compound (6/8, 9/8, and 12/8) meters.
4. Play/accurately transcribe simple melodies (given a starting pitch) including rhythm used.
5. Playbacks: at the keyboard, play a series of melodic patterns that the instructor will highlight, demonstrate, and drill in class.
6. Sing (as a group) simple melodies demonstrated, with rhythm attached.
7. Demonstrate and apply basic music theoretical components of Western Music notation: play major, minor, chromatic, whole tone, pentatonic scales, and blues scale; identify and build major key signatures, and relate to minor keys; play a variety of chords and chord progressions, and demonstrate ability to write chord symbols accurately.
8. Demonstrate ability to differentiate aurally between major, minor, and diminished chords, as well as begin to differentiate between augmented, sus2 vs. sus4, and 7th chords.
9. Improvise to various rhythmic and melodic patterns given in class.
10. Transcribe or creatively notate/color-map, and play/perform two short solo (individual) projects by ear: the midterm project

will be a minimum of eight measures in chosen meter, while the final project will be a minimum of sixteen measures in chosen meter.

11. Play by ear and creatively notate an assigned portion of final group project, and perform it with the class.

MUS 201 Vocal Ensemble (2) KCC AA/DA Spring

1 hour lecture, 2 hours lecture/lab per week

Prerequisite(s): MUS 114 or both previous choral experience and audition or consent of instructor.

Recommended Preparation: Ability to sight-sing is helpful, but not required.

Comment: MUS 201 is repeatable for a maximum of six credits. MUS 201 is offered in the Spring semester only.

MUS 201 is a performance-oriented course for all students interested in singing in a small ensemble. The selected repertoire is drawn from a range of classical, popular (jazz, musical theatre), and Polynesian/ethnic choral literature. An extra-curricular concert is scheduled at the end of the semester. Previous choral experience is helpful but not required.

Upon successful completion of MUS 201, the student should be able to:

1. Identify and give examples of the repertoire presented.
2. Give examples of a more advanced knowledge of basic vocal technique.
3. Identify and list the problems of performance encountered in a variety of physical settings.
4. Give examples of performance etiquette, including behavior expectations prior to and after performances.
5. Perform at a more advanced level of ensemble singing in terms of musicianship and performance practice.

MUS 206 Synthesizer Ensemble (3) KCC AA/DA

6 hours lecture/lab per week

Prerequisite(s): MUS 121C or an equivalent piano course; and ability to read music in both the treble and the bass clef.

Recommended Preparation: Two years of piano experience and some knowledge of synthesizers.

Comment: Need Personal headset with a quarter-inch adapter, a one-inch/3-ring black binder with clear plastic front, and a pencil with an eraser. MUS 206 is repeatable for a maximum of six credits.

MUS 206 offers rehearsals and performances of the Synthesizer Ensemble, and utilizes an assortment of computerized synthesizers. Students are exposed to classical, pop, jazz, new age, and contemporary music, with a focus on the dichotomy of classical repertoire infused with contemporary synthesized techniques and patches in variation form. For the spring semester, students perform a mixture of classical, popular, jazz, and international music. This is a solo and ensemble class: each student will work on at least one piano/keyboard solo, as well a majority of ensemble selections, to be performed at the 3-5 performances toward the end of the semester. Student must preferably have own equipment.

Upon successful completion of MUS 206, the student should be able to:

1. Demonstrate skill in various techniques of playing the synthesizer: smooth patch changes; use of legato touch when playing string patches, and use of mod wheel to achieve vibrato effect for wind instrumental sounds, etc.
2. Demonstrate knowledge of patch strengths/ weaknesses among the various synthesizers in performance set-up, for optimal sound capabilities and comparisons: be able to easily find acoustic piano, electric piano, digital bell, warm strings, mellow brass, harp, percussion, and other commonly-used patches on each keyboard.
3. Demonstrate ability to shape dynamics and phrasing through strategic control of volume slider on keyboard(s), thus enhancing ensemble performance.
4. Perform at least one contemporary keyboard solo by memory, using pitch and/ or modulation wheels.
5. Contribute at least one musical aspect or part for the ensemble's international concert variations, incorporating styles of music ranging from classical to contemporary.
6. Work on at least one individual part by ear from CDs, mp3 recordings, and/or YouTube videos, to contribute to and enhance the spring concert music.
7. Demonstrate skills in teamwork as part of the ensemble: setting up equipment together, breaking down equipment after rehearsals/ performances.

MUS 229 Musical Theatre: Song and Dance (3)

2 hours lecture, 2 hours lecture/lab per week

Prerequisite(s): Ability to pass audition by singing in tune and/or exhibiting basic dance technique; or consent of instructor.

Recommended Preparation: MUS 121B or DNCE 131 or THEA 101.

Comment: MUS 229 is repeatable for a maximum of six credits. MUS 229 may not be audited. MUS 229 is offered in the Fall semester only.

MUS 229 is a vocal and dance course that focuses on the musical theatre genre. Topics explored in this course include the history of musical theatre, the development and tradition of song and dance, standard musical theatre repertoire, and the necessary preparation for staging a musical production. Activities include song and character analysis as well as basic choreography used in this genre.

Upon successful completion of MUS 229, the student should be able to:

1. Exhibit full range, accurate intonation, clarity in diction, and good tone production using proper vocal techniques in coordination with basic dance skills.
2. Perform at a competent level of musicianship (sing correct pitches, rhythms, the ability to read general musical notation).

3. Perform at a competent level of body awareness necessary for good vocal tone production and basic dance movements (alignment, coordination, strength, and flexibility).
4. Identify notable composers/lyricists and choreographers and their contribution to the musical theatre genre.
5. Identify signature musical theatre repertoire from a historical perspective.
6. Identify basic dance vocabulary used in musical theatre auditions and choreography.
7. Fundamentally master basic technique in a variety of styles of dance commonly utilized in musical theatre choreography.
8. Recognize music, dance and drama as an interdisciplinary art form.
9. Exhibit organizational skills necessary for musical theatre (scheduling, time management).
10. Project appropriate performance energy to express and evoke emotion and meaning for the audience.

MUS 231C Applied Music, Western (Piano) (1)

30 minutes individual session per week, 1.5 hours master class recital performances every three weeks

Prerequisite(s): MUS 121C and minimum one year of piano lessons (but preferably 5-10 years of piano lessons/experience) and audition/interview and consent of instructor.

Comment: MUS 231C is repeatable for a maximum of six credits. MUS 231C may not be audited.

MUS231C provides individual instruction in piano performance, covering intermediate and advanced piano technique paced to an appropriate level for each student's experience. Applied piano instruction is essentially a performance class. The emphasis will be toward developing piano technique that has clarity, flexibility, dynamic intensity, and sensitivity of phrasing for expressive musicianship through increasingly more confident and skillful performances. Pedaling, theory, sight-reading, and learning/ practicing/ memorization/ performing techniques will also be covered.

Upon successful completion of MUS 231C, the student should be able to:

1. Play piano literature from Two-Part Inventions, and Preludes and Fugues from the WTC Vol. 1 and 2, by J. S. Bach; first movements of a sonata by Haydn, Mozart, and/ or Beethoven; two compositions by a Romantic and/ or Impressionistic composer (these could include music by Chopin, Rachmaninoff, Schubert, Scriabin, Debussy, for example); and at least one composition by a Contemporary composer (these could include music by Bartok, for example, as well as living composers in this century).
2. Learn how to create, then draw colormaps (five) for each composition performed, enabling more secure memorization through the use of color to highlight music motifs and repetitive elements. This is especially important for contemporary (Bartok) repertoire.
3. Show development of confidence in performance skills, through performing with obvious enjoyment at music discipline repertoire recitals, thus enabling the communication of music as a language that is pleasurable to "speak" to others.
4. Play Major and harmonic minor scales and arpeggios, four octaves, hands together, M.M. 92 to the quarter note, as well as play Major and minor triad progressions beginning in root position.

MUS 253 Elementary Music in Action (3) KCC AA/DA

3 hours lecture per week

Comment: Letter grade only. MUS 253 may not be audited. MUS 253 may not be taken credit/no credit.

MUS 253 focuses on musical concepts, philosophy and pedagogy. This class uses media, singing, movement, instruments and other resources to create an active elementary music classroom.

Upon successful completion of MUS 253 the student should be able to:

1. Describe a level of comprehension of the biological, cognitive, social, and musical characteristics of children from six through twelve years of age
2. Use knowledge of human behavior drawn from the foundations of psychology, such as Gardner's multiple intelligences and brain, research, which provide support for the importance of the early years in musical development.
3. Develop a repertoire of materials including music of the world: Hawaiian, Far East: Chinese & Japanese, Native Americans & North-American - Appalachians.
4. Identify a basic understanding of technology use for instructional and organizational applications in elementary music teaching.
5. Demonstrate skills and competency levels in reading simple notations, singing solfege with hand signs and chanting with rhythmic syllables.
6. Demonstrate skills and competency levels in playing 'ukulele.
7. Demonstrate skills and competency levels when modeling activities such as singing, movement, listening, reading music, and playing classroom instruments (pitched and non-pitched) for elementary school children.
8. Perform quality music literature and activities to effectively teach elementary school children.
9. Demonstrate effective lesson planning, utilize sequential patterns of instruction and provide effective delivery and pacing in teaching elementary school children.
10. Demonstrate the ability to read and write in journals expressing affirmations and transformations as well as reflections on personal development as teachers.

MUS 290 Contemporary Music of Asia & Oceania (3) KCC AA/DH and AS/AH

3 hours lecture per week

Recommended Preparation: ENG 100 or ESL 100.

Comment: Letter grade and credit/no credit only. MUS 290 may not be audited.

MUS 290 offers an in-depth study of the contemporary musical cultures of Asia and Oceania. We will use contemporary music as a way to analyze contemporary issues related to politics, gender, environment, spirituality and globalization. This class is designed to enhance students' cross-cultural understanding through service learning, a teaching and learning method that integrates critical thinking and meaningful service in the community with academic learning, personal growth, and civic responsibility.

Upon successful completion of MUS 290, the student should be able to:

1. Explain orally and in writing the distinctive aural features of music in Asia and Oceania.
2. Analyze how music reflects historical, social, political and environmental aspects of Asia and Oceania.
3. Communicate effectively in both writing and speaking when evaluating service learning activities.
4. Apply orally and in writing critical thinking skills related to course content and service-learning experiences.