

# School of Health Professions

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Graduation requirements and regulations for every academic program are provided in this catalog; however, this catalog is for informational purposes only and does not constitute a contract. Degree and program requirements and course descriptions are subject to change.

Located on the KU Medical Center campus in Kansas City, Kansas, the KU School of Health Professions (<http://healthprofessions.kumc.edu>) offers more than 30 academic programs and prepares students for careers in health care, research and leadership.

Undergraduate and graduate degree programs are available, as well as several certificate programs. Admission and degree requirements vary by program.

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## Advising

It is strongly recommended for students to seek advising from their academic program of interest as soon as possible in their collegiate study. Please refer to the specific academic program for appropriate contact information and advising availability.

To connect with a program in the school, please contact Alex Lopez, outreach and recruitment specialist, at [alopez12@kumc.edu](mailto:alopez12@kumc.edu) or 913-588-1743 (711 TTY)

### Clinical Laboratory Sciences (<https://catalog.ku.edu/health-professions/clinical-laboratory-sciences/>)

Bachelor of Science in Clinical Laboratory Science (<https://catalog.ku.edu/health-professions/clinical-laboratory-sciences/bs/>)  
Master of Science in Genetic Counseling (<https://catalog.ku.edu/health-professions/clinical-laboratory-sciences/genetic-counseling-ms/>)  
Doctor of Clinical Laboratory Science (<https://catalog.ku.edu/health-professions/clinical-laboratory-sciences/dcls/>)

### Dietetics and Nutrition (<https://catalog.ku.edu/health-professions/dietetics-nutrition/>)

Dietetic Internship Graduate Certificate (<https://catalog.ku.edu/health-professions/dietetics-nutrition/certificate/>)  
Dietetics and Integrative Medicine Graduate Certificate (<https://catalog.ku.edu/health-professions/dietetics-nutrition/integrative-med-certificate/>)  
Master of Science in Dietetics and Nutrition (<https://catalog.ku.edu/health-professions/dietetics-nutrition/ms/>)  
Master of Science Great Plains IDEA Program (<https://catalog.ku.edu/health-professions/dietetics-nutrition/ms/greatplains/>)  
Doctor of Clinical Nutrition (<https://catalog.ku.edu/health-professions/dietetics-nutrition/clinical-nutrition-doctorate/>)  
Doctor of Philosophy in Medical Nutrition Science (<https://catalog.ku.edu/health-professions/dietetics-nutrition/phd/>)  
Master of Science in Health Informatics (<https://catalog.ku.edu/nursing/ms-health-informatics/>)  
Health Informatics Post-Graduate Certificate (<https://catalog.ku.edu/medicalcentercampusinterdisciplinarystudies/healthinfogradcert/>)  
Bachelor of Science in Health Information Management (<https://catalog.ku.edu/health-professions/health-information-management/bs/>)

### Health Informatics (<https://catalog.ku.edu/nursing/>)

### Health Information Management (<https://catalog.ku.edu/health-professions/health-information-management/>)

Minor in Digital Health (<https://catalog.ku.edu/health-professions/health-information-management/digital-health-minor/>)  
Minor in Healthcare Management (<https://catalog.ku.edu/health-professions/health-information-management/healthcare-management-minor/>)

**Hearing and Speech (<https://catalog.ku.edu/liberal-arts-sciences/speech-language-hearing/>)**

Master of Arts in Speech-Language Pathology (<https://catalog.ku.edu/liberal-arts-sciences/speech-language-hearing/ma/>)

Doctor of Audiology (<https://catalog.ku.edu/health-professions/audiology-speech-language-pathology/aud/>)

Doctor of Philosophy in Speech-Language Pathology or Audiology (<https://catalog.ku.edu/liberal-arts-sciences/speech-language-hearing/phd/>)

Doctor of Speech-Language Pathology (<https://catalog.ku.edu/health-professions/audiology-speech-language-pathology/slpd/>)

**Nurse Anesthesia (<https://catalog.ku.edu/health-professions/nurse-anesthesia/>)**

Doctor of Nurse Anesthesia Practice (<https://catalog.ku.edu/health-professions/nurse-anesthesia/dnap/>)

**Occupational Therapy (<https://catalog.ku.edu/health-professions/occupational-therapy/>)**

Doctor of Occupational Therapy (Entry-Level) (<https://catalog.ku.edu/health-professions/occupational-therapy/otd-entry-level/>)

Doctor of Occupational Therapy (Post-Professional) (<https://catalog.ku.edu/health-professions/occupational-therapy/otd/>)

**Physical Therapy, Rehabilitation Science, and Athletic Training (<https://catalog.ku.edu/health-professions/physical-therapy-rehabilitation-science/>)**

Master of Science in Athletic Training (<https://catalog.ku.edu/health-professions/physical-therapy-rehabilitation-science/mat/>)

Doctor of Physical Therapy (<https://catalog.ku.edu/health-professions/physical-therapy-rehabilitation-science/dpt/>)

Doctor of Philosophy in Rehabilitation Science (<https://catalog.ku.edu/health-professions/physical-therapy-rehabilitation-science/phd/>)

**Respiratory Care and Diagnostic Science (<https://catalog.ku.edu/health-professions/respiratory-care/>)**

Bachelor of Science in Respiratory Care (<https://catalog.ku.edu/health-professions/respiratory-care/bs/>)

Certificate in Cardiovascular Sonography (<https://catalog.ku.edu/health-professions/respiratory-care/cardiovascular-sonography-cert/>)

Certificate in Diagnostic Ultrasound Technology (General and Vascular) (<https://catalog.ku.edu/health-professions/respiratory-care/diagnostic-ultrasound-technology-cert/>)

Certificate in Nuclear Medicine Technology (<https://catalog.ku.edu/health-professions/respiratory-care/nuclear-medicine-technology-cert/>)

**Therapeutic Science (<https://catalog.ku.edu/health-professions/therapeutic-science/>)**

Doctor of Philosophy in Therapeutic Science (<https://catalog.ku.edu/health-professions/therapeutic-science/phd/>)

The Office of Graduate Studies at KU Medical Center reviews and approves matters related to graduate study including admission, coursework and degree requirements. Each college or school at the University of Kansas has a graduate division reporting to KU Lawrence Graduate Studies. The Office of Graduate Studies (<http://www.kumc.edu/academic-affairs/graduate-studies.html>) serves as the graduate division for the schools located on the medical center campus.

Students do not enter programs in the School of Health Professions before the junior year of college. Some programs require an associate's or bachelor's degree in a specific field prior to beginning course work. All have specific prerequisites and minimum grade-point averages for collegiate course work.

Bachelor's degrees are available in the following fields:

- Clinical laboratory science
- Health information management
- Respiratory care

In addition, the following certificate programs at the undergraduate level are available:

- Cardiovascular sonography
- Diagnostic ultrasound technology (general and vascular)
- Nuclear medicine technology

## University Honors Program

The school encourages qualified students to participate in the University Honors Program (<http://www.honors.ku.edu/>).

The School of Health Professions offers graduate programs in the fields of dietetics and nutrition, molecular biotechnology, nurse anesthesia, occupational therapy, physical therapy, rehabilitation science, and therapeutic science. In addition, programs in audiology and speech-language pathology are offered cooperatively with the Lawrence campus via the Intercampus Program in Communicative Disorders.

Basic admission requirements are listed in the Graduate Studies (<https://catalog.ku.edu/graduate-studies/>) section of the online catalog; however, individual graduate programs have specific additional requirements.

The School of Health Professions (p. 1) offers the following graduate degrees:

- Master of Arts
- Master of Science
- Doctor of Audiology
- Doctor of Clinical Laboratory Science
- Doctor of Nurse Anesthesia Practice
- Doctor of Occupational Therapy
- Doctor of Physical Therapy

- Doctor of Philosophy
- Doctor of Speech-Language Pathology

Two certificate programs are available at the graduate level:

- Dietetic internship
- Dietetics and integrative medicine

For information about university regulations, see Regulations (<https://catalog.ku.edu/regulations/>) or visit the University of Kansas Policy Library (<http://www.policy.ku.edu/>). All students in the School of Health Professions are required to follow and abide by policies stated in the KU School of Health Professions student handbook (<https://www.kumc.edu/school-of-health-professions/academics/student-handbook.html>) as well as those defined in the handbook of the student's academic program.

## Undergraduate Regulations

### Credit/No Credit

A Credit/No Credit option is available to all degree-seeking undergraduates. Students may enroll in one course each semester under the option, if the course is not in the student's major or minor. For more information, visit the KU Policy Library (<http://policy.ku.edu/>).

**Warning:** *Certain undesirable consequences may result from exercising the option. Some schools, scholarship committees, and honorary societies do not accept this grading system and convert grades of No Credit to "F" when computing grade-point averages.*

Check with the department before electing the Credit/No Credit option because most programs will NOT accept this designation for prerequisite courses.

### Grading

The departments of Clinical Laboratory Sciences, Health Information Management, and Respiratory Care recognize only grades of A, B, or C as passing. Grades of D and F are not considered passing for the purpose of advancing in the curriculum.

## Graduation with Distinction and Highest Distinction

The School of Health Professions awards the Highest Distinction honor to undergraduates having achieved the highest grade-point average among the programs in the school upon graduation. Distinction honors are bestowed upon those with the next highest final grade-point average. The total number of these two categories combined may exceed ten percent of that year's graduating class.

### Honor Roll

Students with grade-point averages of 3.5 having completed at least 12 hours with letter grades are recognized on the honor roll or dean's list in fall and spring. An honor roll notation appears on the transcript.

### Transfer of Credit

Only transfer grades of C or higher apply toward graduation from the School of Health Professions. Not all programs in the school accept transfer students. Please check with the appropriate program for full eligibility requirements.

CredTran (<http://creditransfer.ku.edu/>) is a transfer course equivalency system listing more than 2,200 colleges and universities from which KU

has accepted transfer courses in the past. If your school or course is not listed, the student's evaluation will be completed after admittance to KU.

## Graduate Regulations

Programs at the graduate level follow policies administered by the Office of Graduate Studies (<https://catalog.ku.edu/graduate-studies/kumc/#regulationstext>) in addition to those indicated in the KU School of Health Professions student handbook (<https://www.kumc.edu/school-of-health-professions/academics/student-handbook.html>) as well as those detailed in the handbook of the student's specific academic program.

### Credit/No Credit

Graduate students may select the Credit/No Credit option for certain courses. Students should follow the policy outlined in the University Senate Rules and Regulations, Section 2, article 2.27, and contact the department or program for more information.

## Anatomy and Cell Biology Courses

### ANTM 380. Special Topics In Anatomy. 1-5 Credits.

Advanced instruction is offered in the form of tutorials for a limited number of undergraduate students with prior experience in anatomical sciences. The emphasis of the course will be advanced study of a specific area of gross anatomy, neuroanatomy, or histology. In gross anatomy and neuroanatomy, students will do a complete, detailed dissection of a specific area of the body and present it to the faculty with a term paper on a clinically significant aspect of the dissection. In histology, students will prepare specific organs for special histological and immunocytochemical techniques with an oral presentation and term paper. Prerequisite: Permission of instructor.

## Clinical Lab Sciences Courses

### CLS 210. Introduction to Clinical Laboratory Sciences. 1 Credits.

An introductory overview of the professions of Clinical Laboratory Sciences including types of analyses performed, specialties, interrelationships in the health care system and a visit to a clinical laboratory. This course will enable those considering a major in the Clinical Laboratory Sciences to have a clear definition of the professions. (Same as BIOL 210.)

### CLS 520. Phlebotomy. 1 Credits.

Principles and practice of collecting blood specimens for clinical laboratory analyses. Includes specimen identification, equipment, anticoagulants, safety precautions, specimen transport, and processing. Hepatitis immunization required. Prerequisite: Admission to the Clinical Laboratory Science Program or consent of instructor.

### CLS 523. Fundamentals of Analytical Techniques Laboratory. 3 Credits.

This course, including lecture, recitation, and laboratory provides theory and hands-on practice of basic laboratory skills. Laboratory exercises include enhancement of skills needed for reagent preparation, pipetting of reagents and specimen, and test performance using a variety of assays (spectrophotometry, urinalysis etc.). Following the accurate collection of data in each experiment, students will analyze and interpret data applying the appropriate analytic/statistical tools, evaluate results for validity, and justify their conclusions. The theory underlying accuracy and precision in laboratory testing (quality control and quality assurance) will be included. Basic laboratory mathematics, method validation, and problem-solving

strategies will be emphasized. Prerequisite: Admission to the Clinical Laboratory Sciences program or consent of the instructor.

**CLS 530. Clinical Chemistry I. 3 Credits.**

Introduction to human physiology and pathophysiology I with emphasis on proteins, carbohydrates, lipids, enzymes, liver & kidney function, blood gases and body fluids. The related clinical chemistry tests, their principles, analysis, interpretation, and significance are included. Prerequisite: Admission to the Clinical Laboratory Sciences program or consent of the instructor.

**CLS 531. Clinical Chemistry, Urinalysis, and Body Fluids Laboratory. 2 Credits.**

This course, including laboratory and recitation, provides theory and hands-on practice of advanced laboratory skills. Laboratory exercises include enhancement of skills needed for reagent preparation, pipetting of reagents and specimen, and test performance using a variety of assays (spectrophotometry, electrophoresis, urinalysis, etc.). Following the accurate collection of data in each laboratory, students will analyze and interpret data applying the appropriate analytic/statistical tools, evaluate results for validity, and justify their conclusions. Theoretical and applied concepts related to the formation, collection, processing, and evaluation of urine and body fluids are included. This course also includes the study of chemical, physical, and microscopic properties of urine and body fluids, and the correlation of findings with normal characteristics, abnormalities, and disease. Prerequisite: Admission to the Clinical Laboratory Science program and completion of CLS 539 with a grade of C or higher.

**CLS 532. Clinical Microbiology I. 3 Credits.**

Medically important bacteria that may be isolated from patient specimens. Topics in each area include pathophysiology of diseases caused by these organism, laboratory diagnosis and identification of organisms, and clinical correlation case studies. Other areas of study include sterilization and disinfection procedures, epidemiology, antimicrobial susceptibility testing, and quality control and quality assurance. Prerequisite: Admission to the Clinical Laboratory Sciences program or consent of the instructor.

**CLS 533. Clinical Microbiology I Laboratory. 2 Credits.**

A laboratory with recitation addressing diagnostic procedures used for isolation and identification of clinically significant bacteria. Prerequisite: CLS 532 or CLS 532 concurrently, or consent of the instructor.

**CLS 536. Hematology I. 3 Credits.**

Fundamentals of hematopoiesis; the physiology, function, and cytochemistry of normal and abnormal blood cells; the theory and performance of clinical laboratory methods related to these parameters. Prerequisite: Admission to the Clinical Laboratory Sciences program or consent of the instructor.

**CLS 537. Hematology I Laboratory. 2 Credits.**

A laboratory with recitation emphasizing basic hematologic techniques and identification of normal and abnormal cells in peripheral blood and bone marrow. Prerequisite: CLS 536, or CLS 536 concurrently, or consent of the instructor.

**CLS 538. Immunology. 3 Credits.**

This course covers basic theory of molecular and cellular immunology of the innate and adaptive immune systems. Lectures include structure and function of antigens, antibodies, complement, major histocompatibility complexes, B- and T-cells and their receptors, cellular and molecular basis of the immune response and immune regulation, hypersensitivity, and immune tolerance. Clinical applications and methodologies will be incorporated into lectures. Prerequisite: Admission to the Department of Clinical Laboratory Sciences or consent of instructor.

**CLS 539. Fundamental Techniques and Clinical Immunology Laboratory. 3 Credits.**

This course, including lecture, recitation and laboratory, provides theory and hands-on practice of basic laboratory skills. It is an introduction to safety practices and fundamental laboratory training in phlebotomy, pipetting, microscopy and calibrations. It also focuses on principles and procedures of immunology and serology. Laboratory exercises consist of development of skills needed for reagent preparation and test performance using a variety of assays, accurate collection of data, and interpretation of data applying the appropriate analytic/statistical tools. The theory underlying accuracy and precision in laboratory testing (quality control and quality assurance) will be included. Basic laboratory mathematics, method validation, and problem-solving strategies are emphasized. Laboratory concepts and immunological assays, such as agglutination, precipitation and enzyme immunoassay for diagnosis of infectious diseases and immunological disorders are also included. Prerequisite: Admission to the Clinical Laboratory Science program, completion of BIOL 503 or CLS 538 (or equivalent transfer course) with a grade of C or higher, or concurrent enrollment in CLS 538, or consent of the instructor.

**CLS 540. Clinical Chemistry II. 2 Credits.**

Introduction to human physiology and pathophysiology II with emphasis on hormones, therapeutic drugs, clinical toxicology, tumor markers, vitamins and trace elements. The related clinical chemistry tests, their principles, analysis, interpretation, and significance are included. Prerequisite: CLS 530 or consent of instructor.

**CLS 541. Professional Development. 2 Credits.**

This course combines lectures and projects to give students an introduction to and practice in the following: resume writing and interviewing skills; the components of and the production of a scholarly product; the basic principles involved in education with the identification and writing of educational objectives; the activities and responsibilities involved in laboratory management. Prerequisite: CLS 520 - CLS 549 or consent of instructor.

**CLS 542. Clinical Microbiology II. 2 Credits.**

Pathogenesis, disease processes, and diagnostic protocols for parasites, medically important fungi and mycobacteria. Prerequisite: Admission to the Clinical Laboratory Sciences program or consent of the instructor.

**CLS 543. Clinical Microbiology II Laboratory. 2 Credits.**

A laboratory with recitation addressing diagnostic procedures used for isolation and identification of parasites, medically important fungi, and mycobacteria. Prerequisite: Admission to the Clinical Laboratory Sciences program or consent of the instructor.

**CLS 544. Immunohematology I. 3 Credits.**

CLS 544 covers the basic theory and principles of immunohematology including: blood group systems, antibody identification, testing procedures, hemolytic disease of the newborn, autoimmune hemolytic anemias, donors and donor collection, investigation of transfusion reactions, legal and regulatory issues, and component utilization, preparation, and storage. Emphasis is on procedures utilized by blood banks to provide safe blood transfusions. Prerequisite: BIOL 503 or CLS 538, CLS 546, or consent of instructor.

**CLS 545. Immunohematology I Laboratory. 2 Credits.**

CLS 545 is a laboratory course emphasizing the basic techniques of blood banking including blood typing, screening and identification of antibodies, compatibility testing, and special antigen testing. In addition, students will be introduced to common diagnostic procedures used in the evaluation of special problems such as hemolytic disease of the newborn and transfusion reactions. Prerequisite: BIOL 503 or CLS 538, CLS 546, or consent of instructor.

**CLS 546. Hematology II. 3 Credits.**



Lectures on hematopoiesis, the physiology, function, and cytochemistry of normal and abnormal blood cells, normal and abnormal hemostasis, and the theory and performance of laboratory methods related to these parameters. Prerequisite: CLS 536 and CLS 537 or consent of instructor.

**CLS 547. Hematology II Laboratory. 2 Credits.**

A laboratory with recitation involving performance of hematology laboratory procedures with emphasis on basic hematologic and coagulation techniques and the identification of normal and abnormal cells in the peripheral blood and bone marrow. Prerequisite: CLS 536, CLS 537 and CLS 546 or CLS 546 concurrently, or consent of the instructor.

**CLS 549. Clinical Immunology I Laboratory. 2 Credits.**

A laboratory with recitation involving performance of immunoassays. Emphasis on theory, methodologies, and clinical correlations. Prerequisite: CLS 523, BIOL 503 or CLS 538, or consent of instructor.

**CLS 600. Introductory Biochemistry. 3 Credits.**

An introduction to the chemistry and metabolism of carbohydrates, lipids, proteins, nucleic acids, and other biologically important molecules. Topics include cellular processes, reactions and interactions occurring in living organisms. Prerequisite: Admission to the Department of Clinical Laboratory Sciences or consent of instructor.

**CLS 605. Introduction to Molecular Diagnostics I. 1 Credits.**

An introduction to molecular biology and molecular biological methodologies and technologies commonly used in basic, applied, and diagnostic laboratories. An emphasis is placed on molecular biology principles and techniques used in the clinical laboratory for diagnosis, prognosis, and treatment of disease. Prerequisite: Admission to the Clinical Laboratory Sciences program or consent of the instructor.

**CLS 607. Introduction to Molecular Diagnostics I Laboratory. 1 Credits.**

An introduction to molecular diagnostic methodologies and technologies commonly used in clinical laboratories. Principles and performance of nucleic acid isolation, restriction enzyme digestion, electrophoresis, amplification, hybridization, and analysis. Applications in infectious and genetic disease. Prerequisite: Admission to the Clinical Laboratory Science program or Cytotechnology program or consent of the instructor.

**CLS 608. Introduction to Advanced Biotechniques. 0 Credits.**

A lecture course introducing the theory behind a variety of current molecular, biochemical and immunologic techniques utilized in molecular research and diagnostic laboratories. Course content is continued in CLS 610, Advanced Biotechniques Lecture. Prerequisite: Admission to the Clinical Laboratory Sciences program or consent of instructor.

**CLS 609. Introduction to Advanced Biotechniques Laboratory. 0 Credits.**

Introductory laboratory course with practical application of selected molecular, biochemical, and immunologic techniques. Course content is continued in CLS 611, Advanced Biotechniques Laboratory. Prerequisite: Admission to the Clinical Laboratory Sciences program or consent of instructor.

**CLS 610. Advanced Biotechniques Lecture. 3 Credits.**

A lecture course covering the theory behind a variety of current molecular, biochemical and immunologic techniques utilized in today's research and diagnostic laboratories. Material presented will include proper specimen preparation and handling; technique set-up and quality control; trouble shooting and technique modification. Prerequisite: Admission to the Clinical Laboratory Sciences program or consent of instructor.

**CLS 611. Advanced Biotechniques Laboratory. 2 Credits.**

Laboratory course with practical application of selected molecular, biochemical, and immunological techniques. Designed to provide

limited experience with protein purification and analysis techniques, electrophoresis techniques, nucleic acid analysis and manipulation. Prerequisite: Admission to the Clinical Laboratory Sciences program or consent of instructor.

**CLS 621. Biotechnology Methodologies Practicum. 4 Credits.**

Placement of the student in clinical laboratories performing molecular diagnostic techniques for the analysis of infectious diseases, hereditary conditions, or acquired genetic conditions. Prerequisite: Admission to the Clinical Laboratory Sciences program or consent of instructor.

**CLS 622. Problems in Molecular Diagnostics. 2 Credits.**

Provides a targeted review of current theory, techniques and application of molecular techniques in the diagnosis of infectious disease, and hereditary and acquired genetic disease. Prerequisite: Admission to the Clinical Laboratory Science or Cytotechnology program, or consent of instructor.

**CLS 623. Molecular Genetics Practicum. 4 Credits.**

Placement of the student in a molecular genetics research laboratory (utilizing either prokaryotic or eucaryotic organisms or both) working with laboratory staff on an on-going small project within the laboratory. Molecular genetics laboratories utilized could be involved in, but not restricted to, any of the following activities: gene sequencing, cloning or splicing; elucidation of the mechanisms that regulate gene expression; proto-oncogene activation. Prerequisite: Admission to the Clinical Laboratory Sciences program or consent of instructor.

**CLS 633. Special Topics Practicum. 4 Credits.**

Placement of the student in any of a variety of research laboratories actively participating in molecular biological projects utilizing advanced genetic, biochemical immunologic, or other molecular techniques. Prerequisite: Admission to the Clinical Laboratory Sciences program or consent of instructor.

**CLS 638. Clinical Competency Review. 0 Credits.**

This review will enable students to identify areas of weakness in their understanding of clinical laboratory science in preparation for clinical rotations. Students will participate in Blackboard-based and in-person laboratory sessions in order to evaluate their performance in meeting required competencies. Prerequisite: CLS 520-CLS 549 inclusive, CLS 605, CLS 607, or consent of instructor.

**CLS 639. Urinalysis. 1 Credits.**

Tutorial instruction and clinical laboratory experience in urinalysis with the application of knowledge and skills to methodology, instrumentation, and quality control. Advanced content on renal disorders with emphasis on pathological mechanisms, interpretation, and clinical correlation of test results. Prerequisite: CLS 540, or consent of instructor.

**CLS 640. Clinical Chemistry III and Immunology II. 2 Credits.**

Tutorial instruction in the chemistry of body fluids and immune function focusing on correlation of chemical and immunological analyses to disease states. Addresses organ system disease, metabolic disease, and other special topics. Prerequisite: CLS 540 and CLS 549, or consent of instructor.

**CLS 641. Clinical Chemistry and Immunology Practicum. 3 Credits.**

Tutorial instruction and clinical laboratory experience in the chemistry of body fluids, with the application of knowledge and skills to methodology, instrumentation, and quality control. Involves correlation of chemical and immunological analyses to pathophysiology. Prerequisite: CLS 540 and CLS 549, or consent of instructor.

**CLS 642. Clinical Microbiology III. 2 Credits.**

Tutorial instruction addressing pathophysiology and diagnostic protocols of viruses, rickettsia, chlamydia, mycoplasma, and other unusual organisms. Prerequisite: CLS 532, CLS 533, CLS 542 and CLS 543, or consent of instructor.

**CLS 643. Clinical Microbiology Practicum. 3 Credits.**

Tutorial instruction and clinical laboratory experience in diagnostic microbiology, with the application of knowledge and skills to methodology, instrumentation, and quality control. Prerequisite: CLS 532, CLS 533, CLS 542 and CLS 543, or consent of instructor.

**CLS 644. Immunohematology II. 1 Credits.**

Tutorial instruction addressing advanced transfusion medicine theory and concepts. Focuses on hospital transfusion services, blood utilization, management, legal and regulatory issues, and special topics. Prerequisite: CLS 544 and CLS 545, or consent of instructor.

**CLS 645. Immunohematology Practicum. 2 Credits.**

Tutorial instruction and clinical laboratory experience in transfusion medicine, with the application of knowledge and skills to methodology, instrumentation, and quality control. Prerequisite: CLS 544, CLS 545, or consent of instructor.

**CLS 646. Hematology III. 2 Credits.**

Tutorial instruction on hematologic and hemorrhagic disorders with emphasis on pathological mechanisms, interpretation, and clinical correlation of test results. Prerequisite: CLS 546 and CLS 547, or consent of instructor.

**CLS 647. Hematology Practicum. 3 Credits.**

Tutorial instruction and clinical laboratory experience in hematology, with the application of knowledge and skills to methodology, instrumentation, and quality control. Prerequisite: CLS 546 and CLS 547, or consent of instructor.

**CLS 650. Clinical Laboratory Science Review. 0 Credits.**

Review of the clinical laboratory science body of knowledge in preparation for, and culminating in the BS in CLS - Clinical Concentration comprehensive examination. Prerequisite: CLS 520-CLS 549 inclusive, CLS 605, CLS 607, CLS 661, and CLS 639-CLS 647 inclusive, or consent of instructor.

**CLS 655. Molecular Biotechnology Review. 0 Credits.**

Review of the clinical laboratory science body of knowledge in preparation for, and culminating in the BS in CLS - Molecular Biotechnology Concentration comprehensive examination. Prerequisite: CLS 520-CLS 549 inclusive, CLS 605-CLS 633 inclusive, and CLS 661 or consent of instructor.

**CLS 661. Management Principles in Health Care. 2 Credits.**

Introduction to basic principles of management, education, and research and their application in the current health care environment. Course content includes: management theory, scope of management, quality issues, budgeting, personnel issues, evaluation and application of management concepts; introductory research methods and evaluation of journal articles. Prerequisite: Admission to the Clinical Laboratory Sciences program or consent of the instructor.

**CLS 690. Special Topics. 1-5 Credits.**

A course of study offering the student the opportunity for acquisition of additional knowledge and skills in one of the clinical laboratory routine areas or a specialty area, e.g., cytogenetics, metabolic analysis, or supervision; or at another clinical site. Course requirements designed in cooperation with student. Prerequisite: Admission to the Clinical Laboratory Science program or consent of instructor.

**CLS 710. Molecular Techniques I. 2 Credits.**

A lecture course covering the theory underlying molecular techniques involving nucleic acids and mammalian cell culture. Topics include purification and analysis of nucleic acids, recombinant DNA, construction and screening of genetic libraries, genetic engineering, control of gene expression, construction of gene fusions, amplification, hybridization, and nucleic acid databases and bioinformatic analysis. Prerequisite: Admission to the MS in Molecular Biotechnology program or consent of instructor.

**CLS 711. Molecular Techniques Laboratory I. 2 Credits.**

A laboratory course emphasizing the application, practice, and troubleshooting of molecular techniques involving nucleic acids and mammalian cell culture. Topics include purification and analysis of nucleic acids, recombinant DNA, genetic engineering, control of gene expression, construction of gene fusions, amplification, and hybridization. Topics are covered through a project-based approach. Prerequisite: Admission to the MS in Molecular Biotechnology program or consent of instructor.

**CLS 720. Molecular Techniques II. 2 Credits.**

Lecture and discussion course covering the theory and practice of molecular techniques for protein analysis. General topics include: protein detection, quantification, and characterization; protein separation and identification; protein expression systems; protein extraction, fractionation, solubilization and purification; analysis of protein-protein interactions; proteomics; and mass spectroscopy. Prerequisite: Admission to the MS in Molecular Biotechnology program or consent of instructor.

**CLS 721. Molecular Techniques Laboratory II. 2 Credits.**

Laboratory course for the practice and application of molecular techniques for analyzing and manipulating proteins. Techniques will include: bioinformatics analyses; expression, purification and solubilization of epitope tagged fusion proteins, protein-protein interactions; protein quantification; protein separation by electrophoresis and column chromatography; protein detection by chemical and immunological methods; and LC-MS. Prerequisite: Admission to the MS in Molecular Biotechnology program or consent of instructor.

**CLS 730. Current Issues in Biotechnology. 1 Credits.**

A seminar course that address topics including scientific, business, legal, social, and ethical issues in biotechnology. Students explore these topics through literature discussions, student presentations, and discussions with speakers from biotechnology-related academic and industry sectors. This course is meant for graduate students in the Molecular Biotechnology program. Prerequisite: Consent of instructor.

**CLS 740. Journal Club. 1 Credits.**

This course is an introduction to the critical reading of journal articles from the current literature in molecular biotechnology. Discussions will emphasize the analysis of experimental design and technique, as well as the significance of the results and validity of the author's conclusions. Students will learn how to search for articles and background information pertaining to selected topics, and how to present a polished, professional summary of that literature. Assigned papers for discussion and student presentations will focus on new strategies and technologies in molecular biotechnology of wide fundamental importance, or on hypothesis-based research that uses molecular biotechnological approaches. Prerequisite: Completion of (or concurrent enrollment in ) CLS 710 and CLS 720.

**CLS 742. Scientific Writing. 1 Credits.**

Formats, techniques, and styles of scientific writing. Emphasis will be placed on clear, concise, and effective writing. The class will focus on the process of writing scientific manuscripts and grant proposals. Students will identify and define the sections of scientific manuscripts as well as grant proposals. During the course, each student will write an R21-type (NIH Exploratory/Developmental Research Grant) proposals as could be submitted to the most appropriate NIH Institute. This course is intended

for students enrolled in their final semester of the Master of Science in Molecular Biotechnology program. Prerequisite: Consent of Instructor

**CLS 744. Topics in Molecular Biotechnology. 1-5 Credits.**

Advanced course on special topics in molecular biotechnology, offered by arrangement. May include lectures, discussions, readings, laboratory techniques, and supervised research experience. This course is intended for graduate students in the Molecular Biotechnology program. Prerequisite: Consent of instructor.

**CLS 750. Practicum I. 4 Credits.**

Advanced practical experience in a selected laboratory pursuing applied, basic, or diagnostic research projects utilizing genetic, biochemical, or other molecular biology-related approaches. Students apply and extend their knowledge and skills by performing a research and/or development project under the supervision of a site mentor. This practicum is performed at a site other than those utilized for CLS 751 (Practicum II) and CLS 752 (Practicum III). Prerequisite: Completion of CLS 710, CLS 711, CLS 720, and CLS 721, and consent of the instructor.

**CLS 751. Practicum II. 5 Credits.**

Advanced practical experience in a selected laboratory pursuing applied, basic, or diagnostic research projects utilizing genetic, biochemical, or other molecular biology-related approaches. Students apply and extend their knowledge and skills by performing a research and/or development project under the supervision of a site mentor. This practicum is performed at a site other than those utilized for CLS 750 (Practicum I) and CLS 752 (Practicum III). Prerequisite: Completion of CLS 710, CLS 711, CLS 720, and CLS 721, and consent of the instructor.

**CLS 752. Practicum III. 5 Credits.**

Advanced practical experience in a selected laboratory pursuing applied, basic, or diagnostic research projects utilizing genetic, biochemical, or other molecular biology-related approaches. Students apply and extend their knowledge and skills by performing a research and/or development project under the supervision of a site mentor. This practicum is performed at a site other than those utilized for CLS 750 (Practicum I) and CLS 751 (Practicum II). Prerequisite: Completion of CLS 710, CLS 711, CLS 720, and CLS 721, and consent of the instructor.

## Clinical Lab Sciences Courses

**DCLS 800. DCLS Advanced Topics. 1 Credits.**

Seminar course that addresses topics and issues relevant to DCLS clinical practice, including ethical and social issues in healthcare practice, health informatics, and communication techniques needed for interaction with healthcare colleagues and patients. Repeatable. Prerequisite: Admission into the Doctorate in Clinical Laboratory Science program, or consent of instructor.

**DCLS 802. Principles of Healthcare Education. 3 Credits.**

This course will address various aspects of teaching in healthcare settings. This includes educating patients and their families, educating other healthcare professionals, and the more formal area of undergraduate and graduate education. Education theory, pedagogical methods, educational resources, learning objectives, and evaluation techniques applicable to each type of educational situation will be addressed. Prerequisite: Admission into the Doctorate in Clinical Laboratory Science program, or consent of instructor.

**DCLS 805. Advanced Molecular Diagnostics. 2 Credits.**

This course focuses on the enhancement of scientific and technical knowledge in nucleic acid-based testing for the diagnosis of acquired and hereditary genetic disorders, and infectious diseases. Topics include an in-depth review of the theory of molecular techniques and the application of these techniques in inherited disorders, oncology, infectious

disease, pharmacogenetics, histocompatibility, identity determination, and genomics. Prerequisite: Admission into the Doctorate in Clinical Laboratory Science program, or consent of instructor.

**DCLS 815. Research Methods in Clinical Laboratory Sciences. 2 Credits.**

A discussion of research methods used in clinical laboratory sciences, with an emphasis on selecting and applying appropriate research designs. Includes an overview of the research methods and various approaches in current use in clinical laboratory science; focused on research question formulation; internal and external validity of research; variable measurement and reliability, and generalizability of findings. Specific approaches covered include non-experimental, experimental and quasi-experimental designs, epidemiologic methods (e.g., cohort and case-control studies), survey research, and qualitative research. Prerequisite: Admission into the Doctorate in Clinical Laboratory Science program, or consent of instructor.

**DCLS 820. Evidence Based Practice. 3 Credits.**

Evidence-Based Practice (EBP) encompasses Evidence-Based Medicine and Evidence-Based Laboratory Medicine. EBP is a problem-based approach to decision making using research evidence combined with clinical expertise, the patient's values, circumstances, and the clinical context. This course addresses the historical development of EBP, why using EBP in clinical decision making improves patient care, when and how to implement and use EBP in clinical decision making, and how to discuss the EBP finding with patients, family members, and other healthcare practitioners. Evaluating research studies for their applicability to EBP and designing research studies based on clinical evidence focused on laboratory testing will make up most of the course content, activities, and assignments. Prerequisite: Admission into the Doctorate in Clinical Laboratory Science program, or consent of instructor.

**DCLS 828. Advanced Immunology and Transplant. 3 Credits.**

This course focuses on enhancement of scientific and technical knowledge in clinical immunology and transplantation in order to consult with other healthcare practitioners on clinical applications and diagnostic and therapeutic testing of immune-mediated diseases. Topics include autoimmunity, hypersensitivity, immunotherapy and immunotoxicology, transplantation and HLA testing/compatibility, cancer immunology and immunodeficiency. This course also includes test methodologies in cellular, humoral, and molecular immunology, selection and interpretation of test results, and recommendations for follow-up testing for patient monitoring. Prerequisite: Admission into the Doctorate in Clinical Laboratory Science program, or consent of instructor.

**DCLS 830. Advanced Clinical Chemistry. 3 Credits.**

This course focuses on in depth physiology and pathophysiology together with the principles of current and emerging chemistry tests. Emphasis on the correlation between chemistry tests and disease states, interpretation and limitations of chemistry test results. Current clinical chemistry literature, clinical scenarios, case studies, and advanced laboratory practice issues will be used to enhance knowledge and skills. Prerequisite: Admission into the Doctorate in Clinical Laboratory Science program, or consent of instructor.

**DCLS 836. Advanced Hematology. 3 Credits.**

This course focuses on enhancement of scientific and technical knowledge in hematology and hemostasis to consult with other healthcare practitioners on the selection of screening and diagnostic tests for hematological disorders, interpretation of results, and recommendations for follow-up testing. Topics to be investigated include physiology and regulation of the hematopoietic system and hemostasis, and the genetic, molecular and cellular mechanisms underlying the pathophysiology of selected hematological disorders such as anemias, leukemias,



lymphomas, and disorders of hemostasis with additional focus on utilization of appropriate hematology, hemostasis, and molecular diagnostic tests, and reducing turn-around time. Prerequisite: Admission into the Doctorate in Clinical Laboratory Science program, or consent of instructor.

**DCLS 838. Advanced Immunology and Transplant. 3 Credits.**

This course focuses on enhancement of scientific and technical knowledge in clinical immunology and transplantation in order to consult with other healthcare practitioners on clinical applications and diagnostic and therapeutic testing of immune-mediated diseases. Topics include autoimmunity, hypersensitivity, immunotherapy and immunotoxicology, transplantation and HLA testing/compatibility, cancer immunology and immunodeficiency. This course also includes test methodologies in cellular, humoral, and molecular immunology, selection and interpretation of test results, and recommendations for follow-up testing for patient monitoring. Prerequisite: Admission into the Doctorate in Clinical Laboratory Science program, or consent of instructor.

**DCLS 842. Advanced Clinical Microbiology. 3 Credits.**

Course Description: This course focuses on enhancement of scientific and technical knowledge in clinical microbiology necessary for consultation with other healthcare practitioners for (i) the selection of screening and diagnostic tests for suspected infectious diseases, (ii) interpretation of results, and (iii) recommendations for follow-up testing. Topics to be investigated include utilizing molecular diagnostic tests, antimicrobial susceptibility testing and resistance mechanisms, bioterrorism, biofilms, opportunistic and emerging infections, utilization of appropriate microbiology tests, evidence based practice in clinical microbiology, and reducing turn-around time. Current scientific literature, clinical scenarios, case studies, and advanced laboratory practice issues will be used to enhance knowledge and skills. Prerequisite: Admission into the Doctorate in Clinical Laboratory Science program, or consent of instructor.

**DCLS 844. Advanced Immunoematology. 3 Credits.**

This course will explore advanced blood banking theory and transfusion medicine concepts pertaining to basic-to-advanced serological testing techniques, blood product utilization, molecular immunoematology testing methods, quality assurance, and other relevant topics. Learners will be re-introduced to specialized blood banking procedures including (but not limited to) the following: ABO/Rh, antibody screens, antibody identification, fetal screen, elutions, phenotyping, and crossmatching. Using case studies and discussion, learners will correlate laboratory data to clinical disease processes encountered in transfusion medicine. Prerequisite: Admission into the Doctorate in Clinical Laboratory Science program, or consent of instructor.

**DCLS 851. Clinical Correlations I. 3 Credits.**

Course Description: This course will correlate clinical presentation and laboratory testing as it relates to physiological changes associated with select diseases of major organ systems (e.g., endocrine, muscle, cardiovascular, respiratory, renal, gastrointestinal, immune, nervous, and reproductive). Prerequisite: Admission into the Doctorate in Clinical Laboratory Science program or instructor permission.

**DCLS 852. Clinical Correlations II. 3 Credits.**

This course will complement DCLS 851 Clinical Correlations I and will correlate clinical laboratory testing as it relates to physiological changes associated with patient symptomology (e.g., chest pain, shortness of breath, unresponsiveness, fever of unknown origin, jaundice) and treatment in a consultation model. Prerequisite: Admission into the Doctorate in Clinical Laboratory Science program or instructor permission.

**DCLS 880. Principles of Interprofessional Education and Practice Theory. 1 Credits.**

An introductory course to core competencies in interprofessional education and practice for healthcare teams including roles and responsibilities, values and ethics, teamwork, communication, and collaborative practice as it relates to the improvement of patient safety outcomes and the provision of quality patient care. Prerequisite: Admission into the Doctorate in Clinical Laboratory Science program, or consent of instructor.

**DCLS 881. DCLS Interprofessional Practice. 1 Credits.**

This course is designed for DCLS program students to apply core competencies in interprofessional practice for healthcare teams including roles and responsibilities, values and ethics, teamwork, communication, and collaborative practice via participation in interprofessional activities. Prerequisite: Successful completion of DCLS 880 and admission into the Doctorate in Clinical Laboratory Science program, or consent of instructor.

**DCLS 890. Advanced Laboratory Operations. 3 Credits.**

This course will explore laboratory quality, utilization, accreditation, regulation, and management topics. Core course content explores the selection, implementation, strengths, and weaknesses of appropriate quality assurance programs to maintain desired quality goals. All aspects of laboratory services will be explored to enhance consultative skills that will be applied in the clinical residency. The use of practice guidelines, critical or clinical pathways, algorithms and reflex testing, direct access testing, evidenced-based practice, and outcomes measurements, as well as initiatives to change the practice of laboratory services in all phases (pre-analytical, analytical, and post analytical) are covered. Prerequisite: Admission into the Doctorate in Clinical Laboratory Science program, or consent of instructor.

**DCLS 899. Independent Study. 1-3 Credits.**

Faculty-guided, student-directed individualized study for students enrolled in the DCLS program who need additional enrollment associated with their plan of study. The specific course requirements are to be described in the Independent Study proposal form to be completed by the student and approved by the faculty mentor and DCLS Program Director prior to enrollment. Can be repeated for credit. Prerequisite: Admission into the Doctorate in Clinical Laboratory Science program.

**DCLS 901. DCLS Research I. 2 Credits.**

Research I is part of a three-course series (DCLS 901, DCLS 902, DCLS 903) taken consecutively. The goal of DCLS 901 is to initiate the development of a research project by preparing a formal written research proposal that includes selecting a topic, reviewing current literature, preparing and submitting an IRB approval, and other activities required to begin data collection. Prerequisite: Admission into the Doctorate in Clinical Laboratory Science program.

**DCLS 902. DCLS Research II. 3 Credits.**

Research II is part of a three-course series (DCLS 901, DCLS 902, DCLS 903) taken consecutively. The goal of DCLS 902 is to continue the work begun in DCLS 901 by initiating data collection, analyzing and interpreting the data collected, beginning the writing of a manuscript draft, and other activities required to move the research project forward. Prerequisite: Satisfactory completion of DCLS 901.

**DCLS 903. DCLS Research III. 3 Credits.**

Research III is part of a three-course series (DCLS 901, DCLS 902, DCLS 903) taken consecutively. The goal of DCLS 903 is to complete the project begun in DCLS 901 and DCLS 902 by finalizing the analysis and interpretation of the data collected and develop a defensible conclusion regarding the research hypothesis. Completion of a final draft of the manuscript describing the research project and outcomes is the culmination of this course. Prerequisite: Satisfactory completion of DCLS 902.



**DCLS 911. Clinical Residency I. 4 Credits.**

The first of a three-course series (DCLS 911, DCLS 912, DCLS 913) providing a structured and supervised experience correlating coursework with practice. Designed to develop the DCLS student to meet national professional responsibilities. Students work with management, laboratory staff, physicians, nurses, and other members of the healthcare team to provide guidance in laboratory utilization and interpretation to optimize patient outcomes. Requires 14-16 weeks of full-time placement at a program affiliate. Prerequisite: Permission of instructor.

**DCLS 912. Clinical Residency II. 5 Credits.**

The second of a three-course series (DCLS 911, DCLS 912, DCLS 913) providing a structured and supervised experience correlating coursework with practice. Designed to develop the DCLS student to meet national professional responsibilities. Students work with management, laboratory staff, physicians, nurses, and other members of the healthcare team to provide guidance in laboratory utilization and interpretation to optimize patient outcomes. Requires 14-16 weeks of full-time placement at a program affiliate. Prerequisite: Permission of instructor.

**DCLS 913. Clinical Residency III. 5 Credits.**

The third of a three-course series (DCLS 911, DCLS 912, DCLS 913) providing a structured and supervised experience correlating coursework with practice. Designed to develop the DCLS student to meet national professional responsibilities. Students work with management, laboratory staff, physicians, nurses, and other members of the healthcare team to provide guidance in laboratory utilization and interpretation to optimize patient outcomes. Requires 14-16 weeks of full-time placement at a program affiliate. Prerequisite: Permission of instructor.

**DCLS 999. DCLS Capstone. 1 Credits.**

The capstone is completed during the final semester of the program and consists of a written manuscript and an oral examination. The manuscript, suitable for publication, is based on the research developed and completed during the research course series DCLS 901, 902, and 903. The final oral defense will be scheduled once the final draft of the manuscript is accepted by the student's Graduate Committee. The oral examination is a defense of the manuscript and can include questions regarding general knowledge of clinical laboratory science concepts and applications from across the entire DCLS curriculum. Prerequisite: Satisfactory completion of DCLS 902.

## Clinical Lab Sciences Courses

**GENC 801. Introduction to Clinical Research. 1 Credits.**

This course is designed to introduce students to the clinical research process and build the foundations necessary for their thesis or capstone projects. The course will explore the essential elements of research including topic selection, formulation of a research question, aim, and hypothesis, literature review, identification of a mentor, research design and methodology, research ethics, the protection of human subjects, and the role of the Institutional Review Board (IRB). Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

**GENC 802. Fundamentals of Genetic Counseling. 2 Credits.**

This course provides a framework for the development of clinical skills in genetic counseling. Major components include completing the intake, recording the family history, recognizing dysmorphic features, developing a differential diagnosis, identifying counseling aids and resources, medical documentation, and components of the genetics physical examination. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

**GENC 803. Human Genetics. 3 Credits.**

Topics covered this semester will include gene structure and function, chromosomal abnormalities, single gene inheritance, molecular, cellular and biochemical basis of genetic disease, complex and multifactorial inheritance, genetic diversity, risk calculation in genetic counseling, and population genetics. Techniques of genetic analysis and appropriate nomenclature will be introduced. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

**GENC 804. Psychosocial Genetic Counseling. 4 Credits.**

Students will develop skills to be able to organize a genetic evaluation/counseling session, conduct a psychosocial assessment, apply basic counseling skills, obtain a history including targeted family history, provide patient education, and make a follow-up plan for a genetics diagnostic evaluation. Additionally, students will examine their own beliefs and backgrounds, and understand how these may impact their ability to provide genetic counseling. The course is organized to provide theory and application in the form of role play and practice with standardized patients at the Clinical Skills Lab. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

**GENC 811. Research in Genetic Counseling. 1 Credits.**

This course will provide a framework for the development of the student's research topic. Students will identify the members of their research committee, refine specific aims/hypotheses, and learn methods of data collection, basic biostatistics, and manuscript writing used in genetic counseling research. Students will also hear from genetic counselors who work in research. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

**GENC 812. Cytogenetic and Molecular Basis of Disease. 2 Credits.**

Students will become familiar with cytogenetic and molecular laboratory testing and methodology, components of a test report, variant analysis, genome-wide association studies, polygenic risk scores, emerging technologies, and use of personalized medicine. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

**GENC 821. Clinical Fieldwork I. 1 Credits.**

This course provides the student with practical experience performing supervised genetic counseling for patients referred for a variety of health concerns. Each student will participate in three clinical rotations each lasting five weeks. Students will begin practicing skills of case preparation, contracting, medical intake, pedigree drawing, describing the natural history of disorders, reviewing testing options, identifying psychosocial concerns, and resource identification. Students are expected to participate in 2-4 cases per week during this course, increasing with each rotation. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

**GENC 822. Prenatal Genetics and Teratology. 2 Credits.**

This course combines case-based learning, presentations from topic experts and class discussion to prepare students for clinical practice in reproductive genetic counseling. Topics include routine pregnancy care, prenatal screening and diagnostic testing, ultrasound anomalies, evaluation for infertility, recurrent pregnancy loss and stillbirth; assisted reproductive technologies; teratology; fetal treatment and intervention; perinatal loss and bereavement. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

**GENC 832. Medical Genetics I. 2 Credits.**

The Medical Genetics course series offers an overview of concepts in medical genetics including natural history, cardinal features, management, and treatment of pediatric and adult genetic syndromes. Therapeutic approaches and treatment modalities including gene therapy and clinical trials will be reviewed. Guest lecturers with relevant clinical expertise

will be invited to speak. A special focus on disability and advocacy will include presentations from families and patients affected by genetic conditions. This course utilizes case-based learning supplemented by lectures, quizzes, and jeopardy-style reviews. Sections I, II and III can be taken in any order. Topics in Medical Genetics I will include: Cardiovascular Genetics, Neurogenetics, Kidney, GI, Lung and Liver disorders, Neurocutaneous disorders, RASopathies, and syndromes associated with brain malformations, seizures and microcephaly. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

**GENC 833. Clinical Fieldwork II. 3 Credits.**

This course provides the student with practical experience performing supervised genetic counseling for patients referred for a variety of health concerns. Each student will participate in one clinical rotation lasting seven weeks. Students will continue to improve upon skills learned in Clinical Fieldwork I including case preparation, resource identification, contracting, medical intake, pedigree drawing, reviewing testing options, presenting research opportunities, and identifying psychosocial concerns with the goal of becoming competent at performing these skills independently. Students will practice skills of risk assessment, risk counseling, describing the natural history of disorders, results disclosure, follow-up, documentation, and advanced psychosocial counseling. Students will attempt to perform basic psychosocial counseling. Students are expected to participate in 4-6 cases per week during this course. Prerequisite: Clinical Fieldwork I. Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

**GENC 842. Biochemical Genetic Counseling. 2 Credits.**

Examine the biochemical basis of human disease with emphasis on the role of the genetic counselor, including recognition of various biochemical diseases, including phenotypes, inheritance patterns, diagnostic methods, biochemical signatures, and treatments. Students will also explore the concepts of newborn screening and the various roles of the genetic counselor in the metabolic clinic. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

**GENC 852. Cancer Genetic Counseling. 2 Credits.**

This course will cover topics including cancer nomenclature, epidemiology, etiology and hereditary cancer predisposition syndromes. It will address risk assessment, molecular testing, screening and risk management recommendations. Discussions will include psychosocial implications of diagnosis. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

**GENC 862. Laboratory/Industry. 2 Credits.**

In this course students will become familiar with the role of genetic counselors and other professionals in non-patient facing roles with a significant focus on laboratory settings (e.g., commercial, academic, research, and/or public health screening laboratories), including their involvement in the performance and interpretation of genetic/genomic tests, test development and implementation, customer liaison and support, and sales and marketing. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

**GENC 902. Advanced Psychosocial Genetic Counseling. 2 Credits.**

Builds on GENC 804; This course will focus on advanced psychosocial and genetic counseling skills and will cover topics including delivering difficult news, grief and loss, recognizing and managing a crisis and genetic counseling related to a variety of patient affects. The course is organized to provide theory and application in the form of role play and practice with standardized patients at the Clinical Skills Center. Prerequisite: GENC 804; Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

**GENC 903. Genetic Counseling Thesis/Capstone. 3 Credits.**

This faculty guided, student-directed course provides credit for the implementation and completion of genetic counseling student thesis or capstone projects. Prerequisite: GENC 801; GENC 811; Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

**GENC 912. Professional Development I. 2 Credits.**

The course will provide information on a range of topics related to professional development as a Genetic Counselor including CV development, interviewing skills, licensure, insurance and reimbursement, and developing familiarity with the healthcare system as it relates to genetic counseling. Students will also present a journal club article. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

**GENC 913. Clinical Fieldwork III. 3 Credits.**

This course provides the student with practical experience performing supervised genetic counseling for patients referred for a variety of health concerns. Each student will participate in three clinical rotations each lasting five weeks. Students will continue to improve upon skills learned in Clinical Fieldwork II including documentation and advanced psychosocial counseling. Students will become competent or proficient in the core roles of genetic counseling sessions. Students are expected to participate in 4-6 cases per week during this course. Prerequisite: Clinical Fieldwork I and II. Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

**GENC 922. Medical Genetics II. 2 Credits.**

The Medical Genetics course series offers an overview of concepts in medical genetics including natural history, cardinal features, management, and treatment of pediatric and adult genetic syndromes. Therapeutic approaches and treatment modalities including gene therapy and clinical trials will be reviewed. Guest lecturers with relevant clinical expertise will be invited to speak. A special focus on disability and advocacy will include presentations from families and patients affected by genetic conditions. This course utilizes case-based learning supplemented by lectures, quizzes, and jeopardy-style reviews. Sections I, II and III can be taken in any order. Topics in Medical Genetics II will include: Neuromuscular disorders, skeletal dysplasias, bone disorders, ciliopathies, psychiatric disorders, pharmacogenetics, adult-onset disorders and syndromes associated with hearing loss, limb anomalies, craniosynostosis, arteriovenous malformations, and overgrowth. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

**GENC 932. Social, Ethical and Legal Issues in Genetics. 2 Credits.**

In this course students will discuss topics including ethical principles, ethics cases, cultural awareness, newborn screening, GINA, and various DEI topics including assessing our own biases, self-reflection, strategies for reducing microaggressions, and issues related to GC admissions. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

**GENC 933. Clinical Fieldwork IV. 3 Credits.**

This course provides the student with practical experience performing supervised genetic counseling for patients referred for a variety of health concerns. Each student will participate in three clinical rotations each lasting five weeks. Students will continue to build upon skills learned in Clinical Fieldwork I, II, and III. Students will become proficient in all roles of genetic counseling sessions. Students are expected to participate in 6 cases per week during this course. Prerequisite: Clinical Fieldwork I, II and III. Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

**GENC 942. Medical Genetics III. 2 Credits.**

The Medical Genetics course series offers an overview of concepts in medical genetics including natural history, cardinal features, management, and treatment of pediatric and adult genetic syndromes. Therapeutic approaches and treatment modalities including gene therapy and clinical trials will be reviewed. Guest lecturers with relevant clinical expertise will be invited to speak. A special focus on disability and advocacy will include presentations from families and patients affected by genetic conditions. This course utilizes case-based learning supplemented by lectures, quizzes, and jeopardy-style reviews. Sections I, II and III can be taken in any order. Topics in Medical Genetics III will include: common microdeletion/microduplication syndromes, FLNA-related disorders, blood disorders, mosaic syndromes, ophthalmologic disorders, diabetes, and syndromes associated with craniofacial anomalies, sexual development, chromosome breakage, telomere length, bone marrow failure, skin findings, immune dysfunction, and intellectual disability. Prerequisite: Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

**GENC 952. Professional Development II. 2 Credits.**

This course will provide information on a range of topics related to professional growth as a Genetic Counselor including supervision, program development, self-care, professional organizations, opportunities for professional growth and identifying a professional mentor. Students will also present journal club articles. Prerequisite: Professional Development I; Admission into the Master of Science in Genetic Counseling program, or consent of instructor.

**Dietetics and Nutrition Courses****DIET 660. Management of Human Resources in Dietetics. 6 Credits.**

Focus on human resource development and utilization as the student works with food service personnel. Learning encompasses recruiting, training, supervision, and evaluation of employees in a food service system. Open only to seniors majoring in dietetics. Prerequisite: Management concepts or personnel administration.

**DIET 661. Management of Food Processing and Service. 6 Credits.**

Application of theories and concepts pertaining to management functions and interdepartmental relationships in a variety of clinical food service settings. Consideration is given to the newer technological developments in the administration of food services. Open only to seniors majoring in dietetics. Prerequisite: Food service systems and management in dietetics.

**DIET 662. Special Problems in Food Service Management. 3 Credits.**

Advanced experience in the practice of dietetics in an assigned setting. Problems and procedures will vary with interest and needs of the students. Open only to seniors majoring in dietetics. Prerequisite: Food service systems.

**DIET 672. Nutrition Care of Patients. 6 Credits.**

Directed observation and supervised experience in nutritional care of patients. Nutrition principles studied in DIET 670, Applied Normal Nutrition, and DIET 671, Nutrition in Medical Science, are applied in clinical situations. Open only to seniors majoring in dietetics. Prerequisite: Principles of nutrition; and nutrition throughout the life cycle.

**DIET 675. Seminar in Dietetics and Nutrition. 1 Credits.**

Involves study and discussion of text and general materials pertaining to philosophy and methodology in the field of dietetics and nutrition. Guest lecturers will participate. May be repeated for credit providing no

course duplication takes place. Open only to seniors majoring in dietetics. Prerequisite: Introduction to dietetics.

**DIET 800. Selected Topics in Dietetics. 1-3 Credits.**

An elective course to allow student credit hours in special issues or problems in dietetics offered by individual faculty. Course content can provide students with investigation of problems and/or issues relevant to theory, research investigation and/or practice related to the field of nutrition and dietetics.

**DIET 801. Current Issues or Trends. 2 Credits.**

Review of current issues in the economic, social, ethical, political, legal, technological, and ecological environments and the effects of these changes on dietetics practice.

**DIET 802. Foods Writing for Professionals. 3 Credits.**

A course focusing on the writing skills needed by the food professional in order to communicate effectively in writing about food and food-related topics. Student experiences include hands-on projects in research and writing for various audiences and types of publications.

**DIET 803. Accounting Concepts & Analysis. 3 Credits.**

An emphasis on financial statement analysis is the main objective of the course. A review of all major accounts in the income statement, balance sheet and statement of cash flow is made in determining a firm's performance and financial condition in relation to what matters most to shareholders and investors. Prerequisite: General Calculus and Linear Algebra

**DIET 805. Entrepreneurship Theory and Practice. 3 Credits.**

Development and management of small businesses or private practice within the dietetics industry. Business plan development, marketing, cost considerations. Overview of consulting to health care and hospitality operations and examination of skills required for success.

**DIET 819. Grant and Scientific Writing for the Professional. 3 Credits.**

Grant writing, identifying external funding, managing grants, preparing manuscripts for peer-reviewed publication, and preparing papers and poster for presentation at professional meetings. Prerequisite: Enrolled GPIDEA.

**DIET 822. Healthcare Administration. 3 Credits.**

A comprehensive review of today's health care institutions and their response to the economic, social/ethical, political/legal, technological, and ecological environments.

**DIET 824. Financial Management and Cost Controls in Dietetics. 3 Credits.**

This course overviews the fundamental knowledge of financial management, managerial accounting, and operational cost controls for dietetics professionals. Topics include a review of managerial accounting concepts for not-for-profit organizations and for-profit organizations based on the Uniform System of Accounts, value and risk analyses, budgeting, asset management, franchising and management contracts, cost-volume-profit analyses, and operational applications for financial performance.

**DIET 829. Nutrition and Aging. 3 Credits.**

An overview of nutrition and the aging process. Physiological, psychological, and sociological aspects of aging, theories of aging, internal and external factors related to nutrient intake, and nutrient needs will be considered. Physical activity and practical application to community settings is addressed.

**DIET 830. Nutrition: a Focus on Life Stages. 3 Credits.**

The influence of normal physiological stresses on nutritional needs throughout the life span will be explored. Evaluating nutritional status at different stages of life and identifying appropriate needs and services



will be included while, at the same time, consideration given for specific characteristics such as physiological condition and cultural heritage.

**DIET 832. Functional Foods for Chronic Disease Prevention. 3 Credits.**

Integrate and evaluate the regulatory principles, food science, nutrient science and nutritional metabolism for the development of functional foods, nutraceuticals, and dietary supplements for chronic disease prevention. Prerequisite: Biochemistry, Human Nutrition, Basic Food Science or consent of instructor.

**DIET 833. Principles of Statistics. 3 Credits.**

A basic course in statistics: Statistical methods applied to experimental and survey data from social or natural sciences; test of hypotheses concerning treatment means; linear regression; product-moment, rank, and bi-serial correlations; contingency tables and chi-square tests.

**DIET 834. Methods of Research in Nutrition. 3 Credits.**

A study of basic research terminology and designs commonly used in nutrition research. Topics include: research on animals, tissue culture and human subjects; qualitative, quantitative and outcomes research; ethical issues in research; dissemination of research findings; and appropriate use of research findings. Prerequisite: Consent of instructor.

**DIET 835. Nutritional Epidemiology. 3 Credits.**

This course emphasizes the important issues related to designing, conducting, and interpreting research on the role of diet or physical activity in the development of disease (& health) in human populations. Prerequisite: DIET 833 Statistics or Permission of Instructor.

**DIET 836. Biochemical, Physiological, and Genetic Aspects of Human Nutrition. 3 Credits.**

The topics covered will examine the integration of biochemistry, physiology, genetics, and nutrition. Emphasis will be placed on developing an understanding of how the combination cellular structure and function is related to the metabolic needs of the cell and its response to the environment. The integrated approach will form a basis for evaluating nutritional needs in humans. Prerequisite: courses in nutrition, physiology, and biochemistry, or consent of instructor.

**DIET 837. Nutrition in Diabetes. 3 Credits.**

(3 hours) An in-depth study of diabetes management with emphasis in nutrition care. Topics will include diabetes pathophysiology, clinical care guidelines, basic pharmacology, clinical nutrition education and counseling strategies, and nutrition care planning. Prerequisite: A course in medical nutrition therapy or consent of instructor. Must be a student in the Great Plains IDEA degree program.

**DIET 838. Advanced Medical Nutrition Therapy. 3 Credits.**

This course will discuss the role of diet in disease including diet as a factor related to prevention of diseases or illness, diet as an etiologic agent in illness and diet as a treatment for disease. Medical nutrition therapy is the use of specific nutrition services to treat an illness, injury or condition and involves two phases: 1) assessment and 2) treatment, which includes diet therapy, counseling and/or the use of specialized nutrition supplements.

**DIET 839. Clinical Aspects of Nutrition Support. 3 Credits.**

The course content provides in depth study of specialized visceral and somatic nutrition assessment of the critically ill patient. Content includes extensive review of methods for determining energy expenditure and substrate utilization during specific disease states. Discussion of the aspects of feeding the critically ill patient including timing, enteral and parenteral feeding methodology, specialized medical foods, equipment requirements, feeding complications and prevention, and pharmacological issues. Students will be expected to calculate formulas for both types feeding modalities and provide discussion of the evidence based

guidelines for administration of these nutrition therapies. Prerequisite: minimum of 3 cr hours in Medical Nutrition Therapy.

**DIET 840. Foundations of Leadership in Dietetics. 3 Credits.**

Study of the key issues in the theory, research and application of leadership in organizations. This includes defining leadership, understanding situational characteristics that facilitate/hinder effective leadership, understanding effective/dysfunctional leadership and gaining greater insight into one's own leadership style and functioning. Prerequisite: Must be admitted to the GPIDEA Program.

**DIET 841. International Nutrition and World Hunger. 3 Credits.**

Advanced study of the magnitude, cause, and nature of hunger and undernutrition in low income countries; emphasis on programs, policies and planning directed toward alleviating hunger.

**DIET 842. United States Public Health Nutrition. 1-3 Credits.**

A study of US public health and nutrition concerns in diverse US populations, assessment of nutritional status in commonalities, health communication, nutrition policies and community based nutrition interventions. Exploration of the roles of dietitians, nutritionists, and others in developing and delivering nutrition policies and interventions in US communities. Prerequisite: Must be a student in the Graduate Certificate Dietetic Internship Program, the Dietetics and Nutrition Master of Science Program, or the Great Plains IDEA, or have the consent of the instructor.

**DIET 843. Nutrition Education in the Community. 3 Credits.**

Principles and practices of teaching individuals and groups to translate nutrition knowledge into action. Emphasis on research in and evaluation of nutrition education.

**DIET 844. Behavior Management Theory. 3 Credits.**

An in-depth analysis of the development of the behavioral basis of individual and group behavior in business, governmental, educational, and other organizations with emphasis on current research literature and applications.

**DIET 845. Nutritional Aspects of Oncology. 3 Credits.**

A course focusing on current research examining the role of nutrition in specific cancers. Topics include basic cancer biology, pathology and nutritional research methodology. Sources of information for cancer prevention programs and the application of translational research to clinical patient populations will be discussed.

**DIET 846. Nutrition and Wellness. 3 Credits.**

Course will address wellness promotion through nutrition. Nutritional risk and protective factors will be examined as they relate to public health and individual nutrition.

**DIET 850. Operations Management and Analysis. 3 Credits.**

The study of the role of operations systems in the provision of value for the customer. Operations systems design; capacity determination, resource requirements planning and control, theory of constraints, supply chain management, quality management and control and project management are discussed and analyzed. Prerequisite: Basic graduate statistics course

**DIET 854. Non-Thesis Research. 1-3 Credits.**

Directed study of special problems in nutrition or nutrition care. This course provides for the individual or group study of special problems. Through directed readings, investigations and projects, the student acquires information with reference to questions in dietetics and nutrition not covered in organized courses. This course fulfills the research requirements for the Non-Thesis Option.

**DIET 862. Maternal and Child Nutrition. 3 Credits.**

Critical examination of behavioral, physiological, and public health issues impacting dietary and nutritional factors that support normal growth and



development. Course content focuses on the early stages of the life cycle: gestation, lactation, infancy, preschool, school age, and adolescence. Topics include the fetal programming hypothesis, growth and nutritional requirements, breast and formula feeding of infants, infant weaning, and eating behaviors that lead to normal growth, growth faltering, and pediatric obesity. Cross-listed with DN 862. Prerequisite: Registered Dietitian, or registry eligible dietitian.

**DIET 865. Nutrition and Human Performance. 3 Credits.**

This course is designed to develop an understanding of nutrition, based upon knowledge of the biochemical and physiological process and functions of specific nutrients in meeting nutritional requirements. Emphasis will be placed upon the relationship of optimal nutrition and physical efficiency and performance.

**DIET 870. Nutrition Counseling and Education Methods. 3 Credits.**

Nutrition education for groups and individuals in clinical and community settings. Includes discussion and experience in applying learning theory, assessing educational needs, stating goals and objectives, selecting learning activities, implementing and evaluating instruction, and documenting care provided.

**DIET 874. Nutrition Therapy for Eating Disorders. 3 Credits.**

An online study of eating disorders management and nutrition care. Topics will include eating disorders medical complications, clinical care guidelines, basic pharmacology, clinical nutrition education, nutrition care planning, psychology of eating disorders, team collaboration, and therapeutic modalities for nutrition counseling. Prerequisite: A course in medical nutrition therapy or consent of instructor.

**DIET 875. Pediatric Clinical Nutrition. 3 Credits.**

Examines physiological, biochemical and nutritional aspects of disease processes relevant to infants and children up to 18 years of age. Medical nutrition therapy for a variety of medicine conditions found in this population will be discussed including inborn errors of metabolism, food hypersensitivity, obesity, and diseases of the major organ systems. Cross-listed with DN 875. Prerequisite: Registered Dietitian or registry eligible dietitian.

**DIET 876. Intervention for the Prevention & Management of Obesity. 3 Credits.**

This course emphasizes obesity in a population group ranging from childhood to the adult. Course materials will examine the impact of obese conditions on disease development throughout the life cycle. The course will critically analyze current evidence focused on interventions used in the behavioral and clinical management of overweight and obese individuals in community and clinical settings. Prerequisite: Consent of instructor.

**DIET 880. Dietary and Herbal Supplements. 3 Credits.**

Explore the safety and efficacy of botanical/herbal and dietary supplements in health applications including dietary supplementation in the prevention and treatment of chronic disease. Prerequisite: Human physiology is advisable.

**DIET 881. Phytochemicals. 3 Credits.**

The course is an overview on phytochemicals (non-nutritive biologically active compounds which may have health benefits) from fruits, vegetables, cereals and oilseeds. The course will include discussions of functional foods which are designer foods providing these compounds to the public. It will cover recent findings on chemistry, physiological functions, potential health implications of phytochemicals.

**DIET 885. Advanced Human Nutrition: Macronutrients. 3 Credits.**

Physiological and biochemical aspects of macronutrients metabolism and human nutrition. Prerequisite: Must be admitted to the GPIDEA Program.

**DIET 886. Advanced Nutrition: Nutrigenomics, Nutrigenetics and Advanced Lipid Metabolism in Human Nutrition. 3 Credits.**

This course integrates topics related to current biochemical issues in nutritional science. The course will examine topics ranging from the cellular, molecular, and biochemical aspects of nutritional science to translational and applied research at the clinical and educational level. The goal is to emphasize the integrative and complex nature of human nutrition research ranging from basic science to clinical studies to translational and applied studies.

**DIET 887. Nutrition and Immunology. 3 Credits.**

This course examines the mechanisms underlying the modulation of immune responses by nutritional, naturally occurring and orally active food compounds. The role of nutritional status and changes in the life stages which impact immune response impacting disease initiation and progression. Contributions of the GI system and changes in life stages impacting immunity and their relationship to immune response will be discussed.

**DIET 896. Micronutrients in Human Nutrition. 3 Credits.**

Interrelationships of micronutrients in terms of biochemistry, physiology, genetics, and nutrition. Emphasis will be placed on developing an understanding of how the coordination of structure and function is related to the metabolic needs of the cell and its response to the environment. This integrated approach will form the basis for evaluating the micronutrient needs of humans in both normal and altered metabolic states.

**DIET 899. Thesis. 1-6 Credits.**

Scholarly essay based research, written under the guidance of the student's adviser. Credit given upon meeting thesis requirements for the master's program.

## Dietetics and Nutrition Courses

**DN 671. Nutrition in Medical Science. 6 Credits.**

Study of the science of medical nutrition therapy and evidence based practice in the nutritional management of disease during specific stages of the life cycle. Prerequisite: Consent of Instructor

**DN 796. Social and Cultural Aspects of Dietetics and Nutrition. 2-4 Credits.**

A study of the aspects of society, culture and personality related diet, food habits, and nutrition. The role of the community and its agencies will be considered. Includes field work. Prerequisite: Consent of instructor.

**DN 800. Selected Topics in Clinical Dietetics: \_\_\_\_\_. 1-6 Credits.**

A learner-centered, self paced study of topics in applied clinical dietetics. Independent modules are offered to address the science and art of nutritional care relating to specific issues to clinical dietetics. Topics will be grouped in various combinations to provide flexibility of choice. Students may enroll in one or more topics for a total of six credit hours. Prerequisite: By permission of instructor only.

**DN 810. Nutrition Assessment. 3 Credits.**

Methods and tools used in screening and assessment of nutritional status of individuals and population groups are studied. Assessment methodology includes dietary surveys, computerized dietary intake analysis, anthropometric measures, biochemical measures and clinical evaluations. Laboratory experiences are provided to allow students practice time for learning and applying assessment techniques. Prerequisite: Permission of instructor.

**DN 817. Seminar in Dietetics & Nutrition I. 1 Credits.**

Seminar designed to promote effectiveness of professional written and oral communication, increase knowledge of research, and review content information in selected topics in dietetics.

**DN 818. Seminar in Dietetics & Nutrition II. 1 Credits.**

To promote effectiveness of professional written and oral communication, to increase knowledge of research, and to review content information in selected areas in dietetics.

**DN 819. Scientific Writing for the Nutritional Sciences. 1 Credits.**

Research proposal preparation and / or scientific manuscript writing experience. This course will provide the student with an overview of the steps used in proposal writing and / or the steps in preparation of a scientific manuscript for publication.

**DN 820. Nutrition Education Skills for School Teachers. 3 Credits.**

This graduate level course will expand understanding of nutrition and healthy eating for classroom teachers and other professionals who work with children. The course has a special emphasis on child and adolescent nutrition and how to translate nutrition facts into classroom applications and school-based interventions. Course topics will include healthy food choices, nutrition guidelines, nutrients, energy balance and weight, child and adolescent nutrition, and nutrition education in the classroom, school-based nutrition interventions, and measuring outcomes of nutrition interventions. Prerequisite: Student must be classroom teacher or consent of instructor.

**DN 822. Management Dietetics & Nutrition I. 1 Credits.**

Managerial skills in health care quality improvement and food service are practiced. Students are typically enrolled in DN 827 Practicum supervised practice experiences associated with the dietetic internship. Prerequisite: food service systems or commensurate practical experience.

**DN 823. Management Dietetics & Nutrition II. 1 Credits.**

Managerial style is related to food policy, financial benchmarking and applied nutrition practice. Students are typically enrolled in DN 827 Practicum supervised practice experiences associated with the dietetic internship. Prerequisite: food service systems or commensurate practical experience.

**DN 825. Medical Nutrition Therapy I. 3 Credits.**

Course content introduces the student into the concepts of an intermediate study of nutritional therapy of disease. Course content includes evidence-based practice in prevention and nutritional management of diseases. Patient assessment and medical chart documentation are covered. Elements of pathology and biochemistry of the nutrition-related problems are integrated into course topics. This course is designed for students enrolled in the dietetic internship, but students from other departments may enroll with consent of instructor. Prerequisite: Undergraduate coursework in nutrition, diet therapy, biochemistry and physiology or consent of instructor.

**DN 826. Medical Nutrition Therapy II. 3 Credits.**

Course content includes current nutrition theory and evidence-based practice in treatment of disease. Advanced therapies and patient management in nutrition support will be discussed. Course topics include parenteral nutrition, fluid and electrolyte management, liver diseases, cancer, gestational diabetes, and renal diseases. Elements of pathology and biochemistry of the nutrition-related problems are integrated into course topics. This course is designed for students enrolled in the dietetic internship, but students from other departments may enroll with consent of instructor. Prerequisite: Undergraduate coursework in nutrition, diet therapy, biochemistry and physiology; DN 825; or consent of instructor.

**DN 827. Practicum in Dietetics and Nutrition. 1-10 Credits.**

Supervised practice experience for graduate level students to fulfill the requirements for the Dietetic Internship. Experiences take place in hospitals, clinics, community health care agencies, and other practice settings in which dietetics and nutrition services are provided. Prerequisite: Admission to the graduate program, permission of dietetic internship director or course instructor.

**DN 828. Clinical Education in Dietetics. 2-3 Credits.**

A study of teaching methods appropriate for use in a clinical setting. Emphasis on development of instructional objectives, learning situations, and methods of evaluations to be used in clinical teaching in dietetics. Prerequisite: Consent of instructor.

**DN 829. Nutrition and Aging. 3 Credits.**

An overview of nutrition and the aging process. Physiological, psychological, and sociological aspects of aging, theories of aging, internal and external factors related to nutrient intake, and nutrient needs will be considered.

**DN 830. Food Technology. 2-3 Credits.**

Consideration of current food processing methods and the factors affecting the palatability and nutritive values of human foods. Course includes pertinent information regarding the protection of the food supply.

**DN 834. Methods of Research in Nutrition. 3 Credits.**

A study of basic research terminology and designs commonly used in nutrition research. Topics include: research on animals, tissue culture and human subjects; qualitative, quantitative and outcomes research; ethical issues in research; dissemination of research findings; and appropriate use of research findings. Prerequisite: Consent of instructor. Same as DIET 834.

**DN 836. Biochemical, Physiological, and Genetic Aspects of Human Nutrition. 3 Credits.**

The topics covered will examine the integration of biochemistry, physiology, genetics, and nutrition. Emphasis will be placed on developing an understanding of how the combination cellular structure and function is related to the metabolic needs of the cell and its response to the environment. The integrated approach will form a basis for evaluating nutritional needs in humans. Prerequisite: courses in nutrition, physiology, and biochemistry, or consent of instructor. Same as DIET 836.

**DN 837. Nutrition in Diabetes. 3 Credits.**

(3 hours) An in-depth study of diabetes management with emphasis in nutrition care. Topics will include diabetes pathophysiology, clinical care guidelines, basic pharmacology, clinical nutrition education and counseling strategies, and nutrition care planning. Prerequisite: A course in medical nutrition therapy or consent of instructor.

**DN 838. Advanced Medical Nutrition Therapy. 3 Credits.**

This course evaluates current issues in medical nutrition therapy. Course content includes evidence based analysis, the role of diet in disease management including factors related to disease pathophysiology, nutritional assessment and medical nutrition management of specific disease states. Prerequisite: undergraduate medical nutrition therapy, biochemistry, physiology, or consent of the instructor.

**DN 839. Clinical Aspects of Nutrition Support. 3 Credits.**

Specialized nutrition assessment and support. Review of energy expenditure and substrate utilization in specific disease states. Current methods for the initiation and management of enteral and parenteral nutrition therapy including access, metabolic and mechanical complications. Evaluation nutrition support methodology in selected disease states.

**DN 840. Advanced Topics in Nutrition. 1-2 Credits.**

Reading and preparation of a paper and/or oral presentation on a selected subject in nutrition. Prerequisite: Consent of instructor.

**DN 841. International Nutrition. 1-3 Credits.**

A study of global public health and nutrition concerns in various nations, assessment of nutritional status of diverse populations, international health and nutrition organizations, policies, and interventions. We explore the roles of dietitians, nutritionists, and others in creating and implementing international public health and nutrition policies and interventions. To enroll in the course, you must be a student in the Graduate Certificate Dietetic Internship Program, the Dietetics and Nutrition Master of Science Program, or the Great Plains IDEA, or have the consent of the instructor. Cross-listed with DIET 841.

**DN 842. United States Public Health Nutrition. 1-3 Credits.**

A study of US public health and nutrition concerns in diverse US populations, assessment of nutritional status in commonalities, health communication, nutrition policies and community based nutrition interventions. Exploration of the roles of dietitians, nutritionists, and others in developing and delivering nutrition policies and interventions in US communities. Prerequisite: Must be a student in the Graduate Certificate Dietetic Internship Program, the Dietetics and Nutrition Master of Science Program, or the Great Plains IDEA, or have the consent of the instructor.

**DN 854. Special Problems in Dietetics and Nutrition. 1-4 Credits.**

Directed study of special problems in nutrition or nutrition care. This course provides for the individual or group study of special problems. Through directed readings, investigations, and projects, the student acquires information with reference to questions in dietetics and nutrition not covered in organized courses.

**DN 857. Motivational Interviewing in Public Health Settings. 1 Credits.**

The course is designed to introduce participants to Motivational Interviewing, its concepts, and to the subsequent skills required for helping people to change.

**DN 860. Collaboration Strategies in Health Care. 1 Credits.**

Persuasion and negotiation techniques: skills to evaluate and promote collaboration and goal achievement in a multidisciplinary health care team; analysis of communication styles and strategies to achieve mutual beneficial outcomes.

**DN 862. Maternal and Child Nutrition. 3 Credits.**

Critical examination of behavioral, physiological, and public health issues impacting dietary and nutritional factors that support normal growth and development. Course content focuses on the early stages of the life cycle: gestation, lactation, infancy, preschool, school age and adolescence. Topics include the fetal programming hypothesis, growth and nutritional requirements, breast and formula feeding of infants, infant weaning, and eating behaviors that lead to normal growth, growth faltering, and pediatric obesity. Prerequisite: Consent of the instructor.

**DN 865. Nutrition in Sports and Exercise. 3 Credits.**

Gain a deeper understanding of exercise physiology and nutrient requirements in sports and exercise. Examine, discuss, and develop critical thinking skills in areas within sport and exercise nutrition such as exercise metabolism and general exercise periodization as well as energy, macronutrient, micronutrient and fluid needs of athletes engaged in specific sports. Learn and explore current scientific literature regarding body composition and nutrition supplementation in addition to reviewing eating disorders in athletes and evidence-based approaches to weight management in sport. Prerequisite: Biochemistry and/or exercise physiology class or permission of the instructor.

**DN 870. Health Behavior Counseling. 1 Credits.**

Theoretical and applied issues in health behavior counseling. Students will learn the theories of behavior change and how to apply these to health care issues. Specific health behaviors (i.e., dietary changes, smoking cessation, exercise adherence) will be discussed in the context of chronic disease for children, adults, and the elderly. Effective methods of counseling patients and promoting changes on an individual and small group basis will be presented.

**DN 874. Nutrition Therapy for Eating Disorders. 3 Credits.**

An online study of eating disorders management and nutrition care. Topics will include eating disorders medical complications, clinical care guidelines, basic pharmacology, clinical nutrition education, nutrition care planning, psychology of eating disorders, team collaboration, and therapeutic modalities or nutrition counseling. Prerequisite: A course in medical nutrition therapy or consent of instructor.

**DN 875. Pediatric Clinical Nutrition. 3 Credits.**

Examines physiological, biochemical and nutritional aspects of disease processes relevant to infants and children up to 18 years of age. Medical nutrition therapy for a variety of medicine conditions found in this population will be discussed including inborn errors of metabolism, food hypersensitivity, obesity, and diseases of the major organ systems. Prerequisite: DN 826: Applied Clinical Nutrition or equivalent or consent of instructor.

**DN 876. Intervention for the Prevention & Management of Obesity. 3 Credits.**

This course emphasizes obesity in a population group ranging from childhood to the adult. Course materials will examine the impact of obese conditions on disease development throughout the life cycle. The course will critically analyze current evidence focused on interventions used in the behavioral and clinical management of overweight and obese individuals in community and clinical settings. Prerequisite: Consent of instructor. Same as DIET 876.

**DN 880. Dietary and Herbal Supplements. 3 Credits.**

Designed to develop the health professional's skills in partnering with patients to make dietary supplement decisions. Students will investigate the use of botanicals and dietary supplements in nutritional support of aging, maternal health, and wellness. Discussion on supplementation in the prevention and treatment of chronic diseases will include: arthritis, cardiovascular, diabetes, digestive, liver and renal disorders, memory deficits, and ophthalmic dysfunctions. Prerequisite: Human physiology is advisable.

**DN 881. Introduction to Dietetics and Integrative Medicine. 3 Credits.**

Introduction to principles guiding integrative and functional Medical Nutrition Therapy; assessing, diagnosing, intervening, monitoring, and evaluating an individual client to restore function; focusing on the unique nutritional imbalances characteristic of chronic disease pathophysiology; supporting individuals with persistent symptoms; preventing chronic disease. Prerequisite: Introductory genetics, medical nutrition therapy, or consent of instructor.

**DN 882. A Nutrition Approach to Inflammation and Immune Regulation. 3 Credits.**

Inflammation and immune system dysregulation is common in chronic disease. The course presents the integrative nutrition approach to identify the underlying causes of inflammatory and immune-related conditions and associated nutritional influences; applies individualized nutritional interventions, as powerful modulators of the pathophysiology of inflammatory and immune responses. Prerequisite: Medical nutrition therapy, genetics or consent of instructor.

**DN 884. Diet, Physical Activity & Cancer. 3 Credits.**



Multi-disciplinary approach, introductory cancer biology, Cancer epidemiology and risk factors. Dietary and environmental causation and prevention. Cancer in various organ systems. Nutrition therapy in Oncology. Nutrition implications in cancer treatments. Lifestyle factors and cancer survivorship. Exercise programming adaptations. Analysis of primary literature. Prerequisite: Permission of instructor.

**DN 885. Nutritional Biochemistry. 3 Credits.**

Course content facilitates the understanding of advanced biochemical principles applied to human nutrition. Topics include protein structure, bioenergetics, enzyme function, nutrient digestion, absorption and metabolism, metabolic regulation and intermediary metabolism, cellular signaling, and genomics encompassing nucleotide metabolism, gene expression and gene regulation. Prerequisite: Undergraduate biochemistry or consent of instructor

**DN 890. Graduate Research. 1-4 Credits.**

Individual investigation of special problems in dietetics and nutrition or hospital dietary administration approved by the student's advisor or advisory committee. Investigation involves original research.

**DN 895. Advanced Macronutrients and Integrated Metabolism. 3 Credits.**

Energy containing macronutrients and fiber presented from the perspective of their importance in human nutrition. Structural properties, digestion, absorption and metabolism are emphasized. Fuel utilization in response to food intake and exercise, cellular and whole-animal energetic and energy balance integrate metabolism. Students take an active role in presenting and discussing and exhibit advanced skills in analysis and presentation. Prerequisite: BCHM 702 or Equivalent.

**DN 896. Advanced Micronutrients and Integrated Metabolism. 3 Credits.**

Vitamins and minerals presented from the perspective of their requirements as nutrients for normal human physiological functions with emphasis on their underlying roles in structure, function and metabolism. Students take an active role in selecting, presenting and discussing recent published research and to exhibit advanced skills in analysis and presentation. Prerequisite: Biochemistry.

**DN 897. Micronutrient Research in Human Nutrition. 1 Credits.**

This course requires students to design a research study on a vitamin or mineral. Students submit a written proposal and present it orally and defend the proposal in class. Students will be evaluated on the basis of plausibility, feasibility and originality of the proposed research. Co-requisite DN 896. Prerequisite: Consent of Instructor.

**DN 899. Thesis. 1-6 Credits.**

Scholarly essay based on research, written under the guidance of the student's advisor. Credit given upon meeting thesis requirements for the master's degree. Prerequisite: Consent of advisor.

**DN 900. Techniques in Nutrition Research. 3 Credits.**

A series of seven laboratory modules emphasizing quantitative methods and experimental analysis. The series of modules will be team taught by departmental faculty. Each module requires data collection, data analysis, and written interpretation or report. Instrumentation, dietary assessment software utilization and cellular microtechniques will be emphasized. Students will be responsible for learning one technique practiced in an outside laboratory setting. Student will rotate between the module sequence based on the number of students enrolled in the class. Prerequisite: DN 895 and DN 896 or permission of instructor of record.

**DN 901. Graduate Seminar in Nutrition. 1 Credits.**

Advanced course examining current research topics in nutrition. Extensive student and faculty interaction is emphasized utilizing lectures, class discussion of selected scientific readings and oral presentations.

Prerequisite: Admission to PhD program in Dietetics and Nutrition or permission of instructor.

**DN 910. Leadership Essentials in Clinical Nutrition. 3 Credits.**

This course builds upon leadership theories to develop the skills to link theory and practice. After completing this course students will be able to successfully evaluate leadership theories; identify and develop a personal leadership style, increase competencies for effective leadership, and identify positive applications in clinical nutrition. The class also examines the differences between leadership and management and why those differences are important in clinical nutrition. Students also engage in practice of essential management skills for clinical nutrition. The class is designed to be an interactive exploration of personal leadership development and management skills. The student will be asked to respond to critical thinking opportunities and demonstrate their understanding of key concepts through exercises, discussion questions, quizzes, a Learning Journal, and their Leadership Growth Plan.

**DN 915. Advanced Nutrition Assessment in Clinical Nutrition. 3 Credits.**

This course builds on students' prior knowledge and provides advanced concepts and skills for nutrition assessment of individuals. The course is structured into four assessment components: biochemical, dietary intake, body composition and nutrition focused physical exam. Main topics include in-depth overview of the assessment methods, strengths and limitations of methodology, evaluation and interpretation of assessment data, sources of measurement errors, validity of assessment methods, and advanced analytical approaches used to assess and interpret laboratory data.

**DN 920. Nutrition Communication for Advanced Practice. 3 Credits.**

The overall goal of this course is to enhance the student's professional communication skills across a range of nutrition practice areas. This course will emphasize the nutrition professional's ability to effectively communicate with a wide audience including community members of all ages, races, and ethnicities; patients in public health and clinic settings, hospitalized patients, non-nutrition health professionals, peers, and researchers. The course will use online didactic methods to establish a background of theory, but student learning and assessment will be project-based.

**DN 930. Evidence Analysis in Clinical Nutrition. 3 Credits.**

Students will identify a pertinent clinical nutrition question and utilize the Academy of Nutrition and Dietetics' Evidence Analysis Library Manual to conduct a systematic review. Students will follow the rigorous process of defining a research question, searching and critically evaluating published literature, developing an evidence summary table and composing a systematic review. The goal of the course is a manuscript suitable for publication. Prerequisite: Consent of the instructor.

**DN 932. Ethics in Clinical Nutrition Research. 1 Credits.**

This course provides information and insights on important tenets that are essential for clinical nutrition research. Topics covered in lectures and moderated discussions include ethical, regulatory, and legal issues, informed consent for research participation, role and function of institutional review boards, just selection of research subjects, ethical aspects of study design, and privacy and confidentiality. Additionally, given the social, religious, and other influences on an individual's food choice, the moral and political aspects of food and nutrition research will be discussed. Prerequisite: Permission of instructor if student is not enrolled in a DN degree program.

**DN 934. Advanced Methods of Research in Clinical Nutrition. 3 Credits.**



This course prepares clinical nutrition students with the knowledge to design, conduct and write up results of a research project; and to read and review the clinical nutrition literature at an advanced level. Broad topics include ethical, regulatory and legal issues, study design and biostatistics, technology transfer, data management and sources of funding support, and clinical research infrastructure. Within these topics special emphasis is paid to educating the student about study designs that could be particularly useful to those with a clinical doctorate, e.g., designs that make use of electronic health records or other pre-existing databases. Students will get practice writing a research protocol and budgeting for a trial. Prerequisite: DN 834 or equivalent introduction to basics of research, or by permission of instructor.

**DN 941. Applied Nutritional Epidemiology. 3 Credits.**

The overall goal of this course is to provide graduate students the conceptual and applied skills to better interpret and conduct nutrition epidemiology research. Emphasis of this course includes design of a nutritional epidemiology research study, statistical computing, management of nutrition and outcomes-related datasets, methods of statistical analysis, and interpretation of analyses. Prerequisite: DN 934 Advanced Methods of Research in Clinical Nutrition.

**DN 950. Interprofessional Collaboration in Clinical Nutrition. 2 Credits.**

This course seeks to improve students' abilities to function and lead inter-professional healthcare teams. Students will apply core competencies in interprofessional practice for healthcare including roles and responsibilities, values and ethics, communication, team formation, teamwork, leading teams, decision making in teams, and managing conflict in teams. Prerequisite: Permission of Instructor.

**DN 970. Pharmacology in Clinical Nutrition. 3 Credits.**

This course provides the principles of clinical pharmacology and nutrition as therapeutic interventions and drug-nutrient and drug-food interactions. Students will apply the concepts to the pharmacological and nutritional management of compromised body systems. The strong conceptual base will prepare students to evaluate and monitor the use of commonly used medications and nutrition and herbal supplements. Applications across the lifespan will be incorporated within the class. Prerequisite: Consent of Instructor.

**DN 971. Advanced Nutrition Counseling. 3 Credits.**

Advanced Nutrition Counseling: This class is for experienced dietetic practitioners. The course content emphasizes evidence-based strategies and advanced counseling skills to promote behavior and attitude change in patients/clients. Prerequisite: Instructor's consent required.

**DN 972. Frontiers in Medical Nutrition Therapy. 3 Credits.**

This class is for experienced dietetic practitioners. The course content emphasizes contemporary issues, controversies and evidence-based intervention strategies that can be implemented to improve patient outcomes in areas of lifespan nutrition. Prerequisite: Consent of the instructor.

**DN 980. Nutrigenomics and Nutrigenetics in Health and Disease. 3 Credits.**

Nuclear receptors and their mechanisms of action, nutritional control of gene expression and functional genomic studies with relationships to nutrient intake and polymorphisms. Prerequisite: DN 836, DN 895, DN 896 or permission of instructor.

**DN 990. Doctoral Research. 1-9 Credits.**

Original and independent investigation approved by and conducted under the supervision of the student's advisor or advisory committee. This course is in partial fulfillment of the requirements for the Ph.D. degree. Prerequisite: Corequisite: Restricted to Dietetics & Nutrition Ph.D.

candidates, or consent of DN advisor. Students must have completed the qualifying exam.

**DN 991. Applied Research in Clinical Nutrition. 1-6 Credits.**

This capstone course is designed to enhance the student's ability to apply graduate knowledge to achieve tangible and relevant clinical research outcomes. All aspects of this translational research project will be included (i.e., planning, data collection, analysis and interpretation of results, written documentation, and oral presentation of the project). The outcome is a manuscript which has been submitted for publication. Collaborative interprofessional patient care projects are strongly encouraged. Prerequisite: DN 930, DN 934, DN 940, and permission of instructor.

**DN 992. Applied Clinical Residency in Clinical Nutrition. 3 Credits.**

The residency experience is designed to span 360 hours and will be completed within a professional workplace setting. Students will identify an area of practice through which they will provide leadership to develop a research-based clinical initiative or program. Upon completion, the students will provide their clinical team with the program or clinical initiative, along with program evaluation methods. Prerequisite: Acceptance into the DCN program.

**DN 999. Dissertation. 1-6 Credits.**

Preparation of the written dissertation based upon original research and in partial fulfillment of the requirements for the Ph.D. degree. Prerequisite: DN 990 or consent of advisor.

## Health Information Mgmt Courses

**HEIM 177. First Year Seminar. 3 Credits.**

A limited-enrollment, seminar course for first-time freshmen, addressing current issues in health data and information management. Course is designed to meet the critical thinking learning outcome of the KU Core. First-Year Seminar topics are coordinated and approved by the Office of Academic Programs and Experiential Learning. Prerequisite: Open to Freshmen only (less than 30 hours).

**HEIM 210. Introduction to Healthcare. 1 Credits.**

This course is an introductory overview of the United States healthcare system. Course content emphasizes organizational structures and patient care settings in healthcare, healthcare professionals and their roles, as well as laws and regulations that influence how healthcare is paid for, quality is assessed, and healthcare data is protected. Current events in healthcare are also addressed. Open to all students.

**HEIM 230. Medical Terminology. 3 Credits.**

A study of the language of medicine including word construction, definitions, medical abbreviations, and use of terms related to various areas of medical science and health professions. Course requires students to be able to break down medical terms, understand their meanings and pronounce them correctly. This online course is designed for students interested in clinical and health professions.

**HEIM 401. Introduction to Health Information Management (HIM). 3 Credits.**

This course introduces students to the foundational concepts of health record content, characteristics and requirements, along with the operational processes designed to support and safeguard the healthcare data and information contained therein. Joint Commission survey process is also included. Industry standard software applications are used for applied, hands-on learning in this course.

**HEIM 415. Healthcare Delivery Systems. 3 Credits.**

This course is an in-depth overview of the United States healthcare system and focuses on the structure and function of services across

settings. Special emphasis is placed on the history of healthcare, reimbursements and financing, health policy, outcomes (cost, quality, access) and the integration of care across delivery settings using health information technology.

**HEIM 420. Legal Aspects of Healthcare. 3 Credits.**

This course introduces the student to some of the basic legal principles found in healthcare and health information management (HIM). Fundamentals of law including statutory, regulatory, and judiciary practices are reviewed in the context of HIM including tort and liability. Emphasis is placed on HIPAA regulations. Patient legal rights and responsibilities as related to their healthcare are included, as well as fraud and abuse prevention and compliance.

**HEIM 425. Pharmacology Concepts for Health Information Management. 2 Credits.**

A fundamental overview of how drugs affect the human body and how the body impacts drugs used in pharmacotherapy. This course is designed to provide the student with the knowledge necessary for managing patient health information specific to medication administration and management. This course also covers pharmacology topics relevant to analyzing medication administration documentation in the patient health record. Prerequisite: Admission to BS in HIM program or instructor permission.

**HEIM 435. Clinical Concepts for Health Information Management. 3 Credits.**

This course examines ways in which health information professionals apply knowledge of clinical concepts in professional practice. Course content surveys professional practice roles and application of clinical knowledge in daily work, clinical documentation in health records, as well as diseases and conditions affecting the various body systems. Prerequisite: Anatomy and physiology lecture and lab, medical terminology, or instructor consent.

**HEIM 450. Introduction to Professional Practices Experiences. 1 Credits.**

This course is designed to provide students a better understanding of the various career opportunities in the Health Information Management field and develop skills required for professional environments. The emphasis is on professional behavior for health information management professionals in the workplace. Course content is intended to prepare students for site visits, professional practice experiences, internships, and their future careers.

**HEIM 485. Independent Study in Health Information Management. 1-10 Credits.**

The content will vary depending on material appropriate to students. May be repeated for additional credit utilizing a variety of projects and special assignments. Prerequisite: Permission of the program director.

**HEIM 501. Information Resources and Professional Development. 2 Credits.**

This course prepares students to effectively utilize information resources and technology on an academic medical center campus to foster success in the Health Information Management program, professional practice experiences and the health professions. Students will learn to apply software applications, project management strategies, and professional writing and literacy skills. This course has a special emphasis on professionalism, self-awareness, communication, collaboration and critical thinking.

**HEIM 510. Professional Practice Experience / Lab I. 1 Credits.**

This course provides a laboratory/professional practice experience opportunity for the application of concepts learned through previous coursework in addition to further exploration of advanced health information management topics, interprofessional education, and

technical writing. Prerequisite: Successful completion of Junior-level HIM academic courses or permission from instructor.

**HEIM 525. Healthcare Database and Architecture. 3 Credits.**

This course is designed to help students understand databases and database management systems. Students will learn to model and understand database design, in conjunction with learning methods to structure data as records, tables, or objects. Students will also learn how query languages are used for searching, sorting, reporting, and other "decision support" activities to best utilize the available data. Along with acquiring knowledge fundamental to management of the electronic health record (EHR), students will develop general technical knowledge to become capable health information professionals. Prerequisite: IST 202, IST 205, or similar course.

**HEIM 540. Health Information Systems. 3 Credits.**

The increased use of technology to support health data and information continues to evolve. This course introduces students to core topics and concepts in health informatics, emphasizing the implementation and management of health information systems. Students learn the conceptual framework and foundational elements of health informatics, selecting and implementing systems through the Systems Development Life Cycle (SDLC), data and information infrastructure, privacy and security aspects, human-computer interaction frameworks and usability concepts, and current trends and supporting technologies.

**HEIM 565. Clinical Terminologies and Classifications I. 4 Credits.**

This course introduces classification systems and terminologies used in healthcare and the relationship of these systems to patient care, research, and reimbursement systems. Course content provides study and application of coding guidelines, conventions, and rules of coding systems. Prerequisite: HEIM 435 or permission of the instructor.

**HEIM 567. Quality and Performance Improvement in Healthcare. 3 Credits.**

This course provides instruction on the principles of quality (QI) and performance improvement (PI) in the context of healthcare. PI drivers, models, techniques, and processes are covered including workflow reengineering. QI program organization, management and effectiveness are addressed. This course also includes content on patient safety, risk management, resource management and assessment of provider competence.

**HEIM 570. Introduction to Healthcare Management. 3 Credits.**

This course introduces theoretical and applicable concepts of management with an emphasis on managing in healthcare organizations. Students explore traditional management roles as well as leadership concepts. Course content depicts management in the context of a complex stakeholder environment evidenced in the healthcare system of the United States.

**HEIM 571. Human Resource Management in Healthcare. 3 Credits.**

This course explores the human resource management roles and responsibilities that are necessary in the successful administration of healthcare organizations. Course content studies the fundamentals of human resource management including employment law, staffing, performance management, workforce diversity, and training and development. Prerequisite: HEIM 570 Healthcare Management.

**HEIM 575. Applied Statistics and Research Methods in Healthcare. 3 Credits.**

Emphasis is on the statistical analysis of healthcare data. Content includes hospital-based statistics, an introduction to epidemiological concepts, research design and methodology, research ethics

and protocol, hypothesis testing, data management, analysis and presentation. Prerequisite: HEIM 525 and MATH 365 or similar.

**HEIM 585. Healthcare Reimbursement. 3 Credits.**

This course examines complex financial systems within the United States healthcare system. Students explore content related to healthcare reimbursement methodologies and revenue cycle management.

**HEIM 635. Clinical Terminologies and Classifications II. 3 Credits.**

This course offers continued study of classification systems and terminologies used in healthcare and the relationship of these systems to patient care, research, and reimbursement systems. This course includes an introduction to the role of mapping between the various classification systems, nomenclatures and clinical terminologies used in healthcare. Prerequisite: HEIM 565 or permission of the instructor.

**HEIM 661. Management Principles in Health Care. 3 Credits.**

Introduction to basic principles of management and education and their application in the current healthcare environment. Course content includes: management, quality issues, budgeting, personnel issues, evaluation and application of management concepts, and educational methodologies. Cross listed with CLS 661 and RESP 661. Prerequisite: Admission to the Health Information Management Program or permission of the instructor.

**HEIM 665. Topics in Health Information Management. 2 Credits.**

This course will utilize case studies, student discussions and guest presentations to address the latest developments in the management of health information. Students will examine key issues and trends within HIM through a series of seminar topics and presentations.

**HEIM 670. Independent Study in Health Information Management. 1-10 Credits.**

The content will vary depending on material appropriate to students. May be repeated for additional credit utilizing a variety of projects and special assignments. Prerequisite: Permission of the program director.

**HEIM 671. Leadership in Healthcare. 3 Credits.**

This course applies key concepts in personal, professional and organizational leadership for healthcare management. Special emphasis is on strategic leadership and planning for enterprise-wide health information strategies. Students will focus on leadership styles with an emphasis on self-discovery and professional development within an ever-changing environment.

**HEIM 676. Healthcare Analytics. 3 Credits.**

This course covers data-driven, computer-based tools and data analysis techniques that aid decision-making in healthcare. Effective use of data analysis increases the quality of strategic and operative planning and reduces the time used for decision-making processes. The course focuses on data-driven techniques and tools including such topics as medical coding systems, database fundamentals, business performance monitoring (managerial dashboards), and data mining applied to the healthcare industry. A number of data mining and predictive modeling approaches are discussed to address specific issues in healthcare. Prerequisite: HEIM 575.

**HEIM 679. Information Governance in Healthcare. 3 Credits.**

This course examines the role of health information managers as facilitators and champions of information governance in healthcare organizations. Course content includes an exploration of the topic of information governance, as well as introduces strategic considerations for enterprise processes, policies and procedures, standards, and metrics to support information governance efforts. Information is considered

throughout the course as a strategic asset for organizational optimization. External users of information and related implications are also discussed.

**HEIM 680. Management Internship. 3 Credits.**

This is a four-week internship that provides the student with a management capstone experience with the activities and responsibilities commonly performed by the health information administrator. Students receive "hands-on" managerial experience. The internship may take place in any type of healthcare setting throughout the healthcare continuum and industry. Students interpret classroom theory into actual planning, organizing, assessing, and controlling situations in a health information department or related administrative or technical environment. Students are responsible for all costs including room, board, and transportation. Management internship sites are selected based upon such factors as: HIM experience, credentials of the student, expressed wishes from their internship choices. Prerequisite: Successful completion of all HIM professional coursework and/or permission of the instructor.

**HEIM 681. Management Practicum. 3 Credits.**

This practicum experience provides the student with a management capstone experience in the activities and responsibilities of the health information administrator. The specific practicum topics are selected based on the experience and credentials of the student. Prerequisite: Successful completion of all HIM professional coursework and/or permission of the instructor.

## Hearing and Speech Courses

**AUD 805. Introduction to Clinical Research. 1 Credits.**

The course will provide a comprehensive overview to clinical research. The student will gain an understanding of how to develop clinical research questions including protocol design and the factors that should be considered in initiating a clinical research study. This will include biostatistical considerations, the recruitment of study participants, regulatory issues, and data management, and defining measures and instruments. Students will gain knowledge of how to define clinical research among the various institutional entities involved with clinical research at the University of Kansas Medical Center such as the Research Institute (RI), General Clinical Research Center (GCRC) and the Human Subjects Committee (HSC). Additionally, one component of the course will focus on how to apply for funding (grantsmanship), critical appraisal of research studies, and how to present research data. Prerequisite: Consent of instructor.

**AUD 810. Diagnostic Audiology. 4 Credits.**

Audiometric calibration, pure tone and speech testing, analysis of audiograms, middle ear testing.

**AUD 811. Hearing Disorders. 3 Credits.**

A study of disorders of the auditory system including anatomical, physiological, perceptual, and audiological manifestations of pathologies affecting hearing. Prerequisite: AUD 810 and AUD 829.

**AUD 813. Psychoacoustics and Theories of Hearing. 3 Credits.**

A study of relations between common acoustic stimuli and the responses they elicit; consideration of sensory scales, noise phenomena, and speech intelligibility. Prerequisite: AUD 829.

**AUD 814. Hearing Conservation. 1 Credits.**

A study of the major components of hearing conservation programs in industrial, educational, and military settings. Forensic audiology issues related to occupational hearing loss are included. Prerequisite: AUD 810 and AUD 829.

**AUD 816. Speech Perception. 2 Credits.**

Acoustic and perceptual characteristics of phonemes, words, and connected speech for normal-hearing adults and infants; how speech

perception is assessed clinically and is affected by hearing loss, aging, use of amplification, talker differences, and linguistic factors. (Same as SPLH 716.)

**AUD 817. Pediatric Audiology. 3 Credits.**

Normal and pathological development of the auditory system; pediatric audiometric testing; auditory and communication aspects in the habilitation of hearing-impaired children. Prerequisite: AUD 810.

**AUD 818. Vestibular Systems and Disorders. 3 Credits.**

Study of the anatomy and physiology of the normal peripheral and central vestibular system; clinical assessment of vestibular disorders; vestibular rehabilitation.

**AUD 819. Hearing Aids I. 3 Credits.**

Study of the components, function, fitting, and performance characteristics of hearing aids, applications of amplification in rehabilitative audiology. Prerequisite: AUD 810.

**AUD 820. Rehabilitative Audiology and Counseling. 3 Credits.**

Principles and methods of auditory, communication, and social assessment and intervention with hard of hearing and deaf adults, children, and their families. Prerequisite: AUD 810 and AUD 819 or equivalent.

**AUD 821. Hearing Aids II. 3 Credits.**

The advanced study of the theoretical bases, techniques, and clinical application of hearing aids and their assessment. Participants will review, present, and discuss contemporary issues in hearing aid literature and research. Prerequisite: AUD 819.

**AUD 822. Electro-Acoustics and Instrumentation. 3 Credits.**

A study of the generation, control and measurement of the simple and complex sounds essential to clinical audiology and hearing research.

**AUD 823. Cochlear Implants and Hearing Assistance Technologies. 2 Credits.**

Through lecture and discussion format, this course will cover the principles and methods of assessment, candidacy, surgery, programming and rehabilitation of patients receiving cochlear implants. In addition, hearing assistance technologies such as large area systems and alerting devices will be covered with emphasis on classroom amplification. Prerequisite: AUD 819 and AUD 821 or permission of instructor.

**AUD 824. Central Auditory Processing. 2 Credits.**

The study of the anatomy and physiology of the central auditory system. Analysis and review of the diagnostic procedures and the therapeutic strategies for central auditory processing disorders.

**AUD 826. Tinnitus Management. 2 Credits.**

This course provides an advanced lesson in the evaluation and treatment of tinnitus and decreased sound tolerance. Topics include: diagnostic evaluation, CBT, biofeedback therapy, sound generator selection and programming, hearing aid considerations and programming, verification/validation, and pediatric considerations. Prerequisite: AUD 821.

**AUD 828. Genetics and Hearing Loss. 2 Credits.**

The fundamentals of human genetics as related to hearing loss, including patterns of inheritance, genotypic and phenotypic characteristics of the major forms of syndromic and nonsyndromic hearing loss; genetic counseling, genetic testing, possible genetic treatment, and issues related to them; resources for keeping up with this rapidly changing field. Prerequisite: Permission of instructor.

**AUD 829. Anatomy and Physiology of the Hearing and Vestibular Mechanisms. 3 Credits.**

Advanced study of the anatomical and physiological properties of the human hearing and vestibular mechanisms.

**AUD 841. Clinical Observation. 1 Credits.**

This course provides a community-based application of foundational audiology topics. First-year Au.D. students will observe a variety of community audiology clinics.

**AUD 842. Interprofessional Education for Audiologists. 1 Credits.**

Observation of healthcare professionals providing services at regional hospitals or clinics. Through observations, readings, and reflections, students are oriented to the work of healthcare professionals outside the field of audiology and the role of audiology within an interprofessional healthcare team.

**AUD 843. Clinical Practice in Audiology. 1-6 Credits.**

Supervised simulation experiences and clinical work at the University and/or University Medical Center audiology clinics, or affiliated, off-campus practicum sites. Prerequisite: Permission of instructor.

**AUD 846. Independent Study in Problems in Audiology. 1-10 Credits.**

**AUD 851. Auditory Evoked Potentials. 3 Credits.**

Theoretical bases, techniques, and clinical applications for auditory evoked potentials including electrocochleography, auditory brainstem response, middle and late latency and cognitive responses. Prerequisite: AUD 810, AUD 822, AUD 829, or permission of instructor.

**AUD 853. Pharmacology for Audiology. 2 Credits.**

Presentation and discussion topics including: basic pharmacology (pharmacokinetics and pharmacodynamics), mechanisms of ototoxicity, selected ototoxic agents, drugs used in otolaryngology, and a review of patient management strategies. Prerequisite: Enrollment in the Au.D. or Ph.D. audiology program or permission of instructor.

**AUD 858. Business Audiology. 2 Credits.**

An introduction to audiology business practice principles. Operational functions of the audiology clinic will be reviewed, including human resources, marketing, legal and ethical practice concerns, billing, coding and reimbursement. Prerequisite: enrollment in the Au.D. or Ph.D. audiology program or permission of instructor.

**AUD 899. Thesis. 1-10 Credits.**

**AUD 940. Seminar in Audiology: \_\_\_\_\_. 1-4 Credits.**

Advanced study of selected topics in audiology such as (but not limited to): cochlear micromechanics and other physiological processes; psychoacoustics, speech perception, cochlear implants, scientific reading, etc. Prerequisite: Enrollment in the Audiology Ph.D. or Au.D. program or permission of instructor.

**AUD 941. Grand Rounds in Audiology. 1 Credits.**

Presentations/discussion of clinical case studies and professional issues in Audiology. Au. D. students and audiology faculty members will participate in these sessions.

**AUD 942. Investigation and Conference. 1 Credits.**

Readings and case study analysis in preparation for the formative and comprehensive exams. Enrollment is restricted to Au.D. students. Prerequisite: 2 semesters of full-time enrollment in the Au.D. program.

**AUD 944. Clinical Rotation. 1-6 Credits.**

Supervised clinical work at university-affiliated, off-campus sites. The Clinic Rotation is intended to prepare students for entry into their Clinical Externship and to foster increasing independence. Clinical skills required are defined in standards set forth by the American Speech-Language Association.

**AUD 945. Clinical Externship. 1-9 Credits.**



Supervised clinical work at the University of Kansas and/or KUMC audiology clinics, or affiliated, off-campus sites. The Clinical Externship is intended to refine clinical skills, increase clinical independence, and ensure that clinical skills meet the certification standards in audiology set forth by the American Speech-Language-Hearing Association. Open to 3rd and 4th year Au.D. students. Approval from Instructor needed for 3rd year students.

**AUD 946. Advanced Grand Rounds in Audiology. 1 Credits.**

Advanced, critical discussion of clinical case studies and professional issues in audiology and interprofessional collaboration. Third- and fourth-year Au.D. students and audiology faculty will participate in these sessions. Prerequisite: 4 credits of AUD 941 or by permission.

**AUD 999. Doctoral Dissertation. 1-12 Credits.**

## Hearing and Speech Courses

**SLPD 801. Seminar on Evidence-Based Practice in Speech-Language Pathology and Other Health Sciences I. 3 Credits.**

This course is designed to give students a thorough understanding of evidence-based principles and procedures so that they could provide evidence-based services in a clinical setting. It is also designed to prepare students to assume a position of leadership in which they would be required to promote and teach evidence-based practices to their staff clinicians. Prerequisite: Consent of instructor.

**SLPD 802. Seminar in Evidence-Based Practices in Communicative Disorders. 3 Credits.**

In this course, students apply information covered in SLPD 801 to their areas of primary concentration. In-class and on-line sessions are led by students and guests from the university and community. Student presentations include primarily reports of progress on their semester project, a meta-analysis dealing with a clinical issue of their choice. Students report on status of (a) their development of the research question; (b) details of the literature search; (c) evaluation of relevant studies; (d) determination of level of evidence provided by the studies; (e) calculation and aggregation of effect sizes; and (f) conclusions regarding the impact of the analysis on clinical practice. Guest presenters, including program and university faculty as well as clinic administrators and practitioners from the community, lead discussions on advantages of and problems with using evidence-based practices to help them make decisions in the speech-language clinic.

**SLPD 804. Clinical Practice in Speech-Language Pathology: Advanced Training for the Experienced Clinician. 1-3 Credits.**

Students participate in clinical experiences (assessment and/or treatment) related to their primary and/or secondary area of concentration. Clinical experiences in which the student learns about a particular patient population, standardized and non-standardized assessment measures, instrumentation, computer software, devices, and/or treatment techniques and strategies are possible. Prerequisite: certification in speech-language pathology from the American Speech-Language-Hearing Association.

**SLPD 805. Independent Study in Speech-Language Pathology. 1-3 Credits.**

Investigation of special topics by individual SLPD students. Prerequisite: Consent of Instructor.

**SLPD 903. Capstone Project. 1-6 Credits.**

The Capstone Project reflects the culmination of academic and advanced clinical study and may take many forms (e.g., small original research study, original analysis of data collected by another researcher, research literature meta-analysis, program design and analysis, etc.). The Capstone project will comprise a written report that involves both literature and field activity. A Capstone project represents the research and application

of knowledge, as well as an articulated plan for dissemination of the outcomes. Students will enroll in this course for a total of 6 credits.

Prerequisite: Consent of Instructor.

## Nurse Anesthesia Courses

**NURA 761. Nurse Anesthesia Pharmacology I. 3 Credits.**

Gain advanced pharmacologic knowledge pertinent to perioperative anesthetic management. This course focuses on, but is not limited to, the following areas: general pharmacology principles, intravenous induction agents, inhalation anesthetics, opioid and nonopioid analgesics, principles of the autonomic nervous system, G-proteins, cardiac pharmacology, and diuretics. Students will enhance critical analytical thinking, problem-solving skills, and ability to synthesize didactic information to the clinical environment. The intent of this didactic course is to guide students in the acquisition, synthesis, and integration of advanced pharmacologic principles related to anesthesia practice.

**NURA 764. Nurse Anesthesia Pharmacology II. 3 Credits.**

The intent of this didactic course is to guide students in the acquisition, synthesis, and integration of advanced pharmacologic principles related to anesthesia practice. In this course, the student will acquire advanced pharmacologic knowledge pertinent to perioperative anesthetic management. This semester the focus will be on, but not limited to, the following areas: neuromuscular blocking drugs and reversal agents, anti-Parkinson and anti-convulsant medications, psychiatric medications, pulmonary pharmacology, local anesthetics, endocrine pharmacology, antiemetics, antimicrobials, and chemotherapy. The goal of this learning will be to enhance the student's critical analytical thinking, problem-solving skills, and ability to synthesize didactic information to the clinical environment. Prerequisite: NURA 761.

**NURA 800. Professional Aspects of Anesthesia. 3 Credits.**

This course includes orientation to the profession of nurse anesthesia. The student will gain an understanding of the anesthesia department management and organization. The history of anesthesia will be discussed. Ethical, psychological, professional adjustments and legal responsibilities of the nurse anesthetist will be presented.

**NURA 801. Introduction to Clinical Practicum. 1 Credits.**

Students will engage in clinical practice that involves introduction to basic anesthesia skills. Emphasis is given to patient assessment, anesthetic planning and management of the patient population of low risk categories. The course includes introduction to clinical problem solving and "call" experiences that address the trauma patient and emergency surgical/anesthetic interventions for pathological states. Prerequisite: Permission of Instructor.

**NURA 805. Clinical Anatomy. 4 Credits.**

An intensive study of the major anatomical systems and regions of the body which have clinical significance for anesthetists and others. Particular attention devoted to the respiratory, cardiovascular, and nervous systems. Regional topics include the anatomy of the head, neck, vertebral column, thorax, axilla, and femoral triangle. Involves both lectures and cadaver dissection, plus appropriate models, x-ray films, and audiovisual materials. Prerequisite: Admission to the Nurse Anesthesia Program or permission of instructor.

**NURA 806. Advanced Physiology. 4 Credits.**

A course designed to lead to an advanced comprehension of the physiology of organ systems in the human in both cellular and organ processes. Physiology subject matter relevant to clinical health sciences include membrane transport, muscle, cardiovascular, respiratory, renal, water and electrolyte balance, gastrointestinal, and endocrine physiology as well as neurophysiology. Cellular mechanisms include the structure and function of ion channels and pumps, mechanisms of calcium

regulation, excitation-coupling processes and mechanisms of oxidative cell damage and apoptosis. Prerequisite: Permission of instructor.

**NURA 808. Health Care Policy for Advanced Nursing Practice. 2 Credits.**

Students will utilize current clinical and legislative issues to examine ways to conceptualize the issues into social policy contexts. Assignments throughout the course are employed to both demonstrate and engage students in leadership and structural systems theories to effect change in healthcare policy. The course includes social policy development across the lifespan, leadership styles which influence change, and the implementation and analysis of policy solutions. Prerequisite: Successful completion of first three semesters of Doctor of Nurse Anesthesia Practice curriculum.

**NURA 809. Adv Pathophysiology. 3 Credits.**

A course designed to lead to advanced comprehension of pathophysiologic processes in the human body. Course content will build upon prior nursing education and professional experiences to provide a scientific basis for clinical application related to anesthetic planning and implementation. The intent of this course is to prepare the nurse anesthesia student to engage in critical thinking and problem-solving skills pertinent to the application of best practices involving anesthesia considerations for patients with pathological conditions. Prerequisite: NURA 806 Advanced Physiology.

**NURA 811. Advanced Theory in Anesthesia I. 3 Credits.**

This is the first of five successive courses relative to the didactic study of the art and science of nurse anesthesiology. Students will acquire the knowledge base pertinent to the perioperative anesthetic management of ophthalmology and otorhinolaryngology procedures and patients with alterations in the endocrine system. Students enhance their critical thinking, problem-solving skills and ability to synthesize didactic information to the clinical environment. In addition, students will be required to engage in analysis of currently published research to identify "best practices" based on research evidence. Prerequisite: Permission of Instructor.

**NURA 812. Advanced Theory in Anesthesia II. 3 Credits.**

This is the second of five successive courses relative to the didactic study of the art and science of nurse anesthesiology. Students will acquire the knowledge base pertinent to the perioperative anesthetic management of gastrointestinal and hepatobiliary disorders, bariatrics, robotic/ laparoscopic procedures, otorhinolaryngology disorders, and renal disorders. Students enhance their critical thinking, problem-solving skills and ability to synthesize didactic information to the clinical environment. In addition, students will be required to engage in analysis of currently published research to identify "best practices" based on research evidence. Prerequisite: Permission of Instructor.

**NURA 813. Advanced Theory in Anesthesia III. 2 Credits.**

This is the third of five successive courses relative to the didactic study of the art and science of nurse anesthesiology. Students will acquire the knowledge base pertinent to the perioperative anesthetic management of obstetrical, neonatal and pediatric patients. Students enhance their critical thinking, problem-solving skills and ability to synthesize didactic information to the clinical environment. In addition, students will be required to engage in analysis of currently published research to identify "best practices" based on research evidence. Prerequisite: Permission of Instructor.

**NURA 814. Advanced Theory in Anesthesia IV. 3 Credits.**

This is the fourth of five successive courses relative to the didactic study of the art and science of nurse anesthesiology. Students will acquire the knowledge base pertinent to the perioperative anesthetic management of neurosurgical, cardiovascular, thoracic, and transplantation patients.

Students enhance their critical thinking, problem-solving skills and ability to synthesize didactic information to the clinical environment. In addition, students will be required to engage in analysis of currently published research to identify "best practices" based on research evidence. Prerequisite: Permission of Instructor.

**NURA 815. Advanced Theory in Anesthesia V. 3 Credits.**

This is the fifth of five successive courses relative to the didactic study of the art and science of nurse anesthesiology. This is the final theory course of didactic study for the art and science of nurse anesthesia. Students will acquire the advanced knowledge pertinent to the perioperative anesthetic management of geriatric patients and patients undergoing orthopedic procedures. Students will enhance their critical problem-solving skills and ability to analyze/synthesize didactic anesthesia content for application to clinical practice. In addition, students will be required to review and engage in analysis of contemporary research to identify "best practices." The course content is provided as web-based and instructor facilitated learning. Prerequisite: Permission of Instructor.

**NURA 820. Information Systems and Data Management in Anesthesia. 1 Credits.**

Information systems, data management concepts, and their applications will be explored. This will enable the doctoral prepared nurse anesthetists to utilize resources to facilitate quality improvement, increase patient safety through outcome measurements, and improve resource utilization in the perioperative period. Prerequisite: Permission of instructor.

**NURA 821. Advanced Practicum in Anesthesia I. 2 Credits.**

This is the first of six courses relative to the application of the art and science of nurse anesthesiology. Each section is designed to address specific surgical categories and the relevant patient care needs and risks. Completion of each course requires acquisition and refinement of clinical skills. Students will demonstrate progression in cognitive, psychomotor and affective skills appropriate to a professional nurse anesthetist. Prerequisite: Permission of Instructor.

**NURA 822. Advanced Practicum in Anesthesia II. 2 Credits.**

This is the second of six courses relative to the application of the art and science of nurse anesthesia. Each section is designed to address specific surgical categories and the relevant patient care needs and risks. Completion of each course requires acquisition and refinement of clinical skills. Students will demonstrate progression in cognitive, psychomotor and affective skills appropriate to a professional nurse anesthetist. Prerequisite: Permission of Instructor.

**NURA 823. Advanced Practicum in Anesthesia III. 2 Credits.**

This is the third of six courses relative to the application of the art and science of nurse anesthesia. Each section is designed to address specific surgical categories and the relevant patient care needs and risks. Completion of each course requires acquisition and refinement of clinical skills. Students will demonstrate progression in cognitive, psychomotor, and affective skills appropriate to a professional nurse anesthetist. Prerequisite: Permission of Instructor.

**NURA 831. Advanced Chemistry and Physics. 2 Credits.**

Chemical and physical principles including states and properties of matter, laws governing the behavior of gases, flow and vaporization, oxidation and combustion; principles of electricity and electrical safety; and chemical properties and structure-activity relationships as a foundation for pharmacology. Course will also cover pertinent areas of organic chemistry. Prerequisite: Permission of instructor.

**NURA 833. Basic Principles of Anesthesia Practice. 3 Credits.**

This course introduces students to the introductory principles and theories regarding the art and science of anesthesia practice. Students will develop a conceptual basis for practice gained through a systems

approach applied to development of anesthesia care based upon a strong foundation in physical assessment, physiological monitoring, applications of pharmacology, anesthesia systems, physical and chemical basic sciences. Prerequisite: Admission to the nurse anesthesia program or permission of instructor.

**NURA 835. Advanced Physical Assessment and Patient Care Technology for Anesthesia. 3 Credits.**

This course is designed to develop and refine the physical assessment skills of the practitioner as well as enhance their understanding, interpretation, and application of laboratory measurements and advanced diagnostic procedures in the perioperative setting. The course is arranged in a systems approach with emphasis placed on the cardiovascular, pulmonary, renal, neurological, and endocrine. Diagnostic procedures and laboratory values specific to each of these systems and their relevance to anesthesia principles and practice will be discussed. The selection of appropriate monitoring devices specific to each system related to individual patient needs will be discussed. Prerequisite: Permission of instructor.

**NURA 839. Regional Anesthesia/Pain Management. 3 Credits.**

Includes study of conductive anesthesia techniques, pharmacokinetics of local anesthetics, anatomical placement, and physiologic response. The course is inclusive of acute and chronic pain management techniques.

**NURA 880. Advanced Topics: \_\_\_\_\_. 1-4 Credits.**

Special study allowing a student to pursue a particular subject through readings, directed assignments, and conferences with a faculty member. Prerequisite: Consent of instructor.

**NURA 889. Introduction to Theory, Research Methods and Evidence-Based Practice. 3 Credits.**

Methods of theory development and analysis provide the foundation for the study of concepts and theories from nursing, anesthesiology and related scientific disciplines. Historical, scientific and philosophical frameworks relevant to the theoretical basis of nurse anesthesia are explored. The fundamentals of research methodology are examined including elements of design, measurement, statistical analysis and dissemination. The relationships between research, theory and practice are developed to create an awareness of how "best practice" resources support professional growth, competence and quality. Prerequisite: Permission of instructor.

**NURA 892. Applied Statistics and Analysis in Health Care. 3 Credits.**

Concepts include graduate-level statistical reasoning, statistical principles, and the role as the scientific basis for clinical and public health research and practice. Content includes hospital-based statistics, introduction to epidemiology, relationship of research design to statistical methods, research ethics/protocol, hypothesis testing, and data management. Prerequisite: Permission of instructor.

**NURA 901. Evaluation and Application of Evidence-Based Practice in Anesthesia I. 1 Credits.**

First of four courses in which the student will use analytic methods to critically appraise existing literature from nurse anesthesiology and other disciplines to determine and implement the best evidence for practice. An exploration of the design, implementation and evaluation of quality improvement methodologies will lead the student to an appreciation of the safe, effective, efficient and timely delivery of patient-centered anesthesia care. Previous student knowledge in the domain of research analysis will be applied to the design of evidence-based interventions in current anesthesia practice. Prerequisite: Permission of instructor.

**NURA 902. Evaluation and Application of Evidence-Based Practice in Anesthesia II. 1 Credits.**

Second of four courses in which the student will use analytic methods to critically appraise existing literature from nurse anesthesiology and other disciplines to determine and implement the best evidence for practice. An exploration of the design, implementation and evaluation of quality improvement methodologies will lead the student to an appreciation of the safe, effective, efficient and timely delivery of patient-centered anesthesia care. Previous student knowledge in the domain of research analysis will be applied to the design of evidence-based interventions in current anesthesia practice. Prerequisite: Permission of instructor.

**NURA 903. Evaluation and Application of Evidence-Based Practice in Anesthesia III. 1 Credits.**

Third of four courses in which the student will use analytic methods to critically appraise existing literature from nurse anesthesiology and other disciplines to determine and implement the best evidence for practice. An exploration of the design, implementation and evaluation of quality improvement methodologies will lead the student to an appreciation of the safe, effective, efficient and timely delivery of patient-centered anesthesia care. Previous student knowledge in the domain of research analysis will be applied to the design of evidence-based interventions in current anesthesia practice. Prerequisite: Permission of instructor.

**NURA 904. Evaluation and Application of Evidence-Based Practice in Anesthesia IV. 1 Credits.**

Fourth of four courses in which the student will use analytic methods to critically appraise existing literature from nurse anesthesiology and other disciplines to determine and implement the best evidence for practice. An exploration of the design, implementation and evaluation of quality improvement methodologies will lead the student to an appreciation of the safe, effective, efficient and timely delivery of patient-centered anesthesia care. Previous student knowledge in the domain of research analysis will be applied to the design of evidence-based interventions in current anesthesia practice. Prerequisite: Permission of instructor.

**NURA 912. Leadership in Nurse Anesthesia I. 1 Credits.**

First of two courses which focus the students on leadership projects which were designed in NURA 800, Professional Aspects of Anesthesia. Students will apply a variety of leadership theories as they conduct the projects with nurse anesthesia faculty supervision. At the conclusion of NURA 913, students will evaluate the projects and determine if goals were met, recognize which principles of leadership theory(ies) were utilized in the projects, and prepare an action plan for revisions. Presentations and self-analysis of the projects will be posted as VOPPTs on the ANGEL course site. Prerequisite: Permission of instructor.

**NURA 913. Leadership in Nurse Anesthesia II. 1 Credits.**

Second of two courses which focus the students on leadership projects which were designed in NURA 800, Professional Aspects of Anesthesia. Students will apply a variety of leadership theories as they conduct the projects with nurse anesthesia faculty supervision. At the conclusion of NURA 913, students will evaluate the projects and determine if goals were met, recognize which principles of leadership theory(ies) were utilized in the projects, and prepare an action plan for revisions. Presentations and self-analysis of the projects will be posted as VOPPTs on the ANGEL course site. Prerequisite: Permission of instructor.

**NURA 924. Advanced Practicum IV. 2 Credits.**

Fourth of six clinically-based courses related to the art and science of advanced nurse anesthesia practice and care of patients with specialized anesthesia care. The courses are divided into sequential clinical practicum related to diverse patient types in both normal and abnormal states and for those requiring anesthesia care in specialized areas (cardiothoracic, obstetrics, neurosurgical, etc.) Participation in case presentations may be required as warranted by clinical events. An opportunity is provided to apply advanced clinical decision making



skills and evidence-based research to the assessment, management, and evaluation of complex health care problems of a diverse patient population in the perianesthesia care setting. Prerequisite: Permission of instructor.

**NURA 925. Advanced Practicum V. 2 Credits.**

Fifth of six clinically-based courses related to the art and science of advanced nurse anesthesia practice and care of patients with specialized anesthesia care. The courses are divided into sequential clinical practicum related to diverse patient types in both normal and abnormal states and for those requiring anesthesia care in specialized areas (cardiothoracic, obstetrics, neurosurgical, etc.) Participation in case presentations may be required as warranted by clinical events. An opportunity is provided to apply advanced clinical decision making skills and evidence-based research to the assessment, management, and evaluation of complex health care problems of a diverse patient population in the perianesthesia care setting. Prerequisite: Permission of instructor.

**NURA 926. Advanced Practicum VI. 2 Credits.**

Sixth of six clinically-based courses related to the art and science of advanced nurse anesthesia practice and care of patients with specialized anesthesia care. The courses are divided into sequential clinical practicum related to diverse patient types in both normal and abnormal states and for those requiring anesthesia care in specialized areas (cardiothoracic, obstetrics, neurosurgical, etc.) Participation in case presentations may be required as warranted by clinical events. An opportunity is provided to apply advanced clinical decision making skills and evidence-based research to the assessment, management, and evaluation of complex health care problems of a diverse patient population in the perianesthesia care setting. Prerequisite: Permission of instructor.

**NURA 980. DNAP Senior Scholarly Project. 1-6 Credits.**

The DNAP Senior Scholarly Project is a merger of students' accumulated knowledge base, didactic and clinical, relevant to the practice of nurse anesthesia in the Doctor of Nurse Anesthesia Practice (DNAP) curriculum. The Senior Scholarly Project requires that a practice-focused problem, issue, or concern be identified and examined in depth. The project will include application of an innovation or intervention suitable to an area of focus (e.g. organizational leadership, clinical practice, education, administration, etc.) that involves the development, evaluation, and dissemination of the project findings to a targeted audience. The DNAP Senior Scholarly Project is designed in a series of phases. Each phase is to be completed during an enrolled semester. Continuous enrollment in the project is required during the final year of the DNAP course of study. During each semester of enrollment in the DNAP Senior Scholarly Project, students will participate in project committee reviews lead by the assigned Advisory Committee Chair relative to the progression and completion of the project. The DNAP Senior Scholarly Project committee and the student share joint responsibility for the facilitation, progression, and completion of the scholarly project. Prerequisite: NURA 889, NURA 892, PRVM 800.

## Occupational Therapy (MS) Courses

**OTMS 699. Special Projects. 1-6 Credits.**

(1-6) An elective course to allow student investigation of special issues or problems relevant to applied research and/or practice, under the direction of a faculty member chosen by the student. Systematic coverage of current issues may include a research investigation or study related to pertinent sociocultural trends, practice factors, or emerging issues in service provision. Students will complete special projects such as oral presentations, written papers, or case analysis as negotiate with the

faculty mentor. May be repeated for credit. Prerequisite: Enrollment as a non-degree seeking student and permission of the instructor.

**OTMS 701. Professional Development. 3 Credits.**

With an emphasis on leadership skills and professionalism, this course will include mentoring, supervising, managing, organizing presentations, and teaching, writing, and contributing through professional organizations (interdisciplinary and occupational therapy). Students professionalism on issues of concern to administrators, staff therapists, educators, or those in private practice. Prerequisite: Permission of Instructor.

**OTMS 705. Multidisciplinary Theoretical Perspectives. 3 Credits.**

Students will identify and explore the key theories in occupational therapy and those more specific to their emphasis area with an emphasis on those currently influencing clinical reasoning. Students will demonstrate an understanding of contemporary theories and be able to compare and contrast key theories. Students will develop rationales for theory guided interventions. Furthermore, they will develop an impact summary in their identified area of emphasis. Prerequisite: Permission of Instructor.

**OTMS 735. Practice Models for Applied Science. 3 Credits.**

Issues and trends relative to advanced application of theory, assessment and intervention with emphasis on pediatrics will be presented in lecture and discussion. Special projects will emphasize the student's special interests. Although faculty directed, student presentation will be emphasized.

**OTMS 799. Special Topics in Occupational Therapy. 1-6 Credits.**

An elective course to allow student investigation of special issues or problems relevant to applied research and/or practice, under the direction of a faculty member chosen by the student. Systematic coverage of current issues may include a research investigation or study related to pertinent sociocultural trends, practice factors, or emerging issues in service provision. Students will complete special projects such as oral presentations, written papers, or case analyses as negotiate with the faculty mentor. May be repeated for credit. Prerequisite: Permission of instructor.

**OTMS 800. Research Proseminar. 1 Credits.**

A proseminar conducted by the core graduate faculty in Occupational Therapy and Therapeutic Science. Twice-monthly meeting will involve student and faculty presentations of their current research, as well as provide more opportunities to obtain feedback on research proposals. May be taken more than once for a total of four credits. (Same as TS 800.)

**OTMS 801. Applied Neuroscience. 3 Credits.**

The course will address the major functions of the systems within the central nervous system and how they interact to produce responses to environmental demands. Sensory input, central processing, and output mechanisms will be analyzed. The student will then appraise human behavior in relation to function and dysfunction of the nervous system, both in formulating potential behavioral signs when a specific neurological site is presented, and in hypothesizing about neurological involvement when analyzing a particular individual's problems. Prerequisite: Undergraduate neuroscience course or permission of instructor.

**OTMS 835. Interpreting Research for Applied Science. 3 Credits.**

This on-line course examines selected research studies, analysis methods and results employed, and applies research findings to practical problems. Students will design their own research project reflecting their area of interest.

**OTMS 890. Graduate Research. 1-6 Credits.**

Students investigate an empirical question relevant to occupational therapy and write a literature review and a research proposal under the guidance of a faculty advisor. Pending approval of the proposal, the



student will carry out initial phases of the project, including materials preparation and data collection.

**OTMS 899. Thesis. 1-6 Credits.**

Course requires data analyses, interpretation, and scholarly writing based on individual original research carried out under the guidance of the student's adviser. These activities, along with an oral presentation of research, must meet with approval of the student's advisory committee to complete thesis requirements. Prerequisite: OTMS 890.

## Occupational Therapy Doctorate Early Entry Courses

**OTDE 700. Foundations in Occupational Therapy. 2 Credits.**

This foundational course will support transition to the graduate program and the occupational therapy profession. Students will understand occupation as the foundation of the discipline and discuss the philosophy, history, current practice parameters and future directions of the occupational therapy profession. This course introduces students to constructs of professionalism including ethics and professional behaviors, interprofessionalism, and professional responsibilities within context of occupational therapy. Prerequisite: Acceptance to the entry-level professional OTD program of study.

**OTDE 705. Functional Anatomy and Kinesiology to Support Occupational Performance. 3 Credits.**

This course will focus on understanding of the physical components of human movement which serve as one foundation for occupational performance. The instructor will facilitate a section-based review of anatomy (e.g., shoulder, elbow, wrist, hand, hip, knee) integrated with the biomechanical and kinesiology principles that occur in typical and atypical movement within each section. The emphasis in this course will be on how to use biomechanical and kinesiology principles to guide the development of occupation-based interventions in people with various abilities across the lifespan through promotion, compensation, adaptation and prevention. Prerequisite: Acceptance to the entry-level doctoral program in Occupational Therapy.

**OTDE 710. Professionalism in Context - I: Interpersonal and Interprofessional. 2 Credits.**

This course includes professional opportunities for students to apply interpersonal and interprofessional skills and professional reasoning through service learning. Students will gain understanding regarding occupational performance in medical, community and educational contexts across the lifespan. Students will participate in reflections through small group discussions, apply knowledge from fieldwork experiences, conduct assessments, and develop evidence-based interventions. The emphasis for this course in the series is becoming familiar with the interprofessional team process and structure. Prerequisite: Successful completion of all prior coursework required by the OTDE curriculum.

**OTDE 711. Professionalism in Context II. 3 Credits.**

This course will explore the importance of context in understanding how the person, environment, and tasks all interact to guide occupational performance in everyday life. Students will apply the fundamentals of the evaluation process to assess occupational performance across the lifespan. Prerequisite: Successful completion of all prior coursework required by the OTDE curriculum.

**OTDE 715. Scholarly Practice I: Becoming an Evidence-Based Practitioner. 2 Credits.**

This course provides a beginning structure for the development of foundational scholarship skills to support and inform evidence-based occupational therapy practice. Topics include university resources for

scholarship; finding and evaluating evidence related to conditions, assessments, interventions, outcomes, populations, and patient experiences. Students will be guided in understanding and categorizing levels of evidence provided by primary sources, books, web resources & practice journals. Students will complete writing assignments and identify key elements of scientific reasoning. Prerequisite: Acceptance to the entry-level professional OTD program.

**OTDE 716. Scholarly Practice II: Professional Writing. 2 Credits.**

This course builds on basic scholarship skills and will provide experience in communicating scholarly findings and articulating interpretation of study outcomes through professional writing. This process will reinforce familiarity with the American Psychological Association (APA) writing style. Writing clarity, good syntax, and proper grammar are essential components of professional writing, and will be considered when assigning grades. Prerequisite: Successful completion of all prior coursework required by the OTDE curriculum.

**OTDE 720. Theory to Practice in Occupational Therapy. 2 Credits.**

This course prepares students to use occupational therapy theories and professional reasoning to guide the OT process of evaluation, intervention and outcomes. Students will explore contemporary themes in current OT theories and models and examine the roots of these ideas. Students will explore how theory develops and evolves and the potential role of occupational therapy theories to influence health and well-being of individuals, groups and populations. Prerequisite: Acceptance to the entry-level professional OTD program.

**OTDE 725. Analysis & Adaptation I. 3 Credits.**

This course will analyze the role of occupations and the factors influencing occupational performance in everyday contexts. This course will apply the occupational therapy practice framework to understand occupation as a means and end to occupational therapy practice. This course will use experiential learning for understanding occupation, the occupational therapy process, and person-centered practice. Prerequisite: Acceptance to the entry-level professional OTD program.

**OTDE 726. Analysis & Adaptation II. 4 Credits.**

This course will apply concepts of professional reasoning and the occupational therapy framework to explore the impact of selected medical and psychosocial conditions on person factors and occupational performance in everyday life. An understanding of these conditions is paired with appropriate occupational therapy assessments and task analysis to understand performance considerations and occupation as a therapeutic means and end to occupational therapy practice. This course will use practical lab and service learning experiences as a context for understanding performance considerations, occupation, the occupational therapy process, and person-centered. Prerequisite: Successful completion of all prior coursework required by the OTDE curriculum.

**OTDE 730. Population Health & Wellness. 3 Credits.**

This course will present population-based concepts, theory, and evidence that link occupation, health, wellness, and quality of life and prioritize the health and life participation needs of populations. The course will draw from experiences with community partners to develop assessment and intervention emphasizing health promotion, maintenance and restoration of health and wellness and disease prevention for all populations in communities. Prerequisite: Acceptance to the entry-level professional OTD program.

**OTDE 740. Neuroscience Foundations to Support Occupational Performance. 3 Credits.**

Principles of neuroscience will be interpreted in clinical application using a strength-based approach to advance understanding of nervous system

function. The integration and function of neural systems will be considered in relation to specific challenges and capacity of the nervous system as a whole to support behavior. A practical application and problem-based perspective will be encouraged throughout the course, with students invited to consider consumer perspective and availability of potential supports. Students will consider human behavior and occupational performance in relation to development and to function/dysfunction of the nervous system, both in formulating potential behavioral signs when a specific neurological site is presented, and in hypothesizing about neurological involvement when given a client description. Prerequisite: Open to students enrolled in the entry-level OTD graduate program or those with permission from the OTED department. Successful completion of all prior courses required by the OTDE curriculum.

**OTDE 754. Occupational Performance and Participation Across the Lifespan - I. 3 Credits.**

This course is part 1 of theory and practice related to children and adolescents. This course will emphasize the need to examine participation in meaningful activities within authentic contexts with considerations for the effects of a disability, conditions, and age on occupational performance using a person-centered approach. Prerequisite: Successful completion of all prior courses in the OTDE curriculum.

**OTDE 755. Occupational Performance and Participation Across the Lifespan - II. 3 Credits.**

This is PART 2 of the OPPAL series that focuses on theory and practice related to children and adolescents. This course will emphasize the need to examine participation in meaningful activities within authentic contexts with considerations for the effects of a disability, conditions, and age on occupational performance using a person-centered approach. Prerequisites: Successful completion of all prior courses required by the OTDE curriculum.

**OTDE 756. Occupational Performance and Participation Across the Lifespan - III. 5 Credits.**

This course includes study about developmental theories and how occupations change across the lifespan related to adults and older adults. This course will emphasize the need to examine participation in meaningful activities within authentic contexts with considerations for the effects of a disability, conditions, and age on occupational performance. Prerequisite: Successful completion of all prior courses required by the OTDE curriculum.

**OTDE 760. Policy and Advocacy for Occupational Therapy - I. 2 Credits.**

This foundational course will introduce policies and the impact of professional advocacy on occupational therapy practice and systems. Students will understand what policy is, why policy matters, and how laws, payment/reimbursement policy, practice acts and regulatory agencies shape our view of health, ability/disability, and OT practice. Self-assessments provide baseline information for professional development related to policy and advocacy. Prerequisite: Successful completion of all prior courses required by the OTDE curriculum.

**OTDE 761. Policy and Advocacy for Occupational Therapy - II. 2 Credits.**

This course will build on foundational policy information by introducing system specific policies and the work of advocacy as applied to the OT profession, populations and policy development/implementation. Students will examine policy within and across settings and systems that impacts OT practice. Students will learn about stakeholders, policy development and will demonstrate advocacy within teams, across public/private systems. Prerequisite: Successful completion of all prior coursework required by the OTDE curriculum.

**OTDE 795. Scholarly Practice III: Understanding Research Methodology. 3 Credits.**

This course introduces students to the process of conducting research. Students will apply the evidence-based practice cycle, scientific method, and critical thinking skills of research to occupational therapy practice. Students will develop research questions aligned with their interests for OT practice needs, and then explore existing literature and evidence related to their research question. Students will learn about responsible conduct of research as they begin to employ the research process. Students will learn and practice the steps for quantitative research processes using a statistical software package. Students will learn the preliminary stages of how to write and put together the components of a manuscript for a peer-reviewed publication. Prerequisite: Successful completion of all prior courses required by the OTDE curriculum.

**OTDE 815. Supporting Occupational Performance Across the Mental Health Continuum. 4 Credits.**

This course will apply theory and evidence to occupational therapy practice across the continuum of mental health through mental illness in healthcare, social, and educational settings. Students will consider opportunities to support positive mental health for all people and support individuals with psychiatric disorders through assessment and intervention for meaningful, client-determined engagement in everyday life. Prerequisite: Successful completion of all prior coursework required by the OTDE curriculum.

**OTDE 845. Scholarly Practice IV: Interpreting, Integrating, and Translating Evidence. 4 Credits.**

This course will emphasize the processes of conducting and disseminating a research study. Conducting a study includes activities such as subject recruiting, data management and analysis, and evaluating how findings may be used to guide practice. Disseminating research involves understanding how to frame the research based on stakeholder interests and could involve manuscript writing, professional presentations, or discussions with community agencies, families, or consumers. This course allows students to implement a research project based on research questions developed as part of the prior courses in the research sequence in this curriculum. Additionally, students will create a dissemination plan for a community agency wanting information to advance their mission. The goals are to produce an entry-level occupational therapist who is aware of the relation between good research and good practice, is capable of critical analysis of scientific and clinical research literatures, and who is aware of the need for problem identification, good research design and methodology, and the appropriate evaluation, interpretation, and presentation of research findings. Prerequisite: Successful completion of all prior coursework required by the OTDE curriculum.

**OTDE 850. Professionalism in Education. 2 Credits.**

This course focuses on teaching and learning activities in a variety of contexts. This course builds on professional communication strategies introduced in previous Professionalism in Context I. Students will learn effective teaching strategies to communicate information to clients, families, and other professionals while gaining confidence as an entry-level occupational therapy practitioner. Students will gain experience in the development of scholarly presentations for health care professionals. Relationship development, the exchange of messages, conflict management, and a better understanding of the Self, will all contribute to the student's knowledge and understanding of the importance of effective communication in teaching. Prerequisite: Successful completion of all prior coursework required by the OTDE curriculum.

**OTDE 860. Professionalism in Practice I. 3 Credits.**

Students will apply the professional reasoning process to understand individuals' occupational performance based on cases from level II fieldwork experiences. Students will conduct case analysis and develop evidence-based intervention plans. Prerequisite: Successful completion of all prior coursework required by the OTDE curriculum.

**OTDE 861. Professionalism in Practice II. 3 Credits.**

This course will use professional reasoning to examine occupational practice within various delivery systems. Students will use lecture and small group seminars to analyze systems from level II fieldwork experiences and provide evidence to support the role of OT in innovative and traditional practice settings. Prerequisite: Successful completion of all prior coursework required by the OTDE curriculum.

**OTDE 870. Contemporary Community Engagement. 2 Credits.**

This course introduces the concept of community engagement as a strategy for supporting healthy individuals, populations, and communities. Students will reflect on professional experiences and interests to identify gaps in community resources that impact occupational justice. Students will gain competency in identifying health disparities, analyzing policy, and identifying and communicating with funding agencies to engage community interprofessional partnerships. Prerequisite: Successful completion of all prior coursework required by the OTDE curriculum.

**OTDE 900. Occupational Therapy Level II Fieldwork - Part I. 1-12 Credits.**

The first of a required full-time, three-month supervised experience in a facility meeting specified criteria. Qualified occupational therapists supervise the experience. Students will be exposed to a variety of age ranges and disabilities within different service delivery systems. This course can be taken multiple times and must be taken until a total of 12 credit hours have been completed to meet degree requirements. Prerequisite: Satisfactory completion of required academic coursework with a cumulative grade point average of 3.0.

**OTDE 901. Occupational Therapy Level II Fieldwork - Part II. 12 Credits.**

The second required full-time, three-month supervised experience in a facility meeting specified criteria. Qualified occupational therapists supervise the experience. Students will be exposed to a variety of age ranges and disabilities within different service delivery systems. By the end of the three-month period, students will be expected to perform at the level of an entry-level therapist. Prerequisite: Satisfactory completion of required academic coursework with a cumulative grade point average of 3.0.

**OTDE 902. Occupational Therapy Level II Fieldwork - Alternative. 6-12 Credits.**

An alternative supervised experience in a facility meeting specific criteria. Qualified occupational therapists supervise the experience. By the end of the experience, students will be expected to perform at the level of an entry-level therapist. Prerequisite: Satisfactory completion of required academic coursework with a cumulative grade point average of 3.0.

**OTDE 915. Professionalism in Leadership and Administration. 3 Credits.**

This course will focus on professional responsibilities and essential skills associated with leadership, administration, and management of occupational therapy services. Students will gain knowledge in the principles of program evaluation, business aspects of practice, as well as supervisory and management issues. In addition, students will acquire skills in professional development and leadership skills for the entry-level practitioner. Prerequisite: Successful completion of all prior coursework required by the OTDE curriculum.

**OTDE 925. Independent Study - Special Topics. 1-3 Credits.**

This is a learning experience tailored to the needs and interests of a student, focused on topic outside of the regular curriculum or explored in greater detail than is covered by the regular curriculum. The student will work closely with the faculty sponsor to define, pursue, and complete the project. This syllabus is accompanied by a "proposal" form, which must be completed and submitted for consideration by the faculty sponsor at least 8 weeks prior to the start of the term in which the experience will take place. Permission to enroll in this course will not be granted until the proposal has been reviewed and approved by the faculty sponsor. Prerequisite: Successful completion of all prior coursework required by the OTDE curriculum. Consent of the instructor.

**OTDE 935. Independent Study - Study Abroad. 1-3 Credits.**

This independent study experience allows occupational therapy students to explore the profession in an international setting. The experience must be closely coordinated with the Office of International Programs at KU Medical Center. The student establishes individual learning objectives with the OT department faculty mentor in the semester preceding the experience. Prerequisite: Successful completion of all prior coursework required by the OTDE curriculum. Consent of the instructor.

**OTDE 950. Capstone Project Planning. 3 Credits.**

This course is designed to foster development of in-depth and advanced knowledge in a specific interest area through guided planning of the Capstone Project. Students will pursue a literature review while considering the needs of a population or organization, and then propose a Capstone Project. This course supports student development of in-depth knowledge as they explore an area of: a) research and scholarship, b) policy and advocacy c) advanced practice, or other content area specified by ACOTE. Prerequisite: Successful completion of all prior coursework required by the OTDE curriculum.

**OTDE 952. Capstone Project Planning - III. 1 Credits.**

This course will prepare students for their capstone experiences as they begin implementing a plan for their capstone project. Building upon the activities started in OTDE 950 & 951, this course supports student development of in-depth knowledge as they explore an area of: a) research and scholarship, b) policy and advocacy c) advanced practice, or other content area specified by ACOTE. Prerequisite: Successful completion of all prior coursework required by the OTDE curriculum.

**OTDE 980. Capstone Dissemination. 3 Credits.**

Students will collaborate with faculty mentors and site supervisors to develop scholarly presentations for dissemination. Students will present the results of the capstone project to local, regional and/or national audiences. Students will assume a leadership role in identifying opportunities for publication of the capstone project and completing the submission. This course is completed in conjunction with the capstone experience to provide students with the opportunity to develop skills in professional presentations and publications. Prerequisite: Successful completion of all prior coursework required by the OTDE curriculum.

**OTDE 990. Capstone Experience. 14 Credits.**

Students will complete a 14- week practical experience at the completion of coursework and level II fieldwork experiences. This experience is designed to provide in-depth knowledge in a specific area of interest. Students will participate in practical experiences and scholarly activities designed to promote autonomous learning. Students will assume a leadership role in the implementation of the capstone project with guidance from faculty mentor and site supervisor. Prerequisite: Successful completion of all prior coursework required by the OTDE curriculum.

## Occupational Therapy (Doctorate) Courses

**OTD 750. Clinical Reasoning and Problem Based Learning. 3 Credits.**



Students will apply a clinical reasoning process to individuals with occupational performance needs. Cases will be presented from students' clinical experiences. In a problem solving format, students will evaluate models of service delivery, evaluation and intervention delivery and dissemination of information received by the individual. Students will identify and discuss alternatives given a variety of situations and environments. **PREREQUISITE:** Permission of Department.

**OTD 770. Knowledge For Specialty Practice Area. 3 Credits.**

This course is designed to support and correspond with OTD 780. Students will be matched with a faculty mentor as they develop a literature review in an area of clinical interest. This experience is designed to supplement students' ongoing clinical practice as they develop a library of pertinent empirical readings. Students will be mentored as they develop skills in analytical reading and identification of information that informs best practice. **PREREQUISITE:** Admission to OTD Program or Permission of Instructor.

**OTD 776. Population Based Health Care. 3 Credits.**

This course will coordinate with OCH 776. The purpose of this course is to introduce concepts and theories related to providing health care to complex systems and aggregates in the community, state and nation. Emphasis is placed on the promotion, maintenance and restoration of health and wellness and the prevention of disease. Internal and external environmental components which include historical, political, social, cultural and economic factors are presented. The role of the health care provider in identifying, prioritizing and meeting the health and life participation needs of aggregates is discussed. **PREREQUISITE:** Permission of department. LEC

**OTD 780. Practicum in Specialty Practice Area. 3 Credits.**

This course is designed to support and correspond with OTD 770. Students will complete this course as they work in a clinical environment. They will meet with a faculty mentor to support the analysis and dissemination of their empirical information gathered during OTD 770. They will present their empirical literature findings to their professional colleagues via a clinical research forum. Students will be expected to create three forms of information dissemination and critically review the professional feedback they receive. **PREREQUISITE:** Permission of department.

**OTD 783. Evidence Based Practice. 3 Credits.**

This course will coordinate with OTCH 783. Students will address the parameters and criteria for evidence-based practice. They will build a library of information that facilitates their evaluation of the status, beliefs, and practice of Occupational Therapy. They will develop skill in the synthesis of empirical evidence and explore dissemination options to service recipients. Students' work will culminate in the formulation of a decision-making paradigm for their future practice decisions. **PREREQUISITE:** Permission of Department.

**OTD 799. Practice and Research. 3 Credits.**

This is an elective course that allows students to pursue areas of special interest under the direction of a faculty member of his or her choice. This course is designed to support students' learning as they complete their pre-doctoral studies. Investigation of special issues relevant to an aspect of occupational therapy practice will include study of pertinent practice factors. Students will complete special projects relevant to the practice areas of interest, such as an oral presentation, written paper, or case analysis. May be repeated for credit. **PREREQUISITE:** Permission of Department.

**OTD 825. Qualitative Research Methods. 3 Credits.**

This course is an introduction to qualitative research techniques. Students will have several opportunities to gain hands-on experience using fundamental qualitative research techniques to sharpen their data

collection, analysis and write-up skills. The goals of this course are to better understand the role qualitative techniques play in research, identify various ethical issues, sharpen interview and observation skills, and develop foundation skills for collecting, analyzing and interpreting qualitative data. **Prerequisite:** Permission of Department. Lecture course.

**OTD 835. Quantitative Research for Applied Science. 3 Credits.**

Research relevant to applied science comes from a variety of disciplines involving varied research designs and analysis strategies. Students in this course will examine selected research studies and gain skill in analyzing methods and results as well as in applying research findings to practical problems. Students will conduct a critical appraisal on a specific area of study or interest.

**OTD 850. Teaching Practicum. 1-3 Credits.**

The purpose of this course is to provide practical learning whereby students receive individual mentorship for the development, implementation and evaluation of a teaching experience. Students will be responsible for developing the material, instructing students, grading assignments and evaluating the teaching experience. The teaching experience is expected to include at least 12 hours of face to face instruction (or the equivalent in on-line teaching or written materials). Teaching experiences can include MOT program lectures or labs, continuing education workshops, patient education programs, or staff inservices or another experience that meets the time and competency requirements. **Prerequisite:** A graduate level teaching methods course such as NSG 873, NSG 874, C & T 740, C& T 840

**OTD 860. Multidisciplinary Theoretical Perspectives. 3 Credits.**

Students will identify and explore key theories in behavioral, social, and occupational science with an emphasis on those currently influencing clinical reasoning and applications to practice and/or research. Students will demonstrate an understanding of multidisciplinary theoretical frameworks and be able to compare and contrast key theories, while also developing knowledge about theory guided research and practice.

**OTD 865. Occupation-Based Practice. 3 Credits.**

This course will focus on review of client-centered practice within the student's area of expertise and passion. Students will analyze seminal literature and critically relate theory and evidence to practice. For the final project, students will review their specified area of practice to develop a presentation that incorporates empirical evidence and practice methods that support client-centered practice. Students will participate in a combination of synchronous class discussions, written assignments, readings, interviewing a professional of the student's choosing, and presentations.

**OTD 875. Professional Development. 3 Credits.**

This course will explore professional development from an advanced practice perspective. Students will examine aspects of advanced practice such as leadership (both work and professional), management, group and system communication and change agency. They will explore these topics within their current practice settings and select an area of advanced skills to explore in more depth. Students will develop an understanding of how they can impact systems and contribute to the development of healthcare professions.

**OTD 880. Program Evaluation. 3 Credits.**

Leadership in areas of specialty practice will require our graduates to critically evaluate their practice programs. In this course, students will explore the traditional and innovative ways to evaluate professional services and systems, and they will develop skills to conduct program evaluations. Students will examine the purpose and process of program evaluations in a variety of clinical settings. Through lecture, discussion



and a project they will develop and execute a program evaluation in their area of practice. **PREREQUISITE:** Permission of Department.

**OTD 885. Advanced Practicum. 1-3 Credits.**

This practicum is designed to span 400 hours. Students will identify an area of practice through which they want to develop clinical initiatives and leadership. Selected field experiences will provide opportunities for program development, leadership, and information dissemination. Upon completion, the students will provide his or her clinical team with a program, or research based initiative, along with specified program evaluation methods. **PREREQUISITE:** Permission of Department and continuous enrollment until completion of competencies.

**OTD 890. Capstone Project. 1-3 Credits.**

The capstone project will comprise a scholarly report individualized to the scope of the project chosen. A capstone project report represents the application of knowledge as well as the search for it, and differs from a thesis such that student opinion and experience is involved. The student must negotiate capstone objectives, evaluation standards and any potential approvals prior to initiation of the project. **PREREQUISITE:** Permission of OTE Advisor/Mentor after completion of core, elective, and practicum coursework. Total capstone credit will equal 3 hours. **Prerequisite:** All core, elective, and practicum coursework.

**OTD 899. Special Projects. 1-3 Credits.**

This is an elective course that allows students to pursue areas of special interest under the direction of a doctoral faculty member of his or her choice. This course is designed to support doctoral training. Academic options range from research based studies and/or activities to critical analysis of clinical practice methods. Students will complete special projects relevant to their designated practice area of interest. Students must negotiate learning objectives, academic projects and evaluation standards with their mentor. May be repeated for credit. **PREREQUISITE:** Permission of department. LEC

## PhysThr, RehabSci & AthlTrng Courses

**ATTR 701. Foundations in Athletic Training. 1 Credits.**

Introduction to foundational content and basic skills of clinical practice for the athletic training profession. Specific emphasis is placed on behavioral practices of healthcare professionals and clinical skills in patient management. **Prerequisite:** Admission into the MSAT program or permission of instructor.

**ATTR 708. Applied Anatomy. 1 Credits.**

This course introduces how to use anatomical knowledge to gather basic examination information about the patient. Learning opportunities include lecture and laboratory. **Prerequisite:** Admission into the MSAT program or permission of instructor.

**ATTR 709. Advanced Topics in Human Anatomy. 6 Credits.**

The student will obtain a basic understanding of human gross anatomy with specific knowledge of upper and lower extremities, head and neck, back and neural structures. At the end of this course the student will be able to apply this knowledge of anatomy to functional and clinical situations. **Prerequisite:** Admission into the MSAT program or permission of instructor.

**ATTR 713. Integrated Clinical Education I. 2 Credits.**

This course consists of supervised experiences in a clinical setting and seminar sessions that provide opportunities for application of didactic course work. Emphasis will be placed on developing communication, interpersonal, and documentation skills, as well as other athletic training skills and procedures that have been introduced in courses. **Prerequisite:** Successful completion of the first semester of the MSAT curriculum or permission of instructor.

**ATTR 714. Evaluation & Management I. 4 Credits.**

Review of integrative human pathophysiology with an emphasis upon homeostatic mechanisms and etiologies of disease. The interrelationships of function and dysfunction at the molecular, cellular and tissue level (pathology), organ and systemic level (impairment) and to the total human body (functional limitations) will be applied in each of the body systems. Discussions and applied materials will be tailored to the athletic trainer with an emphasis on clinical tools to medically screen patients for the presence of symptoms and signs. **Prerequisite:** Successful completion of the first semester of the MSAT curriculum or permission of instructor.

**ATTR 716. Interventions I. 2 Credits.**

Application of the skills obtained in clinical coursework and clinical problem-solving using common athletic training interventions. **Prerequisite:** Successful completion of the first semester of the MSAT curriculum or permission of instructor.

**ATTR 718. Documentation and Health Informatics. 1 Credits.**

Emphasizes the development of effective documentation skills, including exposure to a variety of documentation formats across various practice setting and implications for proper reimbursement. Concepts of healthcare informatics are introduced including use of an electronic documentation systems and the capability of information systems to support quality care. Disablement classification models, behavioral objectives, and functional outcome concepts are applied to organize patient data and identify treatment goals. **Prerequisite:** Successful completion of the first semester of the MSAT curriculum or permission of instructor.

**ATTR 719. Applied Kinesiology and Biomechanics. 4 Credits.**

This course involves a study of joint structure and function, and biomechanical principles underlying human motion. Emphasis is placed on the application of kinesiological principles to athletic training situations. Learning opportunities include lecture and laboratory. **Prerequisite:** Successful completion of the first semester of the MSAT curriculum or permission of instructor.

**ATTR 723. Integrated Clinical Education II. 2 Credits.**

This course consists of supervised experiences in a clinical setting and seminar sessions that provide opportunities for application of didactic course work. Emphasis will be placed on developing communication, interpersonal, and documentation skills, as well as other athletic training skills and procedures that have been introduced in courses. **Prerequisite:** Successful completion of the first 2 semesters of the MSAT curriculum or permission of instructor.

**ATTR 724. Evaluation & Management II. 6 Credits.**

Builds on the foundation from anatomy, kinesiology and biomechanics. Examination skills and treatment interventions that apply specifically to the musculoskeletal system are provided. Basic examination skills, gait analysis, and therapeutic exercise are discussed and reviewed for common orthopedic conditions. The course will integrate instruction with case-based clinical problem solving. **Prerequisite:** Successful completion of the first 2 semesters of the MSAT curriculum or permission of instructor.

**ATTR 725. Research Seminar. 1 Credits.**

An introduction to research in evidence-based practice that allows students to develop clinical questions and integrate evidence into clinical practice. Emphasis is placed on clinical research pertinent to athletic training. **Prerequisite:** Successful completion of the first 2 semesters of the MSAT curriculum or permission of instructor.

**ATTR 726. Interventions II. 2 Credits.**

Application of the skills obtained in clinical coursework and clinical problem-solving using common athletic training treatment interventions.

Prerequisite: Successful completion of the first 2 semesters of the MSAT curriculum or permission of the instructor.

**ATTR 727. Clinical Reasoning I. 1 Credits.**

Explores the nature of clinical reasoning and involves self-reflection, informed decision making, and medical ethics in managing patient care. Knowledge and skills from the curriculum taught to this point will be incorporated through the use of case studies and simulations within the students' educational exposure. The Capstone Project will be introduced. Prerequisite: Successful completion of the first 2 semesters of the MSAT curriculum or permission of instructor.

**ATTR 755. Pharmacology. 2 Credits.**

Pharmacological background for the clinical treatment of patients. Fundamentals of the actions of drugs including mechanisms of therapeutic and adverse effects. Prerequisite: Successful completion of the first semester of the MSAT curriculum or permission of instructor.

**ATTR 793. Integrated Clinical Education III. 1 Credits.**

This course consists of supervised experiences in a clinical setting and seminar sessions that provide opportunities for application of didactic course work. Emphasis will be placed on developing communication, interpersonal, and documentation skills, as well as other athletic training skills and procedures that have been introduced in courses. Prerequisite: Successful completion of the first 3 semesters of the MSAT curriculum or permission of instructor.

**ATTR 800. Independent Study. 1-8 Credits.**

Individually negotiated learning experiences appropriate to the interests and background of the student. Prerequisite: Admission to the MSAT program, or permission of instructor.

**ATTR 807. Clinical Reasoning II. 1 Credits.**

Application and integration of clinical reasoning and medical ethics in managing patient care. Knowledge and skills from the curriculum taught to this point will be incorporated through the use of case studies and simulations within the students' educational exposure. The Capstone Project will continue. Prerequisite: Successful completion of the first 3 semesters of the MSAT curriculum or permission of instructor.

**ATTR 812. Health Care Administration. 2 Credits.**

Contemporary issues in health care which impact the practice of athletic training in the health care system. Changes in the US health care system will be discussed, including managed care, plus essential elements and principles of management in health care organizations, and an overview of human resources and operational management. Financial management specifically reimbursement for patient services, risk management, information management, and compliance will be discussed. Discussion of professional development is intertwined throughout the course. Students will be exposed to business development and entrepreneurial skills needed to practice. Prerequisite: Successful completion of the first 3 semesters of the MSAT curriculum or permission of instructor.

**ATTR 813. Clinical Experience I. 2 Credits.**

An immersive clinical experience that allows for graduated autonomy in developing and providing patient centered skills for successful health care practice. The student will work alongside and under the supervision of a Preceptor to experience all aspects of athletic training practice. Prerequisite: Successful completion of the first 3 semesters of the MSAT curriculum or permission of instructor.

**ATTR 814. Evaluation & Management III. 2 Credits.**

Incorporates concepts from anatomy, kinesiology, basic biomechanics and knowledge of peripheral joint examination and treatment. Terminology, examination, evaluation, development of a treatment plan and treatment techniques and basic differential diagnosis skills for the

head, neck, and spine are taught. Prerequisite: Successful completion of the first 3 semesters of the MSAT curriculum or permission of instructor.

**ATTR 816. Interventions III. 1 Credits.**

Application of the skills obtained in clinical coursework and clinical problem-solving using common athletic training interventions. Prerequisite: Successful completion of the first 3 semesters of the MSAT curriculum or permission of instructor.

**ATTR 818. Medical Imaging. 1 Credits.**

An introduction to medical imaging and an overview of its role in the health care delivery system. Topics include basic imaging equipment with an emphasis on digital acquisition and processing. Factors affecting the quality of images and limitations to the techniques are reviewed. Imaging techniques covered include: X-rays, CT scans, Nuclear medicine, ultrasound, MRI and PET. This course will include a component covering the microscopic anatomy of cells. Prerequisite: Successful completion of the first 3 semesters of the MSAT curriculum or permission of instructor.

**ATTR 821. Athletic Training Seminar. 1 Credits.**

Graduate seminar focusing on current issues in athletic training and preparation for the athletic training credentialing exam. Prerequisite: Successful completion of the first 4 semesters of the MSAT curriculum or permission of instructor. Corequisite: ATTR 843.

**ATTR 822. Behavioral Health. 1 Credits.**

Exploration of the development and integration of behavioral, psychosocial, and biomedical science knowledge and techniques relevant to the understanding of health and illness. Content will include application of knowledge and techniques to patient centered care. Prerequisite: Successful completion of the first 4 semesters of the MSAT curriculum or permission of instructor. Corequisite: ATTR 843.

**ATTR 824. Performance Enhancement. 1 Credits.**

Development and application of interventions to optimize sport performance. Prerequisite: Successful completion of the first 4 semesters of the MSAT curriculum or permission of instructor. Corequisite: ATTR 843.

**ATTR 827. Clinical Reasoning III. 1 Credits.**

Application and integration of clinical reasoning and medical ethics in managing patient care. Knowledge and skills from the curriculum taught to this point will be incorporated through the use of case studies and simulations within the students' educational exposure. The Capstone Project will continue. Prerequisite: Successful completion of the first 4 semesters of the MSAT curriculum or permission of instructor. Corequisite: ATTR 843.

**ATTR 837. Clinical Reasoning Capstone. 1 Credits.**

Application and integration of clinical reasoning and medical ethics in managing patient care. Knowledge and skills from the curriculum taught to this point will be incorporated through the use of case studies and simulations within the students' educational exposure. The Capstone Project will be completed. Prerequisite: Successful completion of the first 5 semesters of the MSAT curriculum or permission of instructor.

**ATTR 843. Clinical Experience II. 4 Credits.**

An immersive clinical experience that allows for graduated autonomy in developing and providing patient centered skills for successful health care practice. The student will work alongside and under the supervision of a Preceptor to experience all aspects of athletic training practice. Prerequisite: Successful completion of the first 4 semesters of the MSAT curriculum or permission of instructor. Corequisite: ATTR 863.

**ATTR 863. Integrated Clinical Education IV. 1 Credits.**

This course consists of supervised experiences in a clinical setting and seminar sessions that provide opportunities for application of didactic

course work. Emphasis will be placed on developing communication, interpersonal, and documentation skills, as well as other athletic training skills and procedures that have been introduced in courses. Prerequisite: Successful completion of the first 4 semesters of the MSAT curriculum or permission of instructor. Corequisite: ATTR 843.

**ATTR 883. Clinical Experience III. 8 Credits.**

An immersive clinical experience that allows for graduated autonomy in developing and providing patient centered skills for successful health care practice. The student will work alongside and under the supervision of a Preceptor to experience all aspects of athletic training practice. Prerequisite: Successful completion of the first 5 semesters of the MSAT curriculum or permission of instructor.

## PhysThr, RehabSci & AthlTrng Courses

**PTRS 702. Physical Therapy Documentation and Health Informatics. 1 Credits.**

Emphasizes the development of effective documentation skills, including exposure to a variety of documentation formats across various practice setting and implications for proper reimbursement. Concepts of healthcare informatics are introduced including use of an electronic documentation systems and the capability of information systems to support quality care. Disablement classification models, behavioral objectives, and functional outcome concepts are applied to organize patient data and identify treatment goals. Prerequisite: Successful completion of semester 1 of the DPT curriculum or permission of instructor.

**PTRS 703. Applied Anatomy. 1 Credits.**

This course introduces the learner to how physical therapists use anatomical knowledge to gather basic examination information about the patient. Prerequisite: Admission into the DPT program or permission of instructor.

**PTRS 704. Physical Therapy Interventions I. 3 Credits.**

This course focuses on development of skills required by the physical therapist in the generalist acute care environment. Emphasis is placed on body mechanics, workplace safety, infection control, basic mobility assessment, transfers, positioning, line management, responding to clinical emergencies, wheelchair basics, therapeutic exercise, assistive devices, gait training, plan of care and discharge planning. Prerequisite: Successful completion of semester 1 of the DPT curriculum or permission of instructor.

**PTRS 705. Physical Therapy Interventions II. 4 Credits.**

This course will introduce the principles and application of therapeutic biophysical agents. Students will apply skills obtained in previous course work and begin clinical problem-solving using common physical therapy treatment interventions. Topics include integumentary management for wound healing interventions, therapeutic modalities with an emphasis on the healing process, and electrical modalities. Prerequisite: Successful completion of the first 2 semesters of the DPT curriculum or permission of the instructor.

**PTRS 710. Advanced Topics in Human Anatomy. 6 Credits.**

The student will obtain a basic understanding of human gross anatomy with specific knowledge of upper and lower extremities, head and neck, back and neural structures. At the end of this course the student will be able to apply this knowledge of anatomy to functional and clinical situations. Prerequisite: Admission into the DPT program or permission of instructor.

**PTRS 711. Applied Kinesiology and Biomechanics. 4 Credits.**

This course involves a study of joint structure and function, and biomechanical principles underlying human motion. Emphasis is placed on the application of kinesiological principles to clinical physical therapy

situations. Prerequisite: Successful completion of semester 1 of DPT curriculum or permission of instructor.

**PTRS 720. Integrated Clinical Experience I. 1 Credits.**

This course consists of supervised experiences in a clinical setting and seminar sessions that provide preliminary opportunities for application of didactic course work. Emphasis will be placed on the development of communication and interpersonal skills in the clinical setting, as well as documentation and physical therapy skills and procedures that have been introduced in courses. Prerequisite: Successful completion of semester 1 of the DPT curriculum or permission of instructor.

**PTRS 730. Integrated Clinical Experience II. 1 Credits.**

This course consists of supervised experiences in a clinical setting and seminar sessions that provide preliminary opportunities for application of didactic course work. Emphasis will be placed on the development of communication and interpersonal skills in the clinical setting, as well as documentation and physical therapy skills and procedures that have been introduced in courses. Prerequisite: Successful completion of the first 2 semesters of the DPT curriculum or permission of instructor.

**PTRS 745. Orthopedic Physical Therapy I. 6 Credits.**

This course builds on the foundation from anatomy, kinesiology and biomechanics. Examination skills and treatment interventions that apply specifically to the musculoskeletal system are provided. Basic examination skills for all peripheral joints, gait analysis, and therapeutic exercise are discussed and reviewed for common orthopedic conditions. The course will integrate instruction with case-based clinical problem solving. Prerequisite: Successful completion of the first 2 semesters of the DPT curriculum or permission of instructor.

**PTRS 746. Musculoskeletal Conditions and Management. 3 Credits.**

Mastery of physical therapy subjective and objective examination and treatment intervention for patients of all ages who present with a musculoskeletal problem with emphasis on amputation, prosthetics, upper and lower extremity orthoses, fracture management and connective tissue disorders. Emphasis will be placed on the most common clinical problems and physical therapy diagnoses. Prerequisite: Successful completion of the first 2 semesters of the DPT curriculum or permission of instructor.

**PTRS 750. Research in Evidence-Based Physical Therapy Practice. 3 Credits.**

An introduction to research in the evidence-based physical therapy practice including the Scientific Method, library and multimedia resources, research process, measurement theory (reliability and validity), research designs, experimental design principles, research ethics, critical review and analysis of research publications, statistical concepts, and writing of a research report and/or research proposal. Throughout, emphasis is placed on clinical research pertinent to physical therapy. Prerequisite: Successful completion of the first 2 semesters of the DPT curriculum or permission of instructor.

**PTRS 807. Ethics in Health Care. 1 Credits.**

This course covers the basic ethical concepts, principles, relevant theories, and ethical decision-making models applied to major contemporary health care issues and dilemmas facing health professionals. Development of skills for ethical clinical decision making is the focus. Prerequisites: Permission of instructor.

**PTRS 817. Ethics in Health Care. 2 Credits.**

This course covers basic ethical concepts, principles, relevant theories and ethical decision-making models applied to major contemporary health care issues and dilemmas facing health professionals. Development of skills for ethical clinical decision making is the focus. Prerequisite:

Successful completion of the first 6 semesters of the DPT curriculum or permission of instructor.

**PTRS 825. Exercise Physiology. 3 Credits.**

This course will provide entry-level DPT students with the knowledge of the physiological functions and adaptations of the human body with exercise. Emphasis will be placed on familiarizing students with sound medical rationale and the basis for treatment considering the immediate and long-term effects of exercise. Prerequisite: Successful completion of the first 3 semesters of the DPT curriculum, or consent of the instructor.

**PTRS 826. Cardiopulmonary Physical Therapy. 5 Credits.**

Anatomy, physiology and pathophysiology of the cardiovascular and pulmonary systems are studied and related to clinical signs and symptoms. Students are introduced to common evaluation and treatment techniques, as well as the rationale for including physical therapy in the management of cardiopulmonary conditions. These topics are discussed in conjunction with case studies and current research. Prerequisite: Successful completion of the first 5 semesters of the DPT curriculum or permission of instructor.

**PTRS 828. Medical Imaging. 1 Credits.**

An introduction to medical imaging and an overview of its role in the health care delivery system. Topics include an introduction to basic imaging equipment with an emphasis on digital acquisition and processing. Factors affecting the quality of images and limitations to the techniques are reviewed. Imaging techniques covered include: X-rays, CT scans, Nuclear medicine, ultrasound, MRI and PET. This course will also include a component covering the microscopic anatomy of cells. Prerequisite: Admission to the DPT program or permission of instructor.

**PTRS 830. Integrated Clinical Experience III. 2 Credits.**

This course consists of supervised experiences in a clinical setting and seminar sessions that provide intermediate opportunities for application of didactic course work. Emphasis will be placed on the development of communication and interpersonal skills in the clinical setting, as well as documentation and physical therapy skills and procedures that have been introduced in courses. Prerequisite: Successful completion of the first 4 semesters of the DPT curriculum or permission of instructor.

**PTRS 833. Pediatric Physical Therapy. 3 Credits.**

This course introduces fundamental concepts necessary for the entry-level physical therapist to examine, evaluate, and treat the pediatric client. Lecture and lab experiences emphasize a problem oriented approach to physical therapy management of children with musculoskeletal, neurological, and/or cardiopulmonary impairments. Students will learn to recognize components of normal and abnormal development, particularly during the first year of life. Prerequisite: Successful completion of the first 5 semesters of the DPT curriculum or permission of instructor.

**PTRS 840. Integrated Clinical Experience IV. 2 Credits.**

This course consists of supervised experiences in a clinical setting and seminar sessions that provide intermediate opportunities for application of didactic course work. Emphasis will be placed on the development of communication and interpersonal skills in the clinical setting, as well as documentation and physical therapy skills and procedures that have been introduced in courses. Prerequisite: Successful completion of the first 5 semesters of the DPT curriculum or permission of instructor.

**PTRS 845. Orthopedic Physical Therapy II. 6 Credits.**

This course incorporates concepts from anatomy, kinesiology and basic biomechanics, and knowledge of peripheral joint examination and treatment. Terminology, examination, evaluation, development of a treatment plan and treatment techniques and basic differential diagnosis skills for the spine and the temporomandibular joint are taught.

Prerequisite: Successful completion of the first 4 semesters of the DPT curriculum or permission of instructor.

**PTRS 846. Orthopedic Physical Therapy III. 3 Credits.**

This course incorporates concepts from anatomy, kinesiology, biomechanics, and Orthopedic Physical Therapy I and II courses. Terminology, examination, evaluation, development of a treatment plan and treatment techniques and advanced differential diagnosis skills for complex peripheral and/or spinal disorders are taught. Prerequisite: Successful completion of the first 6 semesters of the DPT curriculum or permission of instructor.

**PTRS 852. Neurologic Physical Therapy and Rehabilitation I. 6 Credits.**

This course will introduce the principles of neuroscience and describe their application as relevant to physical therapists. The course will introduce the terminology of the nervous system and cover the major functions of the nervous systems. This course will also integrate neurophysiology and neuroanatomy into the clinical presentation of adults with neurologic pathology. The etiology, epidemiology signs, and symptoms of selected neurological conditions will be presented. The medical management of patients with nervous system disorders will be presented in relationship to the practice of physical therapy. The course will introduce examination of impairments for persons with neuromuscular pathologies. Students will be presented with simple case studies and progress to more complex patient problems. Prerequisite: Successful completion of the first 4 semesters of the DPT curriculum or permission of instructor.

**PTRS 853. Neurologic Physical Therapy and Rehabilitation II. 6 Credits.**

This course will focus on rehabilitation approaches for people with neurologic pathology. Students will examine factors that contribute to the control of voluntary movement and the learning of motor skills, and develop an understanding of the relationship between the brain and the purposeful movements that make us human. Students will acquire the skills to hypothesize about the relationship of health conditions and body function/structure to limitations in activities and participation in adults with neurologic pathology. A clinical decision making approach will combine contemporary rehabilitation approaches, consideration of psychosocial and cognitive factors, and research evidence in the discussion of complex patient cases. After completing this course, students will demonstrate novice-level knowledge and skills necessary to complete a physical therapy examination and develop a comprehensive treatment plan for adults with neurologic pathology. Prerequisite: Successful completion of the first 5 semesters of the DPT curriculum or permission of the instructor.

**PTRS 855. Pharmacology for Physical Therapists. 2 Credits.**

Pharmacological background for the clinical treatment of patients referred to physical therapy. Fundamentals of the actions of drugs including mechanisms of therapeutic and adverse effects. Prerequisite: Successful completion of semester 1 of the DPT curriculum or permission of instructor.

**PTRS 860. Evidence-Based Research Practicum I. 1 Credits.**

Supervised and directed experiences in conducting evidence-based research activities. The research activities involved in this course are broadly defined with emphasis on the enhancement of evidence-based physical therapy practice. The student will be supervised by a member of the faculty. This course is the first of a two-part series of courses, including PTRS 861. Prerequisite: Successful completion of the first 3 semesters of the DPT curriculum or permission of instructor.

**PTRS 861. Evidence-Based Research Practicum II. 1 Credits.**

Supervised and directed experiences in conducting evidence-based research activities. The research activities involved in this course are



broadly defined with emphasis on the presentation and communication of an evidence-based research project. The student will be supervised by a member of the faculty. This course is the second of a two-part series of courses, including PTRS 860. Prerequisite: Successful completion of the first 6 semesters of the DPT curriculum, or consent of instructor.

**PTRS 865. Independent Study. 1-3 Credits.**

Individually negotiated learning experiences appropriate to the interests and background of the student. Prerequisite: Admission to the DPT program, or permission of instructor.

**PTRS 877. Administration in Physical Therapy. 2 Credits.**

Designed to familiarize the entry-level therapist with contemporary issues in health care which impact the practice of physical therapy in the health care system. Changes in the US health care system will be discussed, including managed care, plus essential elements and principles of management in health care organizations, and an overview of human resources and operational management. Financial management specifically reimbursement for patient services, risk management, information management, and compliance will be discussed. Discussion of professional development is intertwined throughout the course. Students will be exposed to business development and entrepreneurial skills needed to expand or start up a physical therapy practice. Prerequisite: Successful completion of the first 3 semesters of the DPT curriculum or permission of instructor.

**PTRS 882. Pathophysiology and Physical Therapist Screens. 6 Credits.**

Review of integrative human pathophysiology with an emphasis upon homeostatic mechanisms and etiologies of disease. The interrelationships of function and dysfunction at the molecular, cellular and tissue level (pathology), organ and systemic level (impairment) and to the total human body (functional limitations) will be applied in each of the body systems. Discussions and applied materials will be tailored to the physical therapist with an emphasis on clinical tools to medically screen patients for the presence of symptoms and signs. Prerequisite: Successful completion of semester 1 of the DPT curriculum or permission of instructor.

**PTRS 890. Specialties in Physical Therapy Practice. 2 Credits.**

Requires students to apply the five elements of patient/client management for addressing multi-system impairments across diverse and complex patient populations. Exposure to physical therapy advanced practice specialty areas included, but not limited to, sport medicine, women's health, neurology, pediatrics, geriatrics, and oncology. Seminar format instruction incorporating case-based instruction, group discussion, and speakers with advanced clinical credentials. Prerequisite: Successful completion of the first 6 semesters of the DPT curriculum or permission of instructor.

**PTRS 920. Full-Time Clinical Experience I. 6-8 Credits.**

Nine to twelve weeks of full-time clinical experience. During the clinical rotation, the student will have the opportunity to develop the patient care skills needed for successful practice as a physical therapist. The student will work under the supervision of an experienced physical therapist in clinical settings affiliated with the program. Prerequisite: Successful completion of the first 7 semesters of the DPT curriculum or permission of instructor.

**PTRS 921. Full-Time Clinical Experience II. 6-8 Credits.**

Nine to twelve weeks of full-time clinical experience. During the clinical rotation, the student will have the opportunity to develop the patient care skills needed for successful practice as a physical therapist. The student will work under the supervision of an experienced physical therapist in clinical settings affiliated with the program. Prerequisite: Successful

completion of the first 7 semesters of the DPT curriculum or permission of instructor.

**PTRS 922. Full-Time Clinical Experience III. 6-8 Credits.**

Nine to twelve weeks of full-time clinical experience. During the clinical rotation, the student will have the opportunity to develop the patient care skills needed for successful practice as a physical therapist. The student will work under the supervision of an experienced physical therapist in clinical settings affiliated with the program. Prerequisite: Successful completion of the first 7 semesters of the DPT curriculum or permission of instructor.

**PTRS 923. Full-Time Clinical Experience IV. 2-6 Credits.**

Three to nine weeks of full-time clinical experience. During the clinical rotation the student will have the opportunity to develop the patient care skills needed for successful practice as a physical therapist. The student will work under the supervision of an experienced physical therapist in clinical settings affiliated with the program. Prerequisite: Successful completion of the first 7 semesters of the DPT curriculum or permission of instructor.

**PTRS 924. Specialized Clinical Experience. 1-6 Credits.**

One and a half to nine weeks of clinical experience. During the clinical rotation the student will have the opportunity to have exposure to a different health care system such as an international clinical experience, or a specialized area of physical therapy practice. The student will be under the supervision of an experienced physical therapist in clinical settings affiliated with the program. Prerequisite: Successful completion of the first 7 semesters of the DPT curriculum or permission of instructor.

## PhysThr, RehabSci & AthlTrng Courses

**REHS 760. Introduction to Matlab Programming. 1 Credits.**

Introduction: matlab windows, input-output, file types, general commands; interactive computation; matrices and vectors, matrix and array operations, scripts and functions applications, graphics. Prerequisite: None

**REHS 803. Research Observations. 1 Credits.**

Students will be introduced to different types of research projects conducted in the department. Students will rotate in up to three research laboratories, sequentially, during a semester. The course is designed to help students select a faculty researcher to mentor them in their dissertation research. Prerequisite: Entry into the PhD in Rehabilitation Science program.

**REHS 805. Seminar in Rehabilitation Science. 1 Credits.**

Students will become familiar with the organization of an experimental scientific paper and learn how to critically assess papers in the field of rehabilitation science. Students will develop writing skills by summarizing scientific papers and communication skills by orally presenting and discussing research literature with his/her peers and colleagues, course coordinator and other faculty members. Prerequisite: Entry in the PhD program in Rehabilitation Science or permission of instructor.

**REHS 856. Research Design and Methods I. 2 Credits.**

An introduction to research design and methods including library and multimedia resources; research process; measurement theory (reliability and validity); experimental design principles; single subject design and other non-experimental design; critical thinking skill and procedure; critical review and analysis of a research article; basic scientific writing skills; and skills in writing a research report/manuscript. Prerequisite: Entry into the PhD in Rehabilitation Science program or permission of instructor.

**REHS 857. Research Design and Methods II. 2 Credits.**

An introduction to research design and method including critically appraising the state of art on a research topic; conducting a systematic

review of literature; basic concept of statistical analysis, performing and interpreting data analysis using parametric, non-parametric, or correlational analyses; preparation of a research proposal focusing on study rational, novelty, and research questions and hypotheses; ethical issues related to research; basic knowledge of bioinformatics; meta-analysis; and writing of a research proposal. Prerequisite: Entry into the PhD in Rehabilitation Science program or permission of instructor.

**REHS 862. Cellular and Molecular Basis of Rehabilitation. 2 Credits.**

A study of the biology, at the cellular and molecular levels, of pathological processes that impair human function will highlight the mechanisms by which cells/tissues repair and/or adapt following disease/injury or aging. Emphasis will be placed on the body's endogenous ability for rehabilitation or adaptation to disease/injury. Prerequisite: Entry into the PhD in Rehabilitation Science program or permission of instructor.

**REHS 864. Introduction to Rehabilitation Science. 3 Credits.**

This course provides introduction to and overview of rehabilitation science, an interdisciplinary field of study that focuses on restoring functional capacity in a person and improving their interactions with the surrounding environment. Different areas of rehabilitation science will be presented. Features of the pathological conditions and targeted individuals, factors that contribute to the outcomes of the rehabilitation, research tools and measurements, potential optimal rehabilitation techniques, and directions of future research will be discussed. Prerequisite: Entry into the PhD in Rehabilitation Science program or permission of instructor.

**REHS 865. Independent Study. 1-3 Credits.**

Individually negotiated learning experiences appropriate to the interests and background of the student. Prerequisite: Entry in the PhD in Rehabilitation Science program, or permission of instructor. IND

**REHS 866. Developing Research Aims in Rehabilitation Science. 2 Credits.**

Students will practice writing specific aims, hypothesis and general study design of a research proposal. Prerequisite: Entry into the PhD in Rehabilitation Science program or permission of instructor.

**REHS 870. Teaching Practicum. 1-3 Credits.**

Directed experiences in a planned instructional activity. Student will write course objectives, plan and deliver lectures, produce practical and written exams and assign grades. Prerequisite: Entry in the PhD in Rehabilitation Science program or consent of instructor.

**REHS 873. Research Practicum. 1-3 Credits.**

This course is designed to provide supervised research experience in various laboratories in the department. Prerequisite: Entry in the PhD in Rehabilitation Science program, or consent of instructor.

**REHS 875. Clinical Practicum. 1-3 Credits.**

Specialized clinical training in a highly specific area of specialization. The primary purpose of this course is for the student to develop advanced clinical skills in his/her area of specialization. Prerequisite: Admission to the PhD in Rehabilitation Science program, and permission of instructor.

**REHS 883. Landscape of Exercise and Physical Activity for Health. 3 Credits.**

This course will examine the role of physical activity in the prevention, treatment, and management of chronic diseases and conditions. This course will cover methods used to measure physical activity, the effects of physical activity on health, and strategies for physical activity promotion. This course will provide students opportunities to practice summarizing key information from articles and organize the literature. Prerequisite:

Entry into the PhD in Rehabilitation Science program or permission of instructor.

**REHS 884. Motor Control and Learning. 3 Credits.**

The course will explore the study of the conditions and factors that influence the acquisition, control, and performance of motor skills. Prerequisite: Entry into the PhD in Rehabilitation Science program or permission of instructor.

**REHS 886. Musculoskeletal Rehabilitation. 3 Credits.**

This course will explore the current concepts in musculoskeletal rehabilitation. The healing process of different types of tissue will be reviewed. The pathophysiological mechanisms of pain and acute and chronic injuries will be studied. Examination, evaluation and treatment interventions for the principal musculoskeletal conditions will be reviewed and discussed. Current scientific literature will be investigated and group discussions will be directed to scientific evidence for the variety of rehabilitation practices in musculoskeletal conditions. Prerequisite: Entry into the PhD in Rehabilitation Science program or permission of instructor; REHS 884 Motor Control and Learning or an equivalent.

**REHS 887. Neurorehabilitation. 3 Credits.**

This course will provide an overview of the evidence of neurorehabilitation interventions on all domains of the International Classification of Functioning in various neurological conditions. Following a review of neuroanatomy, neurophysiology, and clinical presentation of common neurological conditions, principles of neuroplasticity and functional re-organization in neurorehabilitation will be outlined. Evidence of traditional concepts and emerging therapies in neurorehabilitation will be presented. Prerequisite: Entry into the PhD in Rehabilitation Science program or permission of instructor.

**REHS 889. Grant Writing. 3 Credits.**

Research proposal writing for PhD comprehensive examinations and grant applications to federal and private funding agencies including all elements of the grant proposal - aims, innovation, significance and design. The process of grant proposal submission, review and resubmission is covered. Prerequisite: Current enrollment in a recognized graduate degree program or permission of instructor.

**REHS 970. Instrumented Analysis of Human Biomechanical Function. 3 Credits.**

An in-depth study that provides critical analysis of equipment and other resources used in analyzing human motion, balance, strength, electrophysiological responses, and cardiorespiratory function. Students will be required to conduct a preliminary study, including design, methodology and data collection using one or more of these instruments. Prerequisite: Entry in the PhD in Rehabilitation Science program, or consent of instructor.

**REHS 980. Graduate Research. 1-10 Credits.**

Original laboratory investigation conducted under the supervision of a senior staff member. Prerequisite: Entry in the PhD in Rehabilitation Science program, or consent of instructor.

**REHS 990. Dissertation in Rehabilitation Science. 1-10 Credits.**

For students in advanced standing enrolled in the PhD in Rehabilitation Science program.

## Respiratory Care Courses

**CVS 300. Patient Care I. 1 Credits.**

This course will demonstrate the knowledge and application of ergonomic techniques, types and methods of infection control, and proper patient care. The student will learn the roles and responsibilities of healthcare professionals to effectively communicate and collaborate in the healthcare environment. Upon completion of the course, the student will demonstrate

knowledge of medical ethics and laws, quality control and improvement programs, and awareness of resources for professional development.

Prerequisite: Admission to the cardiovascular sonography program.

#### **CVS 305. Physics I. 2 Credits.**

This course is designed to introduce the student to the fundamental physical principles of sonography and their application to various types of sonographic examinations. The course will introduce the basic physical principles of sound waves, hemodynamics, and Doppler ultrasound. The course will also review mathematical relationships that will be applied to the physics of ultrasound imaging. Prerequisite: Admission to the cardiovascular sonography program.

#### **CVS 310. Adult Echocardiography I. 3 Credits.**

This course is designed to enable the student to understand the hemodynamics and physiology of normal cardiac function. The course will include normal anatomy, flow patterns and pressures throughout the heart, principles of hemodynamics as it applies to the cardiovascular system, evaluation of systolic and diastolic function, and how to assess these parameters effectively and accurately by an echocardiogram. Prerequisite: Admission to the cardiovascular sonography program.

#### **CVS 315. Clinical Practicum I. 6 Credits.**

The purpose of the course is to provide well-balanced clinical education through hands on application in both the scanning lab and various clinical settings. Clinical Practicum I will focus on the development of image recognition, anatomy identification, acquisition of two-dimensional imaging, two-dimensional and m- mode measurements, and calculation of fractional shortening and ejection fraction. Prerequisite: Admission to the cardiovascular sonography program.

#### **CVS 320. Physics II. 2 Credits.**

This course is designed to further develop the student's knowledge of the physical principles and instrumentation involved in diagnostic medical sonography. The course will build upon the student's knowledge of the physical principles of 2-dimensional imaging, real time imaging, and pulsed-echo instrumentation. The student will also further their understanding of machine instrumentation including displays and image processing, and the role of dynamic range and harmonics. Lastly, students will gain an understanding of the importance of quality assurance and the potential for bioeffects. Prerequisite: Completion of CVS 305.

#### **CVS 325. Adult Echocardiography II. 3 Credits.**

This course is designed to enable the student to understand the hemodynamics and physiology of valvular heart disease. This will include signs, symptoms and common echocardiographic findings associated with valvular heart disease as well as common treatment options and post-operative evaluation. Assessment of pericardial disease, including etiologies, signs & symptoms, and diagnostic Doppler criteria. Understanding the pathophysiology and echocardiographic findings associated with hypertensive heart and pulmonary hypertension. As well as introduction to some lesser seen cardiac conditions including cardiac masses and disease of the aortic. The role of two-dimensional, m-mode, color and spectral doppler evaluation for various disease states will be discussed. The student will learn to utilize echocardiography to effectively evaluate and quantify the effects of these disease states on the hearts structure, hemodynamics, and ability to effectively function. Prerequisite: Completion of CVS 310.

#### **CVS 330. Congenital Heart Disease. 1 Credits.**

This course will be an introduction to the evaluation of congenital heart disease via the segmental anatomy approach. Topics will include cardiac anatomic variants, physiology of specific lesions, palliative and surgical repairs, and adult congenital echo. Standard pediatric echo windows

and techniques will be introduced via case studies and image reviews.

Prerequisite: Completion of CVS 310.

#### **CVS 335. Clinical Practicum II. 8 Credits.**

The purpose of the course is to provide well-balanced clinical education through hands on application in both the scanning lab and various clinical settings. Clinical Practicum II will focus on the application of color, spectral and continuous wave Doppler skills to evaluate various pathological conditions. Students will further their proficiency in two-dimensional and m-mode scanning. Prerequisite: Completion of CVS 315.

#### **CVS 340. EKG I. 1 Credits.**

This course is designed to introduce the student to the fundamentals of an electrocardiogram (EKG). The student will be introduced to basic EKG principles, including those rhythms commonly encountered in the echocardiography lab. Prerequisite: Completion of Semester I and II.

#### **CVS 345. Adult Echocardiography III. 3 Credits.**

This course is designed to enable the student to understand the pathophysiology and echocardiographic findings associated with cardiomyopathies, and systemic diseases, as well as advanced heart failure therapies utilized to treat these conditions including cardiac transplantation. The etiology, physiology, cardiac auscultation, physical examination, symptoms, and EKG findings associated with the various disease states will be covered, as well as the role of two-dimensional, M-mode, color flow and spectral Doppler in the evaluation of these various disease states will be discussed. The course will also discuss advanced techniques and procedures utilized is diagnostic echocardiographic exams including three-dimensional imaging, myocardial strain and speckle tracking, and intracardiac echo. Prerequisite: CVS 310 and CVS 325.

#### **CVS 350. Clinical Practicum III. 4 Credits.**

The purpose of the course is to provide well-balanced clinical education through hands on application in both the scanning lab and various clinical settings. This course is designed to advance the student's clinical skills learned in previous clinical practicum courses. The focus of this course will be adult echocardiography and vascular ultrasound or adult echocardiography and pediatric echocardiography. Prerequisite: Completion of CVS 315 and CVS 335.

#### **CVS 400. Vascular Ultrasound I. 4 Credits.**

In this course the student will demonstrate knowledge of upper and lower extremity arterial anatomy and disease processes, demonstrate the ability to identify abnormal arterial waveforms and calculate the percent of stenosis. The student will learn upper and lower extremity venous anatomy and abnormal venous disease processes and the difference between acute versus chronic deep venous thrombosis. Prerequisite: Completion of fall semester I, spring semester I, and summer semester I.

#### **CVS 410. Pediatric Echocardiography I. 4 Credits.**

In this course congenital heart disease will be examined via the segmental anatomy approach. Embryology, the normal fetal and postnatal heart and their circulations, hemodynamics, scanning views and techniques, congenital and acquired cardiac pathology and their related sequelae will be investigated. Emphasis will be placed on defect anatomy and hemodynamic consequences and the surgical repair or other treatment options associated with each anomaly will be considered. Recognition of congenital pathology and the development of critical thinking skills to correlate patient history, clinical information, echo findings, and related imaging results to formulate a differential diagnosis will be demonstrated upon completion of the course. Case studies and image reviews will allow the students to build upon their acquired knowledge and skillset. Prerequisite: Completion of fall semester I, spring semester I, and summer semester I.



**CVS 420. Clinical Practicum IV. 8 Credits.**

The purpose of the course is to provide well-balanced clinical education through hands on application in both the scanning lab and various clinical settings. This course is designed to advance the student's clinical skills learned in previous clinical practicum courses. The focus of this course will be adult echocardiography and vascular ultrasound or adult echocardiography and pediatric echocardiography. Prerequisite: Completion of CVS 315, 335, and 350.

**CVS 430. Vascular Ultrasound II. 4 Credits.**

In this course the student will demonstrate knowledge of the abdominal aorta and iliac arteries, renal vasculature, and visceral vasculature and their disease processes. The student will obtain the ability to identify abnormal arterial waveforms and calculate the percent of stenosis. The student will demonstrate knowledge in alternative testing modalities and how they may benefit the patient vs. ultrasound. Prerequisite: CVS 400.

**CVS 440. Pediatric Echocardiography II. 4 Credits.**

This course will build upon the content learned in Pediatric Echocardiography I (CVS 410) and will continue to expose the student to congenital heart disease. Congenital pathology, physiology and quantitative methods used in pediatric echo will be demonstrated and emphasized. Scanning, case studies and image review will allow the student to build upon their acquired knowledge and skillset. Prerequisite: CVS 410.

**CVS 450. Clinical Practicum V. 8 Credits.**

The purpose of the course is to provide well-balanced clinical education through hands on application in both the scanning lab and various clinical settings. This course is designed to advance the student's clinical skills learned in previous clinical practicum courses. The focus of this course will be adult echocardiography and vascular ultrasound or adult echocardiography and pediatric echocardiography. Prerequisite: Completion of CVS 315, 335, 350, and 420.

## Respiratory Care Courses

**DXSC 450. Chronic Disease Diagnosis and Management. 3 Credits.**

This course is open only to online students. The students will explore various trends that are contributing the multi-disciplinary diagnosis and management of chronic diseases patient care. Topics covered in this course include diagnosis and management of respiratory and other chronic disease conditions that may lead to medical imaging, cardiopulmonary exercise testing, pulmonary rehabilitation, home care, elderly care, nutritional care of the pulmonary patient, and communication skills necessary for patient education. Students in this course will gain an understanding of how they can contribute to an inter-professional team in order to provide safe and effective patient care. Presentation of topics in this course may include lecture, group work/discussion, audiovisual, computer and other multimedia aids.

**DXSC 480. Simulation and Interprofessional Education (IPE). 3 Credits.**

This introductory course is designed for health care students to learn key concepts of building and leading a collaborative health care team. The course addresses both the clinical and behavioral aspects of performance with emphasis on interprofessional simulation-based education. The course is offered in a self-paced online format with a competency-based approach. The course will be taught over an eight-week period. The object of the course is to introduce collaborative practice for providing patient-centered care. The student will be introduced to: Interprofessional education and collaborative practice terminology Core Competencies for Interprofessional Collaborative Practice Foundations of effective health care teamwork Leading a collaborative health care team Skills to develop

and implement simulation-based education. Prerequisite: Enrollment in Diagnostic Science Degree Advancement.

**DXSC 495. Management, Ethics, and Law in Healthcare. 3 Credits.**

This course is only open to online students. This course provides an overview of fundamental concepts in healthcare management, law, and ethics. Students will learn the skills and knowledge necessary to be successful in management leadership, management design, and managing diversity. Ethical concerns relevant to the healthcare manager will be addressed. Current and historical controversies in healthcare will be discussed. Upon completion of this course, students will have the knowledge to understand laws, ethics, and management principles of the complex healthcare landscape. Prerequisite: Enrollment in the Diagnostic Science BS DA.

**DXSC 500. Imaging Modality Exploration and Correlation. 3 Credits.**

This course will explore various imaging modalities and their roles in healthcare. General imaging concepts and correlations will be discussed. Prerequisite: Enrolled in Diagnostic Science BS DA.

**DXSC 620. Community and Global Health. 3 Credits.**

This course will explore a wide variety of major health issues that impact us as global citizens. Students will be exposed to an overview of challenges that face the world today as they learn about strategies and programs that promote health in a variety of settings. Through this course, students will become more culturally competent healthcare providers. They will learn about disparities related to ethnicity, socioeconomic issues, human rights, and resource limits as they relate to the health of populations. Prerequisite: Enrollment in Diagnostic Science BS DA.

**DXSC 630. Lean Management. 3 Credits.**

Lean Management-This course will introduce students to lean management principles such as Lean Six Sigma in healthcare. Students will learn process improvement through lean management concepts which will prepare them for management positions. Prerequisite: Enrollment in the Diagnostic Science BS DA program.

**DXSC 640. Professional Communication. 3 Credits.**

Professional Communication-this course will provide students with the tools they need to communicate clearly and effectively which will prepare them for the working world and leadership. Students will learn how to have crucial conversations on how to address serious issues via written or verbal. Prerequisite: Enrollment in the Diagnostic Science BS DA program.

**DXSC 650. Medical Writing & Research. 3 Credits.**

This course is designed to introduce the student to the basics of health research and writing methods. Health care research is the necessary foundation for meaningful improvements in clinical practice. This course will make the health research and writing process accessible, manageable, and enjoyable for health care students. Prerequisite: Enrollment in Diagnostic Science BS DA.

**DXSC 655. Leadership Management. 3 Credits.**

The objective of this course is to prepare undergraduate students to become successful leaders in healthcare by viewing leadership competencies by studying relevant and contemporary skills in today's ever changing healthcare landscape. By the end of the course, students should have an understanding of how to approach complex leadership problems and comprehend them. Prerequisite: Enrollment in the Diagnostic Science BS DA program.

**DXSC 665. Capstone Project. 6 Credits.**

This course is designed to give the student the opportunity to develop a project that is professionally relevant. This project will allow the student



to explore opportunities such as implementing process change, protocol creation, and curriculum development. The course is individualized to the students' intellectual interests and professional development. Prerequisite: Enrollment in the Diagnostic Science BS DA program and be in the final semester before graduation.

## Respiratory Care Courses

### **NMED 70. Introduction to Nuclear Medicine and Medical Law and Ethics for the Imaging Professional. 3 Credits.**

An introductory overview of the field of nuclear medicine technology with includes medical terminology for clinical nuclear medicine, patient and nursing skills including phlebotomy and vital signs, departmental organization and function, and a basic overview of applied mathematical and statistical analysis used in clinical nuclear medicine. This course will also introduce to the imaging profession the legal aspects to patient care regarding patient rights, ethical theories, risk management, quality patient care. The student will participate in group discussion. Prerequisite: Acceptance into the Nuclear Medicine Training Program

### **NMED 71. Nuclear Chemistry and Physics. 2 Credits.**

This course is designed to present the theories of nuclear chemistry and physics including theory of Bohr's atom, radiation production, decay, physical half life and interaction with matter, chemical reactions and equations, review of periodic chart of elements and trilinear chart of nuclides. Prerequisite: College Physics and College Chemistry along with acceptance into the Nuclear Medicine Training Program

### **NMED 72. Radiopharmacy I. 3 Credits.**

This course is designed to present the aspects of radiopharmaceuticals including safety and handling, methods of localization, pharmacology, dose calculation and record keeping, methods of production, and quality control. The course will begin to identify the clinical uses of radiopharmaceuticals as this course will be a prerequisite for Radiopharmacy II. Prerequisite: Acceptance into the Nuclear Medicine Training Program

### **NMED 73. Clinical Procedures I. 3 Credits.**

This course is taught in modules corresponding to organ systems of the body from a technical point of view. Each module includes: review of anatomy and physiology, cross-sectional anatomy, clinical indications for nuclear imaging, nuclear imaging procedures, including radiopharmaceuticals for current clinical practices, image interpretation, and review. Prerequisite: Acceptance into the Nuclear Medicine Training Program

### **NMED 74. Radiation Biology and Protection. 1 Credits.**

This course is designed to provide the student with an understanding of the effects of radiation on the human body at the cellular, organ and whole body levels including late of effects of radiation exposure and the risk to benefits ratio. This course will provide the students with current federal and state regulations in regards to safe handling, disposal, record keeping, and licensing for the clinical use of radiation. Prerequisite: Acceptance into the Nuclear Medicine Training Program

### **NMED 75. Clinical Internship I. 6 Credits.**

Through supervised learning situations in a clinical nuclear medicine imaging department the student will gain knowledge and be required to demonstrate competence in specific imaging of nuclear medicine procedures, radiopharmaceutical distribution, imaging instrumentation, patient safety, occupational safety, and quality control practices in the clinical setting. Prerequisite: Acceptance into the Nuclear Medicine Training Program

### **NMED 80. Nuclear Instrumentation, Medical Informatics and Quality Assurance. 3 Credits.**

This course is designed to familiarize the students with basic non-imaging and imaging with nuclear medicine equipment in the clinic. This course will include basic principles of operation, system configuration and performance characteristics of Scintillation cameras and PET systems, computers and quality control and assurance as required by manufacturer and regulatory agencies. It will introduce the student to various types of medical information systems and their uses in the medical imaging. Prerequisite: Acceptance into the Nuclear Medicine Training Program

### **NMED 82. Radiopharmacy II. 1 Credits.**

This course is the advanced course to Radiopharmacy I. The students will have an understanding of the radiopharmaceuticals that are used in the clinical nuclear medicine department. This course will also cover monoclonal, polyclonal, peptides, PET, therapeutic radiopharmaceuticals, pharmacology, as well as advancement in research that is current on radiopharmaceuticals to be used in the nuclear clinical setting. Prerequisite: Radiopharmacy I

### **NMED 83. Clinical Procedures II. 3 Credits.**

This course is taught in modules corresponding to organ systems of the body from a technical point of view. It also covers PET and CT. Each module includes: review of anatomy and physiology, cross-sectional anatomy, clinical indications for nuclear imaging, nuclear imaging procedures, including radiopharmaceuticals for current clinical practices, image interpretation and review. Prerequisite: Clinical Procedures I.

### **NMED 84. Clinical Internship II. 10 Credits.**

Through supervised learning situations in a clinical nuclear medicine imaging department the student will gain knowledge and be required to demonstrate competence in specific imaging of nuclear medicine procedures, radiopharmaceutical distribution, imaging instrumentation, patient safety, occupational safety, and quality control practices in the clinical setting. Prerequisite: Clinical Internship I

### **NMED 85. Research Methods and Health Administration. 1 Credits.**

This course is designed to familiarize the student in research methodology and advances in nuclear medicine for future developments. This course will also demonstrate the phases of research and research different divisions of the research cycle. The second portion of the class will familiarize the student with the administration techniques of health management. Health management will include billing, coding and budget and equipment selection processes of maintaining a nuclear medicine department. Prerequisite: Acceptance into the Nuclear Medicine Training Program

### **NMED 90. Seminar. 3 Credits.**

This course is designed to prepare the student for national boards in the field of nuclear medicine technology. The instructor and student will be responsible for in-class review of nuclear clinical procedures, nuclear instrumentation and quality assurance, radiopharmacy, radiation protection, and patient care. Students will be required to attend guest lectures and video conferences. Prerequisite: Clinical Procedures I and II, Radiopharmacy I and II, Nuclear Instrumentation and Quality Assurance, Radiation Biology and Protection and Introduction to Nuclear Medicine

### **NMED 91. Clinical Internship III. 5 Credits.**

Through supervised learning situations in a clinical nuclear medicine imaging department the student will gain knowledge and be required to demonstrate competence in specific imaging of nuclear medicine procedures, radiopharmaceutical distribution, imaging instrumentation, patient safety, occupational safety, and quality control practices in the clinical setting. Prerequisite: Clinical Internship II

## Respiratory Care Courses

### **RESP 200. Introduction to Respiratory Therapy. 1 Credits.**

This course is intended to be an introductory course for learners who are entering college-level health care programs or for those who believe they may be interested in pursuing a career in Respiratory Therapy. Topics are appropriate for professions that involve direct patient care, as well as those that provide support services. \*\*\*\*A permission number is required to enroll in RESP 200. Prerequisite: \*\*\*\*A permission number is required to enroll in RESP 200.

### **RESP 300. Introduction to Respiratory Care Procedures. 4 Credits.**

An introductory course designed to acquaint the student with the fundamental theory, procedures, and equipment used in respiratory therapy. Emphasis is placed on understanding application of equipment and procedures to the patient, and the respiratory therapy treatment of patients requiring non-continuous ventilatory assistance. This course introduces such topics as cardiopulmonary resuscitation, bronchopulmonary hygiene, airway care, oxygen therapy, and cleaning and sterilization of equipment. Prerequisite: Enrollment in the Respiratory Care Program.

### **RESP 301. Respiratory Care Evidence Based Practice I. 1 Credits.**

This course is designed to provide the participant with a basic introduction to healthcare research with emphasis on evidence based practices. Students will learn how to identify a research question and conduct a proper literature search. This course will teach students the strengths and weaknesses of different search sources, how to review and critique a scientific article, and present the results of their literature review. Students will learn how to properly cite and develop a bibliography that is consistent with scientific writing, as well as, develop an introduction section of a research paper. This course will familiarize the students with cardiorespiratory medical terminology. Prerequisite: Enrollment in the Respiratory Care Program.

### **RESP 302. Respiratory Care Evidence Based Practice II. 1 Credits.**

This course is the continuation of Respiratory Care Evidence Based Practice I and designed to reinforce the principles of healthcare research, evidence based practices, and the medical terminology used in the cardiorespiratory sciences. Students will refine their ability to identify a research question, conduct a literature search, review and critique a scientific article, and present the results of their literature review. This course will continue to emphasize proper citation and bibliography documentation consistent with scientific writing. Prerequisite: RESP 301 and Enrollment in the Respiratory Care Education Program.

### **RESP 305. Cardiopulmonary Anatomy and Physiology. 2 Credits.**

This course will introduce the student to normal anatomy and physiology of the cardiopulmonary systems. Students will focus on the etiology, and treatment of pulmonary and cardiac diseases, with emphasis on the pulmonary system.

### **RESP 306. Cardiopulmonary Pathophysiology. 2 Credits.**

This course will introduce the student to normal cardiopulmonary systems, as well as, cardiopulmonary pathology. Students will focus on the etiology, pathophysiology, and treatment of pulmonary and cardiac diseases, with emphasis on the pulmonary system.

### **RESP 310. Clinical Pharmacology. 2 Credits.**

The student will learn about adrenergic and parasympatholytic bronchodilators, corticosteroids, mucus-controlling drugs, surfactant agents, antitussives, and the anti-infective drugs used for the treatment

of respiratory disorder. Prerequisite: Enrollment in the Respiratory Care Program.

### **RESP 315. Clinical Application I. 3 Credits.**

This course introduces the beginning respiratory therapy student to the clinical environment. The student participates in clinically-oriented workshops, observation rotations, learning laboratory sessions, or simulations that focus on the application of respiratory therapy equipment, theory, patient management, and communication in the clinical setting. Prerequisite: Enrollment in the Respiratory Care Program.

### **RESP 325. Mechanical Ventilation. 3 Credits.**

Respiratory therapists have great responsibility in caring for acutely and chronically ill patients. This course will prepare students to initiate, manage and wean patients from artificial mechanical ventilation. It will also assist in developing the necessary critical thinking skills to make appropriate decisions and manage patient's ventilation and oxygenation status. Prerequisite: Enrollment in the Respiratory Care Program.

### **RESP 326. Mechanical Ventilation Lab. 2 Credits.**

This course contains such topics as arterial puncture, classification of mechanical ventilators and adjunct devices, and their application to the patient. 2 hour weekly laboratory acquainting the student with the rationale for continuous mechanical ventilation and the basic operation of adult, pediatric, and neonatal mechanical ventilators. Emphasis is placed on the selection of appropriate equipment and assessment of its effect on the patient. Prerequisite: Enrollment in the Respiratory Care Program.

### **RESP 330. Pulmonary Function. 2 Credits.**

Lecture and laboratory introducing the student to basic pulmonary function procedures. This course allows the student to practice pulmonary function tests and interpret the results. Lecture and laboratory topics include such topics as the measurement of lung volumes and capacities, body plethysmography, blood gas analysis, and flow volume loops. Prerequisite: Enrollment in the Respiratory Care Program.

### **RESP 335. Clinical Application II. 4 Credits.**

This course provides the respiratory therapy student with an introduction to the critical care setting. The student will begin to apply the procedures and equipment most often utilized in the intensive care areas. Emphasis is placed on continuous mechanical ventilation, artificial airways, airway care, and bedside pulmonary function testing. The student will assume limited patient care responsibility in the critical care areas. Prerequisite: RESP 315.

### **RESP 340. Respiratory Review I. 1 Credits.**

Respiratory Care Review- This course provides a complete review of the junior year respiratory care curriculum and aids in the preparation for students to take the Self-Assessment examination. Upon successful completion, students will be prepared to begin the senior year curriculum. Prerequisite: Successful completion of the first and second semesters of the respiratory care curriculum.

### **RESP 341. Respiratory Review II. 2 Credits.**

Respiratory Care Review- "Junior Respiratory Care Review". This is the second of a two-course series that provides a complete review of the junior-year respiratory care curriculum and aids in preparing students to take the Self-Assessment examination. Upon successful completion, students will be prepared to begin the senior-year curriculum. Prerequisite: Successful completion of the first semester of the respiratory care curriculum.

### **RESP 345. Clinical Application 3. 3 Credits.**

This course is a continuation of the clinical sequence that provides the respiratory therapy student with experience in the critical care setting. The student applies the procedures and equipment utilized by respiratory care practitioners in the intensive care areas. Emphasis is placed on

continuous mechanical ventilation, artificial airways, airway care, and bedside diagnosis. The student assumes progressively more patient care responsibility in the critical care areas under preceptor supervision. Prerequisite: Completion of RESP 335.

**RESP 350. Clinical Application (special). 1 Credits.**

This course provides the intermediate respiratory therapy student with opportunities to practice basic respiratory therapy procedures. Emphasis placed on performance of respiratory therapy procedures and application of equipment. This course emphasizes such topics as oxygen therapy, aerosol therapy, incentive spirometry, patient assessment, and IPPB therapy. The student will assume limited patient care responsibilities.

**RESP 375. Clinical Special. 0 Credits.**

This course provides the advanced respiratory therapy student with opportunities to refine procedural and evaluative skills in the critical care areas. The student will spend a minimum of twenty-four hours per week in the clinical setting. Emphasis is placed upon the students ability to evaluate the patients' clinical situation and recommend appropriate therapy modalities to the clinical supervisor. During this course the student will assume wider-ranging patient care responsibilities.

**RESP 399. Generalist Practice. 1 Credits.**

This course is designed to allow students the opportunity to improve and perfect skills acquired in the junior year clinical courses. Emphasis will be given to refining the students' abilities to assess patient status and administer appropriate therapy modalities. This course may also be used to assess respiratory therapy knowledge and skills of students transferring from other programs. Prerequisite: Permission of instructor.

**RESP 405. Advanced Critical Care. 4 Credits.**

The respiratory and cardiovascular systems work together to maintain internal and external respiration. Many of the diseases and conditions that affect respiration are cardiovascular. The respiratory therapist plays a vital role in testing and monitoring all the body's cardiopulmonary tasks. Sometimes, the respiratory therapist will assist physicians and other times, they will test and monitor crucial functions on your own. This course will give students the knowledge and skills to handle cardiopulmonary patients. Prerequisite: Enrollment in the Respiratory Care Program.

**RESP 410. Neonatal Respiratory Care. 3 Credits.**

This course is designed to provide the student with an introductory knowledge of fetal and newborn cardiorespiratory anatomy, physiology, development, pathophysiology, and care. Prerequisite: Senior year standing or permission of instructor.

**RESP 411. Neonatal/Pediatric Respiratory Care Lab. 2 Credits.**

This Course is designed to provide the student with an introductory knowledge of fetal and newborn cardiorespiratory anatomy, physiology, development, pathophysiology, and care in a lab setting. Prerequisite: Senior year standing.

**RESP 415. Clinical Application IV. 4 Credits.**

This course provides the advanced respiratory therapy student with opportunities to refine procedural and evaluative skills in the critical care areas. In the clinical setting emphasis is placed upon the student's ability to evaluate the patient's clinical situation and recommend appropriate therapy modalities to the clinical instructor. During this course the student will assume a progressively wider range of patient care responsibilities. Prerequisite: Enrollment in the Respiratory Care Program.

**RESP 420. Health Care Management, Ethics and Law. 2 Credits.**

This course provides an overview of fundamental concepts in healthcare management, law, and ethics. Students will learn the skills and knowledge necessary to be successful in management leadership, management design, and managing diversity. Ethical concerns relevant to the healthcare manager will be addressed. Current and historical

controversies in healthcare will be discussed. Upon completion of this course, students will have the knowledge to understand laws, ethics, and management principles of the complex healthcare landscape.

**RESP 440. Health Care Leadership and Management. 3 Credits.**

This course will provide respiratory care students with a general understanding of the key principles, strategies, and skills required for effective leadership and management in the respiratory care profession and health care overall. This course will aim to equip students with the knowledge and tools necessary to emerge as leaders and managers in various healthcare environments. This course will use theoretical instruction, case studies, and practical applications to explore essential topics in management, leadership styles, communication, decision-making, and collaboration. This course will also focus on the unique challenges and opportunities of management within respiratory therapy. Finally, this course will equip the student for career-long involvement in the respiratory care profession through association involvement and the local and national level. Prerequisite: Enrollment in the Respiratory Care program.

**RESP 450. Chronic Respiratory Disease Management. 3 Credits.**

This course is open only to online students. This course is an introduction to the evolving role of respiratory therapists in health care, especially in the area of chronic disease management. The students will explore various trends that are contributing to the role respiratory therapy may play in patient care. Topics covered in this course include COPD and asthma management, pulmonary rehabilitation, cardiopulmonary exercise testing, home care, elderly care, nutritional care of the pulmonary patient, and communication skills necessary for patient education. Students in this course will gain an understanding of how they can contribute to an inter-professional team in order to provide safe and effective patient care. Presentation of topics in this course may include lecture, group work/discussion, audiovisual, computer and other multimedia aids.

**RESP 460. ACCS Specialty Credential Prep. 3 Credits.**

This course will serve as review of material covered on the NBRC Matrix for the NBRC Adult Critical Care Specialty Examination. The purpose of this course is to guide students in the review and preparation for the NBRC ACCS Specialty Examination. This will include weekly covered content, as well as practice exams.

**RESP 465. NPS Specialty Credential Prep. 3 Credits.**

This course will serve as review of material covered on the NBRC Matrix for the NBRC Neonatal/Pediatric Specialty Examination. The purpose of this course is to guide students in the review and preparation for the NBRC NPS Specialty Examination. This will include weekly covered content, as well as practice exams.

**RESP 470. AE-C Specialty Credential Prep. 3 Credits.**

This course will provide an in-depth review of asthma education based on the National Asthma Educator Certification Board (NAECB) detailed content outline. Including the asthma condition, patient and family assessment, asthma management and organizational issues. Prerequisite: Enrollment in Respiratory Care.

**RESP 480. Simulation and Interprofessional Education (IPE). 3 Credits.**

This introductory course is designed for health care students to learn key concepts of building and leading a collaborative health care team. The course addresses both the clinical and behavioral aspects of performance with emphasis on interprofessional simulation-based education. The course is offered in a self-paced online format with a competency-based approach. The course will be taught over an eight-week period. The object of the course is to introduce collaborative practice for providing patient-centered care. The student will be introduced to: Interprofessional education and collaborative practice terminology Core Competencies for

Interprofessional Collaborative Practice Foundations of effective health care teamwork Leading a collaborative health care team Skills to develop and implement simulation-based education. Prerequisite: Enrollment in Respiratory Care.

**RESP 490. Special Studies or Projects. 1-9 Credits.**

This course involves individual study, research or projects in the field of respiratory care under instructor guidance. Written reports and periodic conferences are required. Content and unit credit will be determined by student-instructor conferences and/or departmental conferences. This course may be repeated for a maximum of nine credits. Prerequisite: Admission to the respiratory care program and consent of instructor.

**RESP 495. Management, Ethics, and Law in Respiratory Care. 3 Credits.**

This course is only open to online students. This course provides an overview of fundamental concepts in healthcare management, law, and ethics. Students will learn the skills and knowledge necessary to be successful in management leadership, management design, and managing diversity. Ethical concerns relevant to the healthcare manager will be addressed. Current and historical controversies in healthcare will be discussed. Upon completion of this course, students will have the knowledge to understand laws, ethics, and management principles of the complex healthcare landscape.

**RESP 615. Respiratory Review III. 3 Credits.**

This course will serve as review of all material covered in the NBRC matrix. The purpose of this course is to guide students in their review and preparation for the NBRC TMC and CSE exams. This will include weekly covered content as well as practice tests. Prerequisite: Enrollment in the Respiratory Care Program.

**RESP 620. Community and Global Health. 3 Credits.**

This course will explore a wide variety of major health issues that impact us as global citizens. Students will be exposed to an overview of challenges that face the world today as they learn about strategies and programs that promote health in a variety of settings. Through this course, students will become more culturally competent healthcare providers. They will learn about disparities related to ethnicity, socioeconomic issues, human rights, and resource limits as they relate to the health of populations. Prerequisite: Enrollment in the Respiratory Care Program.

**RESP 625. Clinical Application V. 4 Credits.**

This course provides the student with the opportunity to integrate clinical activities and responsibilities related to neonatal and pediatric respiratory care. Prerequisites: Enrolled in Respiratory Care Program.

**RESP 630. Lean Management. 3 Credits.**

Lean Management-This course will introduce students to lean management principles such as Lean Six Sigma in healthcare. Students will learn process improvement through lean management concepts which will prepare them for management positions. Prerequisite: Enrollment in the Respiratory Care Program.

**RESP 640. Professional Communication. 3 Credits.**

Professional Communication-this course will provide students with the tools they need to communicate clearly and effectively which will prepare them for the working world and leadership. Students will learn how to have crucial conversations on how to address serious issues via written or verbal. Prerequisite: Enrollment in the Respiratory Care Program.

**RESP 650. Medical Writing & Research. 3 Credits.**

This course is designed to introduce the student to the basics of health research and writing methods. Health care research is the necessary foundation for meaningful improvements in clinical practice. This course will make the health research and writing process accessible,

manageable, and enjoyable for health care students. Prerequisite: Enrollment in Respiratory Care.

**RESP 655. Leadership Management. 3 Credits.**

The objective of this course is to prepare undergraduate students to become successful leaders in healthcare by viewing leadership competencies by studying relevant and contemporary skills in today's ever changing healthcare landscape. By the end of the course, students should have an understanding of how to approach complex leadership problems and comprehend them. Prerequisite: Senior year standing or permission of the instructor.

**RESP 665. Capstone Project. 6 Credits.**

This course is designed to give the student the opportunity to develop a project that is professionally relevant. This project will allow the student to explore opportunities such as implementing process change, protocol creation, and curriculum development. The course is individualized to the students' intellectual interests and professional development. Prerequisite: 5 Core Courses (RESP 650, RESP 495, RESP 620, RESP 480, and RESP 450), 3 Track courses (RESP 460, RESP 470, RESP 465, RESP 630, RESP 640, RESP 655).

## Respiratory Care Courses

**UTEC 300. Introduction to Diagnostic Ultrasound and Medical Law and Ethics for the Imaging Professional. 3 Credits.**

An introductory overview of the field of Diagnostic Ultrasound encompassing medical terminology for the sonographer, departmental function, ergonomics, patient care, and ethical issues in health care. In addition, a study of the department's ultrasound equipment with an extensive review of functionality and design. Prerequisite: Acceptance into the Diagnostic Ultrasound Technology Program.

**UTEC 310. Sonography Principles and Instrumentation I. 2 Credits.**

This course is designed to introduce the students to the basic terminology, the principles of propagation, beams and transducers and possible biological effects. Prerequisite: College Physics along with acceptance into the Diagnostic Ultrasound Technology Program.

**UTEC 315. Sonography Principles and Instrumentation II. 2 Credits.**

This course is designed to educate the student on advanced areas of ultrasonic propagation principles, transducer parameters, instrumentation, interactive properties with tissues, possible biological effects and quality control procedures. Introduction to Color and Spectral Doppler is included. Prerequisite: Sonography Principles and Instrumentation I.

**UTEC 320. Abdominal I Sonography. 2 Credits.**

This course is designed to present and review abdominal cross-sectional and introduce renal anatomy, physiology, pathology, and the associated sonographic appearances. This includes clinical indications for the ultrasound of the kidneys along with sonographic appearances of normal and disease processes with instrumentation, technique, and protocols. Prerequisite: College Anatomy and Physiology along with acceptance into the Diagnostic Ultrasound Technology Program.

**UTEC 325. Abdominal Sonography II. 2 Credits.**

This course is taught in sections corresponding to abdominal organs and compartments imaged in the abdomen. This course provides instruction in Liver, Biliary, Pancreas, and Spleen. Each section includes: review of anatomy, physiology, pathology, clinical indications for sonography, sonographic appearances of normal and disease processes, along with instrumentation, technique and protocols. Abdominal Doppler of normal, diseased, and transplanted liver and pancreas will be included. Prerequisite: Abdominal Sonography I.



**UTEC 330. Gynecologic Sonography. 2 Credits.**

This course is designed to educate the student on gynecologic anatomy, physiology, pathology and the sonographic appearances. This includes clinical indications for ultrasound along with instrumentation, technique, and protocols. Prerequisite: College Anatomy and Physiology along with acceptance into the Diagnostic Ultrasound Technology Program.

**UTEC 335. Obstetrical Sonography. 3 Credits.**

This course is designed to educate the student on normal maternal changes and fetal development throughout gestation. Embryonic and fetal anatomy, anomalies, pathology, biometry, and the sonographic appearances are reviewed. Instrumentation, technique, and protocols are studied. Prerequisite: Gynecologic Sonography and College Anatomy and Physiology.

**UTEC 340. Clinical Internship I. 5 Credits.**

Through supervised clinical experience in an ultrasound imaging department, the student will gain knowledge and be required to demonstrate competence in abdominal and gynecologic clinical imaging and instrumentation. Prerequisite: Acceptance into the Diagnostic Ultrasound Technology Program.

**UTEC 345. Clinical Internship II. 6 Credits.**

Through supervised clinical experience in an ultrasound imaging department and perinatology department the student will gain knowledge and be required to demonstrate competence in gynecologic, obstetrical, small parts and abdominal clinical imaging and instrumentation including Color and Spectral Doppler evaluation. Prerequisite: Gynecologic Sonography and Abdominal Sonography I.

**UTEC 350. Small Parts Sonography. 2 Credits.**

This course is taught in sections corresponding to superficial structures of the body. This course provides instruction in thyroid, scrotal, breast, soft tissue, and musculoskeletal sonography. The sections include: a review of anatomy, physiology, and pathology, clinical indications for sonography, sonographic appearances of normal and disease processes, along with instrumentation, technique, and protocols.

**UTEC 410. Vascular Technology I. 2 Credits.**

This course is taught in sections corresponding to selected sites in the vascular system. Each section includes review of: anatomy, physiology, pathology, and clinical indications for noninvasive vascular imaging and disease processes. Instrumentation, technique, and protocols are included. Prerequisite: Advanced Sonography Principles and Instrumentation II and Abdominal Sonography I.

**UTEC 415. Vascular Technology II. 2 Credits.**

This course is taught in sections corresponding to selected sites in the vascular system. Each section includes review of: anatomy, physiology, pathology, and clinical indications for noninvasive vascular imaging and disease processes. Instrumentation, technique, and protocols are included. Prerequisite: Vascular Technology I, Sonography Principles and Instrumentation I and II, and Abdominal Sonography I, II, and III.

**UTEC 420. Abdominal Sonography III. 1 Credits.**

This course is taught in sections corresponding to abdominal organs and compartments imaged in the abdomen. This course provides instruction in the Retroperitoneum, Peritoneum, Gastrointestinal, Abdominal Wall, and Great Vessels. Each section includes: review of anatomy, physiology, pathology, clinical indications for sonography, sonographic appearances of normal and disease processes, along with instrumentation, technique, and protocols. Prerequisite: Abdominal Sonography I and II.

**UTEC 430. Advanced Sonography Seminar I. 3 Credits.**

This course is designed to prepare the student for national board examinations administered by the American Registry of Diagnostic Medical Sonographers in the field of ultrasound and vascular technology.

The student will be responsible for review of ultrasound clinical procedures, including anatomy, physiology, disease processes and sonographic appearances, and sonography principles and instrumentation. In addition, the student will learn post graduate skills to enhance professional opportunities. Prerequisite: Gynecologic, Sonography Small Parts, Obstetrical Sonography, and Abdominal Sonography I, II, and III, Clinical Internship I, II, and III, and Sonography Principles and Instrumentation I and II.

**UTEC 435. Advance Sonography Seminar II. 4 Credits.**

This course is designed to prepare the student for national boards administered by the American Registry of Diagnostic Medical Sonographers in the field of ultrasound and vascular technology. The student will be responsible for in class review of ultrasound clinical procedures, including anatomy, physiology, disease processes and sonographic appearances, ultrasound physics and instrumentation and vascular physics and instrumentation. In addition, the student will learn post graduate skills to enhance professional opportunities. Prerequisite: Gynecologic Sonography, Small Parts Sonography, Obstetrical Sonography, Abdominal Sonography I, II, and III, Clinical Internship I, II, III and IV and Ultrasound Physics and Instrumentation, Vascular Technology and Vascular Physics and Instrumentation.

**UTEC 440. Clinical Internship III. 4 Credits.**

Through supervised clinical experience in an ultrasound imaging department and perinatology department the students will gain knowledge and be required to demonstrate competence in gynecologic, obstetrical, small parts, abdominal and vascular clinical imaging and instrumentation including Color and Spectral Doppler evaluation. Prerequisite: Gynecologic Sonography, Small Parts Sonography, Obstetrical Sonography, Abdominal Sonography I and II.

**UTEC 445. Clinical Internship IV. 8 Credits.**

Through clinical supervised learning situations in a clinical ultrasound imaging department the student will gain knowledge and be required to demonstrate competence in abdominal noninvasive vascular imaging procedures and all aspects of instrumentation. Prerequisite: Gynecologic Sonography, Small Parts Sonography, Obstetrical Sonography, Abdominal Sonography I, II, III and Vascular Technology.

**UTEC 450. Clinical Internship V. 8 Credits.**

Through clinical supervised learning situations in a clinical ultrasound imaging department the student will gain knowledge and be required to demonstrate competence in abdominal and noninvasive vascular imaging procedures and all aspects of instrumentation. Prerequisite: Gynecologic Sonography, Small Parts Sonography, Obstetrical Sonography, Abdominal Sonography I, II, III and Vascular Technology.

## Therapeutic Science Courses

**TS 800. Research Proseminar. 1 Credits.**

A proseminar conducted by the core graduate faculty in Occupational Therapy and Therapeutic Science. Twice-monthly meetings will involve student and faculty presentations of their current research, as well as provide more opportunities to obtain feedback on research proposals. May be taken more than once for a total of four credits. (Same as OTMS 800.)

**TS 805. Multidisciplinary Theoretical Perspectives. 3 Credits.**

Students will identify and explore key theories in behavioral, social and occupational science with an emphasis on those currently influencing clinical reasoning and applications to practice and/or research. Students will demonstrate an understanding of multidisciplinary theoretical frameworks and be able to compare and contrast key theories, while also developing knowledge about theory guided research and practice.

**TS 850. From Beliefs to Evidence. 1 Credits.**

Analysis of the role of beliefs about practice in professional culture and how beliefs are affected by the accumulation of research evidence. Topics include the nature of science and beliefs, the nature of evidence, and the debate over evidence-based practice. Students will use topics from their own professional interests for class presentations and written assignments. A minimum of two credits over two successive terms is required (1 credit fall and 1 credit spring semester). Note this course alternates in succession with TS900 and TS950, and is offered in the Fall & Spring every 3rd year. Prerequisites: Permission of the instructor.

**TS 880. Special Projects. 1-6 Credits.**

An elective course to allow student investigation of special issues or problems relevant to applied research and/or practice, under the direction of a faculty member chosen by the student. Systematic coverage of current issues may include a research investigation or study related to pertinent sociocultural trends, practice factors, or emerging issues in service provision. Students will complete special projects such as oral presentations, written papers, or case analysis as negotiated with the faculty member. May be repeated for credit. Prerequisite: Permission of instructor.

**TS 900. Evolving Interdisciplinary Views of Disablement. 1 Credits.**

Assessment of how our social and cultural context defines notions of disability and disablement in our society. Topics include historical constructs of disability, public policy related to disability, and social paradigms of disability. Students will evaluate views of disablement from the perspective of their own discipline. A minimum of two credits over two successive terms is required (1 credit fall and 1 credit spring semester). Note this course alternates in succession with TS850 and TS950 and is offered in the Fall & Spring every 3rd year. Prerequisite: Consent of the Instructor.

**TS 950. Designing Effective Knowledge Transfer. 1 Credits.**

Examination of the principles of knowledge transfer and diffusion of innovation as they relate to practices in therapeutic professions. Topics include the diffusion process, change agents, innovation adoption, and current diffusion methods. Students will evaluate diffusion processes that have occurred within their own professions. A minimum of two credits over two successive terms is required (1 credit fall and 1 credit spring semester). Note this course alternates in succession with TS850 and TS900 and is offered in the Fall & Spring every 3rd year. Prerequisite: Consent of the instructor.

**TS 980. Advanced Study in Therapeutic Science. 1-9 Credits.**

Students engage in advanced study of a topic of their interest, guided by an appropriate mentor. Options for engaging in learning include directed readings, interpretation of evidence, discussions, and written syntheses of existing literature. Students typically enroll in offerings of this course several times over a series of successive terms, with the course sequence culminating in a written proposal for original research and an oral defense of that proposal (oral comprehensive examination). Prerequisite: Permission of instructor.

**TS 990. Dissertation in Therapeutic Science. 1-9 Credits.**

Research experience leading to dissertation for doctoral students in Therapeutic Science. Students enroll in offerings of this course over a series of successive terms, culminating in a written dissertation describing original research and an oral defense of the dissertation research. Prerequisite: Permission of instructor.