<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Lecture Hours</th>
<th>Prerequisite(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KINE 601</td>
<td>Reading Research Publications in Kinesiology</td>
<td>3</td>
<td>3</td>
<td>Graduate classification; KINE 406 or equivalent.</td>
</tr>
<tr>
<td>KINE 606</td>
<td>Motor Neuroscience I</td>
<td>3</td>
<td>3</td>
<td>Neuroscience of the neuromuscular system with emphasis on motor control; topics include organization of the CNS; reflexes; integration of sensory information; experimental approaches to study neuromuscular control and neurophysiology of contemporary motor control theories.</td>
</tr>
<tr>
<td>KINE 609</td>
<td>Professional and Career Development in Health and Kinesiology</td>
<td>3</td>
<td>3</td>
<td>Graduate classification.</td>
</tr>
<tr>
<td>KINE 610</td>
<td>Administration of Health and Kinesiology</td>
<td>3</td>
<td>3</td>
<td>Administration of comprehensive programs of kinesiology in higher education settings.</td>
</tr>
<tr>
<td>KINE 614</td>
<td>External Research Fund Development</td>
<td>3</td>
<td>3</td>
<td>Preparation of external research funding applications with emphasis on NIH proposals and other external funding sources; methods and commonly used processes of federal grant review and the funding decision process.</td>
</tr>
<tr>
<td>KINE 622</td>
<td>Supervision of Health and Kinesiology</td>
<td>3</td>
<td>3</td>
<td>Principles and processes of supervision; in-service training of personnel.</td>
</tr>
<tr>
<td>KINE 623</td>
<td>Pedagogical Research in Teaching/Physical Education</td>
<td>3</td>
<td>3</td>
<td>Pedagogical research in education and relate to the specialty area of physical education; study key research paradigms that now influence inquiry in physical education and link to current practices in effective teaching.</td>
</tr>
<tr>
<td>KINE 624</td>
<td>Exercise Physiology I</td>
<td>3</td>
<td>3</td>
<td>Functional changes brought about by acute and chronic exercise; topics include pulmonary and cardiovascular physiology, training and detraining, and special topics.</td>
</tr>
<tr>
<td>KINE 625</td>
<td>Exercise Physiology II</td>
<td>3</td>
<td>3</td>
<td>Functional changes brought about by acute and chronic exercise; topics include pulmonary and cardiovascular physiology, training and detraining, and special topics.</td>
</tr>
<tr>
<td>KINE 626</td>
<td>Exercise for Clinical Population</td>
<td>3</td>
<td>3</td>
<td>Principles relevant to exercise programming for persons with chronic disease/disability; includes information for each condition: pathophysiology, effect on exercise response, effects of exercise on disease process, and recommendation for exercise testing and programming.</td>
</tr>
<tr>
<td>KINE 628</td>
<td>Nutrition in Sport and Exercise</td>
<td>3</td>
<td>3</td>
<td>Interaction between nutrition, exercise, and athletic performance; including: biochemical and physiological aspects of nutrition and exercise; nutrition for training and competition; exercise and oxidant stress; nutritional supplements and ergogenic acids; and nutritional aspects of body composition and weight control.</td>
</tr>
<tr>
<td>KINE 630</td>
<td>Periodized Models</td>
<td>3</td>
<td>3</td>
<td>Scientific principles and procedures relating to detailed cutting edge periodized training designs; emphasis on researched based periodized program designs and implementation regarding the background/history, concepts, variations and application of relevant periodization models.</td>
</tr>
<tr>
<td>KINE 631</td>
<td>Specialized Strength and Conditioning Techniques</td>
<td>3</td>
<td>3</td>
<td>Research based physiological responses and adaptations associated with power, speed, quickness, flexibility and mobility; laboratory demonstration/implementation and specific practical experiences based on available scientific research. Practical mastery as well as theoretical understanding required.</td>
</tr>
<tr>
<td>KINE 632</td>
<td>Exercise Physiology I</td>
<td>3</td>
<td>3</td>
<td>Functional changes brought about by acute and chronic exercise; topics include pulmonary and cardiovascular physiology, training and detraining, and special topics.</td>
</tr>
<tr>
<td>KINE 633</td>
<td>Exercise Physiology II</td>
<td>3</td>
<td>3</td>
<td>Functional changes brought about by acute and chronic exercise; topics include pulmonary and cardiovascular physiology, training and detraining, and special topics.</td>
</tr>
<tr>
<td>KINE 636</td>
<td>Exercise Electrocardiography</td>
<td>3</td>
<td>3</td>
<td>Electrocardiography (ECG) for the exercise scientist; emphasis on recognition and interpretation of normal and aberrant ECG patterns encountered during the graded exercise test; physiologic mechanisms underlying the normal and abnormal ECG.</td>
</tr>
<tr>
<td>KINE 637</td>
<td>Motor Neuroscience I</td>
<td>3</td>
<td>3</td>
<td>Contemporary theories of motor learning that link behavioral analysis to underlying neural correlates of control; topics include memory; physical, mental and observational practice; internal models, motor planning-programming; and self-organization in perception-action systems; emphasis on cognitive and behavioral neuroscience.</td>
</tr>
<tr>
<td>KINE 638</td>
<td>Motor Neuroscience: Development Issues</td>
<td>3</td>
<td>3</td>
<td>Explores the contemporary developmental issues associated with motor behavior (perception to action) across the lifespan; topics include physical and neurological growth, perception, motor control, and environmental influence.</td>
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</table>
KINE 642 Self-organization in Motor Neuroscience  
Credits 3. 3 Lecture Hours.  
Application of the concepts of non-linear dynamical systems theory and self-organization to the study of biological motion and learning; topics include perception-action coupling, phrase transitions and stability, sensori-motor transformations.  
Prerequisites: KINE 406 and KINE 641.

KINE 646 Fundamentals of Space Life Sciences  
Credits 3. 3 Lecture Hours.  
Integrates nutrition, physiology, and radiation biology to define major biological problems in long duration space flight; provide an overview of the problems of bone loss, muscle wasting, and radiation-enhanced carcinogenesis along with potential countermeasures; focus on nutritional interventions and exercise protocols.  
Cross Listing: NUTR 646 and NUEN 646.

KINE 647 Instrumentation and Techniques in Exercise Physiology I  
Credits 2. 1 Lecture Hour. 3 Lab Hours.  
Theory, experiments and demonstrations in exercise physiology; laboratory experience in the use of metabolic and biochemical instrumentation commonly found in a modern exercise physiology laboratory.  
Prerequisite: Concurrent enrollment in KINE 637.

KINE 648 Instrumentation and Techniques in Exercise Physiology II  
Credits 2. 1 Lecture Hour. 3 Lab Hours.  
Theory, experiments and demonstrations in exercise physiology; laboratory experience in the use of metabolic and biochemical instrumentation commonly found in a modern exercise physiology laboratory. A continuation of KINE 647.  
Prerequisite: KINE 637 or concurrent enrollment.

KINE 649 Applied Exercise Physiology  
Credits 3. 3 Lecture Hours.  
Investigate how the acute physiological responses to exercise and the chronic physiological adaptations to exercise training are altered by environmental factors—heat, cold, altitude, and microgravity, and by age and sex; addresses the physiological bases for reducing the risk of cardiovascular, metabolic and bone disease through physical activity.  
Prerequisite: KINE 433 or equivalent.

KINE 681 Seminar  
Credit 1. 1 Lecture Hour.  
Reports and discussions of topics of current interest in kinesiology.

KINE 682 Seminar in...  
Credit 1. 1 Other Hour.  
Reports and discussions of topics of current interest in kinesiology.  
Students may register in up to but not more than four sections of this course in the same semester.

KINE 683 Practicum in Kinesiology  
Credits 3. 3 Other Hours.  
Observation and study of rehabilitation and kinesiology programs in schools and other institutions. May be repeated twice for credit.  
Prerequisite: Approval of department head.

KINE 684 Professional Internship  
Credits 1 to 6. 1 to 6 Other Hours.  
Supervised experiences in application of formal training to performing professional functions consistent with career goals.  
Prerequisites: 12 semester hours of selected graduate work; approval of department head.

KINE 685 Directed Studies  
Credits 1 to 12. 1 to 12 Other Hours.  
Directed study of selected problems in kinesiology not related to thesis. May be repeated for credit.  
Prerequisite: Approval of department head.

KINE 689 Special Topics in...  
Credits 1 to 4. 1 to 4 Lecture Hours. 0 to 4 Lab Hours.  
Selected topics in an identified area of kinesiology. May be repeated for credit.  
Prerequisite: Approval of department head.

KINE 690/HLTH 690 Theory of Research in Discipline  
Credits 3. 3 Lecture Hours.  
Theory and design of research problems and experiments in various subfields of the discipline; communication of research proposals and results; evaluation of current research of faculty and students and review of current literature. May be repeated for credit.  
Cross Listing: HLTH 690/KINE 690.

KINE 691 Research  
Credits 1 to 23. 1 to 23 Other Hours.  
Research for thesis or dissertation.  
Prerequisite: Approval of committee chair.