by the Monte Carlo method; phase-space tracking; dose response estimators, biasing methods; integral form of the Boltzmann equation; condensed-history method for charged particles; neutron, photon, and electron transport calculations for shielding and medical physics applications.

7991 Advanced Projects in Medical Physics and Health Physics (1-3) Prereq.: MEDP 4111 or 7331 and consent of instructor. May be taken for a max. of 6 sem. hrs. credit. Advanced treatment of a specialized area of medical physics or health physics technology of current interest.

7995 Seminar (1) F S Prereq.: Research experience in medical physics. Seminar with research presentations and discussion. 1 hr. credit per semester; students who elect 3 credits will receive 60 minutes of individual instruction per week. Graduate applied courses are offered for 2-6 credits.

**MUSIC • MILS**

Nonimmigrant aliens require approval from their government prior to enrollment in these courses.

1010 Rifle and Pistol Marksmanship (1) 1 hr. lecture; 1 hr. lab. Graduates to freshmen and sophomores or permission of instructor. Rifle and pistol safety; breathing techniques; zeroing; physical and mental conditioning; sighting and aiming; standard firing positions; practical application on indoor firing range.

1101 Leadership and Personal Development (1) F S Prereq.: 1.5 hrs. lab. Introduction to the personal challenges and competencies critical for effective leadership. Focus on developing basic knowledge and comprehension of Army leadership dimensions while gaining an understanding of the ROTC program, its purpose in the Army, and its advantages for students.

1112 Intro to Tactical Leadership (1) F S Prereq.: MILS 1011 or permission of instructor. 1 hr. lecture; 1.5 hrs. lab. Overview of leadership fundamentals, including setting direction, developing, listening, presenting briefs, providing feedback, and effective writing skills.

1105 Army Physical Fitness Training (1) 3 hrs. lab. Open to all Army students. May be taken for a max. of 6 sem. hrs. of credit. Development of strength, stamina, agility, coordination, and flexibility through a combined program of group and individual exercises.

2161 Innovative Team Leadership (2) F S Prereq.: MILS 1011 and 1012 or permission of instructor; 2 hrs. lecture; 1.5 hrs. lab. Examine the dimensions of creative and innovative tactical leadership strategies and styles by studying historical case studies and engaging in interactive student exercises.

2162 Tactical Leadership Development (2) F S Prereq.: MILS 2161 or permission of instructor; 2 hrs. lecture; 1.5 hrs. lab. Examine the challenges of leading tactical teams in the contemporary operating environment (COE). Continuous study of the theoretical basis of the Army leadership framework explores the dynamics of adaptive leader behavior and development of effective leaders.

3011 Adaptive Tactical Leadership (4) F S Prereq.: MILS 2161 and 2162 or equivalent. 3 hrs. lecture; 3 hrs. lab. Study, practice, and evaluation of adaptive team leadership skills as presented with the demands of the ROTC Leaders' Development and Assessment Course (LDAC).

Challenging scenarios related to small unit tactical operations are used to develop self awareness and critical thinking skills.

3012 Leadership in Changing Environments (4) S Prereq.: MILS 3011. 5 hrs. lecture; 5 hrs. lab. Integrates the principles and skills of effective leadership, military operations, and personal development, in order to adequately prepare for the summer Leadership Development Advanced Course (LDAC).

3013 ROTC Advanced Camp (3) Su Prereq.: MILS 3011 and 3012. To receive academic credit, student must enroll in summer session prior to departure for Advanced Camp. Five week course conducted at an Army post with instructors and cadets representing ROTC programs from the United States, Puerto Rico, and overseas. Intense leadership application and training in military skills; oral and written orders, light infantry tactics and weapons systems, and confidence building exercises.

4011 Developing Adaptive Leaders (4) F S Prereq.: MILS 3012, 3 hrs. lecture; 3 hrs. lab. Not for graduate credit. Seniors and cadets prepared. Development of proficiency in planning, executing, and assessing complex operations, functioning as a member of a staff and providing performance feedback to subordinates. Lessons on military justice and personnel processes prepare students to make the transition to becoming an army officer.

4012 Leadership in a Complex World (4) S Prereq.: MILS 4011. 3 hrs. lecture; 3 hrs. lab. Not for graduate credit. Senior standing required. Explores the dynamics of leading in the complex situations of current military operations in the Contemporary Operating Environment (COE). Case studies, scenarios, and exercises are also used to prepare students to face the complex ethical and practical demand of leading as a commissioned officer in the U.S. Army.

4055 Civil War Topics (3) S Spring 04/05.

4066 Military History of the United States (3) See HIST 4066.

4130 World War I (3) See HIST 4130. Special Topics in Military History (3) May be taken for a max. of 6 sem. hrs. of credit when topics vary.

**MUS**

**APPLIED MUSC**

Applied Music and Ensemble Courses

Admission to applied music courses is by audition only. Secondary and primary applied courses, MUS 2101-2154 and 3130-3154, are offered for 2 or 3 credits. Students who elect 2 credits will receive 30 minutes of individual instruction per week; students who elect 3 credits will receive 60 minutes of individual instruction per week. Graduate applied courses are offered for 2-6 credits.

All applied music and ensemble courses may be repeated for credit every semester.

**APPLIED MUSIC COURSES**

All students registering for 2130-54 and 3130-54 may be required to participate concurrently in one of the following major performing organizations: MUS 2423, 2425, 2434, 4255, 4256, 4250, 4252, 4253, 4254, or 4261.

Secondary Applied Music Courses

These courses are designed for students who are not qualified to either major or minor in the specific instrument designated by the course number.

2130 Secondary Voice (2-3)
2131 Secondary Piano (2-3)
2132 Secondary Harpsichord (2-3)
2133 Secondary Organ (2-3)
2134 Secondary Harp (2-3)
2135 Secondary Violin (2-3)
2136 Secondary Cello (2-3)
2137 Secondary Oboe (2-3)
2138 Secondary Flute (2-3)
2139 Secondary Bass (2-3)
2140 Secondary French Horn (2-3)
2141 Secondary Clarinet (2-3)
2142 Secondary Saxophone (2-3)
2143 Secondary Oboe (2-3)
2144 Secondary Trumpet (2-3)
2145 Secondary French Horn (2-3)
2146 Secondary Trombone (2-3)
2147 Secondary French Horn (2-3)
2148 Secondary Tuba (2-3)
2149 Secondary Percussion (2-3)
2150 Secondary Bassoon (2-3)
2151 Secondary Oboe (2-3)
2152 Secondary Guitar (2-3)
2153 Secondary Electraacoustic Composition (2-3)
2154 Secondary Jazz Study (2-3)

Primary Applied Music Courses

These courses are for students whose declared major or minor is the specific instrument designated by the course number.

3130 Primary Voice (2-3)
3131 Primary Piano (2-3)
3132 Primary Harpsichord (2-3)
3133 Primary Organ (2-3)
3134 Primary Trombone (2-3)
3135 Primary Violin (2-3)
3136 Primary Viola (2-3)
3137 Primary Violin (2-3)
3138 Primary Trumpet (2-3)
3139 Primary French Horn (2-3)
3140 Primary Oboe (2-3)
3141 Primary Clarinet (2-3)
3142 Primary Saxophone (2-3)
3143 Primary French Horn (2-3)
3144 Primary French Horn (2-3)
3145 Primary French Horn (2-3)
3146 Primary Euphonium (2-3)
3147 Primary Trombone (2-3)
3148 Primary Tuba (2-3)
3149 Primary Percussion (2-3)
3151 Primary Composition (2-3)
3152 Primary Guitar (2-3)
3153 Primary Electraacoustic Composition (2-3)
3154 Primary Jazz (2-3)

Graduate Applied Music Courses

7300 Graduate Voice (2-6)
7301 Graduate Piano (2-6)
7302 Graduate Harpsichord (2-6)
7303 Graduate Organ (2-6)
7304 Graduate Harp (2-6)
7305 Graduate Viola (2-6)
7306 Graduate Guitar (2-6)
7307 Graduate Cello (2-6)
7308 Graduate String Bass (2-6)
7309 Graduate Flute (2-6)
7310 Graduate Oboe (2-6)
7311 Graduate Clarinet (2-6)
7342 Graduate Saxophone (2-6)
7343 Graduate Bassoon (2-6)
7344 Graduate Trumpet (2-6)
7345 Graduate French Horn (2-6)
7346 Graduate Euphonium (2-6)
7347 Graduate Trombone (2-6)
7348 Graduate Tuba (2-6)
7349 Graduate Percussion (2-6)
7350 Graduate Composition (2-6)
7352 Graduate Guitar (2-6)
7353 Graduate Electraacoustic Composition (2-6)
7354 Graduate Jazz Study (2-6)
7355 Graduate Collaborative Keyboard (2-6)

**ENSCREEN COURSES**

Admission to ensemble courses is by audition only, with the exception of 4230, 4232, and 4233. These courses are open to all students, including freshmen and sophomores. Courses marked with an asterisk (*) will satisfy the major ensemble requirement.

4220 Piano Ensemble (1) May be repeated for a max. of 2 sem. hrs. for degree credit.
4221 Vocal Chamber Music (1)
4222 Woodwind Chamber Music (1)
4223 Brass Chamber Music (1)
4224 String (or Piano and Strings) Chamber Music (1)
4225 Collegium Musicum (1)
4226 Percussion Ensemble (1)
4227 Marimba Ensemble (1)
4228 Contemporary Music Ensemble (1)
4229 Harp Ensemble (1)
4230 Gospel Choir (1)
4231 Swing Choir (1)
4232 Men's Chorus (1)
4233 Women's Chorus (1)
4234 University Chorus (0-1)
4235 Chamber Choir (1)
4236 A Cappella Choir (1)
4240 Opera Chorus (1)
4250 Tiger Marching Band (1)
4251 Wind Ensemble (0-1)
4252 Symphonic Band (0-1)
4253 Jazz Band (1)
4254 Symphonic Winds (0-1)
4255 Chamber Jazz (1)
4260 Philharmonia (1)
4261 Symphony Orchestra (0-1)

**GENERAL COURSES**

General education courses are marked with stars (★).