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 7311 and consent of instructor. May be taken for a max. of 6 sem. hrs. credit. Medical physics or health physics projects that study particular aspects of radiation therapy, medical imaging, or medical health physics.

7992 Advanced Topics in Medical Physics and Health Physics (1-3) Prereq.: consent of instructor. May be taken for a max. of 6 sem. hrs. of credit when topics vary. Advanced treatment planning of high-dose radiation therapy and the physics technology of current interest.

7995 Seminar (1-6) Prereq.: MEDP 4111 or 7311 and consent of instructor. May be taken for a max. of 12 sem. hrs credit. Detailed investigation of a research problem or a design project.

8000 Thesis Research (1-12 per sem.) 3”7”V” grading.

**MILITARY SCIENCE • MILS**

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

1040 Rifle and Pistol Marksmanship (1) 1 hr. lecture; 1 hr. lab. Prereq.: Freshman status; permission of instructor. Rifle and pistol training. Basic techniques: zeroing; physical and mental conditioning; shooting and aiming fundamentals; standard inspection and cleaning; practical application on indoor firing range.

1051 Leadership and Personal Development (1) F S Pr. 1 hr. lecture; 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 concepts and the leadership program in place. 4053 Civil War (3) See HIST 4053. 4066 Military History of the United States (3) See HIST 4066.

3103 Primary Advanced Topics in Military and Strategic Studies (3) Prereq.: 4066. Special Topics in Military History (3) May be taken for a max. of 6 sem. hrs. of credit when topics vary.

**MUSIC • MUS**

**Applied Music and Ensemble Courses**

Admission to applied music courses is by audition only. Secondary and primary applied courses, MUS 2130-2154 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 45 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 4232, 4233, 4234, 4235, 4236, 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 Cello (2-3)

2135 Secondary Violin (2-3)

2136 Secondary Viola (2-3)

2137 Secondary Violoncello (2-3)

2138 Secondary String Bass (2-3)

2139 Secondary Flute (2-3)

2140 Secondary Oboe (2-3)

2141 Secondary Clarinet (2-3)

2142 Secondary Saxophone (2-3)

2143 Secondary Bassoon (2-3)

2144 Secondary Trumpet (2-3)

2145 Secondary French Horn (2-3)

2146 Secondary Trombone (2-3)

2147 Secondary Trombone (2-3)

2148 Secondary Tuba (2-3)

2149 Secondary Euphonium (2-3)

2151 Secondary Cello (2-3)

2152 Secondary Guitar (2-3)

2153 Secondary Electroacoustic Composition (2-3)

2154 Secondary Jazz Studio (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 Cello (2-3)

3135 Primary Violin (2-3)

3136 Primary Viola (2-3)

3137 Primary Trumpet (2-3)

3138 Primary String Bass (2-3)

3139 Primary Flute (2-3)

3140 Primary Oboe (2-3)

3141 Primary Clarinet (2-3)

3142 Primary Saxophone (2-3)

3143 Primary Bassoon (2-3)

3144 Primary Trumpet (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 Electroacoustic Composition (2-3)

3154 Primary Jazz (2-3)

**Graduate Applied Music Courses**

7030 Graduate Voice (2-6)

7031 Graduate Piano (2-6)

7032 Graduate Harpsichord (2-6)

7033 Graduate Organ (2-6)

7034 Graduate Harp (2-6)

7035 Graduate Violin (2-6)

7036 Graduate Viola (2-6)

7037 Graduate Cello (2-6)

7038 Graduate String Bass (2-6)

7040 Graduate Harp (2-6)

7040 Graduate Oboe (2-6)

7041 Graduate Clarinet (2-6)

7042 Graduate Saxophone (2-6)

7043 Graduate Bassoon (2-6)

7044 Graduate Trumpet (2-6)

7045 Graduate French Horn (2-6)

7046 Graduate Euphonium (2-6)

7047 Graduate Trombone (2-6)

7048 Graduate Tuba (2-6)

7049 Graduate Percussion (2-6)

7051 Graduate Composition (2-6)

7052 Graduate Guitar (2-6)

7053 Graduate Electroacoustic Composition (2-6)

7054 Graduate Jazz Studio (2-6)

7055 Graduate Collaborative Keyboard (2-6)

**ENGLISH 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 (•).