UNDERGRADUATE CATALOG

Millersville University

P.O. Box 1002
Millersville, PA 17551-0302

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UNIVERSITY CALENDAR 2016-2017

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FRI	SEP 23	Family Symposium Weekend
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INTRODUCTION

Millersville

Millersville University of Pennsylvania, located in scenic Lancaster County, is one of the 14 state-owned institutions of higher education that make up Pennsylvania's State System of Higher Education.

HISTORY

In the early 1850s, a group of private citizens in Lancaster County decided to sponsor a three-month summer school program that would provide more education for local pupils than what was then available in public schools. The immediate success of that initial program prompted its sponsors to propose that a permanent academy be established. The decision eventually led to the founding of what is now Millersville University.

The academy began in 1854 with the construction of a three-story building containing a small auditorium, two classrooms and housing for 50 students, located on seven-and-one-half acres at the corner of West Frederick and George streets in Millersville. In 1855, just as the building was nearing completion, the trustees saw an opportunity to promote the new school by ofering its free use to J.P. Wickersham, the superintendent of Lancaster County Schools, who was searching for a place to hold a three-month teachers' institute.

Wickersham opened his Lancaster County Normal Institute on April 17, 1855, with 147 students each paying $34 for room, board and tuition for the three-month term. Before the term was over, both Wickersham and the academy trustees agreed that the school should become a permanent normal school.

The Lancaster County Normal School, the frst school of its kind in the state, opened on November 5, 1855, in Millersville with approximately 100 students. The original academy building, soon known as "Old Main," was expanded and enlarged over the years and served the college in many capacities until it was razed in 1970. The University's 11-story Francine G. McNairy Library and Learning Forum at Ganser Hall now stands on that site.

Two years after the school's opening, the Normal School Law of Pennsylvania was enacted. It divided the state into 12 normal school districts, with Lancaster, York and Lebanon counties forming the second district. The law also established certain minimum requirements for facilities and curricula. The state legislature, however, enacted no funds for the development of the schools. The

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Millersville University's faculty, staf and services refect the University's concern for student growth and development. There are over 300 full-time faculty members available to advise and counsel students on academic and career-related matters. There are also counseling, career planning and placement, and tutorial services, as well as services for nontraditional students. A wide range of cocurricular and extracurricular activities and cultural events are ofered.

ACCREDITATION

Millersville University is accredited by the Middle States Commission on Higher Education, 3624 Market Street, 2nd Floor West, Philadelphia, PA 19104; the Pennsylvania Department of Education; and is approved by the American Association of University Women. Teacher Education programs are accredited by the Council for the Accreditation of Educator Preparation (CAEP), 1140 19th Street, N.W. Suite 400, Washington, D.C. 20036, and the University is a member of the American Association of Colleges for Teacher Education (AACTE). The respiratory therapy program is accredited by the Commission on Accreditation for Respiratory Care (CoARC), 1248 Harwood Road, Bedford, TX 76021-4244. The social work programs are accredited by the Council on Social Work Education (CSWE), 1701 Duke Street, Suite 200, Alexandria, VA 22314. The music programs are accredited by the National Association of Schools of Music (NASM), 11250 Roger Bacon Drive, Suite 21, Reston, VA 20190-5248. The nursing programs are accredited by Ċ Q ¢is ŭ cr
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ADMISSIONS & FINANCES

Millersville University

Students may be admitted to Millersville University to work toward an undergraduate degree or to take college-level courses for self-enrichment or career development. Students already holding a bachelor's degree may wish to pursue a second undergraduate degree. For more information on any of Millersville's undergraduate admission programs, contact the O f ce of Admissions in Lyle Hall at 800-MU-ADMIT or 717-871-4625, or visit the Millersville website at www.millersville.edu.

GENERAL ADMISSION POLICIES FOR ALL APPLICANTS TO UNDERGRADUATE DEGREE PROGRAMS

To be considered for admission to Millersville University, one must be a graduate of an approved secondary school or hold a General Educational Development (GED) high school equivalency diploma. Traditional students applying directly from high school must have completed a college preparatory curriculum. Generally, the student's academic program should include four units of academic English; three units or more of academic mathematics, minimally including algebra I, algebra II and geometry; three units or more of academic science, including two or more units of laboratory science, biology and chemistry with lab and any other inquiry-based lab or technical science; and three or more units of academic social science coursework. Foreign language coursework at the secondary level is recommended but not required for admission consideration. Also required are satisfactory scores on the SAT or ACT. Any home-schooled applicant wishing to be considered for admission to Millersville University should be a graduate of an approved home school association program. A GED issued by the Pennsylvania Department of Education is preferred if the student has not completed an approved program of study. Also required are satisfactory scores on the SAT or ACT.

Admission to undergraduate degree programs at Millersville is selective. However, a special admission program is available for some whose high school record or SAT or ACT scores do not demonstrate their true potential.

Admission to Millersville University is granted without regard to race, color, religion, sex, national origin, ancestry, age, handicap, marital status or lifestyle. Applications from quali fed out-of-state students are welcomed; requirements for Pennsylvania resident status appear under the *Expenses and Financial Aid* section of this catalog.

All courses are taught in English, and students are expected to have demonstrated English language pro f ciency.

Prospective students are encouraged to apply electronically by following the undergraduate application instructions on the Millersville University website at www.millersville.edu. If you wish to receive a paper application form, please contact the admissions o f ce. For an application f le to be considered complete, the following must also be submitted:

1. An o f cial copy of the secondary school record.
2.

In addition to demonstrating English language proficiency, as noted previously, transfer students with academic credentials from outside of the United States must have their college/university credentials and/or mark sheets sent to a recognized credential evaluation service for evaluation, as well as to the Millersville University admissions office. Original or certified copies of academic credentials must also be sent directly to the Millersville University admissions office. Two such credential evaluation services are the World Education Services, Inc., at www.WES.org or the American Association of Collegiate Registrars and Admissions Officers

Students in good academic standing who are on leave from a degree program at another college may apply to Millersville as part-time transient students.

Millersville University has reciprocal agreements with these two institutions. Franklin & Marshall College may, upon appropriate authorization, send students to Millersville for courses not offered at Franklin & Marshall, without a tuition charge from Millersville. Similarly authorized full-time graduate students from Lancaster Theological Seminary may enroll in undergraduate and graduate-level courses at Millersville without a tuition charge by Millersville.

Millersville students may also take advantage of these agreements and enroll for courses at these institutions. See the *Special Academic Opportunities* section for more information.

Qualified high school juniors and seniors may take credit-bearing courses at Millersville while pursuing their high school diplomas. Applicants must submit an official high school transcript and SAT, ACT, PSAT or PLAN testing results. They must also complete a special high school student application form and a special high school student enrollment permission form. Both forms can be obtained from your high school counselor or from the Millersville Admissions Office. Participation in the program does not guaran-

4. A United States government employee or a member of the armed forces who was residing in Pennsylvania immediately prior to entering the government service and who has continuously maintained Pennsylvania as his or her legal residence is considered a Pennsylvania resident. Others in military service stationed in Pennsylvania are considered Pennsylvania residents.
5. A student receiving a scholarship or grant dependent on residence in a state other than Pennsylvania is not considered a Pennsylvania resident.

A student who changes his or her residence from Pennsylvania to another state must give prompt written notice to the University. The University may reclassify a student if it believes he or she is no longer a Pennsylvania resident. Students may challenge residency classifications by making written petitions to the Bursar's Office, Dilworth Building. To obtain the request form, go to the bursar's homepage at www.millersville.edu/osa and click on "Residency."

Refunds will be made according to current University and State System of Higher Education policies. Students who reduce their credit-hour load after the end of the drop/add period so as to qualify for billing as part-time students shall not be eligible for a refund of the amount billed which exceeds the part-time rate. After the drop/add period, refunds shall be made only for full-semester withdrawal.

After the end of the drop/add period, there will be no partial refunds for full-time students who reduce their credit-hour load below full-time status, or for part-time students who reduce their credit load. After the drop/add period, refunds of tuition and the general fee will only be made for students who officially withdraw from the University or, in the case of eligible undergraduates, take an official leave of absence.

The technology fee is nonrefundable after the drop/add period, and the refund of tuition and general fee for total withdrawal will be based on the following schedule for the fall and spring semesters.

Through "drop/add period"

Student teachers and cooperative education students residing in University-operated residence halls may request a meal plan adjustment until the Friday prior to the beginning of the semester. No reduction in rate will be made for students who go home for a few days at a time.

Meal Plan for Students Living Of Campus. Students living of campus are welcome to dine in University dining rooms and retail locations. Of-campus students may sign up for a meal plan at any time. Changes may be made no later than the Friday prior to the frst day of classes.

Meal plan per semester:

(per week)	*(per semester)*	*(per semester)*	*(per semester)*
19-meal	$150	2	$2,450
14-meal	$150	2	$1,920
(per semester)	*(per semester)*	*(per semester)*	*(per semester)*
255 meals	$150	2	$2,369
210 meals	$150	2	$1,977
180 meals	$150	2	$1,716
90 meals	$150	2	$933
60 meals	$150	2	$672
45 meals	$150	2	$542

*Note: Flex dollars roll forward from fall to spring. Any fex dollars left over at the end of the spring semester are forfeited.
Flex dollars may be purchased in increments of $50 for use in any dining location.

$833	90 meals
$572	60 meals
$442	45 meals

Visitors and students who live of campus are also welcome to dine in University dining on an occasional basis. Breakfast costs $7.25*; lunch, 10.50*; dinner, $14.25*; and brunch, $10.50.* Rates for special events are available through Dining and

Students who apply and are admitted to the University through the admissions

More information regarding eligibility and how to complete the FAFSA can be found on the Financial Aid section of Millersville's website: www.millersville.edu/fnaid.

A number of scholarships are offered at Millersville, including scholarships based on academic performance, athletic potential and

A scholarship is a financial grant for a student's tuition. The grants are based on specific criteria such as financial need or a particular academic or athletic excellence. Recipients are chosen by the Millersville University president or her/his designee. All scholarships/awards listed are not renewable unless specifically indicated otherwise in the description.

The University Scholarships marked with an asterisk(*) are awarded to first-year incoming students. For more information regarding how to apply for freshman scholarships, contact the admissions office. For general information regarding other scholarships, contact the department found in the brackets [ ] at the end of the scholarship criteria.

SCHOLARSHIPS - ACADEMIC

Awarded to a full-time male or female student majoring in industry and technology who participates in an intercollegiate sport in the year the scholarship is awarded. The recipient must be full-time, maintain a 3.0 GPA and be a sophomore, junior or senior for renewal. [Applied Engineering, Safety & Technology]

Awarded to African-American and Latino students who are full-time undergraduates. Recipients must have a minimum CGPA of 2.5 with 36 or more credits. A written essay and interview are required. [AA-LAS Committee]

Awarded to a student affiliated with an organization that is a member of the All-Greek Council. [Student Affairs]

Awarded to a "nontraditional" female student from the Lancaster area who has completed 90 credits and is one year from completing her degree requirements. [Financial Aid]

Awarded to a student(s) of academic promise who is committed to community involvement and

Awarded to a full-time undergraduate student who has chosen to major in voice. Recipient will

Awarded to an incoming freshman student majoring in secondary education who has a minimum 3.5 high school academic average and a record of community service. The scholarship is renewable for no more than three years, and the student must maintain a minimum grade point average of 3.0. Financial need may be taken into consideration in awarding the scholarship. [Admissions]

***Nancy Zakrewski Grof Memorial Scholarship.** Awarded to a frst-year student who has demonstrated academic achievement in high school; there is no restriction upon major or feld of study. [College of Science and Technology]

Awarded to a student majoring in music. [Music]

Awarded to ofset program expenses for Millersville students in good academic standing studying abroad in a semester- or year-long program or one of shorter-term duration sponsored by or coordinated through the Millersville University Of ce of Global Education and Partnerships (or its successor). The intention of the donor is to maximize the number of participants in study abroad in a given year through the distribution of the spendable income. First preference will be for students (1) with fnancial need, and (2) who are studying abroad for the very frst time. It is understood that all of the fnancial support sy e® b d wam A

Awarded annually to an African-American student majoring in secondary education language arts or the humanities who is in good academic standing and demonstrates financial need. Preference will be given to students from Lancaster County. [African-American Studies]

Awarded to a graduate of Hempfeld High School who completed junior year and attained distinguished achievement in early childhood or middle-level education. If no Hempfeld graduate is eligible, the award will go to the highest ranking Early Childhood or Middle-Level Education major from a high school in Lancaster County. [Early, Middle & Exceptional Education]

Awarded to a full-time student pursuing a B.A., B.S. or B.S.Ed. in physics. If the recipient is a freshman, that individual must be in the top 20% of her or his high school class or have a GPA of at least 3.0 on a 4.0 scale and show evidence of strong science and mathematics skills demonstrated by classwork and standardized tests. If awarded to other than a freshman, the recipient must have a CGPA of 3.0 or greater on a 4.0 scale. Financial need may be considered in selecting the recipient, but it is not to be the primary factor. With the annual approval of the physics department chairperson or designee, the scholarship may be renewed yearly for a maximum of six additional semesters beyond the freshman year, provided the student continues to maintain a departmental and overall GPA of 3.0 or greater. [Physics]

Awarded to an upperclassman who has demonstrated interest in the study of the French language, culture, history or art and has a minimum 3.0 GPA with demonstrated financial need. First preference will be given to a student who is majoring in French; second preference to a student who is a French minor. If a student who meets the above criteria cannot be found, the award will be made to a student with a minimum 2.5 GPA who has successfully completed at least three French courses at the 200 level and above and/or plans to study abroad in France or in a French-speaking country. [Foreign Languages]

. Awarded to a junior early childhood education major on the basis of an empathic concern for the personal, emotional and educational needs of young children, a GPA of at least 3.0 and financial need. [Early, Middle & Exceptional Education]

Awarded to students studying abroad in Marburg. [O f ce of Global Education & Partnerships]

Awarded to a rising senior in good academic standing who intends to teach at the early childhood or middle level. Preference will be given to a student with financial need. [Early, Middle & Exceptional Education]

Awarded as an academic scholarship as determined by the University president or designee. [Financial Aid]

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Awarded to an entering senior majoring in communication and theatre arts who has demonstrated financial need, has a minimum overall academic average of 3.0 and exemplifes commitment to and excellence in the discipline of communications. [Communication & Theatre]

Awarded to an entering, full-time freshman from Pennsylvania majoring in either mathematics or physics. Recipient is chosen on the basis of excellence in scholarship (demonstrated by GPA and classes undertaken, as well as nationally recognized test scores) and involvement in school/community organizations. Financial need may be taken into consideration but shall not be a major criterion. The scholarship may be renewed for the sophomore year with an earned total of 30 credits and a GPA of 3.3 or higher. This scholarship is not intended for education majors. [Admissions]

Awarded as tuition to a rising senior from Pennsylvania majoring in either mathematics or physics. The recipient will have an overall GPA of 3.6 or higher and a GPA in the major of at least 3.75 with demonstrated performance in courses in the major. The recipient is chosen on the basis of excellence in scholarship; is an active participant in department projects (e.g., intern); is of superior research potential (e.g., evidence of successful research efforts); and is involved in organizations and activities outside the major. Financial need may be taken into consideration but shall not be a major criterion. [College of Science and Technology]

Awarded as tuition to full-time students who have chosen to major in music education. Selection based on GPA, performance in feld teaching and Music 171, and demonstrated success in peer teaching. Financial need may be taken into consideration but will not be a major criterion. Student is expected to teach for three hours each week of the semester in collaboration with a music teacher in the School District of Lancaster schools (K-8 music program). [Music]

Awarded as tuition to full-time students who have chosen to major in music business technology. Selection based on GPA, successful completion of 295 Music Studio Recording I, and demonstrated knowledge in the art of recording ensembles. Financial need may be taken into consideration but will not be a major criterion. Student is expected to record public school ensembles for a minimum of 30 hours over the course of the semester in collaboration with music teachers in the School District of Lancaster schools (K-8 music program). [Music]

Awarded to an incoming freshman majoring in mathematics. [Mathematics]

Awarded to an entering student in the bank's service area, with first preference to employees and their families of National Penn Bank. Scholarship selection will be based on academic average and community activities. The scholarship is renewable for three additional academic years, provided the student maintains a GPA of 3.0 or greater. [Admissions]

Awarded to a junior who has made a significant contribution to the success of musical or dramatic performing arts at Millersville and has a GPA of at least 2.0. [Communication & Theatre]

Awarded to a student attending Millersville University in pursuit of the baccalaureate degree. [Alumni Engagement]

Awarded to a junior earth sciences major, who is chosen on the basis of outstanding motivation and academic excellence. [Earth Sciences]

Awarded as tuition for thesis credit courses (up to 6 credits) and as a grant to support applied research associated with that same thesis. Thesis credit courses for the tuition portion may include thesis-

Awarded to an entering freshman biology major with an interest in biological research. The scholarship recipient will develop a research project in collaboration with a faculty member that will lead to the presentation of research results in the student's senior year. The student must rank in the top 10% and/or have a high school GPA of 3.5 or above and have scored 1100 or higher on his/her SAT. The scholarship may be renewed for up to three additional years contingent upon the student's continued progress in the biology course curriculum and maintenance of a GPA of 3.0. [Biology]

***Ratzlaf Scholarship.** Awarded to an incoming biology major. The scholarship may be renewed for three additional years if the student remains a biology major and maintains a GPA of 3.0 or greater. [Biology]

Awarded to a freshman majoring in early childhood education (grades PreK-4) with a minimum GPA of 2.75, demonstrated financial need and involvement in community/volunteer service and/or student leadership. [Early, Middle & Exceptional Education]

Awarded to a sophomore student from Lancaster County entering the junior year. Recipient must have core curriculum in political science, demonstrate service to the community and be in financial need. [Government & Political Affairs]

Awarded to an outstanding student majoring in earth sciences (geology) with a GPA of 3.0 or higher. [Earth Sciences]

Awarded to a junior majoring in business administration who will have successfully completed 90 or more credit hours prior to the semester to which the award is credited and whose extracurricular activity is related to business administration. The scholarship is to be awarded to only one student annually. [College of Arts, Humanities and Social Sciences]

Awarded to nursing students from Lancaster County who successfully complete two semesters of the nursing degree program. Financial need shall be considered. [Nursing]

Awarded to the sophomore secondary education biology major who has earned the highest GPA. [Biology]

Awarded to an entering freshman and renewable for a period of four years. The purpose of this scholarship shall be to attract and retain intellectually brilliant and/or exceptionally artistically talented students. [Admissions]

Awarded to support students in need of financial aid through scholarships and/or loans. [Financial Aid]

Established by the Sigma Chapter of Phi Sigma Pi Honor Fraternity and awarded to a chapter member who has demonstrated high scholarship, outstanding leadership and all-around service to the fraternity. [Phi Sigma Pi]

Awarded to a student majoring in music. [Music]

Awarded as a tuition scholarship to a rising senior biochemistry major who has completed a minimum of 90 credits by the end of the junior year and who is in good academic standing (cumulative CGPA of 3.0 or above), who has earned a B or better in CHEMISTRY 326: Biochemistry I, and who demonstrates financial need. [Chemistry]

Awarded to a junior business administration major who has the highest GPA in courses taken within the department and who has demonstrated outstanding ability and dedication to the study of business. [College of Arts, Humanities and Social Sciences]

Awarded to a nontraditional (23 years of age or older, part-time or full-time) female student. The scholarship is renewable for eight semesters, provided the student maintains a minimum 3.0 GPA. [Financial Aid]

Awarded as tuition to a student in good academic standing with a CGPA of 2.7 or greater. First preference is for a male student who is a member of the cheerleading squad; secondary preference is a student who is majoring in political science and participating in intercollegiate athletics; the alternate choice is a qualifying student majoring in political science. The scholarship may be renewed if the student continues to meet the criteria. [Director of Intercollegiate Athletics]

Awarded to an early childhood or middle-level education major in good academic standing who has passed the Praxis I and received the required clearances (Act 34, Act 151 and FBI record check). The scholarship may be renewed up to three years, provided the student remains within the major in good academic standing. [Early, Middle & Exceptional Education]

Awarded to a worthy junior who intends to teach American history on an elementary, secondary or college level. Secondary consideration is given to a junior history major who excels in American history. [History]

Awarded to a rising junior or senior education major with financial need and a cumulative GPA of 3.0 or greater. First preference is given to a student who intends to teach in mathematics; second preference to teach science; third to teach other subjects. [Academic and Cultural Enrichment Committee]

Awarded to a nontraditional nursing student who, having completed a registered nursing program elsewhere, enrolls at Millersville University with the intent to receive a Bachelor of Science degree and practice

Awarded to an upperclassman who is planning to attend medical school. [College of Science and Technology]

Awarded to an incoming freshman with an outstanding high school record who elects to major in foreign language or choose foreign language as part of a double major. [Admissions]

Awarded to a junior student of color and/or a female who is majoring in communications with an option in broadcasting and who demonstrates financial need. [Communication & Theatre]

Awarded to a student enrolled as an education major and/or seeking teacher certification who has a GPA of at least 3.5. Undergraduate applicants must have obtained advanced professional standing, and graduate students must have obtained admission to degree candidacy status prior to applying for the scholarship. [Academic and Cultural Enrichment Committee]

Awarded to a student majoring in music focused on voice, with first preference given to those with demonstrated financial need. [Music]

Awarded to a student majoring in chemistry with at least 30 credits passed, a CGPA between 2.75 and 3.25 and with demonstrated financial need. First preference will be given to a female student meeting the criteria. The scholarship may be received more than once. [Chemistry]

Awarded to a student pursuing undergraduate research in cooperation with a faculty member in the biological sciences. First preference will be given to a junior or senior student who is conducting research with a high probability of publication in a peer-reviewed journal. The award is renewable, provided that the student continues satisfactory progress towards publication and progresses towards graduation. [College of Science and Technology]

SCHOLARSHIPS - ATHLETIC

For additional information about the following athletic scholarships, contact the head coach of the respective sport or the director of intercollegiate athletics.

Awarded to a full-time junior or senior at the time of the award. The student must be a member of the women's intercollegiate field hockey team when selected and participate on the team in the year the scholarship is awarded. Recipients must have and maintain a GPA of 2.75 or greater and be progressing toward graduation.

Awarded to a full-time rising sophomore or junior who is a member of the women's intercollegiate volleyball team when selected and who expects to participate on the team in the year the scholarship is awarded. Recipients must have and maintain a GPA of 2.75 or greater and be progressing toward graduation. This scholarship may be received more than once at the discretion of the head coach and the athletic director; it is not automatically renewable.

Awarded to one player each on the men's and women's basketball teams who has a 2.0 CGPA and is progressing toward graduation.

Eugene Grof–Arthur Hulme Football Scholarship. Awarded to a student participating in intercollegiate football.

Awarded to up to two active members of the women’s softball team who have CGPAs of 2.75 or greater. The award may be renewed if the student(s) remains active on the team and sustains the required CGPA.

Awarded to the top graduating senior student majoring in chemistry or biochemistry who has demonstrated excellence in organic chemistry based on a combination of research experience, coursework and a desire to pursue a career in chemistry. The student must be enrolled at Millersville University for the current academic year. [Chemistry]

A one-year associate membership in AIC and recognition on a plaque in Caputo Hall to the outstanding graduating chemistry major, based on character, academic standing and potential to become a successful chemist. [Chemistry]

Awarded to a rising junior or senior majoring in Occupational Safety and Environmental Health with a minimum GPA of 3.0 and demonstrated financial need. [Applied Engineering, Safety & Technology]

Presented by the Central Pennsylvania Chapter of ASSE each semester to a junior or senior occupational safety and hygiene management major who has completed at least 15 credits of occupational safety and hygiene management courses and 12 credits of related courses, with a GPA of at least 2.5 overall and 3.0 in health safety management courses. [Applied Engineering, Safety & Technology]

Presented to the outstanding graduating male and female athletic coaching minor students, based on academic excellence, campus leadership, sportsmanship and community service. [Wellness & Sport Sciences]

Awarded to a senior political science major in odd-numbered years and to a senior history major in even-numbered years for outstanding ability in political science and history. [History]

Awarded to worthy and deserving students who excel in music. [Music]

Awarded to seniors in early childhood or middle-level education for outstanding performance in student teaching. Recipients must have spent two full academic years at Millersville in preparation for teaching. [Early, Middle & Exceptional Education]

Awarded to students who are proficient in musical performance and have rendered loyal service to the musical activities of the University. [Music]

Awarded to two seniors annually, one in physical science and one in biological science. [College of Scinece and Technology]

Awarded to a member of the Black Student Union who has a CGPA of 2.5 and who has demonstrated service to the Millersville campus community through active membership and involvement in campus organizations. [Black Student Union]

Awarded to two seniors: one who is a computer science major excelling in mathematics, and one who is a mathematics major excelling in computer science. [Computer Science]

Established by friends of Dr. A.G. Breidenstine in recognition of his service as dean from 1955 to 1965. Awarded to the student whose honors work is judged to be most outstanding. [Honors and Awards Committee]

Awarded to a junior or senior Millersville University student who has completed at least two semesters of study in Ceramics at Millersville University and is accepted to study ceramics at the Chautauqua Institution, Chautauqua School of Arts (Chautauqua, N.Y.) seven-week summer program. [Art and Design]

A book to the outstanding student in the general chemistry sequence. [Chemistry]

Awarded to two seniors for excellence in mathematics. [Mathematics]

Awarded to a graduating senior on the basis of scholarship and all-around service to the University. [Honors and Awards Committee]

Awarded to the second-ranking member of the junior class, payable after graduation. [Honors and Awards Committee]

Awarded to a student for excellence in English at the end of the student's senior year. [English]

Awarded to a graduating senior who, in student teaching, shows the greatest promise of becoming a successful teacher of the sciences. [College of Science and Technology]

Awarded to a senior who has demonstrated outstanding proficiency in the use of English. [English]

. Awarded to a junior for proficiency in mathematics. [Mathematics]

Awarded based on academic performance and evidence of a commitment to diversity through service at the University, demonstrated through a competitive application and essay. [Cultural Diversity Committee]

Awarded on the basis of academic standing, excellence in biology and research potential. [Biology]

Awarded to a senior computer science major for outstanding achievement in computer science courses. [Computer Science]

Awarded to a member of a student publication of Millersville University who has shown enthusiasm and dedication in the production of *The Snapper* or *Touchstone* and meets the following criteria: has worked for the publication for at least four semesters; is versatile and willing to help with any task; and has made notable contributions to the betterment of the publication and the University. This award may be given to an editor, writer, reporter, photographer, business manager, member of the circulation or advertising department, or other member who contributes to the production of the publication. [Snapper]

Awarded to graduating seniors achieving summa cum laude (4.0 academic average overall). [Honors and Awards Committee]

Presented by the early childhood faculty to the outstanding senior early childhood education major. [Early, Middle & Exceptional Education]

Awarded to the senior French major judged outstanding in French studies. [Foreign Languages]

Awarded to a junior or senior industry and technology student who possesses a GPA of at least 3.0 and is committed to specializing in and demonstrating outstanding performance in transportation/energy/power. [Applied Engineering, Safety & Technology]

Awarded to a student who is participating in a global education experience in Ireland (including Northern Ireland), including study abroad (any length program), student teaching or internship abroad. First preference will be given to a student with financial need. An application is required. [Global Education and Partnerships]

Henry J. Kaufman Award in Metal Technology. Awarded to a senior industry and technology major who has attained distinguished achievement in metals technology. [Applied Engineering, Safety & Technology]

Awarded to a senior history major who has shown strong interest and capability in American history. [History]

Awarded to a senior in early childhood or middle-level education with a 3.35 GPA, excellence in student-teaching experience, outstanding personal and professional characteristics, and dedication to teaching. [Early, Middle & Exceptional Education]

The awards are given to two graduating seniors, one excelling in the study of European history and the other excelling in German language and literature. [History and Foreign Languages]

Awarded to a student who has achieved excellence in the communication major. [Communication & Theatre]

Awarded to a junior, senior or graduate student who is pursuing current research on the American Revolution. First preference will be a student whose research focuses on the American Revolution in Lancaster County. Second preference will be a student whose research focuses on the American Revolution in general, and third preference will be a student doing research on a topic within American history. An application is required. The recipient will be selected by the history department after an initial review by the Lancaster County Chapter, PSSR. [History]

Awarded to up to four graduating psychology majors who have a CGPA of 3.5 or higher and show considerable promise for graduate study in psychology or related areas. [Psychology]

Awarded to up to four graduating seniors in the University Honors College who have a CGPA of 3.5 or higher and show considerable promise for graduate study or post-baccalaureate professional school. [University Honors College]

Awarded to a junior who is enrolled in the certification program in special education and has demonstrated potential for becoming an outstanding teacher. [Special Education]

Awarded to an early childhood or middle-level education major and a graduate student who completed their Reading Specialist certification who has an interest in reading and has shown excellence in classroom performance and knowledge of reading techniques. Must have completed all certification courses at Millersville University. [Early, Middle & Exceptional Education]

Awarded to the outstanding music education graduate. [Music]

Awarded to a history major who has earned a minimum of 85 credits; based on academic accomplishment and service to the department and the University. [History]

Awarded to a music education major in good academic standing entering his/her senior year, prior to the semester in which the student will be student teaching. Preference given to students concentrating in vocal studies. [Music]

Awarded to up to five students for expenses related to study abroad and/or international internships. Students will be selected based upon the following criteria: academic merit, the impact of the education abroad on their professional and personal development, and a commitment to promote international education upon their return to Millersville University. First preference will be given to students with financial need. An application is required. Second preference, or if no student meets the above criteria, the award will be offered to up to five students who are pursuing an academic program with an international or comparative focus, including—but not limited to—Government, International Studies and Foreign Languages. [Global Education and Partnerships]

Awarded for outstanding leadership to a student with at least 45 completed credits and a cumulative GPA of 2.5. Selection will be based on the student's contributions to Millersville University and involvement in leadership roles, including but not limited tos student affairs and government. [Student Affairs]

Awarded to an economics major who demonstrates academic excellence through economic research by presenting the best research paper at a research conference, symposium, seminar or poster session. The recipient will be chosen by the chair of the Millersville University economics department and/or the advisor to Omicron Delta Epsilon (Millersville University chapter). [Economics]

Awarded annually to a student who excels in technology education. [Applied Engineering, Safety & Technology]

Awarded to an incoming freshman music major who excels in band instrument performance. [Music]

Pennsylvania Institute of Certi f ed Public Accountants Award. A plaque will be given to a graduating senior who has demonstrated outstanding commitment to the profession of accounting. Selection is based on high performance in accounting in particular and on

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Awarded to a full-time freshman admitted into either the associate or baccalaureate degree program in industrial technology or technology education with a demonstrated interest in graphic communication. [Applied Engineering, Safety & Technology]

Awarded to a full-time junior or senior industrial technology-graphic communication or technology education major with a demonstrated performance in graphic communication and a 3.0 GPA in the major. [Applied Engineering, Safety & Technology]

Awarded to a technology education senior who, in the judgment of the industry and technology faculty, has high potential to become a successful teacher as evidenced by outstanding performance in student teaching and excellence in professional technical areas. [Applied Engineering, Safety & Technology]

Awarded to a junior and a senior who have pursued higher education primarily on a part-time basis and who have had special family responsibilities, or who have overcome cultural challenges. Students admitted on Anondejdusrt', hass0coormainerfoer as evto /o hUnierrsntyhsuperviso he irther aserf. [eerlish]e

ACADEMIC REQUIREMENTS

THE BACCALAUREATE CURRICULUM

Millersville University's baccalaureate-degree programs have four common curricular elements:

1. Proficiency requirements in English composition and mathematics.

2. The general education program, which constitutes about half of the curriculum (48 of the 120 minimum credits required for graduation).

3. The major program, which usually constitutes most of the other half of the curriculum.

4. Electives courses, if needed, to meet the minimum of 120 credits required for graduation. (A few programs require more than 120 credits for graduation.) Students may combine elective and general education courses to complete a minor.

Within each of these components, students have many choices in developing programs of study. They have a challenging and responsible role in planning the substance of their program.

Students are reminded that a full-time semester course load consists of 12 credit hours. However, it is necessary to average at least 15 credit hours each semester in order to graduate in four years (eight semesters).

Final responsibility for each student's program rests with the student. The role of the advisor is just that—to advise. Students are expected to familiarize themselves thoroughly with program requirements for their major described in this catalog, the Curriculum Record Form and the computerized degree audit. This computerized audit report is available to help students monitor progress toward completion of their major, minor and general education requirements.

PROFICIENCY REQUIREMENTS

1. All undergraduate students must demonstrate minimum levels of proficiency in mathematics.
   a. All entering undergraduate students are required to take part in the mathematics placement process.
   b. The mathematics department determines the test(s) and the criteria for course placement.

2. Students placed in a developmental mathematics course are required to enroll in that course. Such students must demonstrate proficiency by satisfactorily completing the course with a grade of C- or above prior to taking any mathematics course at the 100 level or higher.

3. Students who must take developmental mathematics earn course credits, and the grade is counted in the cumulative grade point average, but developmental course credit cannot be counted towards fulfillment of the general education or graduation requirements for the baccalaureate or associate degree.

1. All undergraduate students must demonstrate minimum levels of proficiency in English composition.
   a. All entering undergraduate students who have not completed ENGL 110: English Composition or the equivalent, earning a C- grade or higher, are required to take an English composition placement diagnostic test.
   b. The English department determines the test(s) and the criteria for course placement.

2. Students placed in a developmental English course are required to enroll in that course. Such students must demonstrate proficiency by satisfactorily completing the course with a grade of C- or above prior to taking any English course at the 100 level or higher.

3. Students who must take developmental English earn course credits, and the grade is counted in the cumulative grade point average, but developmental course credit cannot be counted toward fulfillment of the general education or graduation requirements for the baccalaureate or associate degree.

2. Students will demonstrate foundational knowledge of the important ideas and methods of different ways of knowing as follows:

a. Courses in the arts and humanities challenge students to examine, analyze and critically evaluate artifacts of the human intellect and imagination to illuminate the complexity of the human experience. Through exposure to multiple voices, insights, objects and other creative works, students explore and interpret questions of meaning, fact and value. Ultimately, this engagement expands knowledge, deepens empathy and encourages collaboration between diverse individuals and communities.

b. Courses in the sciences and mathematics develop students' understanding and knowledge of scientific and mathematical reasoning and of strategies for logical problem solving. Students are challenged to recognize that scientific explanations offer falsifable predictions, that claims must be supported by evidence and logical reasoning, and that the nature of scientific discovery and knowledge is fuid. Courses emphasize that the scientific meaning of fact, theory and law are not a hierarchy, and give students an appreciation of essential creative aspects of scientific process and discovery.

c. Courses in the social sciences focus on the intricate relationship between human behavior and social institutions. Through qualitative and/or quantitative methods of inquiry, students discover and ascertain how human beings behave and are expected to behave, within certain contexts. This interaction allows students to comprehend and articulate the relationship between behavior and context across people, cultures, time and place.

3. Students will connect important ideas and methods of inquiry from different disciplines as a means of becoming holistic and responsible citizens in a diverse and technologically complex global community. Students will:

a. demonstrate civic and social responsibility.

b. grow in their engagement with peoples of diverse histories and communities, both inside and outside the United States.

c. build the foundation for a lifelong process of understanding, developing and monitoring healthy lifestyle behaviors in all dimensions of wellness, including physical, social, emotional, intellectual, spiritual and environmental wellness.

d. gain personal enrichment by developing new interests that can be enjoyed throughout a lifetime.

To meet these objectives, the general education program is organized into a structure with three components: Foundations for Lifelong Learning, Critical Thinking Across the Liberal Arts, and Connections and Exploration.

GENERAL EDUCATION STRUCTURE (t)

ENGL 110: English Composition (0-3 credits). This college-level competency requirement is in addition to the pre-college proficiency requirement described earlier. Competence in English composition must be demonstrated in one of the following ways before the junior year:

1. Achieving a combined score of 1100 in the Verbal portion of the SAT and the SAT II English Writing Test.
2. Achieving a score of 3 or higher in the Advanced Placement (AP) test in English Composition.
3. Achieving a satisfactory score in the CLEP subject examination in English Composition.
4. Passing the English Composition Competency Examination administered by the English department at the beginning of each fall and spring semester.
5. Earning a grade of C- or higher in English Composition (ENGL 110).

COMM 100: Fundamentals of Speech (3 credits). College-level competency in speech must be demonstrated in one of the following ways, preferably before the junior year:

1. Earning a grade of C- or higher in a competency examination administered by the Communication & Theatre department. To take this examination, register with the Communication & Theatre department by the end of the drop/add period.
2. Earning a grade of C- or higher in Fundamentals of Speech (COMM 100).

Approved MATH Course (3-4 credits). To develop mathematical reasoning ability, at least one approved general education math course must be successfully completed.

Advanced Writing (3 credits). A course to further enhance writing skills. The courses currently approved to meet this requirement are ENGL 311, ENGL 312, ENGL 313 and ENGL 316. Some departmental honors theses (HNRS 499) are approved to meet this

Up to six courses required for the major from departments outside the major may be credited toward the Liberal Arts Component, but courses taught by the student's major department may not be credited here.

A total of 9 credits from the following areas are required to complete the Connections and Exploration Component.

Approved Wellness course (3 credits). The Wellness requirement is designed to assist students in making positive lifestyle changes

A list of Millersville's major programs and options and the specifc course requirements for each is given in the *Academic Programs*

All students enrolled in teacher preparation programs must be admitted to Advanced Professional Studies and meet Pennsylvania state requirements and University requirements prior to being enrolled in their initial Advanced Professional Studies course. Students must meet additional Pennsylvania state requirements in order to be certified. A listing of Advanced Professional Studies courses and requirements is available in the Office of Field Services and on the Certification Office website.

While it is possible for a student to satisfy the course requirements for two different degrees (e.g., B.A. and B.S.Ed.) simultaneously, only one degree will be awarded. The student chooses the degree to be awarded. A student who is progressing toward, or holds, a bachelor's degree will not be awarded an associate degree 54004C0055005B0od to sLCvG8scipline.f0.005 Tw 0 -1.111 TD[8305A044or T O2A TLNYLLZOLLLLP[PKIQVLRYLTYLKSLYLKKZ

honors courses (see specifc departments' requirements). Grades in these courses are determined by the faculty supervisor and departmental committee.

Final theses or projects are examined by and orally defended before the departmental committee. Grades of B- or higher must be earned on them. They are then presented to the Honors and Awards Committee for review. Titles of completed works are published in the commencement program. Contact the department o f ce for an application and more information.

Honors courses o fer special academic challenges and opportunities for intellectual inquiry. These courses require a measure of independent reading, thinking and questioning. Students are expected to assume a greater portion of the responsibility for learning. Course requirements include activities to develop writing, research and analytical skills.

Honors courses are open to students in the University Honors College, students with a cumulative GPA of at least 3.35 and other students with permission from the instructor. A grade of B- or higher must be earned to qualify for the honors designation on the student's record.

ON-CAMPUS ACADEMIC OPPORTUNITIES

Winter session allows students to complete additional courses between the fall and spring semesters. Courses are open to students from other institutions of higher education as well as Millersville students. Residence halls and dining facilities are closed during winter session. For more information about winter session, call the registrar's o f ce at (717) 871-5005, the CGSAL o f ce at (717) 872-3099, or check the University website.

Independent study allows students to pursue, with faculty supervision and guidance, an academic area of interest not available through an established course. To apply, students must complete a special studies assignment form, available in department o f ces and in the online Student Forms Center, and obtain approval for the proposed topic and faculty supervisor from the department chairperson and school dean before the start of the term.

Individualized instruction allows students to complete an established course during a semester in which it is not o fered. Approval to pursue a course through individualized instruction is granted only under special circumstances. To apply, students must complete a special studies assignment form, available in department o f ces and in the online Student Forms Center, and obtain approval for the proposed topic and faculty supervisor from the department chairperson and school dean before the start of the term.

Act 46 of 2014 requires public institutions of higher education in Pennsylvania to provide veteran students, as defned in the Act, with preference in course scheduling. Noncompliance may be reported to the Pennsylvania Department of Education by submitting the Higher Education Student Complaint form found at www.education.state.pa.us. In accordance with Act 46 of 2014, Millersville University provides early registration priority for enrolled students identifed as veterans who meet the following criteria: 1. Has served in the United States Armed Forces, including a reserve component and National Guard, and was discharged or released from service under conditions other than dishonorable; 2. admitted to Millersville University for the current academic year; 3. reside in Pennsylvania while enrolled. Students who have identifed themselves as being veterans, as defned above, will automatically receive their priority registration date and time in their MAX account. Students who believe they are veterans as defned above and who have not yet identifed themselves as such should submit a DD214, Joint Services Transcript (JST) or Community College of the Air Force (CCAF) transcript to the Transfer Credit Coordinator, Room 242, Lyle Hall. The Financial Aid Scholarship and Veterans Coordinator will provide to the Registrar's O f ce the names of the students meeting these criteria prior to the posted priority registration date. Students who are given Course Scheduling Priority privileges are permitted to enroll in courses two days prior to the regular scheduling timetable as defned by the O f ce of the Registrar. Students with questions concerning course scheduling preference for veterans may contact the following individuals: Ms. Giselle Fernandez (717-871-5100), Scholarship & Veterans Coordinator; Ms. Frances Axsmith (717-871-4625), Transfer Credit Coordinator

Well-qualifed Millersville University undergraduates may enroll in graduate courses for undergraduate or graduate credit. Specifc conditions apply to each of these two credit alternatives.

Undergraduates may enroll in 500-level graduate courses for undergraduate credit with permission of the instructor and advisor. The credits earned count toward baccalaureate degree requirements and cannot be converted to graduate credits.

An undergraduate with a 3.0 GPA or higher may enroll in 500- and 600-level graduate courses for graduate credit. The student must have a maximum of 15 semester hours to be completed in the baccalaureate degree program. Written permission must be acquired from the advisor, the course instructor, the graduate program coordinator and/or chair of the department o ferk ˜ W ’

The pass-fail option provides students the opportunity to pursue a course without the usual pressure of earning a grade.

Auditing a course allows a student to attend classes and participate in discussions without the pressures of taking examinations, writing papers or fulfilling other requirements generally associated with earning credit. Students must submit requests to take a course on an audit or pass-fail basis by the end of the add period. See the *Grades & Policies* section for more information.

Course numbers beginning with a zero are pre-college developmental courses that provide opportunities for students to remediate academic skill weaknesses and develop basic proficiency. Placement in these courses is recommended, and under some circumstances required, following an assessment of the student's basic skills. For more information, see the section on

A grade of C- or higher is required to demonstrate proficiency in a developmental course. Students who must take a developmental course(s) earn course credits, and the grade is counted in the cumulative grade point average, b1 TnnBJ4.1@05B00480550Enning as/TT0 1 57.5

Undergraduate courses are offered each semester at several sites in central Pennsylvania. Students enrolled in off-campus sites are welcome and encouraged to use campus facilities and services. For information about off-campus courses, contact the CGSAL, 717-871-4723.

The Corporate University and Nonprofit Resource Network at Millersville provide customized and training solutions to businesses and community or nonprofit organizations. For information, contact The Corporate University, with offices conveniently located in Millersville and Harrisburg, 717-871-7171, or corpu@millersville.edu, or the Nonprofit Resource Network, 717-871-7178, or info@nonprofitresourcenetwork.org.

Study abroad can be a valuable and important part of a student's undergraduate education. Regardless of a student's major, learning firsthand about another way of life and seeing the world from another culture's perspective are invaluable assets for success in our global society.

Millersville University students may study abroad in nearly every country worldwide for a summer, a semester or an academic year. Although most students who study abroad choose to do so during their junior year, students may study and/or do an internship abroad for University credit any time after completing 24 academic credits. International internships for most majors/minors, student teaching abroad and international social work placements are also available.

Whether fluent in foreign languages or only in English, students may participate in study abroad through Millersville's own international partners, through other accredited U.S. institutions' programs or directly through many international universities. Millersville offers its own study/intern-abroad programs with University of the Sunshine Coast in Maroochydore, Australia; Pontificia Universidad Católica de Valparaíso in Valparaíso, Chile; Jiangxi University of Finance and Economics in Jiangxi, China; American Business School Paris in Paris, France; Université de Caen Basse-Normandie in Caen, France; Philipps-Universität Marburg in Marburg, Germany; Kansai Gaidai University in Osaka, Japan; Volunteer Adventure Corps in Cape Town, South Africa; University of KwaZulu-Natal in Durban, South Africa; Universidad de Burgos in Burgos, Spain; Universidad Pública de Navarra in Pamplona, Spain; London Metropolitan University in London, United Kingdom; University of Strathclyde in Glasgow, Scotland, U.K.; and Queen's University Belfast in Belfast, Northern Ireland, U.K.

To be eligible for any study-abroad experience, students must have completed at least 24 college credits, maintained a minimum cumulative 2.0 GPA prior to departure (individual programs may have higher requirements) and received advance approval from the Office of Global Education and Partnerships.

For more information about study abroad, contact Ms. Olivia Cardero, Assistant Director of Global Education and Partnership, Cumberland House, (717) 871-7506, or email globaleducation@millersville.edu.

The purpose of the PASSHE Visiting Student program is to facilitate student enrollment at institutions of Pennsylvania's State System of Higher Education and to enable students to take advantage of courses available across the System, without loss of institutional residency, eligibility for honors or athletics, or credits toward graduation at the home institution.

The student must be matriculated at the home university with a minimum of 12 college-level credits and be in good academic standing.

Students may take a maximum of 24 credits via the Visiting Student Policy.

The student who presents evidence of good standing at the home university will be allowed to register for courses at other PASSHE universities. The visiting student priority level for registration will be determined by each university.

All credits and grades accrued at other PASSHE universities shall be accepted in full by the home university and thereafter treated as home university credits, residency and grades.

It is the responsibility of the student to work with the student's advisor at the home institution regarding applicability of credits toward graduation requirements at the home institution consistent with PASSHE procedures, and to complete the Visiting Student Notification Form and submit it to the home institution prior to enrolling in courses at another PASSHE institution.

Students cannot use the Visiting Student Program to repeat courses.

Students cannot use the Visiting Student Program for internship or practica that are required for licensure or certification without the express written permission of their appropriate university officials at the home university, and placement availability at the requested institution.

The student shall register at, and pay tuition and fees to, the State System University visited. A student wishing to divide a course load between two institutions during the same term shall register and pay appropriate tuition and fees at both universities.

The Office of the Chancellor will work with universities to establish and publish procedures to identify visiting students such that financial aid, residency, eligibility for honors, eligibility of athletics and credits to graduation are assured.

The Visiting Student Form is available from the Registrar's Office.

Millersville students may take courses at other colleges and universities for transfer back to Millersville. Many students, for example, take summer courses at a college near their home. Students must obtain approval in advance from their advisor, the department chairperson and the registrar. Authorization for Transfer of Credit forms are available in the registrar's office or on the Millersville website located under the Student Forms Center. For more information, see the *Transfer Credit* section.

Through this exchange agreement, full-time Millersville students may, with approval, pursue courses not available at Millersville at Franklin & Marshall College. No tuition is charged by Franklin & Marshall College. This agreement does not include courses o f ered during the summer or winter at Franklin & Marshall. See the approval form, available in the registrar's o f ce, for additional requirements.

Through this exchange agreement, full-time Millersville students who qualify for admission to graduate-level courses may, with approval, pursue courses not available at Millersville at Lancaster Theological Seminary. No tuition is charged by the seminary.

Physics-engineering and chemistry-engineering majors are o f ered in cooperation with Pennsylvania State University. In addition, the physics department has an engineering program with the University of Southern California. These programs require three years of study at Millersville, with a major in physics or chemistry, and two years in residence in the engineering program of one of the cooperating institutions. Interested students should contact the physics or chemistry department chairpersons for further information.

Internships provide students with the opportunity to gain professional experience in their chosen f eld before they graduate, and can be a valuable bridge between college and career. Millersville Universi iea ł leemqpprInternslle proga ł Ń prov ʃ, ion

5. Students need an Act 34 Criminal clearance and an Act 151 Child Abuse clearance that indicate “No record exists” for placement in a student-teaching experience. As mandated by the state of Pennsylvania, students will also need an FBI criminal clearance that indicates “No record exists” for eligibility for placement in a student-teaching experience. Students also need a TB test. All clearances and a TB test with negative results must be updated and not expire during the student-teaching semester.

Millersville’s Professional Development School (PDS) is a full-year internship experience that immerses future teachers in a school setting. The senior-year apprenticeship with a master teacher allows selected teacher education students to shift their focus from simply learning about teaching to implementing their learning in the classroom to make a positive impact.

Used in support of University projects as determined by the president of the University.

. Used in support of University projects as determined by the president of the University.

Funds to be used for library acquisitions.

Funds to be used for purchasing computers for classrooms and the library as determined by the president of the University or designee.

Income from the endowment is to be used at the discretion of the president of the University or designee.

Income from the endowment will be directed towards Millersville University's student health and wellness programming with a specifc emphasis on breast health.

To support programs associated with the Honors College, with frst preference toward assisting with global initiatives. Funds will be used at the discretion of the Director of the Honors College in consultation with the University's president.

To be used for the acquisition of instructional equipment for Allied Health professions in the Department of Biology. Allocation of funds for specifc equipment is to be determined by the chairperson of the biology department and the Allied Health Coordinator.

Income from the endowment will be directed to a University program in honor of the recipient and as directed by the award recipient.

To support equipment needs, renovations, maintenance and programs in the arts, including the Winter and Ware Centers.

Awarded to an education faculty member to conduct research contributing to professional and personal enhancement of professors instructing students with learning disabilities.

Funds to be used toward a literary lectureship.

Funds are directed to the honoraria and expenses to bring distinguished symphonic band conductors or soloists to the University to perform primarily with the Millersville Symphonic Band.

To fund an annual jazz concert.

. Used to purchase library materials.

Used in support of a University conference, to be known as the Glenna M. Hazeltine Women in Mathematics and Science Conference.

Funds support scholarships for the Lancaster Partnership Program.

Used for acquisition of materials for the University library.

The income from the endowment will be used to support the Isaacson artist-in-residence. Program expenses may include, but are not limited to, artist's fees, class materials, workshops, public presentations and associated events.

Ray W. Kaufman Endowment Fund. Funds honoraria and expenses to bring distinguished orchestral performers to the campus to perform with the Millersville Community Orchestra.

Esther Kilhefer Endowment in Earth Sciences. Used for the purchase of instS c rt ed for Earth Sci h

classes and concerts, which will also benefit the community at large. A committee shall be appointed by the University president or her/his designee representing the major performing music areas—vocal, instrumental, keyboard, percussion—who shall select the artists for the featured events.

Funds cover direct costs of invited distinguished guest lecturers, who will lecture within the physical sciences.

Established in memory of Dr. Russell DeSouza for equipment acquisition for the earth sciences department.

Used to purchase library books for the history department.

Income from the endowment will be used to fund an artist-in-residence program.

The income from this endowment will be used to finance activities for students that will enhance their academic program. Funds to be awarded on proposals submitted to an All-college Committee established by the Vice President for Academic Affairs.

The income from the endowment will be used to purchase computer equipment for classrooms or the library.

Used to purchase music literature for the music collection of the library.

Used to advance faculty development in the mathematics and computer science departments.

Awarded to untenured faculty in the College of

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Funds to support program needs associated with either education-abroad initiatives or on-campus internationalization efforts. Such needs can include, but are not limited to, expenses related to providing financial assistance for students to participate in study, internships, student teaching or research experiences abroad; hosting visiting faculty and students from abroad; program support for said students and faculty; and costs associated with establishing, promoting or monitoring student programs with international academic partner institutions.

The income from the endowment will support the Walker Center for Civic Responsibility and Leadership programs: student-centered educational and developmental projects and activities.

U	Unsatisfactory	*
W	Withdrew	*
AU	Audit	*
X	Proficiency in Progress	*
Z	No Adequate Evaluation for Grading	0.0

*Not considered in computing GPA.

University policy accepts D- as minimum earned credit. There are certain general education and department major competency

approved, the dean will notify the registrar to record an administrative withdrawal for the course.

Students will not be graduated with unresolved incomplete grades. Degree candidates are notified of the outstanding degree requirements. The degree is not conferred until all requirements have been met.

In order to stimulate and/or satisfy intellectual curiosity, students are encouraged to engage in challenging study on an elective basis. The pass/fail option provides the opportunity for a student to enter a course that he/she might ordinarily avoid. Accordingly:

1. A student may enroll in no more than a total of two courses pass/fail.

2. The student needs to have passed 60 or more credits before electing a course pass/fail.

3. The student must have a minimum GPA of 2.80 or obtain permission of the instructor.

4. The pass/fail option is ordinarily restricted to courses numbered 300 or above. However, a 200-level course may be taken pass/fail with the prior approval of the instructor.

5. Courses taken to satisfy degree requirements for the major, whether offered by the department of the major or offered by other departments as required-related courses, may not be taken pass/fail.

6. Departments may designate which of their course offerings beyond degree requirements their majors may not take pass/fail.

7. Professional education requirements may not be taken pass/fail.

8. Courses taken to satisfy requirements for the minor may not be taken pass/fail.

9. No course used to satisfy general education requirements may be taken pass/fail, but if students take the same courses for other than general education purposes, they may take them pass/fail.

10. Courses taken on a pass/fail basis will be counted toward the total credit-hour requirement for graduation, but those courses that are passed will not be included in the GPA computation on which academic honors and academic standing are based. Courses failed under the pass/fail option will be included when computing the GPA.

11. The minimum grade a student must earn in order to be awarded a “pass” grade is D-.

12. The option to take a course on a pass/fail basis may be exercised until the end of the add period. Contact the registrar’s office, Lyle Hall, for the appropriate form. Having properly registered for a course on a pass/fail basis, a student still has the option to take a letter grade instead of a pass/fail grade, provided that the decision to change is filed with the registrar the week prior to finals week.

13. The pass/fail option is limited to students not on probation at the time of registration.

These terms describe achievement in student teaching and other field experiences.

Auditing a course allows a student to attend classes and participate in discussions without the pressures of taking examinations, writing papers or fulfilling other requirements generally associated with earning credit. An audited course is reported on the student’s record with the designation AU. It cannot be used to satisfy graduation requirements, nor is it considered in computing GPAs. Standard tuition and fees apply.

To register to audit a course, contact the registrar’s office, Lyle Hall, for information and to obtain a permission form, and submit it by the end of the add period. The audit privilege may not be changed to credit status. Audit privileges are ordinarily limited to one course per semester.

Proficiency in Progress (X). This grade reflects progress toward, but not achievement of, proficiency in pre-college developmental courses.

formal letter of appeal and supporting documentation to the ASC in care of the registrar's office. In order to be considered, letters of appeal must be received within eight business days of the date that appears on the Notice of Dismissal.

Students who are dismissed for the first time have the option to appeal in person before a subcommittee of the ASC, in addition to submitting the required written appeal. Students who are dismissed for the second or greater time may only appeal in writing.

The academic decision of the ASC subcommittee is on behalf of the entire ASC, and is therefore final and not subject to further review. The chairperson of the ASC or his/her designee will provide the appellant with a letter stating the decision of the ASC and terms (if any) for future action. Examples of such terms include a reduced credit load, the repeat of coursework and the recommendation to seek assistance from student-support services. Under no circumstances will the chairperson or subcommittee of the ASC modify the duration of a dismissal period prescribed herein.

After the ASC's decision, if an appellant believes the appeal process was not administered as prescribed herein, the appellant may pursue an appeal of the process, but not the academic decision, in writing, to the Associate Provost for Academic Administration. Such an appeal must be made within 10 business days from the date of the decision letter from the chairperson of the ASC. The appellant is advised to provide as much written documentation as possible, describing why the process was not administered as prescribed herein, and any supporting materials. The decision of the Associate Provost for Academic Administration regarding the process appeal is final and not subject to further review.

SEMESTER CREDIT-LOAD POLICIES

To be considered full-time, undergraduates must be registered for at least 12 credits by the end of the drop/add period. Audited courses are included in the computation of semester credit load.

The normal semester load for undergraduates is 15 credits during the freshman year and 15 or more credits in subsequent years. Students with GPAs below 2.00 are strongly advised to take fewer than 15 credits; students on academic probation are limited to 13 credits per semester.

Students who have completed fewer than 80 credits may not register for more than 17 credits. Additional courses may be added at the beginning of the semester during the drop/add period.

More than 18 credits will require additional payment at the current charge per credit hour.

Students may not register for more than 21 credits in one semester.

During the semester in which a student is enrolled in student teaching, one additional course may be taken, provided the course does not conflict with the student-teaching assignment.

Students should recognize that some programs require more than 120 credits. Completing these programs or a second major or minor may require carrying semester loads above 15 credits, attending summer school and/or taking more than four years to complete a degree.

The recommended course load during any summer session (I, II, III) or winter session is two courses. Students should consult their academic advisor before registering for more than two courses in any session.

Normally, students may not carry more than 21 credits in any one semester. Students enrolled in student-teaching courses may enroll for one additional course if it does not conflict with the student-teaching assignment.

LEAVING MILLERSVILLE UNIVERSITY

Students who wish to leave Millersville before graduating may take a temporary leave of absence or withdraw completely.

Students who wish to interrupt their studies at Millersville for up to two consecutive semesters may request a leave of absence. This allows them to register for courses upon their return without applying for readmission. To be eligible for a leave of absence, a student must be enrolled in degree status and have a minimum CGPA of 2.00.

To request a leave of absence, complete an official Leave of Absence form, available from the registrar's office (Lyle Hall) or on the Millersville website in the Student Forms Center. Contact the registrar's office for information on the effects of a leave of absence.

Students who take a leave of absence to study at another institution during the fall or spring semester should also complete an Authorization for Transfer of Credit form, available from the registrar's office or on the web in the Student Form Center.

A leave of absence is cancelled, and the student considered withdrawn, if the student fails to return by the established ending time or is dismissed by the University.

Students who are called to active duty must contact the registrar's office for assistance with arranging a leave of absence and their subsequent return to the University. A copy of the student's military orders must be presented to the registrar. Students who expect to return to class within the current semester to complete their coursework, or who are called to duty after completing a significant

part of the course requirements, should contact their faculty regarding missed work. Students who cannot complete the current semester will be granted a leave of absence for military duty and will be allowed to return for the next semester without penalty.

Students who wish to withdraw from the University must complete an O f cial Withdrawal Form, available from the registrar's o f ce or on the Millersville website in the Student Forms Center. This applies to all students, whether withdrawing during or between semesters, regardless of reason for withdrawal. Failure to complete this form will jeopardize a student's chances of future readmission.

Students who have o f cially withdrawn from the University and wish to return should contact the admissions o f ce, Lyle Hall, for an application for readmission. See the

Class standing is based on total credits earned, including those transferred from other colleges and earned through advanced standing programs, such as CLEP, as follows:

0–29.5	Freshman
30–59.5	Sophomore
60–89.5	Junior
90 or more	Senior

The University supports departmental and faculty class attendance policies that are reflective of and consistent with University-approved guidelines. Faculty will include their class attendance policy in their syllabi given to all students in their classes at the start of the semester.

1. Students are expected to attend all classes. It is the student's responsibility to complete all course requirements even if a class is missed. If a student misses class for an officially excused reason, then he/she is entitled to make up the missed work, but only at the convenience of the faculty member. Responsibility for materials presented in, assignments made for, and tests/quizzes given in regularly scheduled classes lies solely with the student.
2. The University policy is that faculty will excuse absences for the following reasons:
   a. personal illness
   b. death or critical illness in the family
   c. participation in a University-sponsored activity
   d. jury duty
   e. military duties
   f. religious holidays
3. Faculty judge the validity of student absences from class within the University's approved guidelines and may require documentation for excused absences. Faculty will evaluate any reason, other than those listed above, for a student missing class and determine whether the absence is justified. In these circumstances, a student may t may τ ᴰ qlv l ḏlŭ work, Þ ⁂ ŭ

Students who have earned consistently superior grades in their coursework at Millersville University are recognized for their achievements at graduation with the designation of graduation honors. The student's diploma and University record carry the appropriate honors designation:

for a cumulative GPA between 3.50 and 3.74

for a cumulative GPA between 3.75 and 3.94

for a cumulative GPA between 3.95 and 4.00

Eligibility for graduation with honors is determined based on the Millersville grade point average. Neither transfer work nor i

CAMPUS LIFE

Millersville University

SERVICES FOR STUDENTS

Millersville University offers a number of programs and services designed to identify students' academic and personal needs, to develop their skills and abilities to meet their needs, and to support their academic efforts.

Millersville University considers academic advisement to be an integral part of the undergraduate experience, from orientation to graduation. The academic advisement process is devoted to helping all students achieve their academic goals. This process involves the total campus community, including students, faculty, staff and the administration. Advisors work with students in the clarification of educational goals, the planning of a program of study, the selection of courses and the utilization of programs and services at Millersville University.

Every student has an assigned advisor. Students in majors have a faculty member from their department as an academic advisor. Students in the nationally recognized Exploratory Program have a specially trained advisor who may be a faculty member, staff member or administrator at Millersville.

Advisors at Millersville have the responsibilities of assisting students with course selections and program requirements; being knowledgeable about University policies and procedures; helping students to understand and complete the general education curriculum; being accessible to their advisees via office hours, phone and email; referring students to appropriate resources on campus and helping students who need assistance to improve their academic standing. Students share responsibility with their advisor for completing degree requirements and meeting with their advisor on a regular basis to discuss their academic and career plans and questions.

Academic and Student Development is located on the second floor of Lyle Hall. The office has a comprehensive website at www.millersville.edu/advisement. The Exploratory Program also has a website which includes relevant information for the undecided/undeclared student at www.millersville.edu/explore. The office has an email for advisement-related questions at adviser @millersville.edu.

Experiential Learning and Career Management, located in Bedford House, offers career programs and services to help students/alumni clarify and attain educational and career goals. Choice of academic major, exploration and selection of an appropriate occupation, awareness of employment trends and skill development for finding and landing prime jobs need to be an integral part of a college education. The staff assists students/alumni with these important activities. Career counseling, computer-assisted career guidance and current information on hundreds of occupations are available to students.

Interactive programs help students:

- Identify their interests, values and personality traits as they relate to careers.
- Analyze employment trends and their influence on career choice.
- Learn how to research and evaluate career information.

Tutoring is available through the Millersville University Tutoring Center, a division of the O f ce of Learning Services, 717-871-7222, in the following areas: select departments in the CEHS, departments in the CAHSS and departments in the CST (math tutoring available only for students with disabilities; all other students should seek math tutoring directly through the Math Assistance Center).

STUDENT HOUSING

Millersville has suite-style residence halls o f ering a variety of housing lifestyles: coeducational honors, service learning, international, and special-interest theme areas. Each residence hall is sta fed by professional sta f and specially selected and trained undergraduate resident assistants. The sta f strives to maintain an environment conducive to study and social interaction. Special residence hall programs, including lectures, intramurals, and athletic and recreational programs, are o fered throughout the year.

Millersville University f rmly believes that residence hall living is bene f cial for the academic adjustment, campus engagement and personal development of its students. Tf of its stu

SPECIAL EDUCATIONAL FACILITIES

The foreign language media center in McComsey Hall includes the instructional digital language lab with 30 student stations, as well as a smaller learning lab with a variety of visual, audio, computer and print materials for the study and teaching of French, Germanand Spanish. The media center is also connected to several satellite receivers, and both live and delayed newscasts are available in foreign languages.

The Francine G. McNairy Library and Learning Forum is home to the library, the Instructional Technologies and Support Team, the Center for Academic Excellence (CAE), Coordinator of General Education and the O f ce of Sponsored Programs and Research Administration. The building also houses a Starbucks Café, the Digital Learning Studio and the Writing Center Annex.

In 2012, the McNairy Library completed a total life-cycle renovation and expansion, bringing state-of-the-art facilities for research and learning to campus. Students, faculty, sta f and administrators can use f exible, technology-rich spaces for group and individual study in addition to receiving assistance from librarians and information professionals.

Members of the University community can access library resources by visiting the building, or online at www.library.millersville.edu. In addition to an extensive virtual collection of electronic books and journal databases, the library has hundreds of thousands of books and DVDs. Specialized collections include K-12 materials for students in the teacher education program and University Archives and Special Collections, a repository for unique historical documents and records focused on the University and region.

Osburn Hall is devoted exclusively to the Department of Applied Engineering, Safety & Technology, providing classrooms, laboratories, o f ces and other spaces that support applied engineering and technology education, and occupational safety and environmental health programs.

Osburn Hall is a dedicated 70,000-square-foot facility designed with instructional and research capabilities around the technology

The Millersville University Argires Science Complex includes the 88,000-square-foot Caputo Hall (constructed in 1999), the 55,000-square-foot Roddy Hall (renovated in 2001), Brossman Hall and Nichols House. The complex includes 42 teaching laboratories, 39 individual

STUDENT POLICIES

Students are expected to familiarize themselves with and abide by all student conduct regulations found in this catalog and other University publications, including the *Student Code of Conduct,* the

Fabrication is the falsification of research or other findings.

1. Citation of information not taken from the source indicated.
2. Listing in a bibliography sources not actually consulted.
3. Inventing data or other information for research or other academic projects.

Cheating is the act or attempted act of deception by which an individual tries to misrepresent that he/she has mastered subject matter in an academic project, or the attempt to gain an advantage by the use of illegal or illegitimate means.

When a faculty member suspects that an act of academic dishonesty has occurred, he/she will meet with the student to:

a) discuss the alleged act;
b) hear any defense the student may have;
c) discuss any proposed academic sanctions;
d) inform the student of his/her right to appeal faculty-imposed sanctions to the department chair and/or dean of the school.

Academic sanctions that may be imposed by the faculty member include:

a)


ACADEMIC PROGRAMS

UNDERGRADUATE PROGRAMS

Millersville offers 61 undergraduate degree programs leading to an associate or baccalaureate degree, as well as minor programs. Many majors offer options for fulfilling requirements. These programs and options, subject to change, are listed on the following pages. Teaching certification grades are given in parentheses. The specific requirements for each program are given on the following pages under the department offering the program.

BACCALAUREATE DEGREES

Allied Health Technology B.S. Medical Technology (Clinical/Medical Laboratory Science) Nuclear Medicine Technology Pre-Athletic Training Respiratory Therapy	Biology
Anthropology B.A. Archeology	Sociology/Anthropology
Applied Engineering & Technology Management B.S. Advanced Manufacturing Technology Automation & Intelligent Robotics Engineering Technology Computer-Aided Drafting/Design Technology Construction Technology General Industrial Technology Graphic Communication Technology Nanofabrication Manufacturing Technology Robotics & Control Systems Technology	Applied Engineering, Safety & Technology
Art B.A.	Art & Design
Art B.F.A.	Art & Design
*Art Education B.S.Ed. (PreK-12) Art K-12 with Inclusive Education	Art & Design
Biology B.A.	Biology
Biology B.S. Animal Behavior Botany Environmental Biology Marine Biology Medical Technology (Clinical/Medical Laboratory Science) Molecular Biology/Biotechnology Nuclear Medicine Technology Pre-Athletic Training Pre-Optometry Pre-Podiatry Respiratory Therapy	Biology
*Biology B.S.Ed. (7-12) Biology with Inclusive Education 7-12	Biology
Business Administration B.S. Accounting Finance International Business Management Marketing	Business Administration (Accounting & Finance/Management & Marketing)

Chemistry B.A.	Chemistry
Chemistry B.S. Biochemistry Environmental Chemistry Nanotechnology Polymer Chemistry Pre-pharmacy	Chemistry
*Chemistry B.S.Ed. (7-12) Chemistry with Inclusive Education 7-12	Chemistry
Computer Science B.S.	Computer Science
Early Childhood Education B.S.Ed. (PreK-4) Special Education PreK-8/Early Childhood (PreK-4) Dual Major	Early, Middle & Exceptional Education
Earth Sciences B.A. Environmental Geology	Earth Sciences
*Earth Sciences B.S.Ed. (7-12) Earth Science with Inclusive Education 7-12	Earth Sciences
Economics B.A. Financial Economics Political Economy Quantitative	Economics
English B.A. Comparative Literature English as a Second Language Film Studies Linguistics Print Journalism Writing Studies	English
*English B.S.Ed. (7-12) Comparative Literature English as a Second Language English with Inclusive Education 7-12 Film Studies Linguistics Print Journalism Writing Studies	English
French B.A. International Business	Foreign Languages
*French B.S.Ed. (PreK-12) French K-12 with Inclusive Education 7-12 International Business	Foreign Languages
Geography B.A. Environmental Studies Geospatial Applications Global Studies	Geography
Geology B.S.	Earth Sciences
German B.A. German K-12 with Inclusive Education 7-12 International Business	Foreign Languages

*German B.S.Ed. (PreK-12) International Business	Foreign Languages
Government & Political Affairs B.A.	Government & Political Affairs
History B.A.	History
History B.S.Ed. (7-12)	History
Industry & Technology (See Applied Engineering, Safety & Technology)	
Interactive & Graphic Design B.Des.	Art & Design
International Studies B.A.	Multidisciplinary
Mathematics B.A. Actuarial Science Statistics	Mathematics
Mathematics B.S. Actuarial Science Applied Mathematics Statistics	Mathematics
*Mathematics B.S.Ed. (7-12) Actuarial Science Mathematics with Inclusive Education 7-12 Statistics	Mathematics
Meteorology B.S.	Earth Sciences
Middle-Level Education (Grades 4-8) B.S.Ed. Language Arts (Grades 4-8) Mathematics (Grades 4-8) Science (Grades 4-8) Social Studies (Grades 4-8)	Early, Middle & Exceptional Education
Multidisciplinary Studies B.A. Applied Disability Studies Digital Journalism Educational Studies Entertainment Technology Humanities Environmental Hazards & Emergency Management Science & Mathematics Social Sciences Sports Journalism	Multidisciplinary
Music B.A. Music Business Technology	Music
*Music Education B.S.Ed. (PreK-12) Music K-12 with Inclusive Education 7-12	Music
Nursing B.S.N.	Nursing
Occupational Safety & Environmental Health B.S.	Applied Engineering, Safety & Technology
Ocean Sciences & Coastal Studies B.S. Physical Oceanography	Earth Sciences
Philosophy B.A.	Philosophy

Physics B.A. Computer Science Cooperative Engineering Meteorology Nanotechnology Philosophy Polymer Chemistry	Physics
Physics B.S.	Physics
*Physics B.S.Ed. (7-12) Physics with Inclusive Education 7-12	Physics
Psychology B.A.	Psychology
*Social Studies B.S.Ed. (7-12) Economics Economics with Inclusive Education 7-12 Geography Geography with Inclusive Education 7-12 Government Government with Inclusive Education 7-12 History History with Inclusive Education 7-12	Multidisciplinary
Social Work B.A.	Social Work
Sociology B.A. Criminology	Sociology/Anthropology
Spanish B.A. Spanish K-12 with Inclusive Education 7-12 International Business	Foreign Languages
*Spanish B.S.Ed.	

MINORS AND OPTIONS

African-American Studies	Multidisciplinary
Anthropology Archaeology Cultural Anthropology General Anthropology	Sociology/Anthropology
Art Art History Photography Studio Art	Art & Design
Applied Engineering & Technology Management Advanced Manufacturing Technology Computer-Aided Drafting/Design Technology Construction Technology Control Systems Technology General Applied Engineering & Technology Graphic Communication Technology Integrated STEM Education Methods	Applied Engineering, Safety & Technology
Athletic Coaching	Wellness & Sport Sciences
Biochemistry	Chemistry
Biology	Biology
Business Administration Accounting Finance General Business Management Marketing	Business Administration (Accounting & Finance/Management & Marketing)
Chemistry	Chemistry
Computer Science	Computer Science
Criminology	Sociology/Anthropology
Earth Sciences	Earth Sciences
Economics General Economics Technical Economics	Economics
Environmental Environmental Policy and Regulation Industrial and Environmental Health Land Use Quantitative Methods in Environmental Science Water Resources	Multidisciplinary
Environmental Chemistry	Chemistry
Environmental Hazards and Emergency Management	Multidisciplinary
English American Literature British Literature Film Studies General English	English

POST-BACCALAUREATE AND POST-MASTER'S CERTIFICATION AND CERTIFICATE PROGRAMS

Art (K-12)
Biology (7-12)
Chemistry (7-12)
Early Childhood Education (PreK-4)
Earth Sciences (7-12)
English (7-12)

ACCOUNTING

See Business Administration

ACTUARIAL SCIENCE

See Mathematics

ADVANCED MANUFACTURING TECHNOLOGY

See Applied Engineering, Safety & Technology

AFRICAN-AMERICAN STUDIES

Professor Smith-Wade-El, director

African-American Studies is an 18-credit interdisciplinary minor focusing on the history and socio-culture of African Americans. The

Provides an overview of African-American culture and history. African-American perspectives and contributions in the areas of literature, art, theatre, music, politics, economics, science and technology, medicine, male-female relationships, family, the church and the media will be

ALLIED HEALTH TECHNOLOGY

See Biology

ANTHROPOLOGY

See Sociology/Anthropology

APPLIED ENGINEERING, SAFETY & TECHNOLOGY

Professor Litowitz, chairperson
Professor Brusic, EDTE coordinator
Associate Professor Snyder, AETM coordinator
Assistant Professor Ogutu, OSEH coordinator
Professor Wright, Engineering Technology Coordinator
Professors Bell, David, DeLucca, McCade, Specht, Wright
Associate Professor Warner
Assistant Professors Atwater, Karan, Khalighi, Manfredi, Painter

The Department of Applied Engineering, Safety & Technology (AEST) offers nationally accredited programs of study leading to an A.T. in Applied Engineering & Technology or a B.S. in Applied Engineering & Technology Management, a B.S. in Occupational Safety & Environmental Health, and a B.S.Ed. in Technology Education. Minors are offered in Applied Engineering & Technology, and Occupational Safety & Environmental Health. A post-baccalaureate technology education teacher certification program is also offered.

The OSEH program is designed for persons interested in the safety, industrial hygiene and environmental health professions. OSEH includes general education studies, with emphasis on the sciences and core studies in the technical and managerial aspects of industrial safety and hygiene. An internship is required in industry or in an insurance or government agency. Continuous improvement of the program is guided by an advisory committee of safety professionals. Graduates of this program typically work as safety and health managers, industrial hygienists, loss-control consultants, compliance o f cers and environmental safety specialists. The OSEH minor should be an attribute to majors in biology, business administration, chemistry, applied engineering & technology management, political science and nursing. OSEH is nationally accredited by the Accreditation Board for Engineering and Technology (ABET).

from ITEC 300, 392, 400; OSEH 221, 320, 323, 333; BUAD 161, 352, 353, 357; PSYC 329; SOCY 318.
- Required related courses (22-24 credits): Economics (6 credits): ECON 101 and 102. Science (6-8 credits): two of CHEM 101, 103, 104, 205, PHYS 103 or 104, 131, 132. Mathematics (6-7 credits): MATH 130 and one of MATH 151, 160 or 161. ENGL 312 or 316.
- Recommended Perspectives course: ITEC 301, 302, 303 or 304.

Select one of the following concentrations:

- Advanced Manufacturing: ITEC 130, 241, 271, 281; and two of ITEC 375, 376 or 382.
- CADD: ITEC 241 and five of ITEC 130, 243, 245, 342, 344, 345, 346, 446 or 448.
- Construction: ITEC 130, 241, 271; OSEH 120; and two of ITEC 331, 332 or 346.
- Control Systems: ITEC 261, 262, 325; and three of ITEC 130, 241, 326, 342, 364, 425, 427, 466 or 467.
- General Applied Engineering & Technology: ITEC 110, 120, 130, and three additional ITEC laboratory courses (two required at 300 level or above).
- Graphic Communication: ITEC 110, 251, 252; and three of ITEC 351, 355, 356, 357, 455 or 457.

Core requirements (60 credits required): ITEC 130, 241, 261, 262, 325, 326, 342, 364, 425, 427, 466, 467 and CSCI 140, 161, 162, 362, 450, 456.
Required related courses (18 credits): MATH 161 and 211, PHYS 231 and 232.
Recommended Perspectives course: ITEC 301, 302, 303 or 304.
Additional requirement for program (3 credits): ENGL 312 or 316

OSEH courses (44 credits required): OSEH 120, 220, 221, 320, 321, 323, 333, 410, 422, 435 and 440.

Required related courses (33 credits): BIOL 100, CHEM 103 and 104, PHYS 131 and 132, MATH 130 and 151, ITEC 130 and 392, and ENGL 312 or 316.

OSEH courses (18 credits required): OSEH 120, 220, 221, 320, 323 and 410.

K-12 Teacher Certification
Technology literacy courses (12 credits required): ITEC 110, 120, 130, 140. Technical courses (36 credits required): ITEC 222, 241, one of 251 or 252, 261, one of 271 or 281, 327, 344, 346, 435 required and three advanced technical laboratory electives in communication, transportation/energy/power and/or production technology. Professional courses (27 credits required): EDTE 291, EDFN 211, 241 in the sophomore year; EDTE 391, SPED 346, EDSE 340 in the junior year; and EDSE 471, EDTE 461, 491 and 496 in the senior year. A 3.0 overall grade point average is required for entrance into Advanced Professional Studies (APS). A 2.80-2.99 overall grade point average will be accepted, with higher test scores required on the Praxis II exam in order to be eligible for certification.

Required related courses (15-16 credits): ENGL 312 or 316; one lab science course from BIOL, CHEM, PHYS or ESCI (BIOL 100, CHEM 103, CHEM

Agriculture, medicine and other technologies in which living organisms are used to solve problems and modify products and systems. Includes problem solving, design and research activities for understanding biorelated technologies, issues and impacts. 2 hrs. lec., 3 hrs. lab. Reserved for EDTE majors. Offered fall, spring.

A study of transportation and automation systems. Principles of land, air, space and marine transportation will be studied. Includes the investigation of a variety of control systems leading to automation and robotics. 2 hrs. lec., 3 hrs. lab. Prereq: ITEC 120.

Introductory technical sketching, conventional drafting and computer-aided drafting (CAD). Experiences with equipment use and care, lettering, geometric constructions, multiview projection, dimensioning, sectioning and pictorial representation. 2 hrs. lec., 3 hrs. lab. Offered fall, spring.

Freehand sketching and basic elements of two-dimensional design and rendering. Various sketching and shading techniques are developed. Elements and principles of design, methods of designing, and evaluation and design of products are included. An application software is used to render design sketches. 2 hrs. lec., 3 hrs. lab.

Advanced engineering graphics, with an emphasis on basic descriptive geometry, surface development drawings, intersection of solids and pictorial projection systems. 2 hrs. lec., 3 hrs. lab. Offered periodically. Prereq: ITEC 241.

Contemporary resources, processes and impacts of graphic reproduction. Emphasis on workflows relative to offset lithography, flexography, gravure, digital printing and screen printing. Covers graphic design; digital-image composition; digital photography; scanning; prepress, press and postpress production. 2 hrs. lec., 3 hrs. lab. Offered fall, spring. Prereq: ITEC 110 or ART 244 or COMM 201 or by permission.

Planning, creating and publishing of web media. Topics include information design, optimization of graphic and audio files, navigation systems and website technologies. Multimedia authoring software will be utilized to produce and publish websites that include digital animations and interactive forms. 2 hrs. lec., 3 hrs. lab. Prereq: ITEC 110 or permission of instructor.

Survey of electricity and electronics, including typical direct current and alternating current applications, safe practices and technological impacts. Experiences include breadboarding, design and problem solving, use of test equipment and electronic project assembly/troubleshooting. 2 hrs. lec., 3 hrs. lab. Offered fall, spring.

In-depth study of semiconductor theory, including diodes, transistors and silicon-controlled rectifers. Emphasizes digital, linear and hybrid integrated circuits. Covers surface mount and emerging technologies, such as nanotechnology and biotechnology. Practical applications include prototyping circuits, design and problem solving, use of test equipment and troubleshooting. 2 hrs. lec., 3 hrs. lab. Offered fall, spring. Prereq: ITEC 261 or permission of instructor.

Various nonmetallic materials, processes, products and impacts, including polymers, ceramics, wood, clay, composites and glass. Instruction and experiences provided on safety and the use of tools and machines associated with nonmetallics. Includes production activities in each of the specifed nonmetallic material areas. 2 hrs. lec., 3 hrs. lab. Offered fall, spring. Prereq: ITEC 130.

Design, manufacturing and assembly of metallic products. Covers metallic material properties, metallurgy, heat treatment, alloying and impacts. Scientifc and mathematical concepts are stressed to transform metallic materials into useful products. Includes safe utilization of associated tools and machines. 2 hrs. lec., 3 hrs. lab. Offered fall, spring. Prereq: ITEC 130.

Analysis of the development of technology and its impact on humans and a realization of the importance of human technological behavior on the environment, social/cultural systems and the future. Students use analytical skills on a written independent research project, and oral skills to present and defend positions on technological problems facing our society. Prereq: COMM 100, ENGL 110 and junior class standing.

A nontechnical interdisciplinary course to help students identify and analyze forces causing technological and social change. Using an understanding of the processes of technological and social change and research techniques for forecasting the future, students complete a written independent research project. Develops skills to project future technological and social developments and their impacts. Offered periodically. Prereq: COMM 100, ENGL 110 and junior class standing.

Utilization of desktop microcomputer systems to design, compose and publish graphic materials. A research and development activity required. 2 hrs. lec., 3 hrs. lab. Prereq: ENGL 110.

This course involves testing various components of the manufacturing processes involved in creating print and digital/web media. Typical activities will involve testing colorants (e.g., inks, toners, etc.) and substrates used in lithography, fexography, screen printing and digital-printing systems. Optimum conditions for specifc printing methods will be determined through controlled testing and examination. Students may also propose to examine specifc interrelationships between production procedures used in various digital media processes. The course will also cover color separation and reproduction, which includes the study of process color theory, desktop color separations and color reproduction. 2 hrs. lec., 3 hrs. lab. Prereq: ITEC 355 or permission of instructor.

A study of current topics and systems for setting printing production standards, cost estimating, production scheduling, job planning and the consideration of new equipment and technologies. Students will integrate the technical knowledge learned through previous graphics laboratory classes with other coursework in management, marketing, science, business, etc., with a focus on how it all relates specifcally to the printing production process. The course is structured to ofer an overview in several areas of print production management, with emphasis on cost estimating and current printing industry topics. 2 hrs. lec., 3 hrs. lab. Prereq: ITEC 355 and MATH 130, or permission of instructor.

This course utilizes both theory and applications related to wireless communications systems. Topics include amplitude modulation (AM) and frequency modulation (FM) as well as the principles of television broadcasting and reception systems. Transmission lines, antennas and wave propagation are also described. New applications include microwave, wireless telephony, satellite communications and Wireless Fidelity (WiFi™). A research and development activity is required. 2 hrs. lec., 3 hrs. lab. Prereq: ITEC 262 or permission of instructor.

Study of the development of mobile robotic solutions. Emphasis is placed on the programming and interfacing of microcontrollers to control autonomous mobile robots in known environments. A research and development activity is required. 2 hrs. lec., 3 hrs. lab. Prereq: ITEC 262 or permission of instructor.

Preparation of honors thesis proposal. For the defnition of honors course and student eligibility, refer to the departmental honors section of this catalog. EDTE, AETM and OSEH majors may enroll in the Department of Applied Engineering, Safety & Technology honors program. Contact the department o f ce for guidelines and an application.

A capstone course in which students study and apply technical, managerial and entrepreneurial concepts to the development and operation of a student-centered venture. Students organize and operate a model enterprise to develop, manufacture and market a consumer product. 2 hrs. lec., 3 hrs. lab. Prereq: ITEC 130 or 241 and BUAD 251 or permission of instructor.

The history and development of quality movements; factors infuencing the total quality concept; the scope of modern quality systems; management -

In-depth, hands-on exposure to depositing and etching a wide variety of materials, including dielectrics, semiconductor organics, polymers, metallic materials and molecular films. Students work in small teams and develop oral and written reports. 2 hrs. lec., 2 hrs. lab. Prereq: NFMT 311 and 312. Completed at Penn State University in State College during “Capstone Semester.”

Hands-on treatment of all aspects of advanced pattern transfer and pattern-transfer equipment. Includes pattern-generation processes, photolithography, particle beam lithographic techniques, probe pattern generation and three types of lithography (embossing, stamp, self-assembled). 2 hrs. lec., 2 hrs. lab. Prereq: NFMT 311. Completed at Penn State University in State College during “Capstone Semester.”

Materials Modification in Nanofabrication
Detailed coverage of material-processing steps for molecular functionalization, cross-linking, metal silicidation, material oxidation, materials nitradion, barrier materials, alloying, annealing and doping. Includes avoiding unintentional materials modification via the use of diffusion barriers,

Investigation of one or more topics that vary according to needs and interests of students and staf. Ofered periodically. Prereq: senior OSEH majors and practitioners, or permission of instructor.

Review of scientifc and technical foundations, with an examination of problems, regulations and control strategies. Covers identifcation of pollution sources, evaluation strategies, engineering controls, government regulations, basic dispersion modeling, and human and nonhuman efects. Emphasis is on practical information needed by environmental-health professionals to resolve issues afecting industry. Ofered annually. Prereq: OSEH 321 or ENVI 330 or permission of instructor.

Students work full-time for nine weeks or more under the direct supervision of an OSEH professional in industry, insurance, government agency or other approved location. University supervision, seminars and evaluation are provided. Students experience problems, practices and principles in the management of occupational safety and/or industrial hygiene programs. To be taken twice, concurrently or consecutively, with increased work and research responsibilities. Prereq: senior OSEH majors and permission of OSEH coordinator.

Technology & Engineering Education

The intent of this course is to teach students about fundamentals of electricity, mechanisms, fuidics (liquids and gases under pressure), computer-control, and structures. Content will be delivered through a series of hands-on activities that will allow the students to immerse themselves in the content through problem-based learning by doing. Simple knowledge- and skill- building activities will lead to more complex open-ended problem-solving and prototyping activities to build deeper understandings of scientifc, technological, engineering and mathematical (STEM) concepts for teachers of young children. Prereq: ERCH 190. For Integrative STEM Education Methods minors only.

An introduction to the social, historical and philosophical foundations of technology education leading to contemporary programs. Provision is made for observation of classroom and laboratory practices in selected schools. Ofered fall, spring. Prereq: sophomore standing. Must achieve a "C" or higher for admission to advanced professional studies (APS).

Professional teacher preparation in curriculum design and instructional planning and delivery. Major topics involve developing a philosophical basis for contemporary curriculum writing, content selection, instructional objective design, lesson planning and the use of instructional technology and computers in conjunction with several technology education teaching strategies. Field experiences provided within technology education classes in local schools. Ofered fall, spring. Prereq: C or higher in EDTE 291, EDFN 211, 241 and ENGL 110. Admission to advanced professional studies (APS) required. Must achieve a "C" or higher to progress to student teaching.

The purpose of this course is to engage students in curriculum planning, design and assessment that will enable them to identify, use and evaluate experiential and integrative teaching-learning strategies that facilitate connections between all subjects in grades preK to grade 6 (e.g., literacy, science, mathematics, social studies, arts, technology, physical education, engineering). Prereq: ERCH 190, EDTE/ERCH 290, and ITEC 344. For Integrative STEM Education Methods minors only.

Student teachers are assigned full-time to selected cooperating teachers in the Lancaster area. They are supervised by University faculty and gain experience in the responsibilities of the teacher. Ofered fall, spring. Prereq: EDTE 391 with a "C" or higher. (See *Student Teaching* in this catalog.)

Professional education issues and efective teaching and learning during student teaching. Emphasis on planning, teaching, managing and assessing technology education units of instruction. Attention given to legal issues, safety, professional development and meeting the needs of all students in the technology education environment. Prereq: C or higher in EDTE 391. Coreq: EDTE 461: Student Teaching.

This clinical practicum course provides opportunities for teacher candidates to bridge theory and practice. Students will demonstrate and apply knowledge, skills and dispositions related to the implementation of integrative science, technology, engineering and math (STEM) education at the preK to grade 4 level. Emphasis is placed on the planning, development, implementation and assessment of integrative STEM instructional activities and lessons that use problem-based and experiential learning techniques targeted for preK to grade 4 students. Includes feld experiences. Prereq: ERCH 190, EDTE/ERCH 290, ITEC 344, and EDTE 490/690 or permission from instructor; Advanced Professional Studies (APS) status required. For Integrative STEM Education Methods minors only.

Technology education methodologies for instruction in advanced design and innovation. Teams of students develop solutions to technological problems. 1 hr. lec., 3 hrs. lab. Ofered fall, spring. Prereq: ITEC 110, 120, 130, 140, 344; MATH 130 or higher; and ENGL 312 or 316.

Professors Andriulli, Frischkorn, Robinson, Schuller
Associate Professors Bruntse, Cunningham, Mata, Pannafno
Assistant Professors Filippone, Gates, McDonah

The Department of Art & Design is an accredited institutional member of the National Association of Schools of Art and Design and ofers three baccalaureate degree programs: the Bachelor of Arts in art (B.A.), the Bachelor of Science in art education (B.S.Ed.), and the Bachelor of Fine Arts in art (B.F.A.). The recommended course sequence during the frst two years for all three programs is similar so that any change in degree program within the art department need not result in loss of time or credits.

Liberal arts, art education and fne arts degree programs are designed to ofer the fexibility needed to meet the unique needs of each student. To lend authenticity to this idea, each student, with the help of an advisor, assumes much of the responsibility for determining their program of study.

B.A. and B.F.A. art students must maintain a minimum grade point average of 2.0 in their major, while B.S.Ed. students must maintain a minimum GPA of 3.0 overall.

The B.A. program in art provides a sound, broad-based educational foundation which, to a considerable extent, can be individually tailored to meet the specifc educational goals of each student.

The B.S.Ed. in art education program is designed for students who aspire to become art teachers. Upon completing this program, students are certifed to teach art at both the elementary and secondary levels in the public and private schools of Pennsylvania.

The B.F.A. program ofers greater depth in art studio and is the professional studies program designed for persons who either intend to become self-employed artists, or graphic designers who wish to further their education in graduate school programs in studio art.

An in-depth study of the contemporary art scene, including an exploration of its cultural and historical roots. Ofered annually. Prereq: ENGL 110 and ART 203 or by permission of instructor.

Ofered periodically.

Art Education

Art experiences with various media and techniques, criticism, and analysis of historical art. Does not count towards any art major. Ofered fall, spring and periodically in summer and winter.

An overview of art education, with particular emphasis on historical and contemporary rationales for teaching art, the identifcation of authentic assessment practices, and the observation of art instruction and alternative career options through a variety of feld experiences. Ofered fall. Art majors only.

An investigation and application of child development theories in the visual arts, the introduction of PDESAS-based curriculum writing and the fdfanced ` ꝛofessional ȳ ɋ ʈ ⁎ א ʈ ƫ Ů ƛ 1 ƽ Ů Θ ʊ Ď ' ă

Continued drawing skill development using a variety of subjects, including the fgure. Traditional and nontraditional approaches to methods and materials are encouraged. Individual development of a personal idiom of expression will be required. Prereq: ART 233. Ofered spring.

Advanced drawing in which individual style and technique are emphasized. An intensive course of independent research, including creation of a portfolio. Prereq: ART 333. Ofered spring.

Ofered spring.

Introduces two-dimensional design and composition, applicable to all art forms, in which students seek original, creative solutions to problems. Design principles and methods are employed as students learn language and visual communication techniques. Artistic production, criticism, analysis and evaluation are central to this course. For both non-art and art majors. Ofered fall, spring.

Introduces visual composition as related to organizing and working with three-dimensional space. The student seeks original, creative solutions to visual problems by exploring methods and techniques. Covers fundamental visual grammar and principles. Ofered fall, spring. Prereq: ART 142.

Explore time-based visual communication environments. Unique conditions influencing the roles of typography, image, symbolic systems, narrative, and sound and time systems are assessed in the resolution of assigned projects. Students are exposed to the tools, theories, aesthetics and techniques used in time-based message building. Offered periodically. Prereq: DESN 246 or permission of instructor.

Capstone class for B.A. or B.F.A. student, with a concentration in graphic and interactive design. The course is designed to prepare the student for entry into the graphic design feld or graduate school. The student will create a professional-quality portfolio of work for entry into the graphic design feld or graduate school. Ofered periodic þ " ' þ ٦e.↑ lmЛ feld א Ůא Ůא Ůא uate þ " φ f

The marine biology option encourages students to choose electives in the marine biology area. Many marine science courses are offered at our field station at Wallops Island, Virginia, since they usually involve significant field work. For more information on the field station, see "Chincoteague Bay Field Station at the Marine Science Consortium" in the *Special Academic Opportunities* section.

The molecular biology/biotechnology option allows students to concentrate in genetics, cell and molecular biology. The courses required for this option complement each other, training students in a variety of laboratory methods and enabling students to gain the theoretical understanding and technical expertise currently needed to be competitive in industry and graduate school.

A dual-degree program is offered through Millersville University and West Chester University. Millersville University students who wish to obtain a degree in biology/pre-athletic training will simultaneously complete the athletic training degree requirements at West Chester University. Students will meet the general education, biology and pre-athletic training requirements at Millersville. Athletic training credits will be earned via distance-learning technologies and one summer of mandatory coursework at West Chester. Upon completion, students will earn two bachelor's degrees from two universities in four years. For more information, please also refer to the B.S., Biology, Pre-Athletic Training Option description in the *Wellness & Sport Sciences* section of this catalog.

After completing three years of undergraduate study, students in the medical technology (clinical/medical laboratory science) program are eligible to apply to an accredited hospital-based medical technology program for one year of clinical laboratory experience, after which they will be awarded the Bachelor of Science degree and will be eligible to sit for the national certification examination. Currently, Millersville is affiliated with three hospital-based medical technology (clinical/medical laboratory science) programs.

After completing three years of undergraduate study, students in the nuclear medicine technology program are eligible to apply for admission to one of the member hospitals of the Pennsylvania College of Health Sciences of Nuclear Medicine Technology for one year of hospital training, after which they will be awarded the Bachelor of Science degree and will be eligible to sit for the national certification examination.

An agreement between Millersville University and Salus University (formerly the Pennsylvania College of Optometry) in Philadelphia allows students in the optometry option to complete three years of undergraduate study at Millersville and then transfer to Philadelphia for the first year of study in the doctoral program. Students who complete the year with good grades receive a B.S. in biology from Millersville University, and after three additional years earn the Doctor of Optometry degree.

A cooperative option exists between Millersville University and the Temple University School of Podiatric Medicine. This 3/4 pre-podiatry program allows students to transfer to the professional school after satisfactorily completing 99 semester hours at Millersville

BIOL 101, 211, 221, 343, 362, 364, and 470 or 472. Electives to bring total biology credits to 43. 24 s.h. chemistry; 8 s.h. physics; 7 s.h. mathematics/computer science, including calculus (MATH 161).

BIOL 101, 211, 221, 343, 362, 364, 472, 485. Electives to bring total biology credits to 46. 16 s.h. chemistry; 8–10 s.h. physics; 7–8 s.h. mathematics.

BIOL 101, 211, 221, 325, 343, 362, 364, 427, 436, and 470 or 472. Electives to bring total biology credits to 45. 20 s.h. chemistry; 8 s.h. physics; 7 s.h. mathematics/computer science, including calculus (MATH 161).

BIOL 101, 211, 221, 343, 344, 362, 364, 375 and 472. 6 s.h. of [illegible]

BIOL 100 (B or higher) or BIOL 101 (C- or higher) and BIOL 362, 364, 462 and 466.

The Department of Biology offers one degree and four options leading to the baccalaureate degree in allied health technology. The requirements are initially very similar for each of the options so that any change in career emphasis need not involve any major loss of time or credits.

A dual-degree program is offered through Millersville University and West Chester University. Millersville University students who wish to obtain a degree in allied health technology/pre-athletic training will simultaneously complete the athletic training degree requirements at West Chester University. Students will meet the general education, allied health technologies and pre-athletic training requirements at Millersville. Athletic training credits will be earned via distance-learning technologies and one summer of mandatory coursework at West Chester. Upon completion, students will earn two bachelor's degrees from two universities in four years. For more information, please also refer to the pre-athletic training option description in the *Wellness & Sport Sciences* section of this catalog.

After completing three years of undergraduate study, students in the allied health technology/medical technology program are eligible to apply to an accredited hospital-based medical technology program for one year of clinical laboratory experience, after which

and evolution. 2 hrs. lec., 1 hr. discussion, 3 hrs. lab. Offered fall, spring. Prereq: biology major or biology minor or permission of instructor. Prereq or coreq: MATH 101 or math placement in MATH 160 or higher.

Emphasis on the intellectual and historical context of the core ideas of BIOL 100 and an in-depth exploration of ideas raised in lecture and laboratory. Satisfies the honors lab when taken with BIOL 100. 1 hr. seminar. Offered fall, spring. Prereq or coreq: BIOL 100 or 101.

Interdisciplinary study of current environmental problems and their implications on future habitability of the planet. Physical, biological and social aspects of alterations to ecosystems presented and solutions considered. Course includes lectures, open forums and student participation. Offered fall and spring. Prereq: COMM 100, ENGL 110, junior status and at least one science (G2 block) and one social science course (G3 block). Biology majors and minors may use this course as the general education perspective (P) requirement. This course may not be used as an elective within a biology degree program.

The basic concepts and principles of evolution and ecology. Topics include natural selection, genetic variation, macro- and microevolution, population genetics, evolutionary stable strategies, species concepts, biodiversity, extinction, reproductive strategies, population dynamics, the ecological niche concept, predation, competition, mutualism, parasitism, coevolution, biogeography, disturbance ecology, and ecosystem structure and function. 3 hrs. lec., 3 hrs. lab. Offered fall and spring. Prereq: BIOL 101 or 100 with a grade of C- or higher; B- or higher in BIOL 100 for biology majors; C- or higher in BIOL 211 and BIOL 221; MATH 151, 160 or math equivalent; ENGL 110.

An intermediate course that will explore population biology, species interactions, trophic structure, community organization, succession, island biogeography and biological diversity at a more advanced level than BIOL 343. The laboratory portion of the course will focus on the use of quantitative methods and manipulative experimental designs to verify fundamental principles and test new hypotheses. 2 hrs. lec., 3 hrs. lab. Offered fall or spring. Prereq: BIOL 343, MATH 151 or MATH 161, and BIOL 375.

Ecology, behavior, taxonomy and evolution of birds, with emphasis on field studies. 2 hrs. lec., 3 hrs. lab. Weekend field trips. Offered spring. Prereq: C- or higher in BIOL 211.

Biological and biochemical roles of nutrients for the proper functioning of the human body. Designed for students with a more advanced understanding of chemistry and math. Nutrition concepts will be used to design and evaluate personal diet plans. No credit given if credit earned for BIOL 256 or WSSD 452. (BIOL 256 does not count for biology majors or minors.) Offered fall or spring. Prereq: C- or higher in BIOL 362 or BIOL 263, ENGL 110.

A systemic approach to the study of the structure of the human body, with discussion of general function. Course designed primarily for those planning to enter medical or allied health professions. Clinical laboratory experiences related to human anatomy. 3 hrs. lec., 4 hrs. lab. Offered spring. Prereq: C- or higher in BIOL 211 and BIOL 362 or BIOL 263.

Study of cellular architecture, with emphasis on cell and tissue function in mammalian systems. Laboratory component of the course will focus on pr '

An introduction to the biological communities of the mid-Atlantic coast, emphasizing the interrelatedness of physical and biological factors, the importance of shore communities to people as seen through the arts and humanities, and the challenges of current environmental issues in the

Study of the effects of human activity on the ecosystems of the Chesapeake Bay System and the role of ecological principles in current restoration efforts. Investigation of how agricultural practices, riparian forests, tidal and nontidal wetlands, and urban development affect the input of nutrients and toxins, and the estuarine processes in the Chesapeake Bay that cause eutrophication and population declines in fisheries. 2 hrs. lec., 4 hrs. lab/field. Offered fall. Prereq: BIOL 343 and ENGL 110.

The development of humoral and cellular immunity to an antigenic stimulus is discussed. Role of these mechanisms in immunogenetics, immunologically mediated disease, immunological protection against infectious agents and cancer also considered. 2 hrs. lec. Offered spring. Prereq: BIOL 362 or 263.

The structure, physiology and ecology of microorganisms. Symbiotic associations between organisms will be examined in depth. Principles of microbial virulence and immunology are also discussed. Laboratory investigations include the isolation and identification of unknown microorganisms. 2 hrs. lec., 3 hrs. lab. Offered fall. Prereq: BIOL 362.

The molecular and macromolecular basis of life. The structure and function of cellular macromolecules, molecular techniques of genetic analysis and the control of cellular processes will be examined in depth. 3 hrs. lec., 3 hrs. lab. Offered fall. Prereq: BIOL 362, 364 or 365, and ENGL 110. BIOL 461 or CHEM 326 recommended.

Comprehensive investigation of animal viruses. In-depth analysis of virus particles, modes of replication, epidemiology of virus infection, virus-host interactions and vaccines. Focus is on medically important viruses such as herpes, influenza, hepatitis and human immunodeficiency viruses. Laboratory exercises include the culture and analysis of viruses in bacterial and mammalian systems. 3 hrs. lec., 3 hrs. lab. Offered fall. Prereq: 364 or permission of instructor.

Principles of development and differentiation in animals and plants at the molecular and supramolecular levels of organization. The laboratory includes both experimental and descriptive embryology. 2 hrs. lec., 3 hrs. lab. Offered spring. Prereq: BIOL 362 or 263, 364 or 365, or permission of instructor.

Application and theory of techniques commonly used in biotechnology, and cell and molecular biological research. Cell culture, plant tissue culture, immunological techniques, cell fusion, radioisotope labeling and detection, centrifugation, microscopic techniques and electrophoretic protocols will be covered in depth. Intended for biology B.S. majors in the molecular biology/biotechnology option. 5 hrs. integrated lecture/lab. Offered spring. Prereq: BIOL 462. BIOL 461 recommended.

Applications of traditional and molecular approaches in understanding the genetic basis for human traits. Gene mapping and identification, cytogenetics and DNA sequence analysis will be covered in depth. Gene function, regulation, mutations and cloning will be explored in the context of human diseases. The Human Genome Project, genetic diagnostics, gene therapy and transgenic organisms will be addressed, along with the genetic basis of cancer, behavior, immunity and development. Genetic counseling and medical genetics will be discussed. 3 hrs. lec./discussion. Offered annually. Prereq: BIOL 364 or 365, ENGL 110.

An opportunity to meet visiting scientists and to discuss their research work. Students will read and discuss, in a seminar format, assigned papers prior to the presentation of the colloquium by the visiting scholar. In addition, they will be expected to participate in discussions with the speaker after the colloquium, hosted by the Department of Biology. Offered periodically. Prereq: BIOL 100 or BIOL 101. Other courses indicated by instructor.

Detailed investigations of a topic of current interest. Topic to be announced each time course is offered. Offered periodically. Prereq: upperclass standing or permission of instructor.

Group discussions. General theme to be determined by professor. Offered annually. Prereq: 16 s.h. of biology and courses indicated by the instructor.

A seminar for prospective life science teachers to consider methods a teacher might employ to present controversial aspects of biology in intellectually honest, balanced ways which also demonstrate sensitivity to the various moral, ethical and political dilemmas secondary school students

Animal groups from protozoa to mammals studied from an ethologist's point of view. Inheritance, learning, development and motivations will be covered. 2 hrs. lec., 3 hrs. lab. Offered spring. Prereq: BIOL 343 and ENGL 110.

Broad survey of evolution, including development of evolutionary theory, history of life and mechanism of evolution. 3 hrs. lecture. Offered fall, spring. Prereq: 12 s.h. biology, including BIO 343, 364 or 365 and MATH 161.

Student research on a topic agreed on with faculty supervisor. Applicant for independent study is required to submit a Request for Special Study Assignment form.

For the definition of honors course thesis and eligibility, refer to the *Special Academic Opportunities* section of this catalog.

See course descriptions as listed within this department. Also see the section of this catalog. BIOL 108, BIOL 212, BIOL 222, BIOL 266.

Marine Biological Science

Introduction to marine organisms, marine communities, and the physical, chemical and biological parameters that shape them; laboratory work will emphasize local coastal marine ecosystems. Weekend field trips. 3 hrs. lec., 3 hrs. lab. Offered summer, fall. Prereq: BIO 211 or 1 year college biology.

An introduction to foundational topics within marine biology, including (1) quantitative reasoning for aquatic biologists, (2) marine geography and mapping, (3) life in a fluid environment, (4) marine aquarium systems, (5) scientific illustration, (6) electronic resources in marine biology, (7) internships, co-ops, jobs and careers in marine biology, and (8) current topics. Offered summer, fall. Prereq: placement in college-level mathematics.

This course is designed so that the student will achieve a strong understanding of a variety of aspects in ornithology, with the strongest focus on field techniques, including identification. Material covered will include evolution, anatomy, physiology, behavior and ecology. A portion of the course will include an overview of the avian families of North America, especially those found in coastal regions along the mid-Atlantic seaboard. The field component for א c] ٹ l

Marine fshes. Morphology, anatomy, physiology, systematics and behavior covered using specimens collected from nearby estuaries and the ocean. Zoogeography, life histories and speciation also discussed. Prereq: BIOL 100.

The taxonomy, ecology, distribution, life histories, physiology and economic status of marine and marine-fringe plants of the Middle Atlantic coast. Covers techniques of collecting, preserving, identifying and cataloging.

Physical, chemical and biological factors controlling marine populations; methods of sampling, identifcation and analysis. Prereq: BIOL 211 and 221; ESCI 261.

All 500-level courses are open to qualifed undergraduates.

The approach is basically ethological rather than taxonomic. The biology, ecology, behavior and adaptations to an aquatic habitat will be studied in the feld. Each student will undertake an individual biological study. Prereq: BIOL 416 and BIOL 445 or permission of the instructor. 3 hrs. lec., 3 hrs. lab. Ofered periodically.

Concepts and principles essential for a basic understanding of genetics and molecular biology are covered. Topics include Mendelian genetics, gene mapping, molecular structure of the gene, gene expressions and regulation, chromatin structure, molecular methodologies, Human Genome Project, population genetics and evolution. 3 hrs. lec., 3 hrs. lab. Ofered fall, spring.

Detailed investigations of a topic of current interest. Topic to be announced each time course is ofered. Ofered periodically.

Respiratory Therapy

The following courses are offered as needed for students in the clinical phase of the respiratory therapy program.

This course is designed to give the student a complete understanding of artifcial airways, manual artifcial ventilation methods and cardiopulmonary resuscitation. A basic study of cardiac physiology and electrocardiograph interpretation will be discussed. Integrated lecture/lab. Prereq: BIOL 356 for the B.S. in biology; BIOL 254 and BIOL 255 for the B.S. in allied health technology. Basic Life Support for Healthcare Providers, for both programs.

A study of the ώ "

The mechanics of basic models: Discussion includes the mechanics of ventilator models classi f cation, the control interrelation, the electro-pneumatic/ microprocessor systems and the audiovisual alarm systems; a selection of current ventilator models are presented using workshops to provide hands-on experience in troubleshooting, setup, control function, alarm setting and mode change. Prereq: RESP 421.

The course provides an overview of cardiovascular physiology, management of invasive monitoring catheters, calculation of all commonly used mechanics, and interpretation of data in pathologic states. Also, each student researches, prepares a journal-quality paper and presents a 40–50-minute verbal presentation on a selected pulmonary disease condition. Prereq: ENGL 110, RESP 414.

Alternate sites for respiratory care are studied to give the students a better understanding of the career opportunities within their reach. The students will understand their role as respiratory therapists in the home care, subacute care and pulmonary rehabilitation settings. Lecture, guest speakers, a camp experience, a one-day site visit and in-class presentations are included. Prereq: RESP 413.

The physiologic role of various gas pressures (alveolar gas pressures, blood gas pressures, inspired gas pressures, tissue gas pressures, etc.) and pulmonary abnormalities causing hypoxemia are discussed. Control of ventilation, oxygen transport (including oxygen content and oxygen dis-sociation curve) and carbon dioxide transport are presented. The student will interpret acid-base imbalances and blood gas abnormalities. Prereq: CHEM 112 and PHYS 131 for the B.S. in biology; CHEM 103, CHEM 104 and PHYSICS 131 for the B.S. in allied health technology.

Aspects of continuous positive and negative pressure breathing are discussed. Special emphasis is placed on the complications of mechanical ventilation and analysis of various waveform patterns produced by di f erent ventilator modes. Theory and measurement of airway resistance and lung thorax compliance are presented. The student learns guidelines and calculations for correct ventilator setup. Prereq: RESP 411 and RESP 420.

A concise core of pharmacologic knowledge that will be used by the respiratory therapist to understand how chemical agents a f ect disease pro-cesses. Emphasis is placed on the chemical and molecular structures, toxic aspects, actions and hazards of drugs. Prereq: CHEM 112 for the B.S. in biology; CHEM 104 for the B.S. in allied health technology.

Infectious diseases resulting in respiratory infections, host defense mechanisms, the immunology of the respiratory system, and temporary or per-manent failure of many protective mechanisms of the body to ward o f infectious agents. Fluid and electrolyte management are stressed. Prereq: BIOL 461.

Diseases of the airway, parenchyma and pleura are covered in an assessment-based format to understand the etiology, diagnosis, treatment and management of patients with noninfectious pulmonary diseases. Prereq: RESP 413.

Uterine development of the embryo is discussed, with emphasis on the fetal pulmonary system. The respiratory and circulatory changeover of the neonate at birth is studied. Temperature regulation, signs of respiratory distress, oxygen administration, arterial blood analysis, and congenital abnormalities and disease states are studied with respect to the newborn. Prereq: BIOL 356 or BIOL 254/255.

The student will complete three diagnostic lab units and three clinical skills lab units in general care therapeutics and general care patient man-agement. Upon successful completion of each of the skills labs, the student will be scheduled for a clinical practice rotation in patient care. The students are assigned to a clinical preceptor to observe/practice/develop competency in their newly a " ʻ a ŭ ʻ q. M til D ɗpugr

This course provides a 120-hour supervised clinical experience for each student enrolled. It immediately follows the completion of RESP 462, in which all of the critical-care patient-care skills were presented, practiced in simulation, observed in patient care and practiced on patients. The expectation is that each student will progress to mastery in the assigned critical-care patient-care clinical skills. The former 100 hours will be devoted to supervised practice, and the latter 20 hours will consist of further practice, with a focus on skill assessment through direct observation by a faculty member. Prereq: RESP 462.

This course provides a 600-hour supervised clinical experience for each student enrolled. The final semester of the program is devoted to refinement of all skills through practicing with a great variety of equipment and procedures. Advanced techniques and procedures are stressed. A total of 16 structured weeks of clinical experiences are offered at contracted affiliated regional hospitals and medical centers. Students will accomplish learning objectives while assigned to various content experts and specialists. The focus is on pulmonary rehabilitation, home care, sleep medicine, pulmonary diagnostics, neonatal/pediatric critical care, advanced airway care, pulmonary medicine and adult critical care patient management. Each rotation area is complete with schedules, content outlines, specific learning objectives and assignments to be completed by the student. Prereq: RESP 463.

Each student selects, designs and conducts a research project, individually or with a research partner. The project culminates in a verbal presentation of the research and a manuscript from each student suitable for publication. Each project is assigned a faculty advisor to oversee and guide the research. Prereq: permission of program director.

In keeping with its mission, goals, and in compliance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA), Millersville University and its consortium-affiliated hospital promote an environment of respect and support for persons with disabilities and will make reasonable accommodations. Individuals with disabilities is defined as those who currently have, have a record of having, or are regarded as having a physical or mental impairment that substantially limits one or more major life activities. Major life activities include caring for oneself, performing manual tasks, walking, seeing, hearing, breathing and working.

Individuals applying for admission, progression to clinical courses and graduation from the program in respiratory therapy must be able to meet the physical and emotional requirements of the academic program. In addition, students admitted must possess the following qualities:

- The emotional maturity and stability to approach highly stressful human situations in a calm and rational manner.
- The ability to make clinical judgments using critical thinking.
- The ability to adhere to ethical standards of conduct as well as applicable state and federal laws.
- The ability to provide effective written, oral and nonverbal communication with patients and their families, colleagues, healthcare providers and the public.
- The ability to successfully complete all requirements needed to receive Advanced Cardiac Life Support certification as defined by the American Heart Association.

An individual who poses a direct threat to the health or safety of others or themselves may be denied admission, progression or graduation. The University's determination that a person poses a direct threat will be based on an individualized assessment that relies on current medical evidence or on the best available evidence to assess the nature, duration and severity of the risk and the probability that potential injury will actually occur.

In order to fulfill the requirements of the respiratory therapist program at Millersville University, students must be able to meet the physical demands associated with the profession. For specific performance standards associated with the respiratory therapist program, please contact the program director at 717-291-8457, or consult the respiratory therapy website at www.millersville.edu/rtp.

Because of the unique responsibilities involved, the program reserves the right to require that the student who appears to be unsuited to the professional demands withdraw from the program and be guided into another curriculum of study.

BIOTECHNOLOGY

See Biology

BROADCASTING

See Communication & Theatre

BUSINESS ADMINISTRATION

Accounting, Finance
Professor Frazer, chairperson
Professors Guo, Galante

Associate Professors Blazer, Leinberger
Assistant Professor Dillon

Management, Marketing
Assistant Professor DiRusso, chairperson
Professors Ghoreishi, Nakhai
Associate Professors Corrigall, Douglas
Assistant Professor Hutto

The business administration program is nationally accredited by the Association of Collegiate Business Schools and Programs to offer the Bachelor of Science (B.S.) in business administration, with options in accounting, finance, international business, management and marketing. The curriculum is designed to provide study in the subjects required for employment in any business or

Finance: BUAD 161, 162, 341, 342, and either 345 or 445.
Management: BUAD 251 and 12 credits in management.
Marketing: BUAD 231, 431, 436 and 6 credits in marketing.

Problem-oriented introduction to the interpretation and application of accounting information from the viewpoint of management, with emphasis on planning and control and long-range strategies. Offered fall, spring. Prereq: C- or higher in BUAD 161.

Financial statement preparation with special attention to revenue recognition and asset valuation. Emphasis on generally accepted accounting principles and accounting theory. Students will develop a familiarity with the official pronouncements. Offered fall, spring. Prereq: C- or higher in BUAD 162.

Examination of generally accepted accounting principles as they apply to long-term liabilities and equity. This course is a continuation of Intermediate Accounting I. Includes issues of current interest. Selected readings from pronouncements. Offered fall, spring. Prereq: C- or higher in BUAD 341, 361.

Special emphasis on current problems and issues using small business accounting software. Offered infrequently. Prereq: C- or higher in BUAD 361.

Investigates cost-accounting techniques such as budgeting, accounting controls, standard cost, operation evaluation techniques, variance analysis and performance analysis. The role of cost accounting in profit planning and decision making is examined. Offered fall, spring. Prereq: C- or higher in BUAD 162, 206(306).

Not-for-Profit Accounting

Introduces special characteristics of real estate and how real estate decisions are made. Includes real estate terms, laws, commercial and residential markets, and property valuation. Offered infrequently. Prereq: C- or higher in BUAD 341.

The international financial environment and a comprehensive analysis of foreign exchange rates and instruments. Topics include the international monetary system, balance of payments, contemporary currency trading and quotation, forward contracts, international parity conditions and foreign currency options. Offered annually. Prereq: C- or higher in BUAD 341.

Analysis of investment objectives and functioning of capital markets, including market trading strategies and techniques of portfolio management. Study of stocks and bonds, mutual funds, options and futures. Offered fall. Prereq: C- or higher in BUAD 341.

Bank investment practices, liquidity management, deposits acquisition and administration, branch location decisions, optimal bank capital, mathematical model in banking, management science in banking, computers and checkless banking. Offered infrequently. Prereq: C- or higher in BUAD 341.

Introduces principles and mechanics of insurance. Includes the conceptual and historical framework of insurance and the actual mechanics of insurance risk management as they pertain to personal and business needs. Offered infrequently. Prereq: C- or higher in BUAD 341.

Classical and modern thought on markets. Numerous modern markets are investigated in terms of functionality

action and reverse discrimination, sexual harassment and comparable worth, disclosing and concealing information in sales, insider trading and whistleblowing. Offered periodically.

Managing a new venture while continually juggling vital issues such as mission and values statement; goals and objectives; growth strategy; people and resources; organizational capabilities; financing strategy; vision of success. The coure addresses differences between entrepreneurial management and corporate management. Offered periodically. Prereq: BUAD 231 and C- or higher in BUAD 251.

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Analysis of individual and collective consumer behavior patterns both within and outside the marketplace through theoretical model building and empirical research findings. Emphasis on the role of consumer research in identifying, planning, implementing and evaluating both short-term and long-term marketing strategies. Offered periodically. Prereq: C- or higher in BUAD 231.

Covers skills and knowledge required of sales representatives to understand customers' needs and make effective presentations. Includes prospecting and contacting customers, making presentations, handling objections, closing the sale and developing long-term relationships. Emphasis on individual role-play and group presentations. Offered periodically. Prereq: C- or higher in BUAD 231.

Economic and social roles of advertising in a contemporary business setting. Emphasis on the creation, development, implementation and evaluation of advertising campaigns through the analysis of creative processes, managerial techniques, media resources, budgeting methods and the concept of social responsibility. Offered periodically. Prereq: C- or higher in BUAD 231.

The role of retail institutions in the marketing system. Emphasis on strategy development in the retailing context. Offered periodically. Prereq: C- or higher in BUAD 231.

Planning, direction and control of the sales force. Includes recruiting, selecting, training, supervising, compensating, motivating and evaluating sales representatives. Emphasis on acquisition of basic sales and managerial skills. Offered periodically. Prereq: C- or higher in BUAD 231.

Research theory and techniques used in marketing activities. Stresses formulation of research objectives, instrument design, sample selection, data collection, statistical analysis, computer applications and report writing for managerial use. Offered fall, spring. Prereq: MATH 235, C- or higher in BUAD 231.

The development of marketing strategy for entering and competing with businesses in foreign countries. Uniqueness of foreign markets and their impact on the marketing manager's decision-making processes are examined. Offered annually. Prereq: C- or higher in BUAD 231.

Analysis of opportunities and problems confronting the marketing manager in decision making. Includes market segmentation, target marketing, positioning, market research, product life-cycle strategies, marketing-mix implementation and social responsibility. Emphasis on case analysis to bridge the gap between marketing theory and application. Offered annually. Prereq: BUAD 431 and 90 credits.

CHEMISTRY

Professor Rajaseelan, chairperson
Professors Mbindyo, Rickard
Associate Professors Miller, Schiza
Assistant Professors Allen, Bonser, Eliof, Kennedy, Kittleman

The Department of Chemistry, approved by the American Chemical Society (ACS), offers three degree programs leading to the baccalaureate degree with a major in chemistry. The recommended course sequence during the first year is identical for the three programs and thereafter differs only slightly through the junior year; thus a change in career emphasis in chemistry need not delay graduation.

The Bachelor of Science degree (B.S.) offers intensive training in chemistry and mathematics and is designed specifically for students who wish to pursue graduate studies or employment as a chemist. There are four options available within the B.S. degree program. The first option, in biochemistry, provides study in the chemistry of life processes. This program offers the best preparation for acceptance to medical schools. Completion of the requirements for these degree programs leads to certification of the graduate by the department to the American Chemical Society, which offers immediate membership eligibility in the ACS as well as more desirable employment opportunities. The second option, in environmental chemistry, provides study in areas that involve the traditional chemistry of the atmosphere, hydrosphere, geosphere and biosphere. The third option is in polymer chemistry. Polymer chemistry forms the basis for the production of plastics, synthetic fibers, paints, coatings, adhesives and many other chemical products.

The fourth option, in nanotechnology, provides study in the control of materials at very small dimensions to make smaller, cheaper and better materials used in many fields. Students spend a semester at the Penn State University Park campus in their nanofabrication facility. Graduates can pursue graduate studies in materials science.

The Bachelor of Arts degree (B.A.) is a more versatile program, combining a solid foundation in chemistry with an ample opportunity for breadth of study. Students electing this degree have found it to be sound preparation for further study or a career in chemistry. It invites interdisciplinary studies in areas such as environmental science, geochemistry, oceanography and chemical physics, and provides the breadth and depth of pre-professional training necessary for subsequent study in, for example, law or medicine.

For those students desirous of pursuing a career in high school teaching, the Bachelor of Science in Education degree (B.S.Ed.) provides a sound background in chemistry as well as the necessary methods courses.

An important program option in chemistry is an internship. Applicable to any of the above degree options, internships offer students invaluable experience in a job related to their career goal as well as financial remuneration, which helps significantly to defray the expenses of college study. Beginning after the freshman year, students choosing this option may alternate periods of on-campus study with off-campus employment until graduation. In addition, up to three credits may be approved to count toward major sequence requirements for each internship experience, and up to six credits may be counted toward degree requirements. For more information, see in the *Special Academic Opportunities* section.

The chemistry 3+4 Pre-pharmacy option within the B.S. program requires three years of study as a chemistry major in the Millersville University liberal arts curriculum, with one year in the Lake Erie College of Osteopathic Medicine (LECOM) Pharmacy school program. At the end of the four years, the student receives a B.S. in chemistry degree from Millersville and after seven years, the student receives a Doctorate in Pharmacy degree from LECOM.

47 s.h. in chemistry: CHEM 111, 112, 188, 231, 232, 251, 265, 326, 341, 342, 391, 392, 452, 465, 487, 488, 498 (1), plus 8-10 s.h. from CHEM 312, 324, 327, 328, 375, 381, 435, 476, 482, 486, 489, 498, 499; COOP 300, 400. Required related courses: MATH 161, 211, 311 and PHYS 231, 232, plus one course in computer science, mathematics and/or physics. Students opting for ACS certification should take all chemistry courses in the given sequence in the college catalog and successfully complete Physical Chemistry II (CHEM 342) before beginning either Inorganic Chemistry (CHEM 452) or Analytical Chemistry (CHEM 465).

or higher and ENGL 110, or permission of instructor.

The history of the development of the science of chemistry from its roots in Egyptian and Greek societies through its specialization in the early 20th century. The relationships between chemical developments and society are explored, as well as the influences of chemistry on Western thought. 3 hrs. discussion. Offered periodically. Prereq: COMM 100; ENGL 110; junior status; CHEM 102, 104 or 111; two social science courses, including one history course: HIST 101, 102 or 410 preferred.

The application of modern chemical principles to the chemical and physical interactions among the hydrosphere, lithosphere, atmosphere and

A course for qualifed students to investigate problems in chemistry. Guidance in the methods of chemical research. A minimum of 3 hours of lab required per semester hour. Prereq: permission of instructor. For further information on independent study, see the *Special Academic Opportunities* section of this catalog.

For the definition of honors course/thesis and eligibility, refer to the *Special Academic Opportunities* section of this catalog.

CLINICAL LABORATORY SCIENCE

See Biology, Medical Technology

COMMUNICATION & THEATRE

Associate Professor Russell-Loretz, chairperson
Professors Boyle, Chang, Dorman, Seigworth
Associate Professors Capecce, Elliot, Irwin, Schreiber, Wood
Assistant Professors Capecce, Igyor, Spicer, Woodall
Instructor Ellis

The Department of Communication & Theatre offers a Bachelor of Science degree in speech communication. The liberal arts program prescribes a common core of required courses and allows the choice of one of four options, including broadcasting, communication studies, public relations and theatre. Each option contains a specifc group of required courses and an additional group of electives chosen in consultation with a departmental advisor.

Persons considering the speech communication program should consult with the department about options and requirements. These programs undergo periodic revision. A complete description of the current program and GPA requirements is available from the departmental office. Options or minor programs of study must be chosen by students with their advisor's consent.

Upon acceptance into the speech communication program, the following academic requirements must be maintained in order to graduate: a C or higher is required in each core course before taking the next higher core course; student progress in the major is reviewed no later than the semester following completion of 60 hours. Students in the major must attain a 2.5 GPA in the major in order to be retained in the major.

COMM 101, 201, 301 and 401.

Communication Options

Required courses: Core courses above, plus the following: COMM 121, 220, 320, 321, 326. Additional requirements: select 24 s.h. of electives from approved list in consultation with advisor.

Required courses: Core courses above, plus 12 credits from the following courses: COMM 203, 217, 227, 317 or 403. Additional requirements: choose 27 credits from major courses, with a minimum of 15 credits from the Additional Requirements list. Of these 27 credits, six credits must be at the 300 level and six credits must be at the 400 level, OR a student maycre® ȳ ᵊ wKaycrRequiɪwK siximuЎ4nd six ᴰ mu l ḏ ȳ ⱥ musom the) ș O dC i O dO d s il s iiΩ rnaɔws i " t dM 2 il dЎ4 i O ds il ɾ ǂ O d ent ' c

Communication Studies

Required fundamentals course in general education. An introductory study of the principles of public speaking, with particular emphasis on the selection and organization of information for persuasive purposes. Satisfes competency requirement.

Focuses on the role of communication in everyday life. Emphasis on how communication shapes the construction of meaning, the maintenance of community and relationships, and various means of interconnection. Ofered fall, spring.

Focuses on the diferent approaches to the study of communication as a discipline. Emphasis on both historical and current scholarship in the feld through diverse means of inquiry. Ofered fall, spring. Prereq: COMM 100, and for communication majors, COMM 101.

Emphasis on the theory and practice of small group communication and problem solving. Group formation, teamwork, leadership, decision making in groups, group confict and other concepts will be explored. A collaborative group service learning project and course activities will reinforce course concepts. Ofered periodically. Prereq: ENGL 110.

Combines both theory and experiential application of interpersonal communication to provide students with a means to analyze relationships and to integrate more efective communication strategies in their lives. Ofered periodically. Prereq: COMM 100.

A survey of the major theoretical approaches to the feld and applications to specifc organizational issues. Explores the scope and history of organizational communication. Ofered periodically. Prereq: COMM 201.

Communication in the Nonproft Sector (G1)
Explores the design, management and functioning of nonproft/civil society organizations, with an emphasis on communication theories and processes. Highlights practices unique to these organizations, with an emphasis on enabling students to establish, run and support them. Ofered periodically. Prereq: COMM 100, ENGL 110.

Focuses on the role of communication in understanding the questions of commitment and participation, place and identity, confict and cohesiveness. Explores issues of race, class, gender and ethnicity across various dimensions of contemporary life, especially through study of and/or participation in community service organizations. Ofered fall, spring. Prereq: COMM 100, ENGL 110, sophomore standing.

A survey of research methods for the study of problems in communication. Students defne a research problem, survey and critique relevant literature, and design a research strategy using various research paradigms. Majors should take this course in the junior year. Ofered fall, spring. Prereq: ENGL 110, COMM 201. COMM 201 and COMM 301 may be taken concurrently. However, if COMM 301 is taken after taking COMM 201, a grade of C or higher is required in COMM 201.

Explores the possibilities of communication between and among diverse cultures. Close study of cultural codes, symbolic interaction, nonverbal behavior and contexts of intercultural contact. Develops an understanding and appreciation of human diversity and competence in intercultural communication practices. Ofered periodically. Prereq: COMM 100, ENGL 110 and junior standing.

Examines theoretical explanations for the social construction of gendered identity. Considers everyday communication practices and contexts to identify how gender, communication and culture intersect to form the complex matrix of meaning which impacts individuals and society. Ofered periodically. Prereq: COMM 100, ENGL 110 and junior standing.

Advanced principles of public speaking in a professional setting. Covers organization and adaptation of speech materials, effective presentation styles, forms of proof. Offered periodically. Prereq: COMM 100, ENGL 110 and junior status.

Hands-on practice in writing news releases for print and broadcast, brochure and newsletter copy, and pitching story ideas to trade editors. Offered fall, spring. Prereq: COMM 251, ENGL 110.

This course emphasizes theory and practice in the strategic planning, writing, communication design, management and analysis of social media campaigns for mobile communications, social media and online social networking. Offered fall or spring. Prereq: ENGL 110, COMM 100, junior status (60 credits earned) and COMM 251, or permission of instructor for ENTR minors.

Analysis of various organizations' public relations problems and communicative responses. Third in a 4-course sequence. Offered fall, spring. Prereq: C or higher in COMM 301, COMM 351 or permission of instructor.

Hands-on practice in public relations problem solving. Involves work in student-run "agencies" to develop and implement a public relations campaign for a nonprofit organization. Capstone course in public relations. Offered fall, spring. Prereq: COMM 451.

Broadcasting

Audio and video production fundamentals, techniques and uses. Includes study of the production process and hands-on production assignments in both audio and video. Laboratory work required. Offered fall, spring.

This course focuses on the implications, for individuals and society, of new information and communication technologies. Through extensive readings, reflections and writings, students will acquire an understanding of the role technologies have played in their lives and the impact they have in their future careers. Offered periodically. Prereq: COMM 100, ENGL 110, junior standing.

Practical experience in both directing and coaching actors. An overview of directing process and directing style. Offered biannually in spring. Prereq: THEA 130 or permission of instructor.

Theatre as it developed in London, England. The course, in conjunction with the London Metropolitan University, requires attendance at four contrasting professional theatre performances in London as well as backstage tours of the Globe Theatre, the National Theatre and the Royal Theatre Drury Lane. Offered summer of even years. Prereq: junior status, COMM 100, ENGL 110.

Detailed study of development of all phases of theatre art and dramatic literature from its origin to 1850. Offered in rotation with THEA 341. Prereq: ENGL 110, COMM 100.

Survey of European and American drama from the time of Ibsen to the present, tracing development of dramatic literature from the rise of realism to contemporary experimentalism; emphasis on plays illustrating significant trends and movements. Offered in rotation with THEA 340. Prereq: ENGL 110, COMM 100.

Introductory survey of theatre management, which addresses concerns related to theatre. An overview of the theatre manager's role, with focus on strategic planning; organizational design; economics and the theatre; unions; and financial concerns which affect the success of theatre organizations. Offered infrequently. Prereq: COMM 100 and ENGL 110.

Advanced work in areas of theatre production. May be taken for credit more than one semester as the topics change. Topics include stage management, costume and makeup, scenic painting, stage voice, careers in theatre. Offered annual s i l ή τ ѧ om e.% m THĒ

The cooperative education program allows students to gain valuable experience in a full-time professional position related to their career goals, adding practical relevance to their program of study as well as financial remuneration. Students may elect one or more cooperative education experiences.

Information about the computer science degree program can be found on the web at cs.millersville.edu, or send email to info@

Relationship between programming languages and software engineering. Structure and vocabulary of modern programming languages. Objectives and methods of software engineering. Programming language topics include binding, data control and sharing, type checking, object-oriented programming, parallel programming and implementation of language constructs. Software engineering topics include requirements definition, specification, design, implementation, verification, validation and relationship of paradigms to languages. Offered fall, spring. Prereq: C- or higher in CSCI 140 and CSCI 162.

Introduction to theory of computation. Topics include finite-state automata, regular languages and grammars, pushdown automata, context-free languages and grammars, Turing machines, limits on algorithmic computation. Offered spring. Prereq: C- or higher in CSCI 140, 162.

Basic introduction to cognitive science. Reviews attempts to understand cognition, using insights from psychology, artificial intelligence, philosophy, linguistics and the neurosciences. Examines the synthesis of those attempts in the emergent field of cognitive science. Offered periodically. Prereq: COMM 100, ENGL 110, junior status. No credit given if credit earned in PSYC 314.

Abstract data types, objects, algorithm design and analysis, trees, graphs, sorting and searching. Emphasis on ADT-based and object-oriented design, incremental development and testing, and comparison of data structure implementations. Offered fall, spring. Prereq: C- or higher in CSCI 140 and CSCI 162.

Introduction to building database-driven web applications. Topics include data modeling, building databases, database queries, basic data management, Model View Controller design paradigm, server-side scripting, web development frameworks, web protocols, markup languages, and client-side scripting. Offered spring. Prereq: C- or higher in CSCI 362.

Structure of digital computers, including register transfer notation, instruction set architecture, computer arithmetic, pipelining and parallel processors. Offered fall. Prereq: C- or higher in CSCI 140, 162.

Theory and implementation of computer graphics, including mathematical basis for computer representation of 3D objects. Topics include graphics pipeline, vertex processing, 3D transformations, primitives, clipping, projections, rasterization, fragment processing, texturing, blending, shaders and lighting models. Offered periodically. Prereq: C- or higher in CSCI 362.

Design and implementation of operating systems, including types of operating systems, file systems, resource management, concurrent processes, deadlocks, memory-management techniques, processor scheduling, disk scheduling, operating system security and system administration. Students expected to develop significant operating systems programming projects. Offered fall, spring. Prereq: C- or higher in CSCI 362, 370.

Introduction to computer networks. Topics include network media, architecture and topology, protocols and layering, client-server models, Ethernet media and hardware, TCP/IP and other protocols, setup and system administration, application protocols and communication, network servers and services, security, data integrity, encryption and firewalls. Offered periodically. Prereq: C- or higher in CSCI 362, ENGL 110.

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techniques for building mobile device apps, such as networked mobile apps that interact with remote services such as GPS, Bluetooth services, wireless hubs and devices, web-based client/server data systems, and games. This course includes a laboratory component. Offered periodically. Prereq: C- or higher in CSCI 362.

Overview of software engineering concentrating on phases of the software development life cycle, including waterfall model, iterative enhancement, prototyping, axiomatic and algebraic specifications, user interface design and object-oriented design, testing, quality assurance and reliability. Team project provides students with practical experience in applying techniques. Offered fall, spring. Prereq: C- or higher in CSCI 330 and CSCI 362.

nificant study or project in some area of computer science. A written report is required. Prereq: departmental permission.

CONSTRUCTION TECHNOLOGY

See Applied Engineering, Safety & Technology

COOPERATIVE EDUCATION/INTERNSHIP

The minimum number of credits for any cooperative experience is 3 credits. The maximum number of credits allowed for one cooperative education course is 12. For information on cooperative education and internships, see the *Special Academic Opportunities* section.

Entry-level cooperative education or internship experience giving initial exposure to departmentally approved job assignment.

Cooperative education or internship assignment with increased work responsibility over the COOP 300 level. Prereq: 300 level or equivalent.

Cooperative education or internship assignment with increased work responsibility over the COOP 400 level. Prereq: 400 level or equivalent.

*Subject abbreviation is dependent upon the department through which the cooperative education credit is earned (e.g., CSCI 3003000300560059000300 4C0

of C (2.0) or higher.

Foundations Block: ERCH 225, EDFN 211, EDFN 241 with grades of C (2.0) or higher. A field experience allows students to make application of their knowledge.

Professional Block I: ERCH 421*, ERCH 496* (6 credits) with grades of C (2.0) or higher. A field experience allows students to make application of their knowledge.

Professional Block II: ERCH 422* (6 credits), ERCH 455*, ERCH 465*, SPED 331* with grades of C (2.0) or higher. A field experience allows students to make application of their knowledge.

Required Related Courses: ART 100, MATH 104, MATH 105, PSYC 227, WELL 240 with grades of C (2.0) or higher.

Certification Requirement: Literature course with an English (ENGL) prefix with a grade of C (2.0) or higher.

Student Teaching: 12 credits.

Major Sequence Requirements: ERCH 110, ERCH 345*, ERCH 435, ERCH 485*, EDUC 424*, SPED 101, SPED 311*, EDFN 320 with grades of C (2.0) or higher.

Foundations Block: ERCH 225, EDFN 211, EDFN 241, SPED 237 with grades of C (2.0) or higher. A field experience allows students to make application of their knowledge.

Professional Block I: ERCH 421*, SPED 321*, SPED 341* with grades of C (2.0) or higher. A field experience allows students to make application of their knowledge.

Professional Block II: ERCH 422* (6 credits), ERCH 455*, ERCH 465*, SPED 331* with grades of C (2.0) or higher. A field experience allows students to make application of their knowledge.

SPED Professional Block: Strand I courses or Strand II courses.

Strand I (Severe/Multiple Disabilities): SPED 411*, SPED 441*, SPED 442*, SPED 451*, SPED 453* with grades of C (2.0) or higher. A field experience allows students to make application of their knowledge.

Strand II (Mild/Moderate Disabilities): SPED 412*, SPED 441*, SPED 442*, SPED 452*, SPED 453* with grades of C (2.0) or higher. A field experience allows students to make application of their knowledge.

Required Related Courses: ART 141, MATH 104, MATH 105, PSYC 227, WELL 240 with grades of C (2.0) or higher.

Certification Requirement: Literature course with an English (ENGL) prefix with a grade of C (2.0) or higher.

Student Teaching: 12 credits.

*Advanced Professional Studies (APS)

Major Sequence Requirements: MDLV 335, SPED 311*, SPED 312, PSYC 227.

Foundations Block: EDFN 211, EDFN 241 with grades of C (2.0) or higher. A field experience allows students to make application of their knowledge.

Professional Block I: EDUC 323*, MDLV 486*, EDFN 320 with grades of C (2.0) or higher. A field experience allows students to make application of their knowledge.

Professional Block II: MDLV 425* (6 credits), MDLV 456*, MDLV 466*, SPED 331* with grades of C (2.0) or higher. A field experience allows students to make application of their knowledge.

Certification Requirement: Literature course with an English (ENGL) prefix with a grade of C (2.0) or higher.

Student Teaching: 12 credits.

English Language Arts Concentration: ENGL 220, ENGL 230, ENGL 272, ENGL 486, ENGL 487 and one elective with grades of C (2.0) or higher. Also required: MATH 104, MATH 204, MATH 205, MATH 230, BIOL 100, CHEM 102, PHYS 101, ESCI 202, GEOG 141, GOVT 111, HIST 106 and one history elective with grades of C (2.0) or higher.

Mathematics Concentration: MATH 104, MATH 204, MATH 205, MATH 230 with grades of C (2.0) or higher and MATH 161, MATH 211, MATH 311 plus two mathematics electives with grades of C- (1.7) or higher, except MATH 301 with a grade of C (2.0) or higher. Also required: BIOL 100, CHEM 102, PHYS 101, ESCI 202, GEOG 141, GOVT 111, HIST 106 and one history elective with grades of C (2.0) or higher.

Science Concentration: BIOL 100 or BIOL 101, BIOL 140, CHEM 111, CHEM 112, ESCI 202, ESCI 221, PHYS 131, PHYS 132 with grades of C (2.0) or higher. Also required: MATH 104, MATH 204, MATH 205, MATH 230, GEOG 141, GOVT 111, HIST 106 and one history elective with grades of C (2.0) or higher.

Social Studies Concentration: ECON 102, GEOG 141, GOVT 111, HIST 101, HIST 106, HIST 206, HIST 260, ECON 101 or ECON 203, GOVT 112 or GOVT 251, and one geography elective with grades of C (2.0) or higher. Also required: MATH 104, MATH 204, MATH 205, MATH 230, BIOL 100, CHEM 102, PHYS 101, ESCI 202 with grades of C (2.0) or higher.

The student must satisfy all requirements listed below for admission to courses designated as APS.

1. A minimum of 48 s.h. in progress.
2. Cumulative GPA of 3.0; GPA of 2.80-2.99 requires higher test scores on Content Area Tests for Pennsylvania licensure (certification)*.

3. Satisfy one of the four Pre-Service Testing options*.
4. Pass one English (ENGL) composition course.
5. Pass one English (ENGL) literature course.
6. Pass two mathematics courses (100 level or above).
7. Pass Education Foundations courses (EDFN 211 and EDFN 241) and receive a favorable faculty recommendation.
8. File an APS application online.

*Cannot be appealed.

Designed to provide an overview of the feld of early childhood education. Historical, theoretical and philosophical infuences on past and current approaches to teaching young children will be traced and analyzed. The course introduces students to the early childhood education profession, developmental characteristics of young children (birth–age 9), developmentally appropriate practices (NAEYC, 2009) and an overview of efective curriculum, instruction and assessment of young children. In the concurrent feld experience, students refect on their ability to cope with classroom reality as they a frm or change their choice of teaching as a profession. Prereq: Act 34 Clearance, Act 151 Clearance and Act 114 FBI Clearance. Ofered spring, fall. Coreq: SPED 312.

Introduces topics in the feld of teaching reading in early childhood, including emergent literacy, approaches to reading instruction, word recognition and vocabulary development, comprehension instruction, assessment techniques and reading instruction for the multicultural and the exceptional child. Supplemented by a feld experience. Ofered fall, spring. Prereq: ERCH 110, Act 34 Clearance, Act 151 Clearance and Act 114 FBI Clearance.

A focus on collaborative relationship building between home, school and community that facilitates positive infuence on the individual child's development. These collaborative relationships create an inclusive learning environment for all children, including culturally and linguistically diverse. The collaborative relationships are based on developing reciprocal communication techniques, cultural sensitivity and rapport with children and their families. Promotes efective communication and advocacy skills for students with disabilities and their families between school, agency personnel and community members. Empowerment techniques and parent workshopw ˢ par® ᵕ pa ر enTmهمي Y ᵐ f e " sar ent ! a

Prepares early childhood teacher candidates to understand the social and linguistic foundations for first and second language development in the early years. Teacher candidates will be able to apply research-based strategies for supporting first language development in the home and for preparing young learners for the transitions to schooling in a second language. Candidates will demonstrate an understanding of the resources that young learners bring to academic settings, and of ways to support young learners and their families in their adjustments to English-speaking schools. Candidates will demonstrate the ability to use assessment data to differentiate and modify instruction according to the needs of their students. Teacher candidates will be prepared to support young English language learners in their acquisition of language and content within optimal learning environments that provide meaningful access to standards-based instruction. Offered fall, spring. Prereq: ENGL 110, admission to Advanced Professional Studies (APS).

Investigation of contemporary goals of early childhood education. Provides analysis of organizational plans, classroom environment, teaching strategies and resources, and noteworthy trends and innovations. Application to individual situations is stressed. Focus will vary. Offered infrequently.

Examines children's oral language development and its contribution to emergent literacy, the period between birth and the time when children learn to

FBI clearances; admission to Advanced Professional Studies; Professional Block I courses of ERCH 421, SPED 321, 341. Coreq: SPED 411/412, 441/442, 452, 453, 454. Offered fall, spring.

ESCI 221, 241, 261, plus 18 s.h. in one or more earth sciences disciplines (geology, meteorology or oceanography) at the 200 level or higher, as approved by advisor. Required related courses: CHEM 111, 112; PHYS 131, 132; MATH 161, 235.

ESCI 221, 222, 227, 321, 326, 328, 426, plus 3-8 s.h. of earth sciences elect es ofquirY ' I ' K, ' j H1, j H1,

Earth SOaphyes Major and CoaslogyStudir (B.A.): 1S0 s.h.

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A broad overview of the biological, chemical, geological and physical characteristics of the ocean, and the importance of the oceans to mankind and the environment. Does not count toward any ESCI major. 3 hrs. lec. Ofered fall, spring and online in summer and winter.

Methods and techniques used in the marine sciences, including introduction to navigation, plotting and evaluation of data pertaining to salinity, temperature, dissolved oxygen, primary productivity and current velocity. 2 hrs. lab. Optional feld trip. Mandatory coreq: ESCI 104. ESCI 104/105 together constitute a single laboratory course in earth sciences for purposes of the general education curriculum. Does not count toward any earth sciences major. Ofered fall, spring and periodically in summer.

Origin and evolution of the atmosphere; solar and terrestrial radiation; horizontal and vertical structure of the atmosphere; temperature, pressure and water in the air; vertical motion; cloud formation and cloud type; circulation systems, severe weather, climate and climate change. 3 hrs. lec. Does not count toward any earth sciences major. Ofered fall, spring and online in summer and winter.

Origin and evolution of the atmosphere; solar and terrestrial radiation; horizontal and vertical structure of the atmosphere; temperature, pressure and water in the air; vertical motion; cloud formation and cloud type; circulation systems, severe weather, climate and climate change. 3 hrs. lec., 2 hrs. lab. Does not count toward any earth sciences major. Ofered fall, spring and online in summer and winter.

Exploration of earth systems and their relation to society, with focus on natural hazards and natural resources. Does not count toward any ESCI major. 3 hrs. lec. Ofered fall, spring and periodically in summer.

Laboratory exploration of earth system impacts on society, and human influences on Earth. Mandatory coreq: ESCI 120. ESCI 120/121 taken concurrently constitute a single laboratory course in earth sciences for purposes of the general education curriculum. Does not count toward an ESCI major. 2 hrs. lab. Ofered fall, spring and periodically in summer.

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Theory and practice of quantifying hydrologic phenomena; field methods, data manipulation and environmental applications. 2 hrs. lec., 2 hrs. lab. Offered fall of even years. Prereq: C- or higher in ESCI 221 or ESCI 241 or GEOG 230, and MPT 160 or MATH 160.

The origin and composition of sediments and sedimentary rocks, study of the processes involved in the sedimentary cycle, environments of deposition,

First and second principles of thermodynamics, water-air systems, equilibrium of small droplets and crystals, thermodynamic processes in the

Methods and mathematical concepts of numerical weather and ocean prediction models. Students must be able to program in one of the following languages: Fortran, C++, or IDL. 3 hrs. lec. Offered spring of odd years. Prereq: ESCI 282 or CSCI 161. Coreq or Prereq: ESCI 343 or 365.

Frequency distributions, sampling theory, linear and multiple regression analysis, time series, space variations of meteorological variables, statistical weather forecasting, forecast verification. 3 hrs. lec. Offered fall. Prereq: C- or higher in MATH 235, 311.

Devices and platforms used to gather meteorological data; methods of data acquisition, reduction, error analysis and quality assurance; description of instrumentation, measurement techniques, observing systems and their deployment. 2 hrs. lec., 2 hrs. lab. Offered fall of odd years. Prereq: ENGL 110, PHYS 232 and MATH 235.

Mean boundary layer characteristics; turbulence and its spectrum; governing equations for turbulent flow; prognostic equations for turbulent fluxes and variances; TKE; turbulence closure schemes; similarity theory; simulation techniques; convective and stable boundary layers; boundary layer clouds. 3 hrs. lec. Offered spring of odd years. Prereq: C- or higher in ESCI 342 and MATH 211.

Algorithms used in the display and interpretation of weather radar data; theory of electromagnetic radiation, principles of radar operation, Doppler radar and interpretation techniques; wind velocity, rainfall rates and detection of individual cells, multiple cells and turbulence. 3 hrs. lec. Offered spring of even years. Prereq: C- or higher in ESCI 241, MATH 311. Coreq or Prereq: ESCI 342.

Ocean Sciences and Coastal Studies

Methods and techniques of oceanography; physical, chemical, biological and geological aspects of the oceans; unity of oceanographic science and its relationship to other environmental sciences. 3 hrs. lec., 2 hrs. lab. Overnight field trip required. Offered fall, spring. Prereq: C- or higher in MATH 151, MATH 155H, MATH 160, MATH 161 or MATH 163.

Work on board small research vessels in the dynamic marine environment; use and application of standard oceanographic instruments and sampling devices; opportunities for independent research. 1 hr. lec., 4 hrs. lab. Offered only in summer at the CBFS. Prereq: C- or higher in ESCI 261.

Sedimentary and tectonic characteristics of the continental margins and deep ocean basins; principles and processes of sediment transport and deposition in the marine environment; applications of geophysical methods at sea; marine mineral resources. 3 hrs. lec. Offered only in summer of even years at the CBFS. Prereq: C- or higher in ESCI 261 or 221.

Oceanic chemical phenomena, including structure of water, salinity, sources and sinks of chemical constituents; chemical interactions at interfaces between hydrosphere and atmosphere, lithosphere and biosphere; geochemical processes at spreading centers; biogeochemical cycles of nutrients; applications of geochronology and tracers; the carbon-dioxide-carbonate system; origin and history of seawater; anthropogenic effects. 3 hrs. lec. Offered spring of odd years. Prereq: C- or higher in ESCI 261 and CHEM 112.

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ECONOMICS

Associate Professor Smith, chairperson
Professors Gumpper, Suliman
Associate Professors Baker, Madden, McPherson

The Department of Economics offers a B.A. degree in economics, with options in quantitative economics, financial economics and political economy.

Economics is the study of how a society is organized to produce and distribute material goods and services. It is a combination of technical knowledge of industry and commerce as well as a broad theoretical and practical understanding of major aspects of the economy.

The economics major requirement includes a basic core of courses in economic principles and theory. The student, in consultation with an advisor, may then select courses based on individual interest and the wide variety of career options available to economics majors.

As one of the crucial fields in the government, manufacturing and service sectors, economics will be an especially attractive field to help students prepare for a future career. By virtue of its broad nature, economics readily widens students' choices to join the workforce and/or pursue their graduate studies. Students who wish to join the workforce, attend law school or work toward advanced degrees in other applied areas are advised to choose the basic B.A. in economics, which emphasizes preparation in applied economics and data processing. Those who plan to do graduate studies in economics or business are advised to take the B.A. in economics—quantitative option, which offers more preparation in mathematics, statistics and theoretical economics. Students interested in government, politics and law may take the political economy option. Students interested in financial services and investments may take the financial economics option.

Potential areas of employment for economics students are diverse. They include the financial sector, government sector and manufacturing sector. The flexibility of the programs not only provides internship and cooperative education opportunities with local industry, but, with the proper advisement, also permits students to combine coursework with computer science, mathematics, social sciences, business, humanities, natural sciences and communication arts.

The economics minor program is intended to provide a background in economics to the student with a major in another field. The technical economics minor is intended to serve the needs of students from mathematics and the sciences who are interested in combining their degrees with economics and related areas and/or planning to pursue their graduate studies in economics and related areas. This minor is open to all interested students.

Students should consult the department for the most recent curriculum and career information.

Core course requirements for all liberal arts economics majors: ECON 101, 102, 215, 231, 318, 319, 488 and 12 additional credit hours in economics electives, plus one required related course (3-4 credit hours): MATH 151 or 161. Students may substitute a maximum of two selected business administration courses for elective courses in economics. Consult the economics department for a currently approved list.

Core course requirements: ECON 101, 102, 215, 231, 235, 318, 319, 333 and 488; 6 additional credit hours in economics electives and a minimum of two required related courses (6-8 credit hours); and MATH 151 or 161.

Core course requirements: ECON 101, 102, 215, 231, 318, 319, 325 and 333; 6 additional credit hours in economics electives and 18 credit hours of required related courses: BUAD 161, 162, 341, 342, 345 and MATH 151 or 161.

Core course requirements: ECON 101, 102, 225, 231, 316, 318, 319 and 365; 12 additional credit hours in electives and 10 credit hours of required related courses, which must include one of the following: MATH 151 or 161; and two of the following: GOVT 111, 112, 205 and 241.

Certification in Secondary Education
This program is designed for students planning to teach economics, geography, government or history. The program consists of 30 s.h. of required core courses, 2 in economics, geography and government and 4 in history. In consultation with an academic advisor, each student will select a concentration totaling 30 s.h. from among the following disciplines: anthropology (0-6), economics (3-15), geography (3-15), government (3-15), history (3-15), psychology (0-6) and sociology (0-6); economics, geography and history courses should be at the 200 level or above. Students who concentrate in economics are highly encouraged to take 15 s.h. in economics. The program also consists of 27 s.h. of professional education courses, two math courses and two courses in the humanities or sciences that support the concentration.

Students wishing to teach anthropology, psychology or sociology in the secondary schools are required to complete the B.S.Ed. As part of that program, students should select a number of courses in anthropology, sociology and psychology to prepare for the certification exams in the social sciences. Additional courses beyond the social studies program may be necessary. Upon receiving certification,

students can take the test for Social Sciences Certifcation, which will allow them to teach anthropology, psychology and sociology. The professional education courses required are EDFN 211, 241 and 330; EDSE 321, 433 and 461.

ECON 101, 102 and either ECON 318 or 319, plus three other courses in economics, including two 300–400-level courses.

ECON 101, 102, 235, 318, 319 and 333.

Introduction to economics as a social science for nonmajors or students interested in taking ECON 101 or 102 who would like a preparatory course.

labor history, political economy, conflict theory and other socioeconomic issues. The course utilizes film as a bridge between real economic life and scholarly treatment of the relevant issues. The course emphasizes critical thinking and synthesis of economic ideas. Students must participate in critical thought, questioning the obvious, exploring meaning and incisive analytical writing. Offered infrequently. Prereq: ECON 100 or 101 or 102; COMM 100; ENGL 110 and junior status.

Economic concepts and models are used to explain laws and legal situations. Economics is applied in some of the principal areas of the law: property, contracts, torts and crime. Offered infrequently. Prereq: ENGL 110, COMM 100, junior status, ECON 102, BUAD 202, or permission of instructor.

Economic aspects of governmental budgeting emphasizing fiscal policy, including impact of taxation and expenditures. Topics include the allocation, distribution and stabilization effects of the public household. Offered spring. Prereq: ECON 101, 102.

Similar in scope to ECON 102, with major emphasis on the further development and refinement of tools of economic analysis. Offered spring. Prereq: ECON 101, 102 and MATH 151 or 161.

Similar in scope to 101, with major emphasis on the determination of the economy's total output, the price level and the level of employment. The course incorporates the interaction of the market for goods and services, the assets market and the labor market. Offered fall. Prereq: ECON 101.

This course presents how economic theory is used to explain decisions of economic agents (e.g., consumers, firms or the government) in markets and strategic environments where the outcomes depend on the interaction of the decisions of the agents. Tests of economic theory predictions in the form of laboratory experiments will also be discussed and implemented. The areas of study include market behavior under various institutional settings, allocation decisions in settings with externalities, and individual choice and uncertainty. Offered annually. Prereq: ECON 102 or 102H, and ENGL 110.

Theory of international trade, commercial policy and trade in relation to economic development, balance of payments and the foreign exchange market, international monetary developments, foreign aid and economic growth. Offered spring. Prereq: ECON 101, 102.

Introduction to economic characteristics and problems of less developed economies, and to associated theories and policies. Offered annually. Prereq: ECON 101, 102; ENGL 110.

Theoretical and case-based examination of women in the political economy of "less developed" economies. Issues covered include women's experiences with economic development; effects of economic development on women's status, roles, workloads and resource access; effective methods of empowerment for women experiencing contemporary economic development; and targeting gender in development, particularly through grassroots efforts. Offered annually. Prereq: ECON 101 or 102, COMM 100, ENGL 110, junior status.

The estimation and hypothesis-testing of economic models, principally using regression techniques. Topics include linear models, time series analysis and simultaneous equations models. The uses and limitations of these models for economic forecasting are examined with the aid of computers. Offered spring. Prereq: ECON 101, 102 and either 231 or 332.

The labor market and labor forces, theories of wages and employment, security, determinants of trade union policy and governmental manpower policies. Offered spring. Prereq: ECON 101, 102.

Examination of a variety of theoretical and philosophical perspectives in economics developed during the past few hundred years. The ideas of

question. The course is structured to support student development and application of critical analytical skills through theoretical and/or empirical methods, research and information management skills, and writing and presentation skills. The course emphasizes the process of research and writing, culminating in three fnal products: the paper, the poster and the presentation. Majors only. Ofered annually. Prereq: ENGL 110, minimum 12 hours of economics or permission of instructor.

For further information on independent study, see the *Special Academic Opportunities* section.

EDUCATIONAL FOUNDATIONS

Associate Professor Mahoney, chairperson
Professors Deemer, Hanich, Herr
Associate Professors Dietrich, Dreon, Long, Mahoney, Neuville, Ward
Assistant Professors Brooks, Primus, Wright

Millersville University provides certifcation in secondary education in the following felds: biology, chemistry, citizenship, social studies, earth and space science, English, foreign languages (French, German, Spanish), mathematics and physics. PreK-12 certifcation is available in art education, technology education, public school nursing, music education and mentally/physically handicapped. The requirements for these programs are listed under the individual disciplines (see *Index*). For further information, contact the chairperson of the educational foundations department.

Secondary Education Certifcation (B.S.Ed.)
Requirements of the major feld are listed under the individual discipline. Professional studies consist of:

1. The social and psychological foundations block, 6 s.h. (EDFN 211, EDFN 241 and an urban feld experience);
2. The advanced professional studies bloc, 15 s.h. (EDFN 330, EDSE 321, EDSE 340, SPED 346); one subject-specifc instructional methods course, includes a 150-hour feld experience.
3. Student teaching 12 s.h. (EDXX 461 and EDSE 471).

Refer to in this catalog for more information.

Students explore the uses of technology and its application in the music classroom. Topics include computer basics, applications software, music hardware and software evaluation, music notation software, sequencing software, MIDI interface devices, telecommunications and multimedia presentation systems. Students are provided a series of hands-on experiences with hardware and software to develop the skills and competencies required of the music professional. No credit given if credit earned in EDFN 220, 230, 320/520, 330/530, 333/533 or EDAR 330/530. Ofered fall, spring.

This course provides an analysis of the philosophical, anthropological, sociological, economic and historical foundations for the contemporary PreK-12 school system in the United States; more specifcally how issues of race, ethnicity, language, gender, disability, sexual orientation, geography, socioeconomics and religion infuence the profession of teaching in particular grade-level contexts. The content for each section will be focused on the respective program area of the candidates (PreK-4 grades, 4-8 grades, and 7-12 grades). The course addresses the Pa. Dept. of Education's socioculturan

tions and opportunities shape women, but also how the presence of women in educational activities alters the nature of that enterprise. Offered periodically. Prereq: COMM 100, ENGL 110, junior status.

Differentiating Instruction in the Classroom
Taken in conjunction with EDXX 461 (Student Teaching), this course is for all secondary content and PreK-12 BSE programs. Course will provide teacher candidates with the ability to develop and apply their knowledge, skills and dispositions in accommodating instruction for English-language learners and students with disabilities. Candidates will design, implement and assess intervention plans and differentiated instruction techniques according to established federal mandates and state standards. Candidate will demonstrate sensitivity and competence in adapting lesson plans, addressing literacy in content area courses, modifying assessment, helping students acquire academic language, contributing in multidisciplinary teams and co-teaching. Prereq: completion of professional block and specifically SPED 346 and EDSE 340. Coreq: enrollment in EDXX 461.

Two to four semesters of supervised research by highly motivated students capable of conducting independent research projects. Prereq: 3.0 GPA and recommendation by faculty mentor. For further information, see the *Special Academic Opportunities* section.

For further information, see the *Special Academic Opportunities* section.

This course identifes the complex sociocultural history that has brought us to where we are in special education practice today. It presents the contemporary and historical influences of the American school system and how special education is integrated into the modern classroom. The overrepresentation of economically disadvantaged and culturally and linguistically diverse populations in special education is explored through careful consideration of cultural collaboration, current sociological variables and analysis of causes and prevention strategies. Individual learning differences and the development of academic and functional performance needs of students with disabilities are considered historically, legally, educationally, culturally and socially. Offered fall, spring, summer. Prereq: FBI, Act 34/151 clearances, TB test. Coreq: Field experience; ECSP majors: EDFN 211, EDFN 241, ERCH 225; INED students: EDFN 211, EDFN 241.

The administration, scoring and interpretation of assessment devices typically used in psychometric evaluations are stressed. Critical evaluation of such devices in terms of reliability, validity and norming groups is also developed. The integration of the interpretive results of psychometric evaluation with behavioral observation, task analysis and other types developed in prerequisite courses is demonstrated. Offered fall, spring. Prereq: admission to Advanced Professional Studies.

Examines social discrimination through consideration of the policies and practices of societies. Creates an understanding of the social, political and cultural, rather than the physical or psychological, determinants of the experience of disability. Disentangles impairments from the myths, ideology and stigma that influence social interaction and social policy. Through course content and activities, students will challenge the idea that the economic and social statuses and the assigned roles of people with disabilities are the inevitable outcomes of their condition. Offered fall, spring, summer. Prereq: COMM 100, ENGL 110 and junior status.

This course is designated to prepare secondary education majors to effectively teach students with disabilities in inclusive classrooms. Partici-

ENGINEERING

See Applied Engineering, Safety & Technology and Physics

ENGLISH

Professor Craven, chairperson
Associate Professor Corkery, assistant chairperson
Professors Carballo,

ENGL 443 Prose Fiction
ENGL 451 Literary Theory

Humanities Series (two):
HUMN 210 French Literature
HUMN 220 German Literature
HUMN 221 German Authors
HUMN 270 Russian Literature
HUMN 280 Spanish Literature

Candidates will also select one of the following courses in the foreign languages department:
HUMN 202 Classical Mythology
HUMN 240 Greek Literature
HUMN 250 Latin Literature
All candidates will take ENGL 431: Comparative Literature.

Observation: Upon approval, a student may substitute an upper-level foreign language course for a humanities series course. For further information about the comparative literature option, please contact Dr. Robert Carballo or Dr. Jill Craven.

This option allows both liberal arts and secondary education students to pursue concentrated study in the area of teaching English as a second language. Students enrolled in this option fulfill all existing departmental requirements (including ENGL 220: Introduction to Language Study), but they must complete the following courses, which can be credited as departmental electives:

ENGL 221 Introduction to Linguistic Analysis
- or -
ENGL 322 History of English
ENGL 321 Transformational Grammar
ENGL 463 Applied Linguistics
ENGL 464 Teaching English to Speakers of Other Languages
All ESL students are encouraged to seek opportunities for ESL tutoring in addition to electing foreign language coursework. Also, ESL students enrolled in the secondary education program are encouraged to request a student-teaching assignment which provides them with the opportunity to teach non-native speakers of English. For more information, contact Dr. Yufeng Zhang.

The film studies option enables English B.A. or B.S.Ed. majors to develop skills and proficiency in the discipline of film studies, including its history, aesthetics, terminology, methods of analysis, theoretical frameworks and interrelationships with society/culture.

All candidates will take:

ENGL 240 Introduction to Film
ENGL 481 History of Film

Candidates will select one of the following courses in the English department:

ENGL 347 Studies of Ethnicity in Film
ENGL 482 Film and American Society
ENGL 483 Politics, Film & Electronic Media
ENGL 484 Brave New Worlds: Exploring Technology in Film

Candidates will also select one of the following courses outside the English department:

ANTH 227 Culture Through Film
ECON 305 Economics in Film
PHIL 327 Philosophy in Film

The linguistics option enables English B.A. or B.S.Ed. majors to pursue in a formal way an interest in language study. Students enrolled in this option fulfill all existing departmental requirements (including ENGL 220: Introduction to Language Study), but in lieu of 9-12 hours of English electives, they complete the following program of study:

1. One course in theoretical linguistics:
   ENGL 321 Transformational Grammar
2. One course in historical linguistics:
   ENGL 322 History of the English Language - or -
   ENGL 465 Special Topics in Language: Seminar (if its content is so oriented)
3. One course in applied linguistics:
   ENGL 463 Applied Linguistics - or -
   ENGL 465 Special Topics in Language: Seminar (if its content is so oriented)
4. One other course in linguistics:
   ENGL 221 Introduction to Linguistic Analysis - or -

ENGL 462 Dialects of American English -or-
ENGL 464 Teaching English to Speakers of Other Languages - or -
ENGL 465 Special Topics in Language: Seminar

In addition, students complete the equivalent of two semesters of foreign language study. The foreign language requirement of this concentration simultaneously fulfills general education requirements.

ENGL 313 Fundamentals of Journalism
ENGL 315 Advanced Reporting
ENGL 317 Editing for Publication - or -
ENGL 330 Computer-Assisted Journalism

ENGL 250 The Press and Society
ENGL 327 Feature Writing and Magazine Journalism
ENGL 435 Journalism through Women's Perspectives
ENGL 473 Special Topics in Journalism

The writing studies option enables English B.A. or B.S.Ed. majors to pursue focused study in the discipline of writing, which draws from subfelds such as the history of rhetoric and composition, literacy, theories of writing pedagogy, and writing and multimedia.

Candidates will take:

ENGL 272: Introduction to Writing Studies

Candidates will select two of the following elective courses—at least one must be from the English department, and at least one must be at the 400 level:

ENGL 280: Rhetoric of Color Line
ENGL 312: Technical Writing
ENGL 313: Fundamentals of Journalism
ENGL 316: Business Writing
ENGL 340: Visual Rhetoric
ENGL 342: Reading and Writing for Civic Change
ENGL 466: Special Topics in Writing Studies Seminar
ENGL 471: Creative Writing
ENGL 472: Writing Workshop
COMM 311: Environmental Advocacy
COMM 317: Intercultural Communicology
COMM 342: Theories of Rhetoric
COMM 403: Persuasion
COMM 430: Culture and the Semiotics of Communication
COMM 441: Political Communication

Candidates will select one of the following capstone courses:
ENGL 400: Cooperative Education
ENGL 491: Thesis (3-credit)

English majors who have chosen the option in journalism and also wish to receive the minor in journalism must select six additional courses from ENGL 250, 300, 318, 327, 328, 330, 400, 435, 473. Students may not count any course toward the minor in journalism that they have used to meet requirements for the journalism option.

18 credits minimum (beyond required composition courses), including ENGL 313, 315, 317 or 318 or 330, 473 and two of the following: ENGL 250, 300, 318, 327, 330, 400, 435.

18 credits minimum (beyond the required composition courses), including at least one course in each of the following areas: language/linguistics, literature and writing. Selection of individual courses must be consistent with University-wide curricular policies for minors.

18 credits minimum (beyond required composition courses), including ENGL 235, 236, 237 and three of the following: ENGL 331*, 421, 422, 423,

18 credits minimum (beyond required composition courses), including ENGL 233, 234, 237, 405 and two of the following: ENGL 331*, 403, 404, 406, 407, 408, 411, 412, 413, 414, 415, HUMN 400*.

*When its primary focus is British literature.

18 credits minimum (beyond required composition courses), including ENGL 240, 347, 481, 482, 483, 484 and one of the following: PHIL 327, ANTH 227, ECON 305. Students may apply to count film courses taken at Franklin & Marshall College.

18 credits minimum (beyond required composition courses), including ENGL 220, 321, 322, 462, 463 and one of the following: ENGL 221, 464, 465.

18 credits minimum, consisting of 1 core course: ENGL 272; 4 elective courses from ENGL 280, 311, 312, 313, 316, 340, 342, 471, 491; COMM 311, 317, 342, 403, 430, 441; GERM 351, 352; FREN 351, 352; SPAN 351, 352 (2 courses must be from within the English department, and at least one course must be at the 400 level); 1 capstone course from ENGL 400 or ENGL 472.

Required course in general education. Introduces strategies of expository and argumentative writing and provides practice in standard written English. Individual instructors use print or nonprint media to achieve this goal. Evaluations based on competency, not on progress. Minimum grade of C- designates competency.

Develops research and analytical skills; presumes basic writing competence. Students who demonstrate competency in ENGL 110 may be exempt from this requirement with written approval of the honors program director. Offered fall, spring.

Workshop to accompany ENGL 110.

Study of the historical development and present characteristics of the English language, the process of language learning, social and geographical dialects and semantics. An overview of linguistic investigation. Offered fall, spring.

Investigates sounds, word structure, syntax and semantics of American English from the point of view of modern linguistics. Offered periodically. Prereq: ENGL 110.

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Learn foundational texts of American literature from 1865 to the present. Discuss the issues, conficts, preoccupations and themes of various later American writers. ENGL 235 is not a prerequisite. Ofered fall, spring. Prereq: ENGL 110.

Textual, critical and rhetorical analysis of literary genres. Designed to familiarize the student with literary theory and interpretation of genres through research and analytical writing. Ofered spring. Prereq: ENGL 110.

Analysis of flm as an art form, including technical and artistic aspects of flmmaking. Genres, auteur theory and other theoretical approaches to cinema. Ofered fall, spring. Prereq: ENGL 110.

Investigates connections among a selection of representative literary works from at least three diferent linguistic traditions and various historical periods in both Western and non-Western cultures. Ofered spring. Prereq: ENGL 110, member of University Honors College or 3.35 GPA.

Applies critical lenses from felds of English studies to a selection of texts on a particular theme. Engages students in interpreting current themes across cultures and/or time periods. Students will explore the topic from diferent perspectives by learning methods for critiquing texts, including new media. Themes/topics determined by instructor. Ofered fall, spring. Prereq: ENGL 110.

Explores jounalism's role in American society by analyzing the problems facing journalists in the realms of politics, law, corporate power and ethics. Ofered fall, spring. Prereq: ENGL 110.

Focuses on some of the major areas of scholarship related to the practice of writing: literacy practices; historical accounts of writing instruction; the relationship of classical rhetoric to contemporary writing; writing across the curriculum; studies of professional and workplace writing; computers and writing; social, political and economic dimensions of writing; and others. Ofered fall. Prereq: ENGL 110.

Examines writing across three major academic domains: sciences, social sciences and humanities. Explores how disciplinary conventions and rhetorical contexts call for
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Focuses on journalistic storytelling style, with emphasis on writing news for digital and print media. Includes journalism history, law and ethics as applied to various news outlets. Offered fall, spring. Prereq: ENGL 110 or equivalent, 60 s.h.

Writing news and features from the perspective of actual field experience. Interviewing, following breaking news, discussion of state and local

Explores modernism in literature. Traces the development of symbolism through the aesthetic movement. Offers a wide, comparative perspective to the study of literature, familiarizing the student with the comparative method. Prereq: ENGL 110, 237.

Analysis of women's contributions to the development of journalism and journalistic writing styles. Offered spring, even years. Prereq: COMM 100, ENGL 110 and junior status.

Extensive practice in writing varied genres of fction and poetry. Inquiry into the social functions and purposes of fctional and poetic writing. Prereq: ENGL 110. Ofered periodically.

Extensive written work focused on particular topics, a theme in literature or a specifc genre in communication. Mini-research papers. Critiques of other student papers. Considerable discussion of other student papers. Ofered periodically. Prereq: ENGL 311 or permission of instructor.

Techniques and problems in journalism. Ofered spring. Prereq: ENGL 313.

Film

For information on independent study and departmental honors, see your advisor.

All 500-level courses are open to qualified undergraduates with permission. For course descriptions, please refer to the *Graduate Catalog.*

the Academic Requirements *section.*

ENTREPRENEURSHIP MINOR

Co-Directors Nancy Mata and Jeri Robinson

The minor in entrepreneurship is a dynamic interdisciplinary program that provides opportunities to Millersville students from different disciplines to interact and learn about entrepreneurship—the process of creating value through recognizing and developing opportunities. It serves to complement the student's major area of study by providing the knowledge and skills needed so that students can create or start their own ventures, work for start-up companies or a family business, or pursue traditional jobs that may involve launching new business units or joint ventures. The goal of the Entrepreneurial Minor is to learn to think entrepreneurially, identify resources and tools, formulate business plans, and devise clear and compelling value propositions as well as ethical practices.

Required courses: ENTR 201: Art of Entrepreneurship; ENTR 315: Entrepreneurial Practicum; COMM 390: Social Media Campaigns; WSTU 491: Creativity, Innovation and Engagement; ENTR 488: Capstone in Entrepreneurship. Students will then pick additional courses from the approved list of courses to satisfy the three additional credits.

This course introduces and explores the mind-set and process of entrepreneurism in: (1) social entrepreneurism (solving social issues); (2) business entrepreneurship (starting an innovative enterprise); (3) employee entrepreneurism (as a worker in an existing business) and (4) academic entrepreneurism (the pursuit of a valuable and productive education). Emphasis will be on identifying opportunities and value, developing the art of creative problem solving and effectively expressing those solutions. Prereq: none.

This course serves as training for entrepreneurial leadership and emphasizes experiential learning in the practice and the development of skills that are needed by entrepreneurs, including effective leadership, collaboration, planning and communication. Prereq: ENTR 201 or permission of instructor.

This course emphasizes theory and practice in the strategic planning, writing, communication design, management and analysis of social media campaigns for mobile communications, social media and online social networking. Prereq: ENGL 110, COMM 100, junior status (60 credits earned) and COMM 251, or permission of instructor for ENTR minors.

This course serves as a capstone for the entrepreneurship minor and provides students with the opportunity to work on a simulated or real start-up company, as well as examine case studies from leading entrepreneurs. Multidisciplinary teams of students work on mentor-defned or mentor-

(contracted with any of the participating departments)

An introduction into all aspects of emergency management, from the origins through the civil defense era to the present day, with a look towards the future of the global aspect of emergency management. Students will learn the basics of emergency management, how to function as an effective emergency manager and how to manage an emergency management agency. Prereq: ENGL 110.

Study of current trends of building disaster-resilient and disaster-resistant communities to limit the scope of the devastation from disasters. An examination into prevalent legislation that controls and shapes both building construction and land-use planning, technological advances for building a disaster-resistant community and legal issues of community planning. Prereq: EHEM 201

An introduction into all aspects of terrorism, weapons of mass destruction and homeland security in our modern world. A study of the overall history of terrorism, legislation that oversees emergency management, and various methods for combating terrorism. How to manage an emergency management agency through modern-age terrorism threats. Prereq: EHEM 201.

ENVIRONMENTAL STUDIES

Five multidisciplinary minors are available that have been designed for students with an environmental interest. We believe that a full major in a discipline is an important foundation on which to build expertise in a specifc environmental area and designed the minors to complement majors in the sciences, technology and social sciences. Increasingly, environmental problems are addressed by multidisciplinary teams, so the minors prepare students to operate in this multidisciplinary setting.

The environmental minors are coordinated by the Center for Environmental Science (CES), and the director of the CES is the primary contact for the minors.

For information on environmental studies and for course prerequisites, also see the *Biology, Chemistry, Earth Sciences* and *Geography* sections.

For information on environmental options within majors, also see the *Biology, Chemistry, Earth Sciences* and *Geography* sections.

This minor prepares a student to move successfully toward graduate school in policy or as stafers in the environmental regulation/policy community.

This minor provides the background needed to understand the link between environmental issues and public health.

This minor explores the physical and economic impact of human land-use practices and the ways in which land use can be sustainable both for human life and for the maintenance of essential biological diversity.

Choose one of the following:

Choose one of the following GIS courses:

Course descriptions are found in the appropriate departmental section.

A capstone course devoted to the definition and assessment of an environmental problem from watershed, airshed, biodiversity and human health perspectives. Case studies will be used as models of how environmental problems can be defined/documented and solutions can be implemented. Student teams will define a problem and implement a solution using interdisciplinary approaches while working with a faculty team. Students are encouraged to take this course at the conclusion of the minor. Offered periodically. Prereq: 12 credits of environmental science minor.

FINANCE

See Business Administration

FIRST YEAR INQUIRY SEMINAR

Each First Year Inquiry (FYI) Seminar section focuses on a different topic of strong interest to faculty and students. Seminars jump-start the process of intellectual inquiry through a free exchange of ideas during and outside of class. FYI instructors mentor and assist students in developing a meaningful and purposeful approach to their college experiences. The FYI Seminar counts in the Connections and Exploration area of the General Education curriculum.

FOREIGN LANGUAGES

Associate Professor Nimmrichter, chairperson
Associate Professors Antolín, Börger-Greco, Gaudry, Moine, Rivera-Hernández
Assistant Professor Valentín-Márquez

For initial placement of freshmen, the department advises that the following guidelines be used:

0-1 year of high school FORL	FORL 101
2 years of high school FORL	FORL 102
3-4 years of high school FORL	FORL 201
4-5 years of high school FORL	FORL 202

A placement examination will be administered every semester to incoming freshman language majors and to those nonmajors intending to take FORL 201, 202, 351 or 352. Consult individual language sections for current policy.

Students who in the first week of classes consider themselves improperly placed should discuss the matter with their instructor so that changes can be made promptly.

All students are required to take an oral proficiency interview at the end of their sophomore year and at the beginning of their senior year.

B.S.Ed. students are required to take the official OPI/OPIC and receive a rating of Advanced Low or higher, as well as the official WPT and receive a rating of Intermediate High or higher prior to graduation.

Attention is called to the Millersville University Foreign Language Summer Programs, in which graduate students can live together in their own schools and speak the target language at all times. Well-prepared undergraduate students may participate following their junior year with a recommendation from their department chairperson and advisor.

In-depth investigation and development of a topic of current interest not covered in regularly scheduled courses. The topics will vary according to the needs and interests of the students and the faculty involved. Specifc topics will be identifed by the subtitles each time the course is ofered. Course may be taken for credit each time the content (subtitle) is diferent. Ofered periodically. Prereq: ENGL 110.

Commercial vocabulary and stylistics of French for the professions. The parts of the business letter, study of general types of business correspondence, oral and written interactions in a professional context, including letters requesting and ofering information, mail orders, sales letters, applications for employment, complaints, claims, collection, credit, etc. Includes the opportunity to take the Certifcate of Professional French given by the Paris Chamber of Commerce. Ofered periodically. Prereq: FREN 202 or 351.

Life and work of foremost French writers through the 18th century. Reading and discussion of selected works in various genres. Ofered spring in alternating years. Prereq: FREN 351 or 352.

Life and work of foremost French and Francophone writers since 1800. Reading and discussion of selected works in various genres. Ofered spring in alternating years. Prereq: FREN 351 or 352.

History and development of French civilization from prehistoric times to 1789. Civilization and art of the Gauls, infuence of the Roman Conquest, Germanic invasions, unifcation of the country through the various dynasties. The art of each period will be studied, with emphasis on architecture. Ofered periodically. Prereq: FREN 202 or 351.

French history, art and culture from 1789 to modern times. Emphasis will be given to painting in the 19th and 20th centuries. Outside readings and class reports. Ofered periodically. Prereq: FREN 202 or 351.

All aspects of contemporary France and/or Francophone com e01900030056005a3Ch01900030056005a3Cda3Ch01900030056005a3Cdasogucophone csEN

Short stories, essays and novels by 18th- and 19th- century authors. Works of Voltaire, Rousseau, Diderot, Stendhal, Balzac, Hugo, Flaubert,

A continuation of GERM 211. Offered infrequently. Prereq: GERM 201 or 211 or placement exam.

German masterpieces taught in English by an instructor of German. Designed primarily as an elective for nonmajors with interest in foreign literature. May be selected by B.A. majors with consent of advisor to fulfill humanities course requirements. Offered fall, spring. Prereq: ENGL 110.

For further information on independent study, see the *Special Academic Opportunities* section.

German majors are offered the opportunity to participate one hour per week in a small conversation group with staff supervision.

Graduate German courses listed below are open to undergraduates with recommendation of advisor and consent of the director of the German graduate program. (See the *Graduate Catalog* for course descriptions.) Undergraduate course number on left corresponds with graduate number in parentheses.

Ancient Greek

A systematic treatment of Latin and Greek components in English words. Study of prefixes, suffixes and roots integrated with the combinative principles, orthography and pronunciation of general and scientific vocabulary. Attention given to the history of the classical element in English. No prior knowledge of Latin and Greek required. Offered infrequently.

Major mythological materials from Greek and Roman civilization. Analysis and interpretation of myth together with its symbolic, allegorical and psychological implications, and its treatment in art and literature from classical to modern times. Offered annually.

Latin (offered in cooperation with Franklin & Marshall College)

Introduction to the language and culture of ancient Rome. Study of forms, syntax and idioms. Emphasis on analytical thinking and English vocabulary building. Intended for beginners. Offered infrequently.

Continuation of the approach used in the first semester. Supplementary readings in unadapted Latin prose and poetry. Offered infrequently. Prereq: LATN 101.

Latin and Greek components in English words. Study of prefixes, suffixes and roots integrated with the combinative principles, orthography and pronunciation of general and scientific vocabulary. Attention given to the history of the classical element in English. No prior knowledge of Latin and Greek required. Offered infrequently.

Major mythological materials from Greek and Roman civilization. Analysis and interpretation of myth together with its symbolic, allegorical and psychological implications, and its treatm [illegible]

Russian (in moratorium, but courses are offered in cooperation with Franklin & Marshall College)

Introduction to language and culture. Fundamentals of grammar and syntax. Oral and written practice, short readings and practice in aural comprehension. Emphasis is placed on learning useful everyday phrases and working toward accuracy in pronunciation. Offered infrequently.

Continuation of the introduction to language and culture and further mastery of speaking, comprehension, reading and writing skills. Offered infrequently. Prereq: RUSS 101 or 1 year of high school Russian.

Representative short readings from major Russian writers, covering 19th and 20th centuries in alternating years. Consideration of themes and characteristics of Russian literature as influenced by history, politics and esthetic currents. Designed primarily as an elective for nonmajors; may be elected by majors with the consent of the advisor as a supplement to the department requirements. Evaluation is by written examinations. Offered infrequently. Prereq: ENGL 110.

Further development of reading, writing, comprehension and speaking skills, and basic grammar, using contemporary cultural and situational material. Offered infrequently. Prereq: RUSS 102 or 3 years of high school Russian.

Continued development of the skills nurtured in RUSS 201. Emphasis on communication in speech and writing, and improved control of grammatical structures, as well as increased vocabulary for daily life and reading. Offered infrequently. Prereq: RUSS 201 or 4 years of high school Russian.

An examination of Russian culture up to about 1700 with Peter the Great's moves toward Westernization; the essence and foundations of the Russian worldview as conditioned by events and as reflected in religion, arts and crafts, folklore, oral and written literature, daily life and rites of passage. Requirements include a crafts project, papers on aspects of folklore and literature, and written examination. A useful course for education majors. Knowledge of Russian is not required. Offered infrequently. Prereq: COMM 100, ENGL 110, junior status.

In-depth investigation and development of a topic of current interest not covered in regularly scheduled courses. The topics will vary according to the needs and interests of the students and the faculty involved. Specific topics will be identified by the subtitles each time the course is offered. Course may be taken for credit each time the content (subtitle) is different. Offered periodically. Prereq: ENGL 110.

Spanish

Introduction to language and culture. Fundamentals of grammar and syntax. Oral and written practice, short readings and practice in aural comprehension. Emphasis is placed on learning useful everyday phrases and working toward accuracy in pronunciation. Offered fall, spring.

Continuation of SPAN 101; emphasis on more complex syntactical structures while working toward greater proficiency in both productive (speaking and writing) and receptive (reading and listening) skills. Offered fall, spring. Prereq: SPAN 101 or 2 years of high school Spanish.

Emphasis is placed on further developing receptive and productive skills through varied realistic exercises and in authentic real-life situations. Contemporary cultural and literary texts provide the thematic basis for oral and written communication. Systematic treatment of grammar. Offered fall, spring. Prereq: SPAN 102 or placement exam.

Continuation of SPAN 201. Communication in speech and writing; grammar and vocabulary are studied in greater depth and breadth. Increased emphasis on developing a cross-cultural perspective. Treatment of grammar and reading comprehensim writte

Outstanding Spanish and Spanish-American literary works. Course taught in English by an instructor of Spanish. Offered periodically.

Commercial vocabulary and stylistics. Presentation of the parts of the business letter. General types of business correspondence, such as letters requesting and offering information, mail orders, sales letters, applications for employment, complaints, claims, collection, credit, etc. Offered infrequently. Prereq: SPAN 202 or 351, or placement exam.

Life and works of outstanding literary figures and movements in Spain through the 17th century. Lectures, outside readings and reports. Offered annually. Prereq: SPAN 351 or 352.

Life and works of outstanding literary figures and movements in Spain from 1700 forward. Lectures, outside readings and reports. Offered an

Spanish majors are offered the opportunity to participate on a regular basis in a small conversation group under staff supervision.

NOTE: The graduate courses in Spanish listed below are open to undergraduates with the recommendation of the advisor and consent of the director of the Spanish graduate program. (See the *Graduate Catalog* for course descriptions.) Undergraduate course number on left corresponds with graduate course number in parentheses.

potential for employment in such diverse areas as planning and other government agencies, environmental and cartographic service companies, and the business community. Contact the department chairperson for more detailed information on career opportunities.

The liberal arts program in geography offers emphases in environmental studies, global studies and geospatial applications for geography majors and minors. A minor in geography brings an added dimension to any major, and current geography minors hold majors in many different University departments. The program in secondary education, providing certification for social studies teaching with a geography emphasis, is also serving a growing demand. Every student will benefit from the liberal arts value of the introductory and regional geography courses.

GEOG 120, 202, 230, 281, 295; one from GEOG 14x, 24x, 34x; four from 30x or 33x; one from 37x, 38x, 29x, 39x or 350: Raster GIS & Remote sensing; 300 or 488. Required related courses: MATH 151 or 160; one from MATH 235, BIOL 375, ECON 231 or ENVI 330; one course from BIOL 241, ESCI 101, 104, 107, 109, 221, 225, 245, 261, 322; an approved minor.

GEOG 120, 141, 230, 281; two from GEOG 22x, 350, 32x; three from GEOG 24x, 34x, 44x (not 245); GEOG 300 or 488; 6 s.h. in geography electives. Required related courses: MATH 130 or 235 and two from ANTH 121, 322, 342, 344, ECON 203, 225, 325, 326, 327, GOVT 221, 251, 351, 352, HIST 102; an approved minor.

GEOG 120, 230, 281, 292, 295, 372; one from GEOG 28x, 29x, 38x, 39x; two from GEOG 278, 304, 305, 306, 329, 336, 407; one from GEOG 14x, 24x, 34x, 44x; 300 or 488; 3 s.h. in geography electives. Required related courses: MATH 130 or 235 and MATH 151 or 160; an approved minor.

This program is designed for students planning to teach economics, geography, government or history. The program consists of 30 s.h. of required core courses, two in economics, geography and government, and four in history. In consultation with an academic advisor, each student will select a concentration totaling 30 s.h. from among the following disciplines: anthropology (0-6), economics (3-15), geography (3-15), government (3-15), history (3-15), psychology (0-6) and sociology (0-6). Economics, government and history courses should be at the 200 level or higher. Students who concentrate in geography are highly encouraged to take 15 s.h. in geography. The program also consists of 27 s.h. of professional education courses, two math courses and two courses in the humanities or sciences that support the concentration.

Students wishing to teach anthropology, psychology or sociology in the secondary schools are required to complete the B.S.Ed. As part of that program, the students should select a number of courses in anthropology, sociology and psychology to prepare for the certification exams in the social sciences. Additional courses beyond the social studies program may be necessary. Upon receiving certification, students can take the test for Social Sciences Certification, which will allow them to teach anthropology, psychology and sociology.

The professional education courses required are EDFN 211, 241 and 330; EDSE 321, 433 and 461.

18 credits minimum, including GEOG 101, 281, 295; two of GEOG 120, 222, 226, 227, 230, 278, 292, 306, 384; and one 300-level regional geography course (34x).

18 credits minimum, including GEOG 101, 202, 230, 281 and two geography electives at the 300-400 level.

18 credits minimum, including GEOG 101, 281; two geography electives at the 100-200 level; one 300-level regional geography course; and one 300-level systematic geography course.

18 credits minimum, including GEOG 101, 281 and four geography electives determined with the approval of the geography chairperson, and must include two courses at the 300-400 level.

Critical resource and environmental issues of the United States examined. Topics are analyzed from the perspective of interrelatedness and implications for culture and society, development and policy formation. Offered fall, spring.

Advanced experience with Geographic Information Systems (GIS) concepts and software. Emphasis on environmental and planning applications and organizational consideration. Offered periodically. Prereq: GEOG 295 or ESCI 281.

Global political and economic forces and environmental change. Emphasis on spatial patterns and processes of transboundary environmental problems, the major pieces of international environmental policy, the negotiations process between states and nonstate actors in policy formation and implemention, and the dynamics of North-South relations on the changing physical landscape. Offered spring of even years. Prereq: junior or senior status; ENGL 110, GEOG 307 or permission of instructor.

Investigation of selected topic with individual research assignment; focus varies but related to environmental analysis. Prereq: senior standing and completion of basic courses. Offered as needed.

Investigation of selected topic with individual research assignment; focus varies but related to environmental analysis. Prereq: senior standing and completion of basic courses and eligibility for departmental honors. See section of this catalog.

Investigation of selected topic with individual research assignment; focus varies.

GEOLOGY

See Earth Sciences

GERMAN

See Foreign Languages

GERONTOLOGY

Assistant Professor Bethel, coordinator

The interdepartmental minor in gerontology is intended to help prepare students to function at the entry level in the rapidly developing

New students (freshmen and transfers) may be admitted to the Government & Political Affairs major by the Office of Admissions upon admission to the University. Admission into the Government & Political Affairs major from other majors at the University is upon approval of the Department of Government & Political Affairs. Such students must have a cumulative GPA of 2.0 or higher to be admitted into the major.

Government & Political Affairs (B.A.): 120 s.h.
Complete both A and B:

36 s.h. in government and political affairs, including 18 s.h. at the 300 level or above. Students must complete the four core classes (GOVT 111: Introduction to American Government; GOVT 221: Introduction to Comparative Political Systems; GOVT 231: Introduction to Political Theory; and GOVT 251: Introduction to Global Affairs), earning a C- or better in each. Of the 18 s.h. at the 300 level or above, at least 6 s.h. must be in capstone (400-level) courses in the major, taken after the student has earned 75 total credits and 24 GOVT credits. (Note: Neither internships nor GOVT 408 qualifies as a capstone course.) Students must earn a C- or better in each of the capstone courses.

Students should check the course description portion of the catalog for prerequisites and recommended courses.

Students planning to attend graduate school in government and political affairs should complete GOVT 401: Political Research Skills and Methods.

Students planning to attend law school should complete GOVT 314: The American Judiciary; GOVT 411: Constitutional Law: Federalism and Separation of Powers; and GOVT 412: Constitutional Law: Civil Rights and Civil Liberties.

Representative philosophers and concepts in the history of Western political theory from antiquity through the 19th century. Offered fall, spring.

Classical sources and recent developments in international law. Evaluation of law in the context of world politics. Offered fall. Recommended: GOVT 251.

Study of various intergovernmental and nongovernmental associations representing a number of multinational groupings serving humanitarian, economic and security functions. Emphasis on organizations such as the United Nations and the European Union. Offered spring. Recommended: GOVT 251.

Institutional and historical overview of American foreign policy. Formal, informal and in5 (Formal,)0.50nstitutional Interne.6 ê03C00550060054005000454005 0al
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HISTORY

Professor Frankum, chairperson
Professor Downey
Associate Professors Kevorkian, Khiterer, McLarnon, Weis
Assistant Professors Adyanga, Davis, Maxwell, Shelor, Sommar

The Department of History offers courses in U.S. and world history and major degrees in both the liberal arts and secondary education. A history minor is also available to the nonhistory majors. The department's program in secondary education provides teaching certification. Academic counseling is available for students choosing careers in history.

The political, socioeconomic, cultural and diplomatic transformation of Europe, 1900 to the present. Offered periodically. Prereq: ENGL 110.

The origins, development and impact upon Germany and the rest of the world of National Socialist theory and practice. Offered annually. Prereq: ENGL 110.

The founding and growth of the British Colonies to the Glorious Revolution of 1688, with particular attention devoted to society, beliefs and government. Offered annually. Prereq: ENGL 110.

America from the Glorious Revolution to the completion of the American Revolution, with particular attention to social, cultural and political developments such as the Enlightenment, the Great Awakening and the War for Independence. Offered annually. Prereq: ENGL 110.

The United States 1789-1850: The formation of a national vision and culture; the development of political parties; the market revolution and social turmoil; westward movement, sectionalism and reform, including abolitionism and the women's movement. Offered annually. Prereq: ENGL 110.

The social, political and economic causes of the Civil War, the military and social events of the war, and the postwar developments of Reconstruction, with particular emphasis on the place of African Americans in U.S. society. Offered annually. Prereq: ENGL 110.

Responses to industrialization from populism through the progressive era; changes in thought and culture; World War I and American society; the rise of America as a world power. Offered annually. Prereq: ENGL 110.

The United States from 1919 to the present. Offered annually.

The course focuses on the military strategy and tactics employed by the combatants during the Second World War (1939-1945). Offered annually.

Examines social and political movements between the 1954 Brown decision and the resignation of Richard Nixon in 1974. Offered periodically. Prereq: ENGL 110.

Traces the historical evolution of the inter-America organizations. Emphasis on U.S.–Latin American relations. Offered infrequently.

Explores the internal dynamics of state formation in the medieval era, the development of sociopolitical and economic institutions, as well as the development and impact of such external factors as Islam, Christianity and the trans-Atlantic slave trade. Offered periodically. Prereq: ENGL 110.

HONORS COLLEGE

Professor Dennis B. Downey, director

Regulations governing admission, retention and graduation in the University Honors College are found in the *Special Academic Opportunities* section.

To graduate in the University Honors College, students must demonstrate competence in English composition and either statistics or calculus. They are required to take SSCI 203H and ENGL 241H, an honors laboratory science course, an honors perspectives course, at least nine hours of honors electives and HNRS 489/499 (Honors Thesis/creative project/research internship or departmental honors thesis equivalent). To remain in good standing in the Honors College, students must maintain a minimum GPA of at least 3.20 and a 3.35 in Honors coursework. University Honors

Required fundamentals course in general education. An introductory study of the principles of public speaking, with particular emphasis upon the selection and organization of information for persuasive purposes. Satisfes competency requirement. Ofered fall, spring.

Emphasis on development of research and analytical skills; presumes basic writing ability. Students who demonstrate competency in English 110 are exempt from this requirement. Ofered fall, spring.

Investigation of connections among a selection of representative literary works from at least three diferent linguistic traditions and various historical periods in both Western and non-Western cultures. Prereq or coreq: ENGL 110.

Concepts of calculus intended primarily for students majoring in mathematics and the sciences. The notions of limit, derivative, definite and indefnite integral are developed in detail, as well as the underlying philosophy of the mathematics and use of calculus in a modern computational environment. Ofered fall. Prereq: permission of instructor; math placement exam.

Required courses: LATS 201 and LATS 488, LATS 300/400 or LATS 498, plus three courses from two different groups chosen from the list of race, culture and ethnicity courses, and one course from the approved list of LATS elective courses. Students are encouraged to carefully plan their Latino studies curriculum and then discuss their plans with their minor and major advisors.

An introductory course designed to study the history, politics, economics and culture of the major Latino groups in the United States: Mexicans, Puerto Ricans, Cubans, Dominicans and Central Americans. Offered fall.

Allows students to volunteer or work at a Latino/a serving organization.

Upper-level interdisciplinary study of Latino cultures through readings, independent student research and service-learning experiences. Prerequisites: LATS 201 and two additional courses that count toward the Latino/a studies minor. Offered periodically.

Investigation

MANAGEMENT

See Business Administration

MARINE BIOLOGY

See Biology

MARKETING

See Business Administration

MATHEMATICS

Professor Schultz, chairperson
Professor White, assistant chairperson

1. CSCI 161.
2. The second semester of a foreign language.

A liberal arts course for students who will not be scheduling a technical/professional math course. A survey of mathematics important to the history of Western civilization and to the modern world. Introductory modules covered usually include number theory, geometry, topology, probability, statistics, graph theory, consumer mathematics and set theory. No credit in math/science block for math and science majors. Prereq: MATH 090 with a grade of C- or higher or math placement testing/evaluation before registration. MATH 100 and MATH 102 may not both be taken for general education credit.

For students who need to improve their algebraic skills before taking a higher-level course such as MATH 151, 160 or 161; focuses on algebraic topics needed for success in college mathematics and its applications. Includes the real number system, linear equations and inequalities, word problems, polynomials and factoring, rational algebraic expressions, exponents and radicals, quadratic equations, irrational equations, graphs of equations, systems of equations, and logarithmic and exponential functions. Prereq: high school algebra I, II and geometry; math placement testing/evaluation before registration; C- or higher in MATH 090.

A survey of mathematical ideas developed by non-European cultures, including, but not limited to, those of Africans, Asians and native North, Central and South Americans. Includes culture and specific examples from the following areas of mathematics: number theory, topology, probability, group theory and logic. No credit under block G2 for math or science majors. Prereq: MATH 090 with a grade of C- or higher, math placement testing/evaluation before registration. MATH 100 and MATH 102 may not both be taken for general education credit.

Mathematics content that elementary and special education teachers of mathematics at any level need to know and understand before beginning to teach. Designed to equip all such majors with sufficient knowledge and facility in mathematics for teaching it effectively. Includes sets and logic, number systems, structure of algorithms, number theory, properties of integers, rational numbers and real numbers, and beginning geometry and measurement. Emphasis on problem solving and reasoning within each topic. Required of all early childhood education and middle-level majors. Prereq: math placement testing/evaluation before registration.

An extension of MATH 104; covers additional mathematics topics relevant to teaching elementary mathematics. Includes algebra, additional study in geometry and measurement, probability and statistics, graphing and further emphasis on problem solving and reasoning. Required of all early childhood education majors. Prereq: C or higher in MATH 104 and passing score on the basic skills test.

For students preparing to take calculus who need additional background in trigonometry. Beginning with angles, numerical trigonometry and triangle solving, it develops the concepts and analytical skills required in calculus: identities, inverse functions, trigonometric equations, graphs and applications. Prereq: MATH 101 or math placement testing/evaluation before registration, and high school algebra I, II and geometry.

Derivation of basic formulas; measures of central tendency and variability; probability and normal curve; sampling and hypothesis testing; confidence intervals. No credit toward a math or four-year computer science major, or under block G2 for majors in the College of Sciences and Technology except for nursing majors and allied health technology majors. Prereq: any 100-level MATH course or math placement testing/evaluation before registration. Credit will not be granted for both MATH 130 and MATH 235.

Elementary calculus and its applications in business, economics, life and social sciences. Functions, limits and continuity. The derivative, applications in marginal analysis, optimization, differentials and error estimation. Antiderivatives, area under a curve and definite integrals; integration by parts. Exponential and logarithmic functions; applications to growth and decay problems; improper integrals. No credit toward a major or minor in mathematics. Prereq: MATH 101 or equivalent with a grade of C- or higher, or math placement testing/evaluation before registration. Credit will not be granted for both MATH 151 and MATH 161.

A rigorous introduction to linear algebra. Includes systems of linear equations, matrix algebra, determinants, vector spaces, inner product spaces, geometry in R^n, linear transformations, orthogonal transformations, eigentheory and diagonalization. Prereq or coreq: C- or higher in MATH 311; MATH 310 recommended.

Designed for mathematics education majors. A rigorous study of probability, distribution theory and the basics of statistical inference. Includes probability, expectation, discrete and continuous distributions, descriptive statistics and both estimation and hypothesis testing for one- and two-sample problems. Credit will not be granted for both MATH 333 and MATH 335. Prereq: C- or higher in MATH 311.

Probability, random variables and probability distributions, mathematical expectation, special probability distributions and probability densities. MATH 335 may be considered as an introductory course in probability theory. Ofered fall. Credit will not be granted for both MATH 333 and MATH 335. Prereq: C- or higher in MATH 311.

Groups, rings, felds, integral domains. Emphasis on structure of algebra. Prereq: C- or higher in MATH 310 and 322.

Various examples of axiom systems, axiomatic development of Neutral Geometry followed by Euclidean and Hyperbolic Geometry. Models for Euclidean and Hyperbolic Geometry. Emphasis on proving geometric theorems, both orally and in writing. Ofered fall. Prereq: C- or higher in MATH 310 and 322 or permission of instructor.

The study of geometry from a transformational point of view. The group of a fne transformations, with the subgroups of similarities and motions, is studied with investigation of invariant properties. Some exposure to transformations in the complex plane. Ofered spring and periodically in summer. Prereq: C- or higher in MATH 310 and 322 or permission of instructor.

Ordinary Diferential Equations
First-order diferential equations; linear frst- and second-order initial-value problems; power series solutions; applications. Also includes at least one of the following topics: special functions of mathematical physics, Laplace transforms, systems of frst-order equations. Ofered fall, spring. Prereq: C- or higher in MATH 311.

Principles of model building; examples from linear optimization, network analysis, dynamic programming, probabilistic decision theory, Markov chains, queuing theory, simulation and inventory models. Applications and theory will be examined. Ofered periodically. Prereq: C- or higher in MATH 322 and one of MATH 235, 333 or 335 or permission of instructor.

Numerical methods for solving systems of linear equations, solving nonlinear equations, integration, interpolation, approximation and least squares curve ftting. Error theory. Prereq: C- or higher in CSCI 161, MATH 311 and 322.

The study of the properties of integers with respect to the fundamental operations. Primary emphasis on the logical derivations of these properties. Includes induction, divisibility, congruences, theorems of Fermat and Euler, continued fractions and quadratic reciprocity. Ofered periodically. Prereq: C- or higher in MATH 310.

Mathematical foundation for the concepts and techniques used in combinatorics. Topics include recurrence relations, fnite diferences, generating functions, pigeonhole principle, special sequences of integers (such as Fibonacci, Sterling and Bell sequences), principle of inclusion and exclusion, and an introduction to the theory of graphs. Applications will be indicated. Ofered periodically. Prereq: C- or higher in MATH 322.

Place and function of mathematics in secondary education; evaluation and improvement of instruction; current trends in objectives, methods and subject matter of junior and senior high school mathematics. A considerable portion of class time is devoted to teaching mathematics to secondary school students. Must be taken simultaneously with EDSE 321. Prereq: C- or higher in MATH 333 (or 335/435), 345 and MATH 353 or 355.

A synthesis of calculus-based probability that will enhance the knowledge of the fundamental probability tools for quantitatively assessing risk. Students will be provided with the skills required for such examinations as the SOA Exam P and CAS

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A continuation of MATH 322. Topics include further theory of linear transformations and their matrix representations: invariant subspaces, equivalent and similar matrices, canonical forms. The vector space L (V, W). Orthogonal transformations and isometries; analysis of Euclidean motions in R^3. Least squares approximation and theory of generalized inverses. Bilinear and quadratic forms and their matrix representations; applications to conic sections in R^2 and quadric surfaces in R^3. Complex vector spaces. Ofered periodically. Prereq: C- or higher in MATH 322.

A continuation of MATH 335. Functions of random variables, sampling distributions, point estimation, interval estimation, hypotheses-testing theory and applications. Ofered spring. Prereq: C- or higher in MATH 335.

Continuation of MATH 345. Introduction to feld theory, rings of polynomials, introduction to Galois theory. Ofered periodically. Prereq: C- or higher in MATH 345.

Elementary Dif erential Geometry
Frenet frames, curvature and torsion of curves in 3-space. Calculus of vector felds, geodesics and curvature of surfaces in 3-space. Surface area and volume. The Euler characteristic of a surface and the Gauss-Bonnet theorem. Rigid motions and isometries. Riemannian metrics, parallelism, non-Euclidean geometries and applications. Ofered periodically. Prereq: C- or higher in MATH 310, 311, 322.

Rigorous development of the concepts and methods of calculus. The real number system and its topology; theory of limits and continuity; dif er-entiable functions and their properties; the Reimann integral. Prereq: C- or higher in MATH 311 and MATH 345 or department permission.

Continuation of MATH 464. Topics chosen from the following: convergence and uniform convergence of inf nite sequences and series of functions; topology of Euclidean n-space R^n; dif erential calculus of functions R^n R and R^n R^m; extreme values; implicit and inverse function theorems; Riemann integration in R^n; metric spaces; function spaces; Riemann-Stieltjes integration. Ofered infrequently. Prereq: C- or higher in MATH 464.

Partial Dif erential Equations
Fourier series and the method of separation of variables; the wave equation, heat equation and Laplace's equation; d'Alembert's formula. Maximum principles, energy integrals and uniqueness. Sturm-Liouville problems and eigenfunction expansions. Ofered fall. Prereq: C- or higher in MATH 365.

Applications of mathematics to real-world p905A00036 66.1 hematicatics ta36.6 60480055004B0504C00580000480055un f4C00580mw -dustry,6 60480sea 6
Mathematical Modeling

For the definition of honors course/thesis and eligibility, refer to the *Special Academic Opportunities* section of this catalog.

See course descriptions as listed within this department. Also see section of this catalog. MATH/HNRS 163, MATH/HNRS 301.

These 500-level courses are open to qualified undergraduates with permission of the department. For course descriptions, please refer to the *Graduate Catalog.*

MEDICAL LABORATORY SCIENCE

See Biology, Medical Technology

Music literature, ensemble technique and performance practice through musical performance in concert band. Offered fall, spring.

Music literature, ensemble technique and performance practice through musical performance in jazz lab band. Offered fall, spring.

Music literature, ensemble technique and performance practice through musical performance in University Choir. Offered fall, spring.

Music literature, ensemble technique and performance practice through musical performance in Women's Choir. Offered fall, spring.

Music literature, ensemble technique and performance practice through musical performance in chamber orchestra. Offered fall, spring.

Music literature, ensemble technique and performance practice through musical performance in commercial music ensemble. Offered fall, spring.

Music literature, ensemble technique and performance practice through musical performance in wind ensemble. Offered fall, spring.

Music literature, ensemble technique and performance practice through musical performance in orchestra. Offered fall, spring.

Music literature, ensemble technique and performance practice through musical performance in jazz ensemble. Offered fall, spring.

Music literature, ensemble technique and performance practice through musical performance in chorale. Offered fall, spring.

Practical keyboard facility through technique, sight reading, improvisation, harmonization and composition. Multicultural folk music, art songs and original piano compositions are included. Solo, duet and ensemble literature are studied and performed. This course is designed to be taken concurrently with MUSI 112. Music majors and minors only. Offered spring.

Includes private study and participation in master classes. MUSI 435 is repeatable (up to 9 s.h.). Music majors and minors only. Offered fall, spring.

Includes private study and participation in ensembles. MUSI 437 is repeatable (up to 9 s.h.). Music majors only. Offered fall, spring.

Trains students in good vocal technique in order to handle the many vocal challenges of musical theatre. Ranging from singing in different musical styles, singing while performing demanding dance routines, dealing with amplification, the switch from spoken to sung characterization, the healthcare of the voice, development of stamina to perform eight shows a week for a year or more and basic theory in order to read and learn music. Offered spring.

A basic study of the technique of singing to adequately train the voice for practical and aesthetic reasons. Development of range quality, projection, control and the fundamentals of correct breathing is pursued thrued thruedtUhpal M560051004C004A005Bm205B0050005susued thrued thrk1e8.4 s0005susu

Woodwinds II. Open to music majors only. Prereq: MUSI 152 or permission of instructor.

Intermediate course in practical keyboard facility accomplished through technique, sight reading, improvisation, harmonization, composition and analysis. Primary and secondary harmonies are explored in selected multicultural folk songs, art songs and original piano compositions. MUSI 231 is designed to be taken concurrently with MUSI 212. Offered fall. Prereq: C or higher in MUSI 131. Note: Music students majoring in piano take MUSI 377 instead of this course.

This course provides in-depth experience in sight-reading technique, keyboard analysis, harmonization, improvisation, transposition, composition and score reading. 1 hr. lec., 2 hrs. lab. MUSI 331 is designed to be taken concurrently with MUSI 312. Offered spring. Prereq: C or higher in MUSI 231.

This course is for advanced music students who wisgs edl ز sp Ḉ ɑ̈eq h ŭ sp Ḉ h !)Ĕ ɋ ! I

Music in the Nonprofit Sector
Provides a comprehensive overview of the field of arts administration and the classical music business. Topics such as nonprofit administration, grants, resumés and publishing will be discussed, as well as networking and guest lecturers. Students will have the opportunity to create a hands-on class project. Offered every other fall. Prereq: MUSI 190.

Introduction to recording techniques. This class focuses on learning the basics of ProTools software, critical listening and class projects using the recording studio. A basic working knowledge of music is recommended, as class projects require some basic musical composition. Offered periodically.

Provides an advanced project-based overview of recording techniques used in the recording studio, film, songwriting, arranging and sound-stage recording. A strong working knowledge of music and the ability to create music are required to complete projects. Offered periodically. Prereq:

NANOFABRICATION MANUFACTURING TECHNOLOGY

See Applied Engineering, Safety & Technology

NANOTECHNOLOGY

See Chemistry and Physics

NUCLEAR MEDICINE TECHNOLOGY

See Biology

NURSING

Associate Professor Kuhns, chairperson
Professors Davis, Zimmerman
Associate Professor W. Martimer
Instructor Monn

The Department of Nursing o fers an ACEN-accredited upper-division program in nursing leading to a Bachelor of Science in Nursing (B.S.N.) degree. This program is designed for registered nurses who are graduates of accredited diploma or associate degree nursing programs with a GPA of 2.0. Nursing courses may only be taken after attaining junior-level status (60-90) credits. NURS 320, Conceptual Basis of Professional Nursing Practice, is the introductory course for the nursing major and should be taken frst.

The goals of the nursing program are to provide an atmosphere and opportunities that develop intellectual curiosity, critical thinking and sound reasoning and judgment; provide knowledge from the humanities, and the physical, biological, psychological and social sciences to complement nursing theory and practice; provide a theoretical and clinical foundation in nursing to prepare a professional nurse who provides rational evidence-based and humanistic healthcare within institutional and community settings; and provide a basis for graduate education in nursing.

NURS 320, 330, 340, 360, 421, 428, 438, 478, 504; 11 s.h. of biology, 3 s.h. of statistics, 3 s.h. of departmentally related courses, 30 s.h. lower-division nursing credits on admission.

School Nurse Certifcation (K-12)
This approved Pennsylvania Department of Education School Nurse Certifcation Program is a post-baccalaureate certifcation program. A B.S.N. and PA-registered nursing license are required. In addition, evidence of an undergraduate health assessment course, NURS 421, BIOL 256, PSYC 227/228, MATH 130, ENGL 110 and a GPA of 3.0 upon B.S.N. graduation. Applicants desiring admission should request information from the Millersville University Certifcation Office. SPED 601; EDFN 545; NURS 560; PRAXIS I and II and a GPA of 3.0 upon completion of certifcation requirements.

Scientifc Advances in Healthcare: An Integrated Perspective (P)
Major contemporary health trends and issues will be presented. Discussion will identify the integration of certain biological, psychosocial, educational and healthcare components as they impact on the individual/famS

Introduces the student to the ethical dimension of nursing practice. Focuses on moral reasoning, ethical theories, values, virtues and other principles. Examines contemporary clinical trends and issues health trends within the context of ethical care. Models of ethical decision making are explored and applied. Role of the ANA Code of Ethics within the profession is examined.

Environmental Factors Affecting Health Status
Discussion of environmental health and factors that influence the holistic person's health. Emphasis on the importance of environmental health assessment and the health effect of air, water and soil pollution; environmental safety hazards and nursing responsibilities for intervention in a personal, community and political realm. Effects of pollution and safety hazards discussed from a nursing perspective. 3 hrs. lec.

In-depth study of health needs of the elderly. Health is viewed in its broadest biopsychosocial context. Review of physiologic and psychosocial changes that occur with aging and the adaptations necessary to cope with such changes. 3 hrs. lec. Offered periodically. Open to all majors.

Integration of physical assessment has positive effects on patient care delivery. An important component of health assessment of the diverse client is a contextual (cultural) review. Cultural assessment is crucial to providing cultural care, which enables providers to deliver services that are respectful of and responsive to the health beliefs, practices and cultural and linguistic needs of diverse patients. Cultural competency is critical to reducing health disparities and is responsive to the needs of diverse patients, resulting in improved patient outcomes.

The nurse's role in promotion of health of aggregates in the community is explored, with an emphasis on vulnerable populations. Public health concepts, using a population focus, are directed toward health promotion and levels of prevention with evidence-based care to create healthier communities and populations. Prereq: NURS 320.

Emphasis on critique and utilization of nursing research. The fundamentals of scientific nursing research and inquiry are explored, including the identification of major elements of a research proposal. Students will identify researchable nursing problems within an area of professional practice. Prereq: ENGL 110, MATH 130. Nursing majors only.

In-depth investigation of topics of current interest in the nursing field. Topics to be announced when course is offered. Offered periodically.

Discussion of the political, economic, legal, ethical and related societal issues which influence nursing practice and education. Professional nursing roles and responsibilities are emphasized. 3 hrs. lec. Nursing majors only.

This senior-level capstone course builds and expands upon work completed to date in the B.S.N. program and is designed to prepare students for leadership roles. Concepts of leadership and management will be described and ultimately applied to seminar topics and clinical experiences. Emphasis is also placed on the interdependence between the nursing profession and various levels of issues as they pertain to real-life world events. Seminar topics include fiscal management, case management and public-policy issues, among others. Clinical experiences will allow the student to practice with a nurse leader in the community. Prereq: ENGL 110, NURS 320, 428.

An individualized experience based on the student's particular interests. Provides an opportunity to demonstrate creativity and initiative to further investigate an area of interest in practice, research or education in nursing. Offered periodically. Prereq: NURS 428.

Discussion of the ways in which information and technology influence practice and decision making in various aspects of nursing practice, such as clinical, education, leadership and research, is the major focus of the course. Advances in technology that support and enhance the delivery of care and interdisciplinary communication are addressed. The legal, ethical, cultural, economic and social factors affecting healthcare information technology are also explored.

OCCUPATIONAL SAFETY & ENVIRONMENTAL HEALTH

See Applied Engineering, Safety & Technology

OCEAN SCIENCES & COASTAL STUDIES

See Earth Sciences

PHILOSOPHY

Associate Professor Ward, chairperson
Assistant Professors Kaiser Ortiz, Miller

Philosophy courses are open to all students and present an opportunity for students to develop their critical-thinking skills on a broad range of issues. Traditional subjects include philosophy of religion, introduction to logic and ethical theories. Nontraditional courses include Philosophies of Death and Dying, and Philosophy in Film.

A major in philosophy is designed to acquaint students with a wide range of philosophers, philosophic concepts and philosophic problems. Such a major can provide adequate training for those who wish to attend graduate school in philosophy, or it can be used as a preprofessional or pretheological degree. In order to supplement knowledge obtained in another major, some students choose philosophy as a second major or as a minor.

The pre-Socratics, Socrates, Plato and Aristotle. Offered fall. Prereq: ENGL 110.

Descartes, Leibniz, Spinoza, Locke, Berkeley, Hume and Kant. Offered spring. Prereq: ENGL 110.

Investigation of philosophical themes, problems and questions raised in film. The medium of film provides a rich and lively context to explore traditional and current issues pertinent to the discipline of philosophy.

One or more major works of a major philosopher or philosophers. May be taken any number of times for credit. Offered annually. Prereq: ENGL 110.

A study of philosophy in America. Offered periodically.

The origin and development of the analytical movement in philosophy. The relation among philosophy, logic and linguistics. Criticism from and comparison with other philosophical movements. Offered periodically. Prereq: ENGL 110.

Critical examination of the ways in which our understanding of the natural world affects our relationship with it as well as our concepts of human nature and society. Emphasis on how knowledge gained through the biological sciences (historically and presently) changes the way we think about ourselves and our place in the natural world. Specific topics include the social impact of evolutionary theory, sociobiology and evolutionary psychology, genetic engineering and aspects of environmental philosophy. Offered periodically. Prereq: COMM 100, ENGL 110 and junior status.

A study of the European philosophical traditions of hermeneutics, phenomenology, existentialism and structuralism in their historical context, and their relations to contemporary culture, particularly to psychology, literature, theology and political action. Offered periodically.

A study of significant ideas in the philosophical thought of Asia. Offered periodically.

Description and criticism of various metaphysical theories of reality. Offered periodically.

Explores the core philosophical issues concerning theories of truth, knowledge and objective values. Emphasizes the development of the skills of critical reading and writing as well as performing philosophical research. May be taken any number of times for credit. Offered annually. Prereq: ENGL 110 and 3 credits in PHIL at the 200 level or higher (excluding PHIL 211 and 312), or permission of instructor.

For further information on independent study, see the *Special Academic Opportunities* section.

PHYSICS

Assistant Professor Hendrick, chairperson
Professors Dushkina, Nolan, Uy
Associate Professors Gilani, Goksu
Assistant Professors Dixon, Li

The Department of Physics offers nine programs leading to the baccalaureate degree with a major in physics. The course structure recommended by the department is essentially identical during the first two years of all programs so that a revision in a student's plan need not involve any loss of time.

The greatest flexibility is found in the liberal arts (B.A.) program, which invites interdisciplinary studies in areas such as biophysics, geophysics, physical oceanography, chemical physics, mathematical physics or astronomy. The program can also be tailored to prepare a student for immediate employment or for graduate study in various areas such as medicine, law, engineering, business management, scientific journalism, nanotechnology and others for which an undergraduate major in physics is valuable.

The Bachelor of Science degree in physics involves the greatest depth in physics and mathematics. This program prepares the student for employment in a technical position upon graduation and also provides a solid foundation for entrance into a graduate program in physics or other technical field.

The physics dual-degree program requires three years of study at Millersville in the liberal arts curriculum, with a physics major plus two years in residence in the engineering program at the cooperating institution, Penn State University. At the end of the five years, the student receives two baccalaureate degrees: a B.A. in physics from Millersville and a B.S. in engineering from the cooperating engineering school.

In addition to the 3/2 arrangement with Penn State, we have three other cooperative programs. One of these is a 4/2 program with

Students majoring in physics are required to attain a grade of C- or higher in MATH 161-211 and PHYS 231-232 before moving on to courses which have these courses as prerequisites.

32 s.h. in physics: PHYS 231, 232, 233, 266, 311, 321, 334, 335, 351, 492, 498. Required related courses: CHEM 111, 112; FORL 101, 102 or competency; MATH 161, 211, 311, 365; plus four additional 200- , 300- and 400-level courses selected from any department with approval of advisor. Foreign language competency required through elementary level. Students presenting two years of successful high school study in one language satisfy this requirement.

48 s.h. in physics: PHYS 231, 232, 233, 266, 311, 321, 331, 334, 335, 351, 352, 395, 451, 471, 492, 498; plus 6 credits, including one 400-level physics course and either PHYS 312 or 322. Required related courses: CHEM 111, 112; MATH 161, 211, 311, 322, 365; plus an additional 3 credits in mathematics at or above the 200 level.

29 s.h. in physics: PHYS 231, 232, 233, 311, 321, 334, 335, 351, 352, 492, 498. 24 s.h. in computer science: *CSCI 140, 161, 162, 370, 362 and one 4 s.h. CSCI elective. Required related courses: CHEM 111, 112; FORL 101, 102 or competency; MATH 161, 211, 311, 365. Foreign language competency required through elementary level. Students presenting two years of successful high school study in one language satisfy this requirement.

An elementary treatment of fundamental concepts of classical and modern physics. Selected examples from classical mechanics, electromagnetism, thermodynamics, relativity and quantum mechanics. The solving of numerical problems is de-emphasized. 3 hrs. lec., 2 hrs. lab. No credit in block G2 for majors in the College of Science and Technology. Credit will be granted for only one of the courses: PHYS 101, 103 or 104. Ofered fall, periodically in spring.

A study of the application of mathematics to practical problems in physics, using Newtonian ideas, and emphasizing applications to devices such as machines and engines, and systems such as electrical circuits. 3 hrs. lec., 2 hrs. lab. No credit in block G2 for majors in the School of Science and Mathematics. Credit will be granted for only one of the courses: PHYS 101, 103 or 104. Ofered spring. Prereq: math placement at the 100 level or above.

Astronomy for a general audience; emphasis on the physical nature of the universe. Terrestrial astronomy, light, telescopes, spectra, stars, stellar evolution, galaxies, cosmology, the solar system. 3 hrs. lec. and discussion. No credit in block G2 for majors in the College of Science and Technology. Ofered fall, spring.

An introductory algebra-based course. Fundamental laws and properties of matter, mechanics and heat. Problems dealing with these laws. 3 hrs. lec., 1 hr. recitation and 2 hrs. lab. Prereq: MATH 101 or MPT score su f cient for the student to enroll in MATH courses above MATH 110. Ofered fall, summer.

Continuation of PHYS 131. Fundamental laws and properties of electricity, magnetism, waves, sound, light and radiation. 3 hrs. lec., 1 hr. recitation and 2 hrs. lab. Ofered spring, summer. Prereq: PHYS 131 or 231.

Intended for musicians dealing with the physical nature of sound and sound sources, and the relation of these to music and musical instruments. The use of mathematics is kept to a minimum. 2 hrs. lec., recitation, 2 hrs. lab. Ofered spring. Prereq: MUSI 112.

The ideas of introductory physics in extended depth in the language of calculus, using problems, laboratory exercises, readings and discussion. Grades of B- or higher in both PHYS 231 and PHYS 230H will result in honors designation for the pair. The pair of courses count as one entry in the science component of the curriculum record form and result in six hours of general education credit. 1 hr. discussion. Ofered fall, spring. Coreq: concurrent registration in PHYS 231 required and either good standing in the Honors Program or a 3.35 GPA or permission of instructor.

An introductory course in classical physics dealing with mechanics, fuids, waves and thermodynamics. 3 hrs. lec., 1 hr. recitation, one 3-hr. lab. Ofered fall, spring, summer. Prereq: C- or higher in MATH 161.

Continuation of PHYS 231. An introductory course in classical physics dealing with electricity, magnetism and optics. 3 hrs. lec., 1 hr. recitation, one 3-hr. lab. Ofered fall, spring, summer. Prereq: C- or higher in PHYS 231. Coreq: MATH 211.

Selected topics from the areas of waves and optics, special relativity, an introduction to the concepts and development of modern physics and single-particle quantum mechanics. 3 hrs. lec. Ofered spring. Prereq: C- or higher in PHYS 232. Coreq: MATH 311.

The fundamentals of analog devices and their application to electronic circuits. Operational amplifers, power supplies, semiconductor devices, oscillators and an introduction to integrated circuits. Two 3-hr. labs. Ofered spring. Prereq: PHYS 132 or 232. Coreq: MATH 161.

The history of the mechanization of the world picture. A study of physics in the evolution of Western civilization and thought relating the impact of the Newtonian revolution on technology, society and thought. 3 hrs. lec. and discussion. Ofered periodicallyr m ט ת א T ש ̋ ח א D ` כ ט ו א T ו כ ז

An overview of astronomy and astrophysics for students majoring in the sciences or mathematics, emphasizing selected areas such as terrestrial

PRE-LAW

Students interested in pursuing a career in law should consult with the Department of Government & Political Affairs early in their academic careers.

PRE-MEDICINE

Entering students who receive a score of 3 on the Advanced Placement (AP) Examination in Psychology shall be awarded three credits for an elective course designated as a 100-level PSYC course. Entering students who receive a score of 4 or 5 on the AP examination shall be awarded three credits for PSYC 100.

Psychology majors may not take any psychology courses or any required related courses on a pass/fail basis. Psychology minors may not take any psychology courses on a pass/fail basis.

The psychology department o fers three undergraduate developmental psychology courses: PSYC 227, 228 and 229. Credit is awarded for any one of the individual courses. Credit is also awarded for the combination of PSYC 227 and 229, but not for any other combination of developmental psychology courses.

A limit of 6 s.h. of cooperative education (PSYC 300, 400 or 500) or PSYC 495 or any combination of the two may be taken by a student and counted in the psychology major. In unusual circumstances, and with written permission of the student's faculty advisor, the directed projects instructor and the department of psychology's cooperative education advisor, up to 6 additional s.h. may be taken; however, these credits may not be counted toward the psychology major.

33 s.h. in psychology. Required psychology courses (15 s.h.): PSYC 100, 211, 212; one of PSYC 314, 315, 316; an additional four courses (12 s.h. minimum) of psychology core electives (PSYC 215, 227, 228, 229, 314, 315, 316, 317, 329, 335, 337, 356, 417, 454) and 6 s.h. of psychology general electives (PSYC 234, 246, 256, 311, 318, 319, 328, 346, 350, 357, 365, 403, 415, 427, 447, 455, 462, 489, 490, 495, 496, 498, 499). Advanced laboratory courses (PSYC 314, 315, 316) not taken as part of the 15 s.h. of required psychology courses may be counted in the block of core electives. Up to 6 s.h. of psychology core electives taken in excess of the required 12 s.h. may be substituted for psychology general electives. Required related courses are BIOL 100, one philosophy course, one sociology course.

The following categories are suggested to help the student organize his/her curriculum in psychology:

Human Services: Select courses from among the following psychology electives: PSYC 227, 228, 229, 234, 256, 311, 328, 335, 337, 346, 356, 403, 417, 447 and 495. Recommended related courses are BIOL 256; SOCY 210, 216, 316, 317; SOWK 102.

Business and Industrial: Select courses from among the following psychology electives: PSYC 234, 256, 311, 317, 318, 319, 329, 335, 346 and 495. Recommended related courses are CSCI 101; BUAD 101, 251, 351, 352; ECON 100, 101, 102.

Preparation for Graduate Study: In addition to the required psychology courses, all of the following are strongly recommended: PSYC 227, 314, 315, 316, 317, 335, 337, 415, 417 and 454.

Psychology requirements: 33 credits of psychology and the required related courses as listed under the major. One course from SOCY 210, SOCY 230, SOCY 313, SOCY 315, SOCY 316, SOCY 317 or SOCY 338 may be credited as general electives in psychology. Sociology requirements: 31 credits of sociology and the required related courses as listed under the sociology major. One course from PSYC 227, PSYC 228, PSYC 317 or PSYC 335 may be credited as an elective in sociology.

Psychology requirements: 33 credits of psychology and the required related courses as listed above for the major. One course from PHIL, including PHIL 201, PHIL 202, PHIL 211 or PHIL 401, may be credited as a psychology general elective, as long as it is not used as the required related philosophy course.

Philosophy requirements: 30 credits of philosophy as listed under the philosophy major. PSYC 454 may be credited as an elective in philosophy.

19 s.h. in psychology. Required psychology . R T ᴷ v ᴛ I R T PH ɣ chi ȿ ȝ I dii ᶠ א ʁ ed psycho as an Z ȳ . л

A study of standard experimental designs and statistical procedures widely used in psychological research. 3 hrs. lec., 2 hrs. lab. Prereq: PSYC 211 with a grade of C- or higher and MATH 101 or MATH 130 with a minimum grade of C- or Math Placement into MATH 130 or above.

Serves as an introduction to the nervous system in relation to cognition and behavior. It will begin at the cellular level, building up to the systems level. Ofered fall, spring. Prereq: Bea PS ` ↔ ⋿ stu[p ak l researspsprk T V˙ Ɔˈ pr p "

An in-depth look at major childhood psychological disorders. Diagnostic criteria, etiology and developmental progression presented. Introduction to diagnostic assessment techniques and commonly used interventions. Offered annually. Prereq: PSYC 100 and PSYC 227 or 228, junior or senior standing.

An introduction to the process and practice of counseling. Emphasis is placed on learning counseling theories and on counseling skills. Offered fall, spring. Prereq: PSYC 100, junior or senior standing.

Study of the development of psychology from a branch of philosophy to a modern science. Offered fall. Prereq: PSYC 100.

An advanced course devoted to critical analysis of student and professional research using staff consultant leadership. Offered periodically. Prereq: senior psychology majors only.

Study of psychological processes involved in the production and experience of music, art and literature coupled with a review of psychological theories of human creativity. Key principles within the domain of psychology will be illustrated and explored through the study of the works of artists, musicians and writers. Offered summer. Prereq: PSYC 100, COMM 100, ENGL 110 and junior status. PSYC 335 recommended.

For the definition of departmental honors and eligibility, refer to the *Academic Policies* section of this catalog.

Examination and discussion of current research issues in psychology. May be taken a maximum of three times. Enrollment limited to students with at least 45 s.h. who are applying to the psychology department honors program and to those already admitted to that program. Offered fall, spring. Prereq: permission of instructor.

Supervised field experience involving the application of psychological principles. Junior or senior standing. Prereq: permission of instructor. Insurance and recent clearances (Act 34/Act151/FBI clearances and TB test results) may be required, depending on the setting.

Detailed investigation of a topic of current research interest. Topic to be announced each time course is offered. Credit and meeting hours variable, depending on topic offered. May be taken more than once for credit as topic varies. Offered periodically. Prereq: junior or senior standing and permission of instructor.

For further information on independent study, see the *Special Academic Opportunities* section of this catalog.

The following 500-level courses are open to qualified undergraduates with permission. For course descriptions, please refer to the *Graduate Catalog.*

PUBLIC RELATIONS

See Communication & Theatre

RESPIRATORY THERAPY

See Biology

ROBOTICS & CONTROL SYSTEMS TECHNOLOGY

See Applied Engineering, Safety & Technology

RUSSIAN

See Foreign Languages

SECONDARY EDUCATION

See Educational Foundations

SOCIAL SCIENCES

Topics in intellectual history, with an emphasis on the development of the “West” and its interactions with other civilizations and cultures. Required of freshman honors students. Ofered fall. Prereq or coreq: member of Univek ‘ خ tur

This program is designed for students planning to teach economics, geography, government or history. The program consists of 30 s.h. of required core courses: two in economics, geography and government, and four in history. In consultation with an academic advisor, each student will select a concentration totaling 30 s.h. from among the following disciplines: anthropology (0-6), economics (3-15), geography (3-15), government (3-15), history (3-15), psychology (0-6) and sociology (0-6). Economics, government and history courses should be at the 200 level or higher unless otherwise noted. The program also consists of 33 s.h. of professional education courses, two math courses and two courses in the humanities or sciences that support the concentration.

Students wishing to teach anthropology, psychology or sociology in the secondary schools are required to complete the B.S.Ed. in social studies. As part of that program, the students should select a number of courses in anthropology, sociology and psychology to prepare for the certification exams in the social sciences. Additional courses beyond the social studies program may be necessary. Upon receiving the social studies certification, students can take the test for social sciences certification, which will allow them to teach anthropology, psychology and sociology.

SOCIAL WORK

Associate Professor Rice, chairperson
Associate Professors Foels, Johnson, Walsh
Assistant Professors Bethel, Felizzi, Girvin, Granruth, Proctor
Instructor Frank

The social work program at Millersville University leads to a Bachelor of Arts degree in social work. Millersville's social work baccalaureate program is professionally accredited by the Council on Social Work Education. Based on the general education curriculum, the social work curriculum is designed to prepare students for beginning professional practice in social agencies and other settings where social workers are employed. The program educates the general practitioner; therefore, it is built on basic required courses. However, it also allows students to explore areas of interest through elective courses and field instruction assignments.

Affirming the mission of Millersville University, a public, liberal arts institution situated in south-central Pennsylvania, the baccalaureate social work program educates students to be competent, effective social work professionals who embrace core social work values,

5. Advance human rights and social and economic justice.
6. Engage in research-informed practice and practice-informed research.
7. Apply knowledge of human behavior and the social environment.
8. Engage in policy practice to advance social and economic well-being and to deliver e f ective social work services.
9. Respond to contexts that shape practice.
10. Engage, assess, intervene and evaluate individuals, families, groups, organizations and communities.

SOWK 102, 201, 203, 301-302, 303, 322, 323 (405), 350, 401-402, 403, 430-431 (330-331). A grade of C or higher must be attained in all required social work courses. Six additional elective credits from SOWK 304, 305, 306, 307, 308, 309, 312, 313, 314, 315. SOWK 401-402 must be taken concurrently with 431. Required related courses: BIOL 204, GOVT 111 or 112, PSYC 100, SOCY 101, 210 or 211.

Introduction to social work's approach to social problems, including how public-policy decisions a f ect individuals and families; overview of competing public-policy agendas in social welfare and alternative strategies for problem resolution; societal values and trends a f ecting service delivery; understanding social work in action; examining core concepts, values and ethics.

This course o f ers a general understanding of economic theory as it applies to both microeconomic and macroeconomic decision making. The course

A developmental approach to the aging process as one phase of the life cycle; biological, psychological, social and economic needs of the elderly; analysis of societal provision for these needs; public-policy issues and pertinent social legislation; community-based programs of social and health services; techniques of generic social work with older persons; advocacy and policy planning for the aging. Lectures and discussion supplemented with audiovisual material, speakers and field visits as available. Volunteer experience with an older person or persons required. Prereq: C or higher in SOWK 102 or permission of instructor.

Scope and contribution of professional social work in comprehensive healthcare settings focusing on individual and community health needs, social and behavioral aspects of illness, essential practice components and skills required of social workers, healthcare policy, issues and trends, alternative healthcare programs and research needs. Prereq: C or higher in SOWK 102 or permission of instructor.

Concepts, policies, issues, trends, theories and social work practice skills in the setting of alcoholism services. Focuses on interaction of affected individuals with others in family, social, economic, educational, legal and political systems. Examines the role of the social worker in identification, intervention and use of network of community resources. Prereq: C or higher in SOWK 102 or permission of instructor.

Application of theory and social work values to practice with mentally disordered people, their families and service systems relating to their needs. Consideration of various practice modalities, including direct intervention as well as social policy analysis, research and prevention.

Social Work and Women; Strengths, Needs and Opportunities (W, G3)
Scope and contribution of professional social work in regard to women's issues and concerns in contemporary society. Emphasis on the analysis of individual and community women's needs, the social and behavioral aspects of women's concerns, the essential practice components and skills required of social workers, social welfare policy and women, issues and trends, alternative women's programs and research needs. Prereq: ENGL 110.

Professionals and society at large have recognized violence in the family against children, spouses and the elderly as a social problem. Other emerging related issues include cross-cultural violence, partner violence in gay/lesbian relationships, courtship violence and date rape. Focus will also include theories of abuse with various populations as well as treatment approaches to the various forms of family violence. Prereq: COMM 100, ENGL 110 and junior status.

This course is interdisciplinary and intercultural in nature. It is designed to prepare all students whose anticipated careers are primarily oriented to direct work with the global community, both domestically and internationally. There will be an emphasis on developing interpersonal communication skills for interacting with people whose way of life differs from one's own; developing insights into the multifaceted issues impacting our world; and understanding global interconnection with oppression to foster social justice. The cornerstone of this course is service-learning opportunities on a local and global level. Course content is presented in the traditional (face-to-face) classroom, with portions of the class held online. Prereq: COMM 100, ENGL 110, 24 s.h. General education, junior standing.

This course will provide a framework for critical analysis of the dynamics of grief and bereavement. Combining a general social systems perspective, an ecological perspective and the problem-solving approach, this course will assist students in integrating knowledge about grief and bereavement into their knowledge of practice theory and human behavior at the micro, mezzo and macro levels. Students will appreciate the diversity of grieving practices and rituals among cultural, religious and ethnic groups. Bereavement dynamics across the life span are addressed. The impact of death and disaster at the community level will be understood, including assessment tools and intervention strategies. Prereq: COMM 100, ENGL 110, 24 semester hours of gen. ed. and junior standing

Mediation as an alternate form of dispute resolution is continuing to rise and is being used in corporate, labor, consumer and family issues widely across the United States. Students in the Mediation class will focus on practical and theoretical aspects of mediation and its place in the larger framework of alternate dispute resolution. Skills in helping parties find common ground, creating a climate for reaching agreement, aspects of confidentiality, and both directive and non-directive mediation techniques will be explored. Each student will have the opportunity to role-play at least one brief session in the role of mediator.

Aiming to strengthen students' foundational and professional writing skills in preparation for professional social work practice, a combination of peer-review processes and iterative instructor feedback is utilized to support students as they produce the course's primary product—a comprehensive literature review. Students receive instruction related to foundational writing skills and complete assignments related to writing forms required of social work professionals to increase their writing competency. Prereq: SOWK 102, ENGL 110H or ENGL 110, junior standing. SOWK majors only.

Sociology is the scientific study of human interaction and social organization. The sociologist is primarily interested in discovering the social patterns affecting and resulting from human group behavior. Sociologists focus on the influences of the social as well as the physical and biological environment on individual behavior and personality formation, on group interaction and on social organization

Required courses: ANTH 121, 122, 123, 220, 233, 320, 422 and 425 and 6 s.h. at the 200 level or above (excluding ANTH 201).

Required courses: SOCY 101, 301, 302, 303, 305 and 15 s.h. of electives in sociology, including 3 s.h. at the 300 level or above. Required related courses: MATH 130 with a minimum grade of C- (Prereq for SOCY 302) and 12-18 credits of nonsociology courses.

Required courses: SOCY 101, 230, 301, 302, 303, 305, 331, 332 and 3 s.h. of SOCY 334-339 and 3 s.h. of electives in sociology. Required related courses: MATH 130 with a minimum grade of C- (Prereq for SOCY 302) and 9 s.h. of related criminology electives.

Secondary Education Certificate
There is currently no separate program to prepare students to teach anthropology or sociology in the secondary schools. Students interested in pursuing teaching of anthropology or sociology should consult the *Social Studies* section of this catalog to learn how to fulfll their career goals.

One course from PSYC 227, 228, 317, 335; SOCY 316, 319; or ANTH 342 may be credited toward both majors.

General Anthropology Option: ANTH 201, 220, 422 and 3 s.h. at the 300 level or higher and 6 additional s.h. in anthropology.

Archaeology Option: ANTH 121, 123, 320, 425 (6 s.h.) and 3 additional s.h. of anthropology.

Cultural Anthropology Option: ANTH 121, 220, 422 or 458, 3 s.h. at the 300 level and 6 additional s.h. in anthropology.

Required courses: SOCY 101, 3 s.h. at the 200 level and 12 additional s.h. of sociology at the 300 or 400 level.

Required courses: SOCY 101, 230, 331 and 332, plus 6 s.h. from SOCY 334-339 and/or 3 s.h. of sociology co-op/internship.

Sociology

Introduction to the scientifc study of human groups, organizations and societies. Examination of major sociological questions and approaches to studying them.

Introduction to the social sciences of anthropology and sociology, department faculty, and opportunities for study and participation. Ofered infrequently.

The family as a social institution. Topics include the family in mass society, diverse family forms, human sexuality, typologies of love, mate selection, husband-wife interaction, parent-child interaction, family disorganization and American ethnic families. Specifc topics may vary.

A sociological examination of problem areas or human concerns such as poverty, labor issues, substance abuse, domestic violence, crime and justice, health, the environment, discrimination and globalization. Topics may vary. Prereq: ENGL 110.

Analysis of population processes such as fertility, mortality, composition, distribution and migration patterns; relationship of population processes to social, economic and political development; efects of status diferences; trends in population change. Ofered periodically.

The nature and causes of criminal behavior and the types of social response to law violation. Ofered fall, spring. Prereq: SOCY 101, ENGL 110.

Exploration of the technical and analytical skills of sociology, including locating sociological resources, citing sociological materials, writing literature reviews and understanding links between sociological knowledge and public policy. Prerequisites: SOCY 101, ENGL 110.

Emphasis on learning and presenting fndings from applied statistical techniques, including frequency tables and graphs, contingency tables, measures of central tendency and dispersion, hypothesis testing, confdence intervals, analysis of variance, correlation, and linear regression (bivariate and multiple). SPSS software package used. Ofered fall, spring. Prereq: C- or higher in MATH 130 and 9 s.h. in sociology/anthropology.

Examination of classical and contemporary theoretical traditions; relevance of sociology to everyday life; works of selected theorists such as Durkheim, Marx, Weber, Merton. Offered fall, spring. Prereq: SOCY 101 and 9 s.h. of sociology at the 200 level or higher.

Nature and extent of juvenile crime; theories of causation; techniques of control and prevention. Offered annually. Prereq: SOCY 101, 230.

Comparison and contrast of the history and culture of rural and urban society in the Mediterranean region. Focus is on topics and themes of importance to the circum-Mediterranean culture area. Offered periodically.

Comparative investigations of a topic or region of current interest in the field of anthropology. Offered annually. Prereq: ENGL 110.

Comparative study of cultures through the medium of film, using anthropological theories, perspectives and texts. Offered annually. Prereq: ENGL 110.

Examines human cultural evolution before and after the advent of writing, using archaeological and related records. Topics vary, from the rise of civilization to the decline of local communities. Offered annually.

A comparative study of methods and aims in the discipline of historical archaeology (the excavation of sites dating post-1500), including excavation and analysis techniques, approaches to archaeological research, and case studies of specific excavations.

Focus on current developments in archaeological method and theory, with specific emphasis on contract archaeology, survey methods, artifact analysis and contemporary theoretical approaches. Offered annually. Prereq: ANTH 123 plus 3 additional hours of anthropology or permission of instructor.

Cross-cultural study of health and healing, including comparative medical systems, theories of disease, patients/healers in the context of culture, mental health, bioethics, interaction of culture, biology and environment, and the effects of cultural change. Offered periodically.

Cross-cultural and interdisciplinary study of famine and world hunger. Critical examination of the political, economic and ecological causes of famine and the psychological and social effects of starvation. Offered infrequently. Prereq: COMM 100, ENGL 110 and junior status.

The intersecting role of gender, race and class on human social life in the United States. and in other cultures. An interdisciplinary and comparative examination of the ways social categories define, limit and liberate human potential. Offered annually. Prereq: COMM 100, ENGL 110, junior status and at least two social science courses.

Examines, in a developmental fashion, the attempts made by anthropologists to explain human similarities and differences, and the dynamics of culture change. Offered annually. Prereq: junior/senior status and a minimum of 9 s.h. in anthropology.

Individual or group research in any of the subdisciplines of anthropology, including archaeological field school and ethnographic field projects. Offered periodically. Prereq: permission of instructor.

Research and group discussions for advanced students on various topics of interest. A total of 6 s.h. may be taken. Offered in alternate years. Prereq: permission of instructor.

Two to four semesters of supervised research by highly motivated students capable of conducting independent research projects. Prereq: 3.0 GPA and recommendation by faculty mentor. For further information, see the *Special Academic Opportunities* section.

For further information, see the *Special Academic Opportunities* section.

SPANISH

See Foreign Languages

Methods, materials, facilities and equipment for programs of health and physical education in elementary schools. Opportunities for observation of children at play, making equipment, program planning and teaching. Ofered fall, spring.

Preparation of students to develop skill and knowledge enabling them to administer frst aid in the case of an accident or sudden illness. Certifcation in CPR and standard frst aid according to American Red Cross standards.

Examines selected major issues in American sport. Emphasis on developing a historical perspective of the origins and implications of recent developments in modern sport. Study of various issues that have infuenced the development of sport-religion, economy, education, race, gender, social class and politics, and explanation of ways sport has contributed to shaping the larger culture. Ofered fall, spring. Prereq: ENGL 110.

This course introduces students to the fundamental principles and basic techniques used by Certifed Athletic Trainers (ATCs). Topics will include appropriate taping, wrapping and bracing procedures commonly prescribed for athletic injuries; selected therapeutic modalities; and an understanding of basic anatomy and functions of the musculoskeletal system, including an orientation to the major anatomical landmarks and underlying body structures. Pre-Athletic Training majors only. Ofered summer.

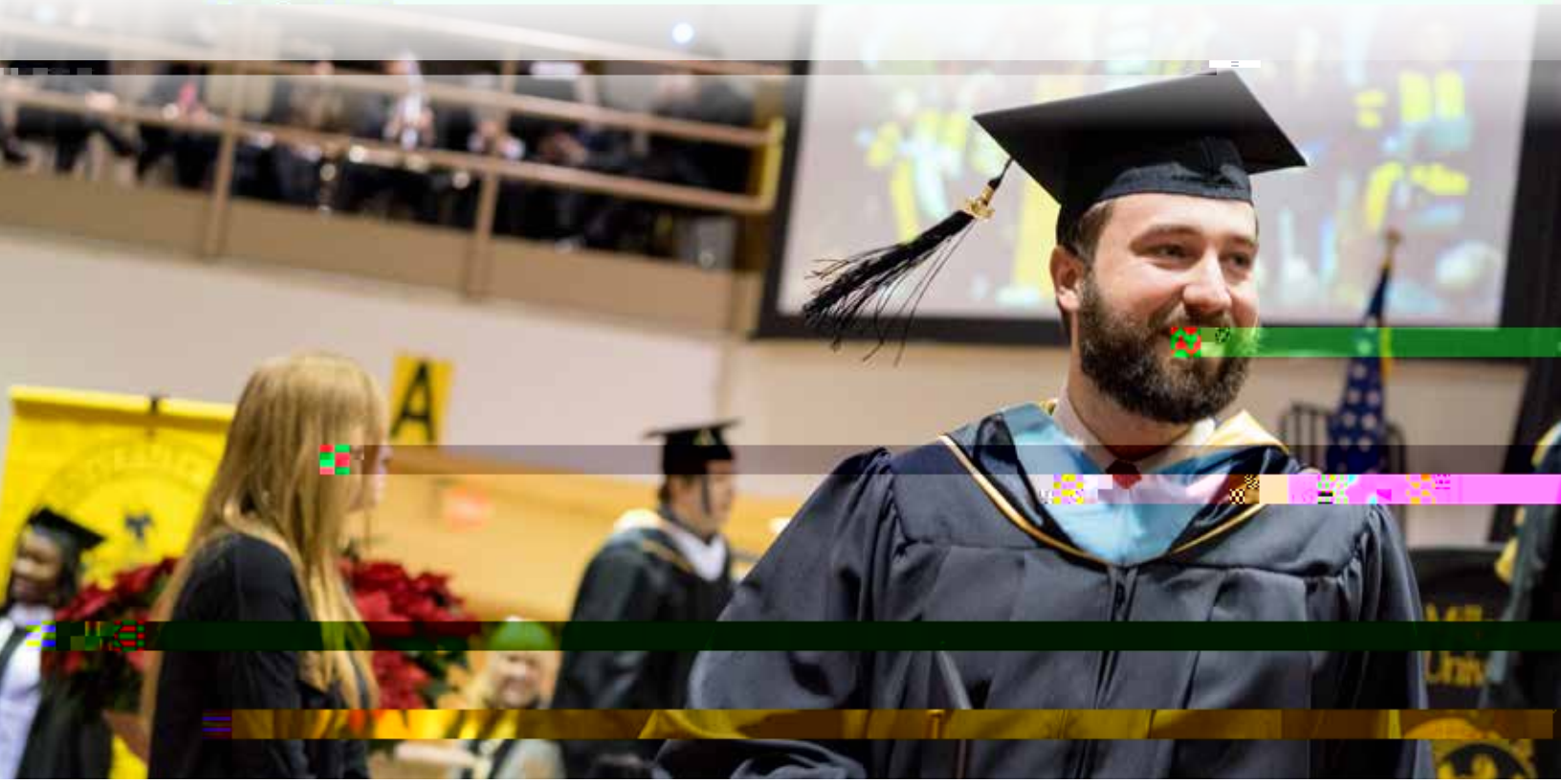
The study of movement, specifcally dealing with movement of the human body, including mechanics, laws of motion, anatomy and the detailed analysis of coaching activities. The functions of the various systems of the human body under stress of muscular activity that are basic for the

WOMEN'S STUDIES

Assistant Professor Bagchi, director

Women's Studies is an 18-credit interdisciplinary minor that involves courses in a wide array of traditional fields, including history, anthropology, communication, business, health, education and literature. The goal of the minor is to inform students about women's contributions, perspectives and visions in our own and other cultures; to validate women's experiences; and to challenge the economic, political and social devaluation of women. Students electing the minor must take Introduction to Women's Studies (WSTU 220) and Feminist Theory (WSTU 330) as well as WSTU 345 (Feminist Research Methods in WSTU) or WSTU 488 (Senior Seminar) and three other electives from an approved list. The minor complements many majors and can be completed as students fulfll general education requirements. Students taking courses in women's studies will benefit by having a more complete education, a greater appreciation for women's contributions, a greater sense of life options for women and a fuller understanding of gender and its role in human life. Expertise in women's studies will help students successfully handle gender-based power dynamics in all professions as well as prepare them for jobs in women-centered areas of health, social work, education, psychology, journalism, politics, public administration and business.

Required courses: WSTU 220, 330 and 345 or 488, plus three courses to be selected from the list of approved courses, at least one of which must be at the 300 level or above. Students will pick courses to satisfy the electives after consultation with their women's studies advisor.



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Sustainability Manager	Christopher J. Steuer, M.S.

Director of Ware and Winter Centers

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(2013). B.S., State University College at Brockport, 1974; M.A., State College of Arts & Sciences at Geneseo, 1979; Ph.D., Cornell University, 1997

(2008). B.A., Temple University, 1980; M.S., University of Pennsylvania, 1986; Ph.D., Temple University, 2004. Vice President for Student Affairs

(2006). B.A., State University of New York, Plattsburgh, 1976; M.S., Youngstown State University, 1977. Vice President for Finance and Administration

(2005). B.A., Washington College, 1986; M.A., American University, 1990; Ph.D., Ibid., 1991. Dean of Graduate Studies and Research

(2015). B.S., West Virginia University, 1979; M.Ed., The College of New Jersey, 1990; Ph.D., University of Virginia, 1993. Dean, College of Education and Human Services

(2015). B.S., State University of New York at Oswego, 1992; Ph.D., New Mexico State University, 1998. Dean, College of Science and Technology.

(2004). B.S., University of Bombay, India, 1970; M.S., Idaho State University, 1973; M.B.A., Southwestern Oklahoma State University, 1991; Ph.D., University of Texas, 1977. Provost and Vice President for Academic Affairs

(2007). B.S., Western Illinois University, 1984; M.S., University of Wisconsin-Whitewater, 1986; Ph.D., The Pennsylvania State University, 2004. Assistant Vice President for Institutional Assessment and Planning

(1990). B.A., Messiah College, 1974; M.A., University of North Carolina-Chapel Hill, 1981; M.A., University of Pennsylvania, 1986; Ph.D., Ibid., 1991. Dean, College of Arts, Humanities and Socal Sciences.

(19995; Ed.D., Unilowaiah College, 1Califo WW3 (, 19974; M.A., UniversitCollege of)]TJ0 -Dakotasi1 17.ph01e a25 4A0003(1W)0130B05An, Engl

(2014). B.S., University of Georgia, 2000; M.A., University of West Georgia, 2003; Ph.D., Indiana State University, 2013.
Assistant Professor of Psychology

(2000). B.S., University of Utah, 1985; M.S., Naval Postgraduate School-Monterey, 1992; Ph.D., University of Maryland, 2000. Associate Professor of Earth Sciences (Meteorology)

(2000). B.A., Millersville University, 1992; M.A., University of Delaware, 1997; Ph.D., Ibid., 1999. Professor of Educational Foundations

(1985). B.S., Montclair State College, 1978; M.S., University of Wisconsin-Stout, 1979; Ph.D., University of Missouri-Columbia, 1985. Professor of Applied Engineering, Safety & Technology

(2005). B.A., Illinois Wesleyan University, 1987; Ph.D., University of Massachusetts, 1992. Professor of Biology

(2006). B.A., La Salle University, 1975; M.B.A., Temple University, 1980; D.P.S., Pace University, 2004. Assistant Professor of Accounting & Finance

(2008). B.S., Shippensburg University, 2004; M.B.A., Temple University, 2005; Ph.D., Temple University, 2009. Assistant Professor of Management & Marketing; Chairperson, Department of Management & Marketing

(2009). B.S., Kansas State University, 1997; M.B.A., Fontbonne University, 1999; Ph.D., University of South Florida, 2006. Associate Professor of Management & Marketing

(1981). B.A., Florida State University, 1974; M.A., Ibid., 1976; Ph.D., Marquette University, 1981. Professor of History; Director of Honors College

(2008). B.S., University of Pittsburgh, 1991; M.A., Ibid., 1992; Ph.D., The Pennsylvania State University, 2008. Associate Professor of Educational Foundations

(1991). B.A., Columbus College, 1982; M.A., University of Iowa, 1986; Ph.D., Ibid., 1988. Associate Professor of English

(2002). B.A., Dominican College, 1996; M.A., Saint Mary's College, 1998; Ph.D., University of Pittsburgh, 2002. Assistant Professor of Wellness & Sport Sciences

(2004). B.S., University of Sofa (Bulgaria), 1984; M.S., Ibid., 1984; Ph.D., Bulgarian Academy of Sciences, 1993. Professor of Physics

(2009). B.A., Macalester College, 1989; M.S., University of Nevada, 1996; Ph.D., New Mexico Institute of Mining and Technology, 2004. Associate Professor of Earth Sciences

(1999). B.S., West Chester University, 1992; M.Ed., Ibid., 1993; M.Phil., Columbia University, 1998; Ph.D., Ibid., 1998. Professor of Educational Foundations

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(2002). B.S., Indiana University of Pennsylvania, 1976; M.F.A., Catholic University, 1982. Associate Professor of Communication & Theatre

(2003). B.A., College of New Jersey, 1992; M.A., Ibid., 1994; Ph.D., Kent State University, 2003. Associate Professor of English

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(1991). B.S., Clarion State College, 1980; M.S., University of Vermont, 1983; Ph.D., University of Wyoming, 1985. Professor of Mathematics

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(2013). B.S.E., Millersville University, 2003; M.A., Shepherd University, 2006; Ph.D., University of Maryland, 2011. Assistant Professor of Art & Design

(1992). B.A., Lycée Jehan Ango (France), 1975; M.A., Université de Paris X Nanterre (France), 1979; M.A., University of North Carolina-Chapel Hill, 1982; Ph.D., Ibid., 1986. Associate Professor of Foreign Languages (French)

(1986). B.S., Edinboro University, 1976; M.A., Kent State University, 1978; Ph.D., University of Toronto (Ontario), 1984. Associate Professor of Geography

(2014). B.S., University of Kurdistan (Iran), 2005; M.S., Azad University (Iran), 2009; Ph.D., Old Dominion University, 2014. Assistant Professor of Computer Science

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(2009). B.A., Fudan University (China), 1997; Ph.D., Stony Brook University, 2006. Associate Professor of Mathematics

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(1984). A.B., Temple University, 1972; M.S., University of Virginia, 1974; Ph.D., University of North Carolina, 1983. Professor of Mathematics

(1981). B.S., University of the Philippines, 1964; M.A., State University of New York at Stony Brook, 1969; Ph.D., Ibid., 1972. Professor of Physics

(2008). B.S., University of Massachusetts, 1984; M.S., University of Rhode Island, 1991; Ph.D., Ibid., 1996. Associate Professor of Earth Sciences

(2008). B.A., InterAmerican University of Puerto Rico, 1986; Western Michigan University, 2000; Ph.D., University of Michigan, 2007. Assistant Professor of Foreign Languages

(2010). B.M., Mercyhurst College, 2000; M.M., Eastman School, 2004; D.M.A., University of Kansas, 2008; Assistant Professor of Music

(2002). B.A., Slippery Rock University, 1990; M.A., Ibid., 1992; Ph.D., Ohio University, 1998. Associate Professor of Psychology

(2005). B.S., South Dakota State University, 1996; Ph.D., Washington State University, 2001. Associate Professor of Biology

(1998). B.S., Pennsylvania State University, 1983; M.S., Shippensburg University, 1990; Ph.D., Michigan State University, 1997. Professor of Biology

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(1982). B.A., Seoul National University (South Korea), 1974; M.S., Purdue University, 1977; Ph.D., Ibid., 1982. Professor of Psychology

(2004). B.A., Rockhurst College, 1988; M.A., Webster University, 1991; Ph.D., Bowling Green State University, 1999. Associate Professor of Communication & Theatre

(2009). B.F.A., Houston State University, 2004; M.S., University of Southern Mississippi, 2007. Assistant Professor of Communication & Theatre

(1999). B.S.I.T., Central Connecticut State University, 1993; M.S., Ibid., 1996; Ph.D., Iowa State University, 1998. Professor of Applied Engineering, Safety & Technology

Wright, Tiffany (2011). B.A., Gettysburg College, 1997; M.A., Millersville University, 2002; Ed.D., Johns Hopkins University, 2009. Assistant Professor of Educational Foundations

(1996). B.S., Shanghai Teachers University (China), 1982; M.S., Washington State University, 1991; Ph.D., The Pennsylvania State University, 1997. Professor of Wellness & Sport Sciences

(1997). B.S., Saint Louis University, 1991; M.S., Ibid., 1993; Ph.D., Ibid., 1997. Professor of Earth Sciences (Meteorology)

(2015). B.A., Xi'an International Studies University (China), 1995, M.A. Ibid., 2001; M.A., Bowling Green State University, 2004; Ph.D., Arizona State University, 2009. Assistant Professor of Communications & Theatre

(1987). B.S., Lebanon Valley College, 1974; M.S., University of Pittsburgh, 1977; Ph.D., State University of New York at Stony Brook, 1983. Professor of Biology

(2003). B.S., Nanjing Normal University, 1990; M.S., Ibid., 1997. Professor of Mathematics

(2006). B.A., Shanghai International Studies University (China), 1994; M.A., University of Toledo, 2001; Ph.D., Purdue University, 2006. Assistant Professor of English

(1987). B.S.N., The Pennsylvania State University, 1974; M.S., University of Delaware, 1985; Ph.D., Widener University, 1996. Professor of Nursing

(2002). B.S., California University of Pennsylvania, 1992; M.S., University of Delaware, 1997; Ph.D., Ibid., 2001. Associate Professor of Computer Science

REGULAR PART-TIME FACULTY

(1986). B.A., Eastern College, 1978; M.A., Millersville University, 1984. Instructor of English

(1988). B.S., Lebanon Valley College, 1967; M.F.A., University of Michigan, 1968. Instructor of Music

(1989). B.S., Marywood College, 1967; M.A., Villanova University, 1970. Instructor of Mathematics

(1990). B.A., Carson-Newman College, 1973; M.A., Marshall University, 1975. Instructor of Communication & Theatre

(1983). B.M.E., Augustana College, 1976; M.M., Peabody Conservatory of the Johns Hopkins University, 1986. Instructor of Music

(2014). B.A., Millersville University, 1991; M.Ed., Ibid., 1997. Instructor of Mathematics

(1987). B.A., Beloit College, 1971; M.A., University of New Hampshire, 1975; Ph.D., Ibid., 1981. Assistant Professor of Sociology

(1986). B.S., Millersville University, 1976. Instructor of Music

CLINICAL FACULTY

D.O., Board Certified Internal Medicine; M.D., University of Health Sciences, Missouri; Residencies: Flint Osteopathic Hospital, Michigan; Memorial Osteopathic Hospital, Michigan

B.S., Muhlenberg College, 1981; M.D., The Pennsylvania State University College of Medicine, 1985; Harrisburg Hospital Family Practice Residency, 1988; American Academy Family Practice Board Certification 1995. Private practice

B.A., Johns Hopkins University, 1975; M.D., New Jersey Medical School, 1979; Lancaster General Hospital Family Practice Residency, 1982; American Board of Family Practice, 1982. Private practice

R.N., Lancaster General Hospital School of Nursing, 1992; M.S.N., Millersville University, 2000; American Nurses Credentialing Center Family Nurse Practitioner Certification, 1996. Practice: Bareville Medical Associates

R.N., Lancaster General Hospital School of Nursing, 1990; B.S.N., Millersville University, 1992; M.S.N., University of Pennsylvania, 1994; American Nurses Credentialing Center Family Nurse Practitioner Certification, 1996. Practice: Cornerstone Family Health Associates

CRNP, R.N., Community Medical Center/Marywood College, 1970; B.S.N., Millersville University, 1984; B.S.N., Ibid., 1998, Family Nurse Practitioner. Practice: Crossroads Family Practice

, B.A., University of Maine, 1976; M.D., University of Vermont College of Medicine, 1980; Lancaster General Hospital Family Practice Residency Program, 1983; American Board of Family Practice, 1995. Practice: Walter L. Aument Family Health Center

R.N., Lancaster General Hospital School of Nursing, 1979; B.S.N., University of Kentucky, 1983; M.S.N., University of Pennsylvania, 1985; Post-Master's Certifcate, Wilmington College, 1995; American Nurses Credentialing Center Family Nurse Practitioner, 1995. Practice: Elco Family Health Center

CRNP, R.N., St. Joseph Hospital School of Nursing, 1995; B.S.N., Millersville University, 2003; M.S.N., Ibid., 2007; Certifed Family Nurse Practitioner. Practice: Millersville University Health Services

R.N., Lankenau Hospital School of Nursing, 1981; B.S.N., Eastern College, 1988; M.S.M., University of Pennsylvania, 1989; ANCC Certifcation: Family Nurse Practitioners. Practice: Lancaster General Hospital

R.N., Lancaster General Hospital School of Nursing, 1983; B.S.N., Thomas Jefferson University, 1986; M.S.N., Millersville University, 2000. Practice: Millersville University Health Services

CRNP, B.S.N., Catholic University, Washington, D.C., 1974; M.S.N., Millersville University, 1999; ANCC Certifed Family Nurse Practitioner, 1999. Practice: Oyster Point Family Health Center, 1999-present

CRNP, B.S. in biology, University of Connecticut; B.S.N., Pace University New York; M.S.N., Ibid., Certifed Family Nurse Practitioner. Member Sigma Theta Tau. Practice: East Petersburg Family Practice

MT(HHS), 1988; B.S., Lycoming College, 1990; M.H.A., St. Francis University, 2001; MLS(ASCP), 2004; Program Director, Medical Laboratory Science Program, WellSpan/York Hospital

B.A., University of Maryland, 1996; M.D., University of Pittsburgh School of Medicine, 2002; AP/CP Residency and Surgical Pathology Fellowship, University of Pennsylvania, 2007; American Board of Pathology Certifcation, AP/CP, 2007; Medical Advisor, Medical Laboratory Science Program, WellSpan/York Hospital

B.S., Millersville University, 1989; MT(ASCP); M.S., Indiana University of Pennsylvania, 1999. Program Director, Medical Laboratory Science Program, Pennsylvania College of Health Services

B.A., East Stroudsburg University; ARRT(N), 1990; CNMT, 1990. Clinical Supervisor, Reading Hospital

A.A., Hagerstown Community College; ARRT(N), 1994; CNMT, 1994. Clinical Supervisor, Meritus Medical Center

B.S., Saint Joseph University; D.O., Philadelphia College of Osteopathic Medicine; ABR, 1989. Medical Director, Nuclear Medicine Technology Program, Pennsylvania College of Health Sciences

B.S., Millersville University; CNMT, 2007. Clinical Supervisor, Good Samaritan Hospital of Lebanon

A.S., Hagerstown Community College; ARRT(R), 2003; CNMT, 2004. Clinical Supervisor, Diagnostic Imaging Services

B.S., Temple University; BCNP, 1985. Clinical Supervisor, Cardinal Health

B.S., York College; CNMT, 1998. Clinical Supervisor, York Hospital

Hofert, Kathleen, B.S., Cedar Crest College; ARRT(N), 1986; CNMT, 1986. Clinical Supervisor, Lehigh Valley Hospital

Hofman, Brandon, A.A.S., Lancaster General College of Nursing & Health Sciences; CNMT, 2004; NCT, 2007. Clinical Supervisor, Geisinger-Lewistown Hospital

B.S., Millersville University; M.H.A., The Pennsylvania State University, 2002; ARRT(N), 1987; CNMT, 1987. Program Chair, Nuclear Medicine Technology Program, Pennsylvania College of Health Sciences

, B.S., Millersville University; ARRT(R), 1996; ARRT(N), 1997; Clinical Coordinator, Nuclear Medicine Technology Program, Pennsylvania College of Health Sciences

, B.S., Millersville University; ARRT(N), 1994; CNMT, 1994. Clinical Supervisor, Lancaster General Hospital

, A.S., Quinnipiac University; CNMT, 1986. Clinical Supervisor, St. Luke's University Hospital

A.A., Wor-Wic Community College; ARRT(R), 2003; CNMT 2005. Clinical Supervisor, Peninsula Imaging

B.S., University of Victoria; ARRT(R), 2000; CNMT, 2003. Clinical Supervisor, Peninsula Regional Medical Center

B.S., York College; CNMT, 2006; Clinical Supervisor, Memorial Hospital of York

M.D. F.Sc., Pre-Medicine, Government College, Gujranwala, Pakistan, 1989; M.B., B.S., Nistar Medical College, Multan, Pakistan, 1996. Board Certifcations: Internal Medicine, 2004; Critical Care Medicine, 2007; Pulmonary Disease, 2010; Sleep Medicine, 2011. Medical Director

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Policy on Auxiliary Aids

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Safety & Security Information

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