

BRADLEY

U N I V E R S I T Y

1997–1999
Graduate Catalog

Please see table of contents on page 3.

Directory for Bradley University Contacts

Main campus number: (309) 676-7611
Main campus address: Bradley University,
 Peoria, IL 61625
World Wide Web: www.bradley.edu

Graduate School, 677-2264
 118 Bradley Hall

Registrar's Office, 677-3101
 11 Swords Hall

Controller's Office, 677-3120
 103 Swords Hall

Financial Assistance Office, 677-3089
 Swords Hall

Multicultural Student Services Office, 677-2646
 Garrett Center

Center for Wellness and Counseling, 677-2408
 133 Bradley Hall

Bookstore, 677-2320

Computing Services Hotline, 677-2964

Cullom-Davis Library
 Circulation, 677-2825
 Document Delivery, 677-3550
 Hours Open, 677-2824
 Interlibrary Loan, 677-2824
 Reference, 677-3502
 Renewals, 677-2826
 Reserves, 677-3315

Bradley University is nondiscriminatory in its admission policy with regard to race, color, religion, gender, disability, place of national origin, veteran status, or other factors prohibited by law.

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About Peoria

Peoria, Illinois, is a metropolitan area of 300,000 people, conveniently located halfway between Chicago and St. Louis. Peoria is large enough to provide a wide range of recreational, cultural, and professional activities, and yet is small enough to maintain a shared community spirit.

Prospects look bright for the Peoria area. The downtown business district has been revitalized with development projects including the \$60-million Civic Center complex and the 30-story Twin Towers complex containing a shopping mall, offices, and condominiums.

Peoria is proud to be home to Bradley University and joins in welcoming you to your graduate school experience.

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Academic Calendar

The Academic calendars are subject to revision. Students should refer to the most recent Academic Handbook for important dates each semester.

1997-98

FIRST SEMESTER

August 18, Monday

August 23, Saturday
August 27, Wednesday
October 11, Saturday
October 15, Wednesday

November 26, Wednesday

December 1, Monday

December 9, Tuesday
December 10, Wednesday
December 11, Thursday
December 17, Wednesday
December 20, Saturday

JANUARY INTERIM

January 5, Monday

January 19, Monday

SECOND SEMESTER

January 12, Monday

January 18, Sunday
January 21, Wednesday
March 14, Saturday
March 23, Monday

May 5, Tuesday
May 6, Wednesday
May 7, Thursday
May 13, Wednesday
May 16, Saturday

SUMMER SESSIONS

May 18, Monday

(No classes on Memorial Day holiday)

June 5, Friday

June 9, Tuesday

July 10, Friday
July 14, Tuesday

August 14, Friday

Reporting date for faculty
Residence halls open
Classes begin
Fall Recess Begins
Classes resume – 8:00 a.m.
Thanksgiving Recess begins
Classes resume – 8:00 a.m.
Last day of classes
Study Day
Final Examinations begin
Final Examinations end
Commencement

First day of classes
Classes meet
Monday-Saturday
Final Examinations

Reporting date for new faculty
Residence halls open
Classes begin
Spring Recess begins
Classes resume – 8:00 a.m.
Last day of classes
Study Day
Final Examinations begin
Final Examinations end
Commencement

Three-week Interim classes begin
Three-week Interim ends
First Session classes begin
First Session ends
Second Session classes begin
Second Session ends

1998-99

FIRST SEMESTER

August 17, Monday

August 22, Saturday
August 26, Wednesday
October 10, Saturday
October 14, Wednesday

November 25, Wednesday

November 30, Monday

December 8, Tuesday
December 9, Wednesday
December 10, Thursday
December 16, Wednesday
December 19, Saturday

JANUARY INTERIM

January 4, Monday

January 18, Monday

SECOND SEMESTER

January 11, Monday

January 17, Sunday
January 20, Wednesday
March 13, Saturday
March 22, Monday

May 4, Tuesday
May 5, Wednesday
May 6, Thursday
May 12, Wednesday
May 15, Saturday

SUMMER SESSIONS

May 17, Monday

(No classes on Memorial Day holiday)

June 4, Friday

June 8, Tuesday

July 9, Friday

July 13, Tuesday

August 13, Friday

Reporting date for faculty
Residence halls open
Classes begin
Fall Recess begins
Classes resume – 8:00 a.m.
Thanksgiving Recess begins
Classes resume – 8:00 a.m.
Last day of classes
Study Day
Final Examinations begin
Final Examinations end
Commencement

First day of classes
Classes meet
Monday-Saturday
Final Examinations

Reporting date for new faculty
Residence halls open
Classes begin
Spring Recess begins
Classes resume – 8:00 a.m.
Last day of classes
Study Day
Final Examinations begin
Final Examinations end
Commencement

Three-week Interim classes begin
Three-week Interim ends
First Session classes begin
First Session ends
Second Session classes begin
Second Session ends

1999-2000

FIRST SEMESTER

August 16, Monday	Reporting date for faculty
August 21, Saturday	Residence halls open
August 25, Wednesday	Classes begin
October 9, Saturday	Fall Recess begins
October 13, Wednesday	Classes resume – 8:00 a.m.
November 24, Wednesday	Thanksgiving Recess begins
November 29, Monday	Classes resume – 8:00 a.m.
December 7, Tuesday	Last day of classes
December 8, Wednesday	Study Day
December 9, Thursday	Final Examinations begin
December 15, Wednesday	Final Examinations end
December 18, Saturday	Commencement

JANUARY INTERIM

January 3, Monday	First day of classes Classes meet Monday-Saturday
January 17, Monday	Final Examinations will be held in the morning only.

SECOND SEMESTER

January 10, Monday	Reporting date for new faculty
January 16, Sunday	Residence halls open
January 19, Wednesday	Classes begin
March 11, Saturday	Spring Recess begins
March 20, Monday	Classes resume – 8:00 a.m.
May 2, Tuesday	Last day of classes
May 3, Wednesday	Study Day
May 4, Thursday	Final Examinations begin
May 10, Wednesday	Final Examinations end
May 13, Saturday	Commencement

SUMMER SESSIONS

May 15, Monday	Three-week Interim Classes begin
(No classes on Memorial Day holiday, May 29)	
June 2, Friday	Three-week Interim ends
June 5, Monday	First Session classes begin
(No classes on Tuesday, July 4)	
July 7, Friday	First Session ends
July 11, Tuesday	Second Session classes begin
August 11, Friday	Second Session ends

Bradley University and Its Mission

The Mission

Bradley University is committed to excellence in teaching and learning. At Bradley, students, faculty and staff unite to create a dynamic academic community of the highest quality committed to the exploration of what is known and the discovery of what is not.

Our Core Commitments

Lydia Moss Bradley founded the University in 1897 with the goal of preparing students to lead productive and useful lives.

The academic community at Bradley University, in achieving that goal, is founded on and embodies many values. At both the undergraduate and graduate levels, among the most important of these is our belief in free and open inquiry and the inherent worth of the individual. Knowledge can only be expanded and truth discovered where members of the academic community are free to pursue their inquiries wherever evidence and argument lead them and to discuss the results of that pursuit. Further, that pursuit is most effective where the individual is respected and responsible, where each person is the object and source of humane and civil behavior.

We believe students learn best and grow the most when they receive individual attention and when they have available a broad range of academic programs and co-curricular activities of the highest quality in a culturally rich and diverse environment. We are committed, in consequence, to remaining a medium-sized comprehensive university that offers academic breadth and depth and opportunities for both the intellectual and personal development of students, providing for them the very best formal and informal opportunities to learn about themselves and the world.

We believe that the most successful professional education and the most broadening liberal education are profoundly intertwined. Our students must be prepared to learn throughout their lives, launch and sustain careers, be effective citizens, and lead rich, fulfilling personal lives in a global and multicultural society. They must, therefore, have the advantage of curricula that develop fully the relationship between the personal and professional and between general competencies and special expertise. They must master both the theoretic and the applied, developing practical skills in combination with conceptual and analytic

abilities. Just as importantly, students must have the advantage of academic and living experiences that enlarge their affective and aesthetic lives, their moral and ethical natures, and their capacity to function in and contribute to our global community.

We believe that an enterprise flourishes when all members participate and feel ownership. Therefore, we are committed to an evaluation and reward structure that facilitates and maintains the development of a dynamic learning community.

Accreditation

Bradley University is accredited as a master's-level degree-granting institution by the Commission on Institutions of Higher Education of the North Central Association of Colleges and Schools.

Bradley's professional accreditation for undergraduate colleges and departments and selected graduate programs includes the following:

- American Assembly of Collegiate Schools of Business
- American Council for Construction Education
- National League for Nursing
- National Association of Schools of Art and Design
- National Association of Schools of Music
- American Chemical Society
- National Council for Accreditation of Teacher Education
- American Dietetic Association (didactic program approval)
- Council for Accreditation of Counseling and Related Educational Programs
- Council on Accreditation of Nurse Anesthesia Educational Programs
- Commission on Accreditation in Physical Therapy Education (undergraduate)

Founding of Bradley

The institution now known as Bradley University was founded in Peoria, Illinois, in 1897 by Lydia Moss Bradley in memory of her husband Tobias and their six children.

The Bradleys had amassed a fortune of about \$500,000 through successful dealings in real estate, railroads, a distillery, flour mill, sawmill, the Peoria Pottery Company, and other enterprises. After Tobias' death in 1867, Lydia Bradley proved to be wise in business dealings, and through real estate and farm investment her holdings grew to more than two million dollars. She was a generous philanthropist, supporting the Universalist Church, Children's Home, Bradley Home for Aged Women, and Bradley Hospital (now Saint Francis Medical Center), and donating 130 acres of land for the Peoria Park District.

The Bradleys had discussed establishing an orphanage in memory of their deceased children. After some study and travel to various institutions, Mrs. Bradley decided instead to found a school where young people could learn how to do practical things to prepare them for living in the modern world. As a first step toward her goal, in 1892 she purchased a controlling interest in Parsons Horological School in LaPorte, Indiana, the first school for watchmakers in America, and moved it to Peoria. She specified in her will that the school should be expanded after her death to include a classical education as well as industrial arts and home economics: "...it being the first object of this Institution to furnish its students with the means of living an independent, industrious and useful life by the aid of a practical knowledge of the useful arts and sciences."

In October 1896 Mrs. Bradley was introduced to Dr. William Rainey Harper, president of the University of Chicago. He soon convinced her to move ahead with her plans and establish the school during her lifetime. Bradley Polytechnic Institute was chartered on November 13, 1896. Mrs. Bradley provided seventeen and a half acres of land, \$170,000 for buildings, equipment, and a library, and \$30,000 per year for operating expenses.

Contracts for Bradley Hall and Horology Hall (now Westlake) were awarded in April and work moved ahead quickly. Fourteen faculty and 150 students began classes in Bradley Hall on October 4—with 500

workers still hammering away. (The Horological Department added another eight faculty and 70 students.) Bradley Polytechnic Institute was formally dedicated on October 8, 1897. Its first graduate, in June 1898, was Cora Unland.

The Institute was originally organized as a four-year academy (similar to a high school) and a two-year college. By 1899 there were 400 pupils, and instruction was offered in biology, chemistry, food work, sewing, English, German and French, history, Latin and Greek, manual arts, drawing, mathematics, and physics. Pleased with its progress, that year Mrs. Bradley transferred to the school the rest of her estate, including nearly 1,000 different pieces of property, reserving its use and profits during her lifetime. She died on January 16, 1908.

The Institute continued to grow and develop to meet the educational needs of the region. Its facilities were in great demand during World War I to train automobile and tractor mechanics. In 1920 the Institute dropped the academy and adopted a four-year college program. Enrollment boomed when servicemen returned from World War II, and in 1946 the Graduate School was established and the name was changed to Bradley University.

THE GRADUATE SCHOOL

Ahmad Fakheri, Ph.D.
Acting Associate Provost and Dean of the
Graduate School

Director of Graduate Admissions

Director, Research and Sponsored Programs

Demetrice Worley, Ph.D.

Director, Teaching Excellence Programs

Bradley University

Bradley University is located on a 65-acre campus in Peoria, central Illinois' largest metropolitan area and one of the world's most productive agricultural and industrial regions. The University community consists of approximately 5,100 undergraduate and 900 graduate students pursuing their education and building their personal and professional lives. The students are aided in their effort by dedicated faculty, administration, and professional support staff.

The University's up-to-date learning facilities enhance opportunities for highly motivated students to interact with distinguished, full-time faculty members. Men and women pursuing a graduate education learn best when they are challenged by well-qualified teachers, directed into exciting programs, surrounded by colleagues, critics, and challenging adversaries, and absorbed in studies that respond to their own motivation to grow in self-knowledge, understanding, and skill.

Bradley's distinctiveness is closely linked to its independence. This independence allows the University to modify its educational programs to meet the current and future demands of society while maintaining strengths in those areas that have long been associated with a distinctive university education. As a private university, Bradley remains free to determine how best to serve the needs of its students, community, region, and the nation.

As a medium-sized, co-educational institution, Bradley must have individual learning and effective teaching as its highest priorities. Research and creative activity, however, are also priorities of the University. Bradley faculty members have earned national and international reputations in their fields. Throughout the University, undergraduate and graduate students have the opportunity to work with faculty members on research projects. These activities complement and reinforce Bradley's emphasis on quality instruction.

Bradley is a distinctive institution of higher education that is successful at achieving a balance between large and small, diversity and specialization, and theory and practice.

Campus Visits

Persons considering graduate study who are interested in having a tour of the campus should contact the Graduate School office.

Degrees

Bradley University offers the following graduate degrees:

Foster College of Business Administration

Business Administration

M.B.A.

Accounting

M.S.A.

Slane College of Communications and Fine Arts

Ceramics

M.A. and M.F.A.

Painting

M.A. and M.F.A.

Photography

M.A. and M.F.A.

Printmaking

M.A. and M.F.A.

Sculpture

M.A. and M.F.A.

College of Education and Health Sciences

Nursing Administration	M.S.N.
Nurse Administered Anesthesia	M.S.N.
Counseling	M.A.
Curriculum and Instruction	M.A.
Leadership in Educational Administration	M.A.
Leadership in Human Service Administration	M.A.
Learning Disabilities	M.A.

College of Engineering and Technology

Civil Engineering	M.S.C.E.
Electrical Engineering	M.S.E.E.
Industrial Engineering	M.S.I.E.
Manufacturing Engineering	M.S.M.F.E.
Mechanical Engineering	M.S.M.E.

College of Liberal Arts and Sciences

Biology	M.S.
Chemistry	M.S.
Computer Science	M.S.
Computer Information Systems	M.S.
English	M.A.
Liberal Studies	M.L.S.

Off Campus Credit and Degree Programs

In addition to the courses offered on Bradley's campus, the University also offers selected graduate courses and degrees at off-campus sites throughout Central Illinois and via videotape and compressed video including:

- the graduate degree in electrical engineering
- the graduate degree in mechanical engineering
- graduate courses in economics, educational leadership, industrial engineering, mathematics, and nursing.

In cooperation with area businesses, the Division of Continuing Education and Professional Development also coordinates the delivery of graduate level courses offered on a contract basis to individual companies. Credit courses offered on a contract basis can be delivered directly on site at company locations, or these courses can be offered on campus with registration open only to company employees.

For more information about off-campus courses or degrees, or contract credit programs, contact the Division of Continuing Education and Professional Development in Heitz Hall, (309) 677-2374.

General Admission Information

Eligibility

(see also: *Admission Requirements*)

Graduate study is open to any student who holds at least a bachelor's degree from an accredited college or university and to certain qualified Bradley seniors (see Categories of Admission below). Students who have already received a master's degree from Bradley must reapply for admission if they wish to take further course work.

Non-Accredited Institutions

A student who has earned a bachelor's degree from a college or university which is not fully accredited may be admitted on a conditional basis (see below) if the following stipulations are fulfilled: (1) the student's undergraduate grade average is B or above; (2) credits of the school from which the student graduated are fully accepted by that school's principal state university; (3) additional work (if any) needed to meet Bradley's baccalaureate requirements is completed here or at another accredited school; and (4) the student earns As or Bs in the first 12 semester hours of courses at the advanced undergraduate or beginning graduate level at Bradley University.

Categories of Admission

1. **Unconditional.** This classification denotes a graduate student who is admitted to a degree program. At the undergraduate level the student must have achieved an overall gradepoint average on a 4.0 scale of at least 2.50 (halfway between B and C), and an average of not less than 2.75 (B-) in courses considered to be in the student's major area of study.
2. **Conditional.** This status may be given if the student's overall undergraduate gradepoint average is below that required for unconditional admission (2.50 overall and 2.75 in the major area of study). It may also be given if the student's scores on standardized tests fall below the requirement in the discipline; if the student does not have sufficient undergraduate preparation; or in fine arts

performance areas, if, in the judgment of the faculty, the quality of work is not totally acceptable. If undergraduate deficiencies are a cause of conditional admission, the faculty in the discipline shall specify the activities which will remove the deficiencies.

The student must obtain the Removal of Conditional Status Form and return it to the Graduate School. Students who are admitted conditionally will not be considered for scholarships or assistantships until the conditions of their admission are met and a "Removal of Conditional Admission Status" form has been submitted and approved. Conditional status must be removed prior to graduation.

3. **Graduate Student-at-Large.** This admission status is for a student who has a bachelor's degree from an accredited institution, wishes to register for graduate or undergraduate courses, and is not currently seeking a graduate degree from Bradley University. Graduate students-at-large do not qualify for scholarships or assistantships.

At the time of application or during the first semester of enrollment, a graduate student-at-large must provide official transcripts as evidence of having earned a bachelor's degree. The student may enroll in any graduate courses for which he or she has met the prerequisites. Students who enroll in courses for which they are not qualified will be asked to withdraw.

Admission as a graduate student-at-large does not constitute admission to a degree program. Should the student later wish to apply to a degree program, all requirements for admission to that program must be met. A maximum of 9 semester hours with grades of B or better earned as a graduate student-at-large may be applied to a degree program, with approval of the program's graduate advisor.

4. **Bradley Undergraduate Students.** Bradley seniors of superior academic standing who are within 6 semester hours of graduation, or who are registering for the semester during which they will complete their bachelor's degree requirements, may register for graduate courses for graduate credit if approved by both the undergraduate dean and the graduate advisor. However, a senior may not take more than 15 hours of graduate work prior to completing baccalaureate requirements. If admitted, the student registers as a senior. Eligible seniors who desire graduate credit must submit the "Application for Graduate Credit for a Senior" form to the dean of the Graduate School. Forms may be obtained from the Graduate School Office, Bradley Hall, Room 118.

Former Students

Students who have received an undergraduate or graduate degree from Bradley must reapply if they wish to take further course work.

Admission Requirements

Degree-seeking students must submit the following materials and an "Application for Graduate School" (including an application fee) before being considered for admission.

Transcripts

All applicants for degree programs must have two official transcripts of all undergraduate and all graduate credits from other institutions sent to the Graduate School, Bradley University, Peoria, IL 61625.

Recommendations

Applicants for admission must have two letters of recommendation sent directly to the dean of the Graduate School from individuals who can comment on their potential to perform well in a graduate program. The department of nursing requires three recommendations: from an immediate supervisor, a faculty member, and a professional associate.

Entrance Examinations

Certain programs require graduate examinations before admission. Official score reports should be sent to the Graduate School if applicable:

Business Administration and Accounting:

Graduate Management Admission Test (GMAT)

Education (all fields): Miller Analogies Test (MAT) or Graduate Record Examination (GRE) general test.

Electrical Engineering: Graduate Record Examination (GRE) (for students from non-ABET-accredited schools) general test or new test #2 when available.

Nursing: Graduate Record Examination (GRE) general test only; OR Miller Analogies Test (MAT)

Information about the GMAT, GRE, and TOEFL may be obtained from the Educational Testing Service, Box 955, Princeton, N.J., 08540; the Bradley Center for Orientation, Testing and Advisement, Bradley Hall 133; or the Graduate School. Information regarding the MAT may be obtained from the Graduate School, 118 Bradley Hall, (309) 677-2371.

Some departments have additional requirements. Be certain to check individual programs for admission requirements.

International Students

International students are those who are not citizens or permanent residents of the United States.

In addition to the admission requirements stated above, international students should review the following information.

Any applicant whose native language is not English is required to submit the results of the Test of English as a Foreign Language (TOEFL). A minimum aggregate TOEFL score of 500 is necessary for admission to the Graduate School. Some departments have higher

minimum requirements. Further information on the TOEFL exam can be obtained by contacting the nearest U.S. embassy, consulate, or U.S. Information Agency, or by writing directly to the Educational Testing Service (ETS), Box 899, Princeton, N.J., 08540, U.S.A. Students who have previously studied in the United States should contact the Graduate School Office to determine whether the TOEFL is required.

International applications must be accompanied by proof of financial support. This proof of support shows that the applicant has the necessary funds or that a sponsor is willing to pay the applicant's tuition and living expenses during his/her stay at Bradley University. The Declaration of Finances form, which is provided with international application materials, should be used for this purpose. Other acceptable documentation would include an official bank document that shows account balances. Documents that show a balance in non-U.S. denominations should reflect both the current exchange rate and the equivalency of financial support in United States dollars. Documentation from a source other than the applicant must be accompanied by a letter of support.

Permanent Residents

Applicants who are permanent residents must submit proof of their status along with their application. Contact the Graduate School Office for more information.

Interruption of Studies

Degree-seeking students who are working toward a master's degree but have not enrolled for one or more semesters must contact the Graduate School Office for reinstatement. Non-degree-seeking students who have not enrolled for one or more sessions must contact the Graduate School Office for a graduate student-at-large application.

Students who maintain continuous enrollment may graduate under either the catalog in effect at the time of their entrance or under the catalog in effect at the time of their graduation. Students whose work has been interrupted for one or more regular semesters may be held to requirements in effect at the time of their re-enrollment. Some departments may have additional requirements.

Registration

Calendar of Course Offerings

Bradley University's academic calendar consists of two fifteen-week semesters (fall and spring). There is a three-week summer interim (mid-May to mid-June), an eight-week summer session, and two five-week summer sessions (early June to mid July and mid July to mid August). There is another three-week interim in January between the fall and spring semesters. (See academic calendar.)

Course Schedules/Academic Handbooks

Bradley's Academic Handbook lists specific registration information on the courses to be offered on campus for the fall and spring semesters. It is available to graduate students in the Graduate School Office, 118 Bradley Hall, in late October for the spring

semester and in late April for the fall semester. Summer school and interim schedules are also available to graduate students in the Graduate School office at least two months prior to the beginning of these sessions.

Application and Registration Deadlines

Entering degree-seeking students must apply to a degree program early enough to allow time for an appropriate decision to be made on their status. This process ordinarily requires four to six weeks, if required application materials arrive in a timely manner. Some departments have specified deadlines. Be certain to check individual programs for deadline information. Applicants for assistantships should apply even earlier; March 1 is the deadline for priority consideration for fall assistantships and scholarships. October 1 is the deadline for priority consideration for spring assistantships and scholarships.

A student with a bachelor's degree who wishes to take 500- or 600-level courses without entering a degree program may register as a graduate student-at-large as late as the last day of registration, providing the student presents evidence of preparation for the courses for which he or she wishes to enroll.

Telephone Registration

Bradley University uses a touch-tone telephone registration system. Using their Bradley ID number and a Bradley Registration Number (BRN) assigned upon admission, students may register by calling the system and entering the appropriate codes using any touch-tone telephone – local or long distance. Instructions for telephone registration are included in the academic handbook each semester.

Graduate students who have not enrolled for one or more semesters must notify the Graduate School of their intent to be reinstated before they can use the telephone registration system.

Schedule Change After Registration

Once a student has registered, changes to that schedule (additions and deletions) may be made by using the touch-tone telephone system. Instructions are outlined in the Academic Handbook.

For all schedule changes after the deadlines for touch-tone telephone registration, students must obtain the Change of Registration Form from the student's advisor and follow the procedures outlined below.

To add a class(es), the signatures of the graduate advisor (or for business only, the associate dean of the College), the instructor of the added class, the department chair for the added class, and the dean of the Graduate School must be obtained.

Partial drops may be done by the telephone up until the last day for dropping classes outlined in the Academic Handbook. For dropping classes after the drop date, the Change of Registration Form must be used and signed by the dean of the Graduate School.

Complete withdrawals cannot be done at any time through the touch-tone telephone procedure. All complete withdrawals must use the Change of Registration Form.

Admission to Interim and Summer School

Students who have been enrolled in graduate study at Bradley University in the preceding regular semester do not need to apply for admission to interim or summer sessions.

Degree-seeking students who have been admitted to graduate study at Bradley University but did not attend classes during the semester immediately preceding the summer or interim session for which they wish to register must contact the Graduate School Office for readmission.

Any non-degree-seeking student who has previously enrolled as a graduate student-at-large must complete another graduate student-at-large application for admission. Forms are available in the Graduate School Office, 118 Bradley Hall.

Fees and Expenses

Application Fee

A nonrefundable fee of \$35.00 must accompany the application for admission to the graduate degree program. This fee is not waived for applicants who earned their bachelor's degrees from Bradley.

Graduate students-at-large and applicants for the Master of Liberal Studies degree program are not required to pay this fee.

Checks or money orders should be made payable to Bradley University.

1997-98 Tuition

Tuition for the 1997-98 academic year is as follows:

Part-time students (7 hours or fewer)

\$342.00 per semester hour

Part-time students (under 12 hours, more than 7)

\$425.00 per semester hour

Full-time students (12 to 16 hours)

\$6,305.00 per semester

Tuition rates are subject to change for 1998-99 and subsequent academic years. Current tuition and fees are published each semester in the academic handbook which contains the course schedules.

All courses taken in the College of Engineering and Technology are assessed a tuition surcharge of \$5.00 per semester hour to support lab equipment.

Tuition for all classes in the MLS program is \$182.00 per semester hour for the 1997-98 academic year.

Senior citizens (individuals 62 or older) may take classes at the rate of \$10.00 per semester hour. Enrollment is subject to availability of classroom space.

Tuition and any fees must be paid by the deadline and in accordance with the instructions found in the current academic handbook. Students who have not made arrangements for payment by the deadline will be dropped from all classes. Questions regarding payment should be directed to the Controller's Office, 103 Swords Hall, (309) 677-3120.

Interim and Summer Sessions

See the Summer Sessions and January Interim bulletins for specific details concerning payment.

Refunds

Students who withdraw from a class may be eligible for a partial tuition refund, depending on the date on which the course was dropped. Students who drop all classes and officially withdraw from the University may be eligible for a partial refund of tuition, room, and board, depending on the date of the withdrawal.

Students should check deadlines and procedures for requesting refunds in the current academic handbook (or Summer Session or January Interim bulletin).

Room and Board

Housing is available both on and off campus. On campus room and board fees vary with housing options and meal plans. Bradley also owns a student apartment complex one block from campus. Students requiring assistance with housing should contact the Director of Housing, Sisson Hall, Bradley University, Peoria, IL 61625.

Other Fees

Health Fee

All students registering for 7 or more hours will be assessed a \$15.00 health fee at the time of registration.

Vehicle Registration

The fee for automobile registration is \$50.00 for the academic year; \$25.00 for second semester only and \$10.00 for summer session. These fees are not refundable.

Thesis Binding Fee

Graduate students required to write a thesis must pay a fee of \$12.00 per copy (three copies required) for thesis binding and handling. This fee must be paid to the Controller's Office prior to submitting the completed thesis to the Graduate School Office. The thesis must be signed by the advisor and stamped by the Controller's Office showing that the fee has been paid.

Cap, Gown, and Hood Rentals

Graduate students electing to participate in graduation ceremonies must pay \$32.85 (subject to change) at the Graduate School Office for cap, gown, and hood rental. Forms for students to indicate size of cap and gown are mailed to students during the semester preceding their graduation once they have filed the Application for Graduation form with the Graduate School Office. There is a \$5.00 late fee assessed for orders made after the indicated deadline.

Financial Assistance

The Graduate School awards financial assistance on a competitive basis to qualified new and continuing students based on a variety of factors, including academic excellence, financial need, and availability of funds. All necessary application forms are available through the Graduate School. Students who are admitted to graduate programs on a conditional basis will not be considered for scholarships or assistantships until the conditions of their admission are met and a Removal of Conditional Admission Status form has been submitted and approved.

Assistantships

Full- and part-time graduate assistantships are available in most department that offer graduate work and also in certain administrative areas. Assistantships for research, teaching, and other academic activities are awarded annually on a competitive basis, with scholastic ability and evidence of special qualifications being the most important criteria. Full-time graduate assistants are required to work 20 hours each week for the assigned department. In return, graduate assistants receive a stipend commensurate with the full-time nature of their work assignments in the department. Students qualifying for full-time assistantships also qualify for tuition scholarships for 100% of actual tuition costs. Part-time graduate assistants are required to work 10 hours each week for the assigned department and receive 50% of the full-time stipend. Students qualifying for part-time assistantships qualify for tuition scholarships for 50% of actual tuition costs.

Minimum requirements:

1. Unconditional admission to a graduate degree program.
2. Approval by the department chair, the dean of the appropriate college, and the dean of the Graduate School.
3. For international students only:
 - a. TOEFL score of at least 550 and an overall undergraduate gradepoint average of 3.5 on a 4.0 scale OR
 - b. an overall graduate gradepoint average of at least 3.0 after completion of 12 semester hours of graduate study at Bradley or at another accredited U.S. institution.

Renewal requirements:

1. Submit the Graduate School Application for Financial Assistance by March 1 for the fall semester, and by October 1 for the spring semester.
2. Complete at least 6 hours (for a full-time assistantship) or 3 hours (for a part-time assistantship) of course work each semester.
3. Maintain a minimum 3.0 gradepoint average.
4. Receive a positive recommendation from an assistantship advisor.

Scholarships

Scholarships are financial awards based on a student's academic achievement or financial need and do not require any repayment (in money or service) to the University. Scholarships may cover up to 50% of tuition costs for up to 9 semester hours of course work taken each semester in a student's graduate degree program. All graduate scholarships are awarded on a competitive basis.

Academic Excellence Scholarships

Minimum requirements:

1. Unconditional admission to a graduate degree program.
2. Overall undergraduate gradepoint average of at least 3.5 on a 4.0 scale.
For international students only: TOEFL score of at least 550 OR
 - a. Removal of conditional admission status.
 - b. Overall graduate gradepoint average of at least 3.5 in 12 semester hours of graduate study at Bradley or at another accredited U.S. institution.

Renewal requirements:

1. Submit the Graduate School Application for Financial Assistance by March 1 for the May interims, summer sessions, and fall semester, and by October 1 for the January Interim and spring semester.
2. Maintain a 3.5 gradepoint average.

Minority Scholarships

Special scholarships for minority students are available. For more information, contact the Graduate School.

Other Scholarships

Illinois Consortium for Educational Opportunity (ICEOP): This scholarship of up to \$10,000 annually (a maximum of \$20,000 total for master's degree students) provides financial assistance to Illinois residents who are members of traditionally underrepresented racial minority groups (Black, Hispanic, Asian American, American Indian, or Alaskan Native) to pursue and complete graduate or professional degrees at Illinois institutions of higher education. Descriptions of eligibility and application procedures are available from the Graduate Office.

For more information regarding additional scholarship opportunities, contact the Graduate School in 118 Bradley Hall or 677-2371.

Need-Based Grants

Minimum requirements:

1. Enrollment in 9 semester hours or less.
2. Unconditional admission to a graduate degree program.
3. Cumulative gradepoint average of at least 3.0.
4. Demonstrate financial need through submission of the Free Application for Federal Student Aid (FAFSA).

Renewal requirements:

1. Submit the Graduate School Application for Financial Assistance by March 1 for the May interims, summer sessions, fall term, and January Interim, and by October 1 for the spring semester.
2. Maintain a gradepoint average of at least 3.0.

Loans

Federal Direct Student Loans: Graduate students, both full- and part-time, are eligible to borrow up to \$8,500.00 each academic year under this program. For additional information contact Bradley's Loan Coordinator, Financial Assistance Office, Swords Hall, (309) 677-3089.

Unsubsidized Stafford Federal Direct Loans: This loan program offers long-term educational loans to qualified graduate students. Students are eligible to borrow up to \$10,000.00 each academic year. For additional information contact Bradley's Loan Coordinator, Financial Assistance Office, Swords Hall, (309) 677-3089.

USX Loans: The USX Foundation makes loans available to full-time students studying in the fields of business, computer science, and engineering. Loans may not exceed \$2000.00 in an academic year and are made at an annual rate of 7%. For additional information contact the Graduate School Office.

Deferred Payment Plan

The University offers a Deferred Payment Plan that requires payment at registration of one-half of the total tuition due. This payment may be made in the form of financial aid, cash or check, credit card, or a combination. The balance is payable in three equal installments beginning approximately one month after registration. Effective interest charges equate to 12 percent per year.

A late fee of \$2.00 per day is assessed for each payment not received by the date stipulated on the deferred payment agreement. For further information contact the Controller's Office, 103 Swords Hall, Bradley University, Peoria, IL 61625; (309) 677-3120.

Employees who work for employers who pay 100% of their tuition costs contingent upon successful course completion are eligible for a full semester's deferral if the employer is enrolled and approved in this program. Under this program tuition payments are deferred until the 30th day after the end of the semester. A \$20 fee must be paid by the student at the time of enrollment to participate in this special deferral program. Students should check with their employer to find out if their company is enrolled in the program.

Cooperative Education/ Internship Program

Graduate students may participate in Bradley's Cooperative Education/Internship Program, which effectively integrates classroom theory with paid, supervised work experience related to the student's academic and career interests. Students can choose from one of two Co-op/Intern models to follow. The traditional Full Time Alternating model is based on alternating periods of full-time study and full-time paid work which corresponds to the academic calendar. The part-time option involves local employers and allows students to attend classes while working part-time.

Newly admitted graduate students must be unconditionally admitted to a degree program in order to qualify for Co-op, and continuing students must have at least a 3.0 gradepoint average in graduate courses. Graduate students do not receive academic credit for Co-op/internship experiences, and graduate assistantships do not count as Co-op/internship experience.

For further information contact the Smith Career Center.

Academic Regulations

Course Numbering System and Requirements

Graduate courses are numbered 500 to 699, and only these courses may be applied toward the master's degree.

Courses numbered 500 to 599 are open to graduate students, seniors and specially qualified juniors. Courses numbered 600 through 699 are open to graduate students only.

Prerequisites

Prerequisites may be met by approved equivalent courses taken at other universities. You should consult your academic advisor if you have a question about prerequisites.

Students who enroll in courses for which they do not meet the prescribed prerequisites may be required to withdraw from those courses.

Student Course Load

The Graduate School requires that a minimum of 30 semester hours be successfully completed for the master's degree. Specific programs may require additional hours.

A full-time student takes 9 to 15 semester hours of course work during a semester of the regular academic year; the maximum permitted is 16 semester hours. Full-time graduate assistants may not enroll in more than 12 semester hours nor work more than 20 hours each week without written permission of their graduate advisor and the dean of the Graduate School. During the summer, a full-time graduate course load is 6 semester hours each session.

Grading System

The grading system of the University which applies to graduate students is as follows:

- A- High Competence (4.0)
- B- Competence (3.0)
- C- Minimum Competence (2.0)
- D- Limited or Incomplete Competence (1.0)
- F- Inadequate Competence for Credit
- W- Official Withdrawal
- IN-Incomplete Work
- IP-Work in Progress

Only courses with a grade of "C" or higher can be used toward completion of degree requirements.

IN – Incomplete Work

"IN" is the symbol used when the instructor lacks sufficient evidence to award a letter grade. The purpose of an "IN" is to provide the time necessary for a student to complete course work which, through no fault of the student's, was not completed in the normal time allowed. Reasonable time necessary for completion is decided by the student and the faculty member teaching the course.

The "IN" should not be mistakenly considered as an incentive for the faculty to recommend or for students to believe that this extension permits students merely to retake courses, or to extend the time for the completion of the prescribed work beyond the end of the semester of enrollment, as a means of removing the "Incomplete."

At the time the "IN" is assigned, the instructor and students must sign a contract specifying what must be done to remove the "IN" and the date by which the "IN" must be removed. Copies of the contract must be provided to the student, faculty member, graduate advisor, and Graduate School office. An "IN" must be removed not later than four weeks before the end of the next regular semester. Under unusual circumstances, the student may be granted an extension to the end of the semester with the approval of the instructor involved, provided that the request was received prior to the normal deadline for the removal of incompletes. If the instructor does not submit a letter grade by the specified deadline, the "IN" will remain permanently upon the student's record and may not thereafter be removed. Once a permanent "IN" is recorded for a course, if a student must complete the course to fulfill degree requirements, the student will have to register for the course again and satisfactorily complete the course requirements.

Contracts are available in the Graduate School Office, 118 Bradley Hall, or from the graduate advisor.

IP – Work in Progress

"IP" may be assigned to a student in a graduate course when the instructor agrees that the student requires more than one semester to complete the course. Normally, "IP" grades will only be assigned for thesis courses, other courses involving extensive projects involving research/creative production, or independent study courses. At the time the "IP" is assigned, the instructor and student must sign a contract specifying what must be done to remove the "IP" and the date by which the "IP" must be removed. Copies of the contract must be provided to the student, faculty member,

graduate advisor, and Graduate School Office. If the "IP" is not removed by the specified date, it will be recorded as a permanent "IP." Once a permanent "IP" is recorded for a course, if a student must complete the course to fulfill degree requirements, the student will have to register for the course again and satisfactorily complete the course requirements.

Contracts are available in the Graduate School Office, 118 Bradley Hall, or from the graduate advisor.

Scholastic Requirements

A degree-seeking student must have a minimum cumulative GPA of 3.0 (B) in graduate work at this University to be in academic good standing at the graduate level. A graduate student whose cumulative gradepoint average drops below a 3.0 will be placed on probation. While a student is on probation, the student's record will be reviewed each semester. The student will be dismissed from the program if the semester gradepoint average in any succeeding semester of enrollment falls below 3.0. Whenever a student's cumulative gradepoint average equals at least 3.0, the student will be removed from probation.

A dismissed student may petition for reinstatement by filling out a Petition for Reinstatement to Graduate Study and sending it to the dean of the Graduate School, 118 Bradley Hall.

A student admitted to a degree program who receives grades of less than "B" for 9 semester hours in that graduate program will be dismissed and must petition the Dean of the Graduate School for permission to continue. The petition must be approved by the graduate advisor, the department chair, and the Dean of the Graduate School. Petitions for Reinstatement to Graduate Study are available in the Graduate School Office, 118 Bradley Hall.

To graduate, a student must be in academic good standing, must have met all conditions placed on him or her by the department, and must have been approved for unconditional status.

Dismissal for Non-Academic Reasons

Bradley graduate students must abide by all University regulations. Students who violate University regulations may be subject to disciplinary sanctions including dismissal or suspension as listed in the Bradley Student Handbook. Handbooks are available from the Student Activities Office located in the lower level of the Student Center.

Time Limit for Degree Completion

Candidates should complete all requirements for the master's degree within five years following the recording of their first graduate grades, including graduate courses taken as a student-at-large. If they do not do so and wish to use courses for the degree that were taken prior to the five-year limitation, they must validate those courses by examination, if their major department gives them permission to do so. This examination is to be devised by the department in

which the courses were offered. Students will be expected to be familiar with contemporary developments in subjects they have taken prior to the five-year limitation. Credit will be allowed for courses which extend beyond the limit only if the advisor recommends to the dean that the candidates are proficient in the subjects. Students should begin the approval process by contacting their graduate advisor.

Repeated Courses

Upon approval of the Dean of the Graduate School, a graduate student may repeat a maximum of two courses in which he or she received grades of C or below. Both the first and second grades received for the course are averaged to calculate the graduate student's overall grade point average; however, semester hours for the course shall count only once toward the degree requirement.

Audited Courses

A graduate student who is admitted to a degree program (full- or part-time) may audit any course at no charge, by permission of the instructor of the course. Students who are admitted as graduate students-at-large pay the same fee for auditing a course as they would if they were taking the course for credit.

Audited courses are not recorded on the permanent record. Students auditing courses should consult with the course instructor prior to the start of the class to clarify expectations for course participation.

Transfer of Credit

For a coherent program, master's degree candidates should take all of their graduate work at one institution or consortium. Bradley will, however, accept 6 semester hours of transfer credit from another accredited institution, providing that (1) the grade in each course offered for transfer is at least a B, and (2) the graduate advisor recommends its acceptance to the dean of the Graduate School. In rare instances, more than 6 semester hours may be transferred; but in no instance will Bradley accept more than 12 semester hours of transfer credit toward the degree. Grades of courses transferred are included in the calculation of the graduate level grade point average. Students applying to have course credits transferred must submit an official transcript from the other institution to the Graduate School. This transcript will be kept in the student's graduate file.

Courses used to earn a master's degree at Bradley or any other university may not be used as credit towards another master's degree at Bradley.

Extension credit is acceptable for transfer if it is taken from an accredited institution and is approved by the procedures outlined above. Correspondence courses and equivalency credit by examination are not acceptable.

Requests for transfer of ungraded courses must be accompanied by the instructor's written evaluation of the student's performance. Ungraded courses accepted for transfer can not be computed in the overall grade point average.

Academic Forgiveness Policy

To qualify for the Academic Forgiveness Policy, students must not have been enrolled in a Bradley degree program for at least five years.

Persons who wish to be readmitted to Bradley University under the Academic Forgiveness Policy must petition the Academic Review Board and request forgiveness of previous grades earned at Bradley. If the petition is approved, grades for all Bradley courses taken before the hiatus of five or more years will be removed from the GPA calculation. Students will retain credit for those courses with grades of "C" or better, whether the credit was taken in residence at Bradley or from another source.

The forgiven grades shall not count in determining the student's grade point average for academic probation or dismissal or for graduation; however, they shall remain on the transcript with an appropriate notation, and shall be used in determining graduation honors.

Forgiveness is a one-time option which is final and irreversible once granted.

Progression Toward Degree

1. Graduate Program of Study

Within the first 12 semester hours of a degree seeking student's graduate course work, a completed Program of Study form must be approved by the program graduate advisor and dean of the Graduate School. The Program of Study form must identify all program requirements including requirements beyond those listed in the graduate catalog. Revisions to the Program of Study are initiated by submission by the student of a Change of Program of Study form. This must be approved by the program advisor and dean of the Graduate School.

The dean of the Graduate School and the program advisor will use the Program of Study form to determine the student's qualifications for and progress toward completion of his or her master's degree.

2. Comprehensive Examinations

In the final semester, each department requires a comprehensive examination which is suitable to its program. The student must make arrangements with his/her advisor to take this examination at the time of registration for his/her final hours of course work. Results of the comprehensive examination must be reported to the Graduate School Office not less than two weeks prior to the date on which the degree is to be conferred.

A master's degree candidate who fails the comprehensive examination will be given only one opportunity for re-examination. Arrangements for a new examination should be made with the graduate advisor after approximately one semester has elapsed, but within the time limit prescribed for the degree.

Results of all comprehensive examinations will be posted to the student's transcript with the designation of Pass, Pass with Distinction, or Fail.

3. **Thesis**
Departments of the University govern the thesis option. Those students selecting this option must obtain information about thesis requirements from their graduate advisor. The general format and procedures for thesis filing are available from the Graduate School.
4. **Application for Graduation**
An application for graduation is included in each semester's academic handbook. The form must be completed and filed with the Graduate School when a candidate is registering for his or her final semester of study. Students finishing during a summer session should make application at the beginning of the term in which they plan to complete their requirements.
Applicants failing to complete all requirements for graduation in the semester for which they applied must reapply later.
5. **Removal of Conditional Status**
A student must be in academic good standing to graduate. The student also must have met all conditions placed on him or her by the department and have been approved for unconditional status.
6. **Attendance Commencement**
A commencement convocation is held at the completion of the fall and spring semesters. Students are encouraged to attend.

Policies and Procedures Governing Student Academic Concerns

The student first discusses academic concerns with the faculty person involved. If the problem is not resolved, the student then goes to the director or chairperson of the program. If no satisfactory solution is reached the student writes or visits the dean of the Graduate School to present his or her petition, informal grievance, or other matter related to graduate education. These policies and procedures are outlined in full in the student handbook and in the fall academic handbook.

Transcript of Credits

A transcript of credits is an authentic copy of the student's academic record. No partial transcript will be issued. Transcripts are released only by written request of the student. This order must be placed in person or by mail to the Registrar's Office, and be accompanied by a \$4.00 fee.

Facilities and Services

Bradley University offers attractive and functional facilities to serve the needs of students, faculty and staff. The 65-acre campus provides an intimate setting within a residential neighborhood. This neighborhood is anchored by an historic district which is located within walking distance of campus. Commercial amenities are provided by the Campustown center, located adjacent to campus. The 90,000 sq. ft. shopping center offers a supermarket, drugstore, restaurants, and a variety of other shops and services.

The campus itself is in the final stages of major facilities improvements. Recent improvements on the campus include new and renovated facilities in the areas of art, business, and engineering, as well as the Library and the Student Center. The new Global Communications Center features state-of-the-art audio, video, computer, and worldwide communication technology. A Visitors Center welcomes prospective students and their families to campus. Campus parking is now available in a new 700-car parking deck.

Bradley University Bookstore

The Bradley University Bookstore handles the books and supplies necessary for course work. Also, for the convenience of the campus, a large variety of other items is stocked, such as greeting cards, T-shirts, and other clothing, gifts, posters, and decorator items.

At the bookstore you can special order books not carried in stock, have film developed, and cash checks. Cookies, snacks, and soda are also available.

All of these items and services can be charged to your VISA, Mastercharge, Discover, or American Express cards.

In addition to the main store, the Fast Break in the Student Center offers convenience items, soft goods, candy, and a variety of other merchandise (including bus tickets). A professional bookstore is also in operation in Campustown. This store offers an extensive medical collection and a variety of books and merchandise.

Computing Services

Computing Services supports both the academic and administrative aspects of University computing. Academic resources include a variety of computer systems and software used for instruction, research, and

public service. Administrative support includes system development and information processing. Computing Services also supports campus-wide computer networks, network connections to the national research and education computer network (Internet), on-line information services, and electronic mail. Bradley is an affiliate of the National Center for Supercomputing Applications, which provides supercomputer access to Bradley students and faculty for instruction and research.

Equipment consists of several Sun Microsystem computers, several AT&T minicomputers, and more than 1,500 AT&T, NCR, and Apple microcomputers. These systems are connected via high-performance fiber optic networks.

Clusters of microcomputers are conveniently located in the Library and several academic buildings. Most students living in residence halls participate in the Residence Halls for the Future program, which provides a networked microcomputer in each residence hall room. Students from many disciplines use computers as an integral part of the learning process.

The Computing Services staff assists students, faculty, and administrators in their use of computers through the University Technology Service Center (UTSC), documentation, training seminars, and other support services.

To establish an "account" for use of computer facilities and access to the Internet, contact Computing Services, 677-2950. To obtain a copy of the training schedule or to register for training call 677-3645.

Romeo B. Garrett Cultural Center

Located at 824 North Duryea Place (next to the Global Communications Center), the Garrett Center houses the offices of Multicultural Student Services and various student organizations. The Center serves as a meeting place for student and community groups as well as a place for social and cultural events. Named in honor of the distinguished professor emeritus of sociology, Dr. Romeo B. Garrett, the Center is open every day during the regular academic year.

Haussler Hall

Haussler Hall is the main recreational facility for students, faculty, and staff at Bradley University. Contained in the building are several workout areas including a weight training room with Nautilus style equipment and free weights, three racquetball courts, 25-yard, 6-lane swimming pool, and three basketball courts for recreational purposes. Also there are men's and women's locker rooms where equipment can be checked out and lockers rented.

Health Center

The Student Health Center is an out-patient clinic that provides service to enrolled Bradley students who have paid the health fee and experience health problems. Students are assisted through advisement, treatment, consultations with health providers and referral for extended treatment if necessary. While there is no charge for most on-site treatments, payment for services

provided through referral to outside agencies is the student's responsibility.

The Center's qualified staff of physicians and nurses is located in modern treatment offices in Heitz Hall. They provide a point-of-entry for all University students to receive health care both at the Center and in the Peoria community.

The Center is open during the school year from 8:00 a.m. to 4:30 p.m. daily by appointment. The Center is open limited hours during breaks and regular summer school sessions. At times when the Health Center is closed, patients are referred to the Saint Francis Medical Center Emergency Room or Prompt Care for emergent or urgent problems.

In addition to regular medical services, the Health Center also offers special men's and women's evening clinics during the regular academic year. Clinic times are 5:00 p.m. to 7:00 p.m. one night during the week. You may call the Center for the specific evening of the clinic after classes start in the fall.

All students are required to have a student health form on file at the Health Center before registering. To avoid penalties and delays in registration, return the completed health form and then verify through the Health Center that it has been received and is complete.

IMMUNIZATION REQUIREMENT: In compliance with Illinois State law, all students registering for classes for the first time in a four year college must show proof of proper immunization or titer showing immunity to measles, mumps, rebecca, tetanus, and diphtheria plus dates of polio immunization.

Instructional Technology & Production Services

ITPS is a comprehensive media services which provides technological support of academic and administrative needs. Services available include full-service photographic, graphic, and desktop publishing production, broadcast quality video production, distant learning, compressed video and satellite conferencing, multimedia, software rental and purchase, equipment checkout, media services, rapid copy service, and audio/video recording

Cullom-Davis Library

The Bradley University Library serves chiefly the needs of the University's students and faculty. Its collection encompasses more than 1,250,000 items—including approximately 532,000 books, periodicals, and government documents, 762,000 microforms, and a variety of audiovisual resources, manuscripts, and archival materials. Major microform collections include the Educational Resources Information Center (ERIC) documents, Library of American Civilization, and Library of English Literature. The Library is a depository for both U.S. and Illinois government documents.

The Library's resources and services are housed in the Cullom-Davis Library, which was renovated and enlarged to 107,000 square feet (nearly double its previous size) in 1990. The new facility provides seating for 1,000 students and space for the collection to grow through the year 2000 and beyond.

Among the facilities is the Virginius H. Chase Special Collections Center, established in 1979 in honor of a Peorian who became a widely recognized authority on the botany and natural history of Illinois; it houses and exhibits rare books, manuscripts, archival materials, and other resources that require special management, including the collections of the Peoria Historical Society and the Citizens to Preserve Jubilee College. About 11,000 music scores, 8,000 recordings, and selected music reference materials are in the Music Resource Collection, which is located on the third floor.

As a participant in OCLC, a computerized bibliographic network, the Library and its clientele have ready access to millions of resources in over 6,000 libraries across the country and abroad. The Library regularly performs searches of computerized databases at no charge to Bradley students and faculty. Through the University's participation in the Alliance Library System, students and faculty may borrow materials from most other Peoria-area libraries. The Library is a member of the Illinois Library Computer Systems Office (ILCSO). As a member, the Library provides an online catalog and circulation system that incorporates Bradley's holdings and those of 44 other academic libraries in Illinois.

Student Center

The Student Center is symbolic of the philosophy that makes this truly a "campus community center." The Center is the focus of many campus activities. The wide variety of facilities and multivariied programs make a significant contribution to campus life outside the classroom.

The facilities of the Center include: cafeteria, ballroom, Fast Break convenience store, meeting rooms, billiards, amusement devices, television, browsing lounges, and Taco Bell. Besides the cafeteria and Taco Bell there are meeting rooms with food service for 10 to 100 people. In addition, the ballroom can accommodate up to 500 people for a meal, dance, or meeting.

WCBU FM 90

Serving all of central Illinois from the Bradley campus, WCBU provides a high quality arts and information service. Licensed to Bradley, WCBU also provides opportunities for students to participate as announcers, newscasters, operations assistants and producers.

Center for Wellness and Counseling

Professional counselors and supportive staff are trained to help Bradley students with a variety of problems. Bradley is concerned about the total development of students—social, emotional, intellectual, physical, spiritual, and occupational—as well as the environment in which they live. Students are assisted with any concerns in these areas. Personal growth and development issues of adjustment to college, relationship concerns, alcohol and substance abuse, anxiety and stress management, communication skills, eating disorders, assertiveness, and lifestyle choices are

some of the issues addressed by the counselors. Often, students can see a counselor the same day that they call for an appointment. Visits are confidential and free for Bradley students.

Student Affairs

The Bradley environment provides opportunities for the deliberate and total development of its students and encompasses experiences beyond the classroom. The Division of Student Affairs is concerned with the whole student and believes that what students learn and experience influences their aspirations, development, and achievements.

Therefore, the Division of Student Affairs enhances students' educational experiences through the mobilization and coordination of resources of the University community in order to develop responsibility within students for growth and development.

The Division complements the academic experience through programming provided by the Centers for Cocurricular Development, Educational Development, Housing, Residential Life and Student Judicial System, and the Smith Career Center. The Division of Student Affairs is also responsible for the Office of Parent Relations.

Center for Cocurricular Development

- Intramural and Recreational Sports
- Multicultural Student Services and Romeo B. Garrett Cultural Center
- Off-Campus Student and Non-Traditional Student Services
- Parents' Weekend
- Student Organizations
- Student Activities
- Student Government
- Student Media

This Center provides a cohesive plan of programs, activities, events and services designed to respond to the cultural, social, physical and recreational needs of all students enrolled at Bradley. Opportunities for leadership and group development and organizational building are provided for students to learn new skills, broaden their abilities, and manage their organizational activities. Communication between faculty, administration, students, and staff will be encouraged as a means to promote a well-informed campus community regarding student activities and government.

Multicultural Student Services and the Romeo B. Garrett Cultural Center foster a greater awareness of the minority and international experience by responding to social, cultural, educational, and philosophical

concerns. The Center serves as a meeting place for students and community groups as well as a place for social and cultural events.

Intramural and Recreational Sports offers students physical and recreational opportunities to participate in a wide variety of sport and recreational activities. A diversified schedule of activities is maintained for the novice to the advanced competitor.

Off-Campus and Non-Traditional Student Services help coordinate special activities and programs that are designed to meet the special needs of these students.

Student Activities organizes social life which includes concerts, dances, lectures, and special events such as Campus Carnival, homecoming, and a variety of student committees and programs. The office also registers student organizations and provides information and certain administrative services for more than 200 student groups.

Student government organizations provide leadership opportunities for students to participate in the governing process of the University, particularly as it relates to student concerns and welfare.

Student media, including the weekly newspaper *The Bradley Scout*, the yearbook *Anaga*, the literary publication *Broadside*, and the radio station WRBU, offer communication experiences and opportunities for interested students. All student media bearing the name of or sponsored by the University must be approved and supervised by the Communications Council.

Center for Educational Development

- Academic Exploration Program
- Advisement
- Counseling
- Health Services
- Learning Assistance
- Testing and Guidance
- Orientation
- Parents' Board
- Retention
- Wellness
- Division Research

The Center for Educational Development is designed to provide opportunities and assistance to students for the realization of their personal and educational goals. Beginning with an appropriate introduction to the University environment, students are subsequently provided with advisement; counseling and wellness services; health services; and opportunities to investigate and explore new academic areas and challenges.

The Academic Exploration Program and other advisement services are offered through the Center for Orientation, Testing and Advisement. In addition, orientation programs assist new students and their parents' adjustment to the University and the parents' adjustment to being the parent of a college student. During orientation, academic, career, and personal skills are assessed and enhanced which ensures a foundation of support that helps students realize their educational goals.

Retention strategies allow students to maintain the sometimes precarious balance between their strengths and personal resources and the demands and

expectations placed upon them by the academic environment, their families, and their peer group.

The Center for Wellness and Counseling provides personal counseling services to aid in the total development of students as well as to enhance the success of their academic achievement. Services are provided by professional counselors and are confidential and free for Bradley students.

The Health Center provides primary care for Bradley students, free of charge. The Center offers care for injuries and short-term illnesses, and advises students on medical matters. The physicians may also refer students needing more intensive physical or medical care.

Center for Housing, Residential Life and Student Judicial System

- Center for Student Leadership and Public Service
- Discipline
- Fraternities and Sororities
- Residence Programs
- Residence Halls and Residence Hall Staff

The Office of Residential Life is responsible for the general welfare of the residential hall students and members of fraternities and sororities at Bradley University, particularly as it concerns their outside class activities and living environment. This office interacts with all segments of the University including students, faculty, administrators, parents and the community. The responsibility of the judicial system is to protect the rights of the University and the individual student.

Smith Career Center

- Experiential Education
- Career Placement
- Career Resources

The Smith Career Center assists students in defining career goals, creating a job-search plan, obtaining career-related work experience, and developing relationships with prospective employers.

Through Experiential Education students gain paid, career-related work experience prior to graduation. Bradley students find opportunities for related work experience through paid internships, summer and part-time employment, and the cooperative education program.

Career Placement efforts include monitoring the employment market, identifying potential employment resources, facilitating campus interviews and resume referrals, and assisting students in making decisions necessary to a meaningful employer-employee relationship.

Career Resources offers job fairs, a career information library, workshops, a credit course in job search strategy, and a strong program of individual advisement.

FOSTER COLLEGE OF BUSINESS ADMINISTRATION

James Lumpkin, Dean
Adrienne Hurt, Director of Graduate Programs

The mission of the graduate programs in the Foster College of Business Administration is to serve the central Illinois community by developing students' knowledge, skills, and abilities through high quality programs of instruction. Our goal is to provide an educational experience which will allow for in-depth study in selected areas.

Master of Science in Accounting

The Department of Accounting offers a graduate program leading to the Master of Science in Accounting (M.S.A.) degree. The program provides graduate education that prepares students to meet professional practice challenges in public, private, and not-for-profit accounting. The program is designed to broaden the student's knowledge, to provide for in-depth study, and to complement theoretical study with relevant and significant research. Graduates should be prepared for meeting the 150-hour CPA examination education requirement, and entrance into, or advancement within, their chosen careers.

The program is open to full-time and part-time students. Students may enter the program in August, January, or during the summer.

Entrance Requirements

- a. An accounting degree or the equivalent.
- b. AACSB admission requirements as follows:

Admission

Admission to the Master of Science in Accounting program is based on a thorough review of the required documents as well as any supplemental materials which may be appropriate. The graduate admissions committee of the Foster College of Business Administration, chaired by the director of graduate programs, makes the admission recommendation.

The required documents are the following:

1. **Application form.** The application form must be complete with meaningful and well-developed answers to the questions on the goals of the applicant. A check of \$35.00, payable to Bradley University, must accompany the application.
2. **Transcript(s).** Official transcripts (two copies) from each college and university attended must be sent directly from the registrar to: Dean, Graduate School, Bradley University, Peoria, IL 61625.
3. **Letters of recommendation.** Two current letters of recommendation are required from persons who can comment meaningfully on the applicant's capability for graduate-level study. Character references are not appropriate. Faculty members under whom the applicant has studied and employers are considered appropriate references.
4. **GMAT (Graduate Management Admissions Test).** The GMAT is a standardized test designed to measure aptitude for graduate study in management. Applicants must arrange to take the test in sufficient time to permit processing of the results. The Bradley University GMAT institutional code is 1070. Information about the GMAT may be obtained by contacting the Graduate School Office or writing to: Graduate Management Admission Test, Educational Testing Service, CN 6103, Princeton, NJ 08541-6103, or by telephone at 609-771-7330.
Students currently in a four-year undergraduate accounting program should take the GMAT the first semester of their senior year in order to allow sufficient time for processing of the results.
5. **A current resume.**
6. **TOEFL (Test of English as a Foreign Language).** Applicable only to international students whose native language is not English. The test measures proficiency in oral and written English.

Graduate courses in business administration at the 600 level are restricted to graduate students who have been admitted to a degree-granting program in the Graduate School. Students-at-large may not take 600-level graduate courses in the Foster College of Business Administration. Exceptions, although rare, may be granted in unusual circumstances by the director of the program.

Degree Requirements

The Master of Science in Accounting program is 30 semester hours. At least 15 of these hours consist of courses in accounting. There are also nine elective semester hours of 600-level courses from the Foster College of Business Administration. The six remaining semester hours of elective course work at the 500 or 600 level may be taken inside or outside of the Foster College of Business Administration.

The program allows a maximum of six semester hours to be taken outside of the Foster College of Business Administration and requires a minimum of nine semester hours outside of accounting.

Accounting Courses Required (15 hrs.)

12 of 15 hours are required from this list:
 ATG 601 Accounting Theory
 ATG 614 Seminar in Managerial Accounting
 ATG 657 Auditing II
 ATG 667 Systems II
 ATG 677 Federal Tax II

For the remaining three required accounting hours students may select courses from above or one of the following:

ATG 501 Advanced Accounting II
 ATG 585 Contemporary Issues in Accounting
 ATG 590 Professional Accounting Problems
 ATG 604 Controllorship
 ATG 687 Seminar in Tax Research

Note:

500-level courses taken to complete requirements in an undergraduate degree cannot be used to complete master's degree requirements.

Elective (9 hrs.) Foster College of Business Administration

For choices see the listing of 600-level courses (with the exception of ATG 660) in the Foster College of Business Administration M.B.A. program, and obtain accounting graduate advisor approval.

Other Electives (6 hrs.)

May be taken in accounting (see above course lists) with approval from an accounting graduate advisor. See "Note" above. May be taken outside of the college with approval from an accounting graduate advisor. See "Note" above. For choices see the listing of 600-level courses (with the exception of ATG 660) in the Foster College of Business Administration M.B.A. program, and obtain accounting graduate advisor approval.

Other Requirements

Applicants should review the Graduate School admission policies, special regulations, registration and fees, and degree regulations located in the front of this catalog.

Comprehensive Examination

A written comprehensive examination must be taken by each student. This examination covers the graduate work that the student is presenting for the degree. The time, place, and nature of the examination is determined by the director of the Master of Science in Accounting program together with the individual.

Course Descriptions

ATG 501 Advanced Accounting II

3 hrs.

In-depth application of accounting concepts, theories, and conventions to recording and reporting of problems arising from business combinations, branch operations, and business operations in foreign countries. Consolidated balance sheets, income statements, and retained earnings statements. Home office and branch accounting, foreign exchange, foreign subsidiaries, segment and interim reporting, SEC reporting and corporations in financial difficulty. Prerequisite: ATG 302.

ATG 585 Contemporary Issues Accounting

3 hrs.

Critical evaluation of concepts, assumptions, principles, and analytical methodologies of accounting and their application to factual situations. Asset valuation and income determination: implications for internal and external uses of accounting information in business decision making. Prerequisite: consent of department chair.

ATG 590 Professional Accounting Problems

3 hrs.

Update and expansion of core knowledge in accounting theory, practice, taxation, and auditing. Prerequisites: ATG 383; ATG 377 or 677; or consent of instructor.

ATG 601 Financial Accounting Theory

3 hrs.

Application of the current authoritative accounting pronouncements to a variety of accounting situations. Conceptual development of analytical tools. Current authoritative and alternative measurement theories. Prerequisites: ATG 302 and Advanced Accounting.

ATG 604 Controllership

3 hrs.

Case studies of management accounting control systems and strategic cost analysis. Use of relevant costs for decision-making, planning, and evaluation of performance. Development of analytic tools drawn from cost accounting, management accounting, mathematics, and behavioral science. Prerequisites: ATG 157 or 505; ATG 158 or 506; BMA 352; or equivalents.

ATG 614 Seminar Management Accounting

3 hrs.

Research managerial accounting tools and procedures and develop management control systems in the business environment. Prerequisites: ATG 204 and BMA 352.

ATG 657 Advanced Auditing

3 hrs.

Problems affecting the auditing profession. Evaluation of alternative solutions and their implications. Prerequisite: ATG 457.

ATG 667 Accounting Information Systems

3 hrs.

Uses of information systems in tax, managerial/cost, auditing, and financial reporting processes. Evaluation of implementation alternatives. Prerequisite: ATG 383.

ATG 677 Federal Taxes II

3 hrs.

Tax aspects of formation, distributions, and liquidations of partnerships and corporations. Gift taxes, estate taxes, and family tax planning. Prerequisite: ATG 377.

ATG 687 Seminar Tax Research

3 hrs.

Using the case-study approach, students will develop and use tax research skills to evaluate tax consequences of proposed business decisions. Students will prepare oral and written reports communicating alternative courses of action and recommendations. Prerequisite: ATG 677 or consent of instructor.

Master of Business Administration

This program is accredited by the American Assembly of Collegiate Schools of Business (AACSB).

The M.B.A. program at Bradley University originated in the late 1940s and emerged as one of the dynamic forces in the College in the 1970s. Subsequently, it has earned recognition by receiving accreditation from AACSB. This recognition signals both the achievement of quality standards of long standing and the establishment of a new base upon which to build toward higher levels of excellence.

The M.B.A. program is open to full-time and part-time students, who take classes together. Students may enter the program in August, January, or during the summer. All of the required courses are offered in the evening and on weekends. The combination of students from different undergraduate disciplines, with varying levels of work experience, results in a dynamic educational environment beneficial to all.

The curriculum has a general managerial perspective. It stresses the theoretical basis of management disciplines as well as practical applications of theory and current management practices. The curriculum focuses on improving managerial performance in the problem-solving environment and also conceptualizing elements for policy formulating activity.

The study of management approached in this manner is appealing to those interested in the administration of all types of enterprise: health, government, and non-profit organizations, as well as the traditional large and small industrial and service business firms.

The practical, applications orientation of the curriculum necessitates the use of a wide variety of pedagogical approaches. Problem-solving situations are used which call for individual attention, group interaction, computer analysis, and formulation of assumptions to deal with uncertainty. Case analysis is extensively used which focuses both on problem-solving and presentation of conclusions using appropriate oral and written communication skills.

The M.B.A. program is designed to provide each student with a professional business education through:

1. A rigorous body of course work that reflects current business practices;
2. The development of analytical and interpersonal skills needed to work effectively in a rapidly changing domestic and global economy;
3. The teaching of the social and ethical responsibilities of business in a system of free enterprise.

Progress Toward the Degree

Admission

Admission to the M.B.A. program is based on a thorough review of the required documents as well as supplemental materials which may be appropriate. The Graduate Admissions Committee of the Foster College of Business Administration, chaired by the director of graduate programs, makes the admission recommendation.

The required documents are the following.

1. **Application Form.** The application form must be complete with meaningful and well-developed answers to the questions on the goals of the applicant. A check of \$35.00, payable to Bradley University, must accompany the application.
2. **Transcript(s).** Official transcripts (two copies) from each college and university attended must be sent directly from the registrar to: Dean, Graduate School, Bradley University, Peoria, Illinois 61625.
3. **Letters Recommendation.** Two current letters of recommendation are required from persons who can comment meaningfully on the applicant's capability for graduate level study. Character references are not appropriate. Faculty members under whom the applicant has studied and employers are considered appropriate references.
4. **GMAT (Graduate Management Admission Test).** The GMAT is a standardized test designed to measure aptitude for graduate study in management. Applicants must arrange to take the test in sufficient time to permit processing of the application with the test results prior to beginning the program. For reporting the test results, the Bradley University GMAT institutional code is 1070. Information about the GMAT may be obtained by contacting the Graduate School Office or writing to: Graduate Management Admission Test, Educational Testing Service, CN 6103, Princeton, New Jersey 08541-6103, or by telephone at 609-771-7330.
5. **A Current Resume.** Since our evaluation includes analysis of work experience, a current resume is very helpful to the admissions committee.
6. **TOEFL (Test of English as a Foreign Language).** Applicable only to international students whose native language is not English. The test measures proficiency in oral and written English.

Graduate courses in business administration are restricted to graduate students who have been admitted to the M.B.A. program or another degree granting program in the Graduate School. Students-at-large may not take 600-level graduate courses in the Foster College of Business Administration. Exceptions, although rare, may be granted by the director of graduate programs in unusual circumstances.

Leave of Absence

M.B.A. students will be allowed to take a one-semester leave of absence during the program without being dropped from the program or changing graduation requirements. If an M.B.A. student must take a second semester off during the program, he or she will have to

reapply for admission to the program. This reapplication does not guarantee admission to the program, and students who are readmitted may be subject to new degree requirements. For purposes of this policy, only the fall and spring semesters are considered. Students are not required to enroll during summer or interim sessions.

Degree Requirements

The M.B.A. program is 34 semester hours. Twenty-five of these hours satisfy a set of required common body courses. The program begins with an introduction to key issues in business decision making drawing on experienced practitioners and graduate faculty teams. A capstone strategy course, taken in conjunction with a computerized business simulation, integrates the business cross-functional approach to organizational issues. A professional development requirement provides application opportunities through short-term business application projects with a project team, advanced research projects in the chosen area of concentration, or summer study abroad projects with site visits to several multinational for-profit and not-for-profit organizations.

There are nine hours of elective course work which may be chosen within one of five areas of concentration (managerial accounting, finance, information technology, management, marketing) or across concentrations as a customized elective selection. The required and elective courses are as follows.

M.B.A. Courses

Required (25 hrs.)

BUS 600 Key Issues in Business Decision Making
 ATG 604 Controllorship
 ECO 606 Microeconomics for Managers
 ECO 608 U.S. Business Cycles in the International Economy
 BMA 620 Management Theory
 FIN 622 Financial Management
 MTG 624 Marketing Decision Making
 BMA 672 Information Technology Management
 BMA 628 Business Policy and Strategy Formulation
 BUS 681 Professional Development
 BUS 690 Business Simulation

Elective (9 hrs.)

Managerial Accounting

ATG 614 Seminar in Managerial Accounting
 ATG 667 Accounting Information Systems
 FIN 625 Financial Statement Analysis
 ATG 658 Topics in Accounting

Finance

FIN 623 Multinational Financial Management
 FIN 625 Financial Analysis
 FIN 627 Financial Risk Management
 FIN 658 Topics in Finance
 FIN 660 Readings in Finance

Information Technology

BMA 671 Productivity Software for Managers
 BMA 673 Data Communications for Managers
 BMA 675 Managing Systems Development
 BMA 676 Electronic Commerce
 ATG 667 Accounting Information Systems
 CIS 571 Computer Law
 CIS 572 Computing Services Management
 MFE 565 Computer Integrated Manufacturing

Management

BMA 602 Organizational Behavior
 BMA 657 Executive Development
 IB 656 International Business Administration
 BMA 658 Topics in Business Administration
 BMA 659 Topics in Management

Marketing

MTG 630 Building and Maintaining Marketing Relationships (required)
 MTG 640 Obtaining, Analyzing, and Applying Marketing Information (required)
 MTG 654 Managing Services Marketing
 IB 656 International Business Administration
 MTG 658 Topics in Marketing
 IB 660 Readings in International Business

Other Electives

QM 652 Advanced Data Analysis
 BMA 653 Production Management
 ECO 658 Topics in Economics
 IB 658 Topics in International Business
 QM 658 Topics in Quantitative Methods
 ATG 660 Readings in Accounting
 BMA 660 Readings in Business Administration
 ECO 660 Readings in Economics

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FIN 660 Readings in Finance
IB 660 Readings in International Business
MTG 660 Readings in Marketing
QM 660 Readings in Quantitative Methods

All students must have a proficiency in mathematics equivalent to the techniques of calculus in college, and working familiarity with business computer systems which includes microcomputers and management information systems. Students without these proficiencies must take appropriate mathematics and computer courses specified by the director of graduate programs.

All students in the M.B.A. program must possess the common body of knowledge in business administration as set forth below.

1. a background of the concepts, processes, and institutions in the production and marketing of goods and/or services, and the financing of the business enterprise or other forms of organization;
2. a background of the economic and legal environment as it pertains to profit and/or nonprofit organizations along with ethical considerations and social and political influences as they affect such organizations;
3. a basic understanding of the concepts and applications of accounting, quantitative methods, and management information systems including computer applications;
4. a study of organization theory, behavior, and interpersonal communications;
5. a study of administrative processes under conditions of uncertainty including integrating analysis and policy determination at the overall management level.

The common body of knowledge is satisfied through core prerequisite and graduate course work. The 500-level core courses are compressed and offered on seven-week schedules. The prerequisite portion of the requirement may be satisfied if an applicant's transcript contains undergraduate courses equivalent to the prerequisite courses listed below. An admitted student who has not had a particular prerequisite course may take it at Bradley University, or with prior permission, at another institution.

Core Prerequisite Courses

ATG 505 Accounting Principles-Financial and
ATG 506 Accounting Principles-Managerial
ECO 506 Elements of Microeconomics and
ECO 508 Elements of Macroeconomics
QM 501 Quantitative Analysis I and
QM 502 Quantitative Analysis II
BMA 542 Legal Environment of Business
BMA 552 Management of Organizations
BMA 553 Operations Management
MTG 515 Fundamentals of Marketing
FIN 522 Introduction to Finance

Students should try to complete all their prerequisite courses prior to enrolling in M.B.A. courses, but students may be permitted to take graduate courses for which all prerequisites have been satisfied, in order to avoid scheduling and course sequencing difficulties.

Other Requirements

Applicants should review the Graduate School admission policies, special regulations, registration and fees, and degree regulations located in the front of this catalog.

Comprehensive Examination

Candidates will be expected to demonstrate their capacity to draw upon and integrate their knowledge from all courses in a written comprehensive examination. A candidate will complete the examination while enrolled in BMA 628. In case of failure, the candidate will be allowed to retake the comprehensive only once.

Practicum

BUS 610 MBA Business Practicum 0 hrs.

Solving challenging business problems with a near-term economic benefit. Prerequisite: MBA student in good standing; Center for Business and Economic Research approval.

LAS M.B.A. Program

Undergraduate students in the College of Liberal Arts and Sciences may combine their studies and earn their baccalaureate degree and M.B.A. degree in five and one-half years or fewer. Students may include all of the prerequisites for the M.B.A. Program as a part of their required 124 undergraduate semester hours. Careful scheduling is required and should be coordinated with the student's undergraduate adviser and M.B.A. program director. Students electing this option must be fully admitted before registering for graduate level courses and have the written approval of the director of graduate programs. Students should contact the director of graduate programs during their sophomore year for particular information.

IE M.B.A. Program

Undergraduate students in the industrial engineering department may combine their studies and earn an M.B.A. degree in five and one-half years or fewer. Students may include all of the prerequisites for the M.B.A. program as part of their required 124 undergraduate semester hours. Careful scheduling is required and should be coordinated with the student's undergraduate adviser and director of graduate programs. Students electing this option must be fully admitted before registering for graduate level courses and have the written approval of the director of graduate programs. Students should contact the director of graduate programs during their sophomore year for particular information.

M.B.A. Association

The MBAA is the social and professional extension of the program. Its principal objectives are to enhance closer personal ties among its members, foster communication between students and the business world, and provide closer ties with the faculty. A

variety of activities is scheduled to include MBA students and spouses, as well as faculty and alumni. All MBA students should join the association.

Course Descriptions

Prerequisite MBA Core Courses

QM 501 Quantitative Analysis I

2 hrs.

The presentation and organization of data. Probability theory, probability distributions, and sampling distributions. Confidence interval estimation and hypothesis tests of one and two samples. Cannot be used to satisfy MBA elective or concentration requirements. Prerequisite: MTH 115 or equivalent.

QM 502 Quantitative Analysis II

2 hrs.

Linear and multiple regression and correlation techniques. Analysis of variance, times-series analysis, and nonparametric procedures. Cannot be used to satisfy MBA elective or concentration requirements. Cannot be used to satisfy MBA elective or concentration requirements. Prerequisite: QM 501 or 262.

ECO 506 Elements of Microeconomics

2 hrs.

Review of demand, supply, product markets, factor markets, perfect competition, monopoly, and other market structures, using algebra. Cannot be used to satisfy MBA elective or concentration requirements. Prerequisite: consent of director of graduate programs.

ECO 507 Review of Elements of Microeconomics

1 hr.

Accelerated review of selected topics from ECO 506, using algebra. Preparation for ECO 606 for those who have had Principles of Microeconomics and need a review. Pass/fail. Cannot be used to satisfy MBA elective or concentration requirements. Prerequisite: ECO 221. (Review course to be taken only if needed— not required.)

ECO 508 Elements of Macroeconomics

2 hrs.

Development of basic analytical framework to understand nature and causes of business cycles in a capitalistic, market-oriented, global economy; role of countercyclical policies; nature and role of various institutions in macro economy. Cannot be used to satisfy MBA elective or concentration requirements. Prerequisite: consent of director of graduate programs.

ATG 505 Accounting Principles Financial

2 hrs.

Introduction to accounting concepts of recognition, measurement, classification, and disclosure, which are the foundations to a financial reporting system. The accounting cycle; preparation of financial statements; introduction to financial statement analysis. (Does not count as elective.) Prerequisite: consent of director of graduate programs.

ATG 506 Accounting Principles Managerial

2 hrs.

Use of accounting data for internal management decision making. Budgeting and variance analysis, capital budgeting decisions, responsibility centers, cost-volume-profit analysis, standard costs, cost behavior, and performance evaluation. (Does not count as elective.) Prerequisite: ATG 505 or equivalent; consent of director of graduate programs.

MTG 515 Fundamentals of Marketing

2 hrs.

Introduction to the marketing function: customer behavior, segmentation, product development, pricing decisions, promotional activity, management of the sales force, and distribution. Cannot be used to satisfy MBA elective or concentration requirements. Prerequisite: ECO 221 or 506.

FIN 522 Introduction to Finance

2 hrs.

Principles of financial management; financial systems and flow of funds; time value of money and its application; raising and allocation of funds; financial analysis, planning, and forecasting. Cannot be used to satisfy MBA elective or concentration requirements. Prerequisites: ATG 505, 506; ECO 506, 508; QM 501, 502; or equivalents.

BMA 542 Legal Environment of Business

2 hrs.

Analysis of the legal environment in which business operates. Ethical and equitable influence on legal development emphasized. Study of specific areas of procedure, constitutional law, contracts, torts, international business law, business organizations, and the regulatory environment related to antitrust, labor, securities, environmental, and consumer law. Cannot be used to satisfy MBA elective or concentration requirements. Prerequisite: consent of director of graduate programs.

BMA 552 Management and Organizations

2 hrs.

The analysis of effective management in organizations. Emphasis on the functions of management and the behavioral processes of change, conflict, leadership, motivation, communication, innovation, and group dynamics. Diversity, ethics, social responsibility, and international management. Cannot be used to satisfy MBA elective or concentration requirements. Prerequisite: consent of director of graduate programs.

BMA 553 Operations Management

2 hrs.

Survey of issues and decision making techniques related to the operations of an organization. Quality management, project management, inventory management, waiting line analysis, production scheduling, job design, and facility layout. Cannot be used to satisfy MBA elective or concentration requirements. Prerequisite: consent of graduate program director.

Required Common Body Courses

BUS 600 Key Issues in Business Decision Making 2 hrs.

Introduction to a range of business-related topics which will be covered in more depth within the common body and integrated throughout the MBA curriculum. Prerequisite: admission to the MBA program.

ATG 604 Controllership 3 hrs.

Case studies of management accounting control systems and strategic cost analysis. Use of relevant costs for decision-making, planning, and evaluation of performance. Development of analytic tools drawn from cost accounting, managerial accounting, mathematics, and behavioral science. Prerequisites: ATG 157 or 505; ATG 158 or 506; BMA 352; or equivalents.

ECO 606 Microeconomics for Managers 2 hrs.

Analysis of domestic and international markets, resource allocation, market structure, impacts on business decision making and on society, role of government regulation in business, pricing strategies. Prerequisites: ECO 221 or 506; ECO 222 or 508; MTH 115; QM 262, 263 (or QM 501, 502); familiarity with computer systems; or consent of instructor.

ECO 608 U.S. Business Cycles in the International Economy 2 hrs.

The application of economic analysis to explain fluctuations in Gross Domestic Product (GDP), employment, and inflation in our contemporary open economy; evaluation of alternative economic stabilization policies; uses and applications for managerial decision making. Prerequisites: ECO 221 or 506, ECO 222 or 508, or consent of MBA director; MTH 115; QM 262, 263 (or QM 501, 502); familiarity with computer systems.

BMA 620 Management Theory 3 hrs.

Planning, organizing, directing, coordinating, and controlling operations through managerial decision-making. Emerging issues and trends; integration of principles and concepts with contemporary concerns. Prerequisite: BMA 352; or IE 306, 313; or IE 511, 522, 564.

FIN 622 Financial Management 3 hrs.

The financial framework of business; principles governing the operation of financial markets. Management of the flow of funds through a company; evaluation of alternative methods of financing under changing conditions; capital and cash budgeting; valuation problems. Prerequisite: foundation courses completed.

MTG 624 Marketing Decision Making 3 hrs.

Marketing management problems, policies, and solutions. Case studies of marketing problems, research, and applications of marketing techniques to business problems. Prerequisite: MTG 315 or 515.

BMA 628 Business Policy and Strategy Formulation 3 hrs.

Strategies in response to conditions such as competition and future development. Must be taken in last semester of program.

BMA 672 Information Technology Management 2 hrs.

Knowledge and application of information-related resources from a management perspective: identifying information needs, strategic uses of information systems, emerging information technologies, managing information resources effectively. Prerequisite: familiarity with computer systems.

BUS 681 Professional Development 1 hr.

Apply professional knowledge and skills in a team environment on not-for-profit, international, or research project. Prerequisites: last semester of program; consent of graduate programs director.

BUS 690 Business Simulation 1 hr.

Students gain an understanding of the interrelationships between the various functional areas of business by making decisions for a company in a computer-based simulation. Prerequisite: concurrent enrollment in BMA 628.

MBA Concentrations

(One course in each area is required as part of the Common Body. For a concentration choose three courses in one area, from this list.)

Managerial Accounting

Choose three courses:

ATG 614 Seminar in Management Accounting 3 hrs.

Research managerial accounting tools and procedures and develop management control systems in the business environment. Prerequisites: ATG 204 and BMA 352.

ATG 667 Accounting Information Systems 3 hrs.

Uses of information systems in tax, managerial/cost, auditing, and financial reporting processes. Evaluation of implementation alternatives. Prerequisite: ATG 383.

FIN 625 Financial Analysis *(see description under Finance)*

Any approved 600-level accounting course.

Finance

Choose three courses

FIN 623 Multinational Financial Management 3 hrs.

How global financial markets accommodate various cultural, legal, economic, and exchange rate systems. How different conventions apply to country-specific accounting, operating, marketing, and financing. Multinational interaction and exposure management are emphasized. Prerequisite: completion of all core courses.

FIN 625 Financial Analysis**3 hrs.**

Contemporary theoretical and applied approaches to analyzing financial health. Managerial implications. Application and interpretation of ratios; univariate and multivariate tools. Financial modeling. Prerequisite: completion of all core courses.

FIN 627 Financial Risk Management**3 hrs.**

Risks induced by input factor, interest rate, and currency exchange rate changes are analyzed for interpretation, reduction, offset, or alternative adjustment. How the firm can enhance financial performance relative to risk taken. Prerequisite: completion of all core courses.

FIN 658 Topics in Finance**3 hrs.**

Topics of special interest which may vary each time the course is offered. Topic stated in current Academic Handbook.

Information Technology

Choose three courses

BMA 671 Productivity Software for Managers**3 hrs.**

The use of packaged software to improve personal productivity in the business environment: spreadsheets, databases, presentation graphics, database retrieval, statistics, word processing, and electronic mail. Problem-solving laboratory exercises using the different software packages. Prerequisite: familiarity with computer systems.

BMA 673 Data Communications for Managers**3 hrs.**

Data communications for supporting management decision making and group coordination: communication technologies, idea generation and group collaboration, data and video conferencing, emerging technologies for communication and coordination. Prerequisite: familiarity with computer systems.

BMA 675 Managing Systems Development**3 hrs.**

Tools and techniques needed to manage the development of information systems. Systems analysis techniques, rapid application development, data modeling, data management and administration, project management tools and techniques. Prerequisite: familiarity with computer systems.

BMA 676 Electronic Commerce**3 hrs.**

Introduction to electronic commerce (EC). Managerial and organizational issues surrounding EC. History of Internet, emerging technologies for EC, electronic data interchange, digital libraries, data warehouses, interactive advertising and marketing, kiosk systems. Relation of EC to organizational strategy. Prerequisite: familiarity with computer systems.

ATG 667 Accounting Information Systems

(see description under Managerial Accounting)

CIS 571 Computer Law**3 hrs.**

Ethical considerations of computer scientists and computer-related security and privacy issues; copyright, patent, trademark, and trade secret issues, deceptive trade practices, computer crime, contract issues, venture capitalists, tax issues, computer torts, constitutional issues, and international trade considerations. Prerequisite: one semester of programming.

CIS 572 Computing Services Management**3 hrs.**

Management of computing resources: planning for computing services; operational considerations; evaluation of service. Prerequisites: CS 302 or 310.

MFE 565 Computer Integrated Manufacturing**3 hrs.**

Computer Integrated Manufacturing (CIM); elements of hardware and software within the manufacturing automation environment. Islands of factory automation and their interactions, information flow and Local Area Networks within the CIM architecture, standardization of electronic data and interfaces. Prerequisite: MFE 370.

Management

Choose three courses

BMA 602 Organizational Behavior**3 hrs.**

Analysis of individual and group behavior in the organizational environment. Motivation, leadership, communication, conflict, change, decision-making, and organizational theory, demonstrated through classroom experiences. Prerequisite: BMA 352.

BMA 657 Executive Development**3 hrs.**

Theory and research of development stages of executive careers. The impact of the organization on the executive personality; forces influencing the development of executive skills and abilities; studies of antecedents of executive role performance; and the role of training programs in executive development.

IB 656 International Business Administration**3 hrs.**

Impact of economic, cultural, legal/political, institutional, and competitive issues on the management of international and global business operations. Adjustment of strategic and tactical entry mode, marketing, production, human resources, and financial decisions to macroenvironmental constraints in selected world regions and markets. Case studies and reports. Prerequisite: BMA 552 (or BMA 352); MTG 515 (or MTG 315); and consent of director of graduate programs.

BMA 658 Topics in Business Administration**3-6 hrs.**

Topics of special interest which may vary each time the course is offered. Topic stated in current Academic Handbook.

BMA 659 Topics in Management
1-2 hrs.

Management-related topics presented in modules or seminars. Topics may vary each time the course is offered. Topic stated in current Academic Handbook. May be repeated under different topics for a maximum of six hours credit.

Marketing

Required:

MTG 630 Building and Maintaining Marketing Relationships
3 hrs.

Core concepts for developing and maintaining internal and external customer relations. Relationship marketing; customer satisfaction, quality, services marketing, consumer and industrial buyer behavior, personal selling, and ethical marketing conduct. Prerequisite: MTG 624.

MTG 640 Obtaining, Analyzing, and Applying Marketing Information
3 hrs.

Gathering, understanding, and using marketing information, data base marketing, qualitative research, electronic research, forecasting, and computer software data analysis packages. Prerequisite: MTG 315 or MTG 515.

Choose one course from the following:

MTG 654 Managing Services Marketing
3 hrs.

In-depth analysis of the problems facing marketing managers in service and nonprofit organizations. Interdependence of marketing, operations, and human resources. Prerequisite: MTG 315 or MTG 515.

IB 656 International Business Administration
*(see description under Management)***MTG 658 Topics in Marketing**
3 hrs.

Topics of special interest which may vary each time the course is offered. Topic stated in current Academic Handbook.

Other Electives

QM 652 Advanced Data Analysis
3 hrs.

Multivariate methods used in economics, marketing, finance, and operations: multivariate analysis of variance; factor, discriminant, and cluster analysis; multidimensional scaling; multiple regression; canonical correlation. Prerequisites: QM 263 (or QM 501, 502); consent of director of graduate programs.

BMA 653 Production Management
3 hrs.

Modern practices in production management: computer-based planning and control systems and management of human resources. Prerequisite: BMA 623 or consent of instructor.

ECO 658 Topics in Economics
3 hrs.

Topics of special interest which may vary each time the course is offered. Topic stated in current Academic Handbook.

IB 658 Topics in International Business
1-3 hrs.

Topics of special interest which may vary each time the course is offered. Topic stated in current Academic Handbook.

QM 658 Topics in Quantitative Methods
3 hrs.

Topics of special interest which may vary each time the course is offered. Topic stated in current Academic Handbook.

ATG 660 Readings in Accounting
3 hrs.

Individual readings for qualified students, under the guidance of a member of the faculty. Prerequisites: consent of instructor and director of graduate programs.

BMA 660 Readings in Business Administration
1-3 hrs.

Individual readings for qualified students, under the guidance of a member of the faculty. Prerequisites: advancement to candidacy; consent of instructor and director of graduate programs.

ECO 660 Readings in Economics
3 hrs.

Individual readings for qualified students, under the guidance of a member of the faculty. Prerequisites: consent of instructor and director of graduate programs.

FIN 660 Readings in Finance
3 hrs.

Individual readings for qualified students, under the guidance of a member of the faculty. Prerequisites: consent of instructor and director of graduate programs.

IB 660 Readings in International Business
1-3 hrs.

Individual readings for qualified students, under the guidance of a member of the faculty. Prerequisites: consent of instructor and director of graduate programs.

MTG 660 Readings in Marketing
3 hrs.

Individual readings for qualified students, under the guidance of a member of the faculty. Prerequisites: consent of instructor and director of graduate programs.

QM 660 Readings in Quantitative Methods
3 hrs.

Individual readings for qualified students, under the guidance of a member of the faculty. Prerequisites: consent of instructor and director of graduate programs.

Economic Education

ECO 690, 691 Economic Education
1-3 hrs. each

For persons studying economics through Bradley's Center for Economic Education. Specific contents arranged to meet the needs of the participants: elementary, secondary, and college teachers, clergy, public administrators, and other professionals. May be repeated up to 12 hours each. (Not an M.B.A. elective.) Prerequisite: undergraduate degree.

SLANE COLLEGE OF COMMUNICATIONS AND FINE ARTS

Jeffrey Huberman,
Dean

The mission of the Slane College of Communications and Fine Arts shall be the pursuit of excellence in providing distinctive programs and learning environments most conducive to the intellectual, aesthetic, and professional development of its students and faculty. The College also recognizes its centrality to the broader University as a participant in general education and to the larger community, nation, and world as a cultural and communications center.

In keeping with this mission, the College offers graduate degrees in the Department of Art, as well as courses in the Departments of Music, Communication, and Theatre Arts.

A dedicated faculty of professional artist-teachers is committed to providing quality educational opportunities to students desiring post-baccalaureate study.

Art

Beth Linn, Graduate Advisor

The graduate degree program in art was established in 1948. The program is accredited by the National Association of Schools of Art and Design (NASAD).

Mission

The mission of the graduate art program is the professional development of individual studio and scholarly abilities, exemplified by a significant body of work. Students admitted to the program demonstrate the potential to solve contemporary problems in the visual arts and address new questions and issues.

Two levels of graduate degrees are offered: an initial graduate degree (M.A.) and a terminal graduate degree (M.F.A.) which designates the highest level of academic achievement in studio art. The purpose of these degrees is to prepare students for professional practice in the field of studio art. Through participation in the program, students gain knowledge and insight into historical and contemporary ideas and studio theory and practice.

Admission Requirements

Applicants for graduate degrees in art shall demonstrate a special ability for growth and conceptual development in their area of concentration.

Following are requirements for admission to the program:

1. Official transcript confirming an undergraduate degree with a major in art or the equivalent, and a grade point average in accordance with the requirements of the Graduate School.
2. Portfolio of work (20 slides for ceramics, painting, printmaking, sculpture; 15-20 original matted prints for photography).
3. Two letters of recommendation.
4. Personal interview (recommended).
5. Application deadlines are November 1 (for spring entrance) and April 1 (for fall entrance) to be assured full consideration.

In some cases, conditional acceptance is possible. Undergraduate study may be necessary where deficiencies exist. Students who already hold a Master of Arts degree in studio art may be admitted to the M.F.A. program. For details, consult the department chair.

Degree Requirements

General requirements:

1. The student is eligible to advance to candidacy with an oral and visual presentation to the graduate faculty after completion of 9 semester hours and before 18 hours. The graduate faculty will make a decision regarding the student's continuation in the program.
2. Each student must participate in the biennial graduate exhibition.
3. Students entering these degree programs with an undergraduate degree in art from Bradley are encouraged to take from 6 to 12 semester hours of work in the major studio concentration from another institution; these courses must be approved in advance by the graduate advisor.
4. A student may transfer from 6 to 12 semester hours of credit in the major concentration from another accredited institution if approved in advance by the graduate advisor.
5. The following studio major concentrations are offered: ceramics, painting, photography, printmaking, sculpture. Drawing is available as a special emphasis.
6. Each student is assigned a graduate committee consisting of a major professor in the field and two additional graduate faculty members. The student must work closely with the major graduate advisor to plan his or her program of study.
7. Each full time graduate student must take one seminar each semester until the requirement is completed. Twelve credits or four seminars are required.
8. A residency of 48 semester hours is required for the M.F.A. degree and 24 semester hours for the M.A. degree.

9. A written comprehensive examination must be passed before graduation.
10. A record of the student's thesis exhibition on colored slides and video tape shall be the responsibility of the student and will become the property of the University.

Course Requirements

Master of Fine Arts Degree with a Major in Studio Art

Studio (major concentration)	30 hrs.
Graduate studio electives	9 hrs.
Graduate electives (may be University graduate courses, additional graduate studios, seminars, and/or written thesis	6 hrs.
Seminars in art history	6 hrs.
Seminar in contemporary trends	6-12 hrs.
Thesis (exhibition)	3-6 hrs.
Total Hours Required	60 hrs.

Master of Arts Degree with a Major in Studio Art

Studio (major concentration)	12 hrs.
Graduate studio electives	6 hrs.
Graduate electives (may be University graduate courses, additional graduate studios, seminars, and/or written thesis	3 hrs.
Seminar in art history	3 hrs.
Seminar in contemporary trends	3 hrs.
Thesis (exhibition)	3-6 hrs.
Total Hours Required	30 hrs.

Course Descriptions

ART 500 Advanced Studio 3-6 hrs.

Advanced work in printmaking, drawing, photography, ceramics, sculpture, intermedia, or painting. Prerequisites: graduate standing or completion of corresponding senior level course.

ART 590 20th Century Art Seminar 3-6 hrs.

Research, presentations, and group discussions on topics of current concern in the visual arts. Limited to a total of 6 hours. Prerequisites: ART 142.

ART 600 Photography Studio 3-30 hrs.

Development of advanced technical, aesthetic and conceptual concerns through experimentation within the photographic media relating to appropriate historical and contemporary references. 3-6 hours per semester.

ART 610 Drawing Studio 3-12 hrs.

Analytical and conceptual evaluation of individual style and content, emphasizing technical and creative competency on a professional level. 3-6 hours per semester.

ART 620 Printmaking Studio**3-30 hrs.**

Technical and conceptual development with intaglio, relief, and planographic printing. Etching, engraving, wood, paper, and plastic relief printing, serigraphy and lithography. 3-6 hours per semester.

ART 630 Ceramics Studio**3-30 hrs.**

Techniques and materials used in stoneware, earthenware, and porcelain. Emphasis on creative development and technical competence. 3-6 hours per semester.

ART 640 Sculpture Studio**3-30 hrs.**

Technical and conceptual information about wood and stone carving and construction, welding and metals fabrication, non-ferrous foundry practice, and plastics lamination, emphasizing individual development. 3-6 hours per semester.

ART 660 Intermedia Studio**3-12 hrs.**

Advanced work in a combination of media of the student's choice. May include two- or three-dimensional media; may incorporate motion, light, sound, film, television, and live performances. Emphasis on experimental possibilities of related media. 3-6 hours per semester.

ART 670 Painting Studio**3-30 hrs.**

Advanced painting in the medium and direction of the student's choice. Emphasis on creative development and technical competence. 3-6 hours per semester.

ART 680 Special Problems**3-18 hrs.**

Problems in area of student's special interest, as advised by instructor. 3 hours per semester.

ART 690 Seminar**3-18 hrs.**

Research and presentation of art topics ranging from history to contemporary concerns of the artist, to interdisciplinary courses or courses consisting of an organized sequence of guest speakers. May be repeated under various topics for a maximum of 18 hours or 3 hours per semester.

ART 699 Thesis**3-6 hrs.**

Supportive Courses

CFA 500 Research Methods in Speech and Theatre Arts**3 hrs.**

Problems and principles in conducting original and creative research, investigation, and reporting in rhetoric and public address, theatre arts, and oral interpretation. Prerequisite: consent of division director.

CFA 604 Independent Study**1-3 hrs.**

Independent research or creative production problems not leading to a thesis. Repeatable to a maximum of 6 credit hours with permission of the graduate advisor. Prerequisite: consent of division director.

Communication

COM 507 Directing the Forensics Program**3 hrs.**

Philosophy, development, and administration of forensic programs. Trends and standards in educational and public debating; problems in research.

COM 678 Seminar in Communication**3-6 hrs.**

Varying topics examining the role of discourse in business, political, or social settings.

Music

MUS 540 Basic Concepts in Music Education**3 hrs.**

Fundamental concepts for design of education and training in music; critical examination of historical and current trends. Emphasis on development of philosophical consistency in formation of objectives and standards for music education in public schools.

MUS 550 Seminar in Music History**3 hrs.**

History of music and stylistic development; emphasis on ability to discuss music in historical perspective. Research assignments and music analysis of representative compositions and composers from various musical periods.

MUS 555 The Teaching of Music Literature**3 hrs.**

Solo, ensemble, and training materials related to the student's performing area, emphasizing methods of teaching and performing music literature. Prerequisite: consent of instructor.

MUS 562 Studies in Music History**3 hrs.**

Detailed study of music history in one of the following periods: Middle Ages, Renaissance, Baroque, Classical, Romantic, Twentieth Century.

MUS 580 Vocal Pedagogy**2 hrs.**

The vocal mechanism and its application to the technique of healthy singing; textbook sources, films, demonstrations, and practical applications. Prerequisite: senior or graduate standing.

COLLEGE OF EDUCATION AND HEALTH SCIENCES

Joan L. Sattler,
Dean

Rita Jensen, Associate Dean and
Graduate Studies Coordinator

The College of Education and Health Sciences at Bradley University was founded in June 1985. The mission of the College is to prepare professionals who are uniquely qualified for useful and productive service that promotes the intelligent use of human resources and fosters individual development over the life span. It includes graduate degree programs within the following departments:

1. Educational Leadership and Human Development, offering programs in leadership in educational administration, leadership in human service administration, and human development counseling. Chair: Lori A. Russell-Chapin.
2. Teacher Education, offering programs in curriculum and instruction and learning disabilities. Chair: Barbara Penelton.
3. Nursing, offering a Master of Science in Nursing (M.S.N.) in nursing administration and in nurse administered anesthesia and supportive courses in nursing. Chair: Francesca Armmmer.
4. Physical Therapy, offering a Master of Physical Therapy (M.P.T.) beginning in the year 2000. Chair: Mary Jo Mays.

Although the Department of Family and Consumer Sciences does not offer a graduate degree program, graduate courses are available to fulfill cognate and elective purposes.

Master of Arts

The Master of Arts degree is conferred upon students who have completed a minimum of 33 graduate semester hours in curriculum and instruction or learning disabilities; 36 graduate semester hours in leadership in educational administration or leadership

in human service administration; 48 graduate semester hours in human development counseling.

Before any application can be approved, the Miller Analogies Test (MAT) or the Graduate Record Exam (GRE) must be a part of the candidate's record. The GRE testing program will change significantly in 1997 and this change will affect the graduate admissions requirements for the departments in the College of Education and Health Sciences. Our current requirement is that all applicants submit scores from the GRE general test. However, once the new GRE is introduced, applicants have the option of taking the package of general test measures containing **either** the mathematical reasoning **or** quantitative reasoning test. Questions about requirements for admission should be directed to the respective department.

The candidate is urged to make necessary testing arrangements with the Graduate School, 118 Bradley Hall, 677-2371, for the MAT. Contact the Center for Orientation, Testing and Advisement, 133 Bradley Hall, 677-2409, to make arrangements to take the GRE. This will expedite the application process.

An applicant must possess a Miller Analogies raw score of 37 (50 percentile) or a GRE combined score of 1440 (50 percentile) to be accepted **unconditionally**.

For **conditional** admission a candidate must possess a minimal MAT score of 27 (25 percentile) or a GRE combined score of 1200 (25 percentile). The MAT may be retaken one time.

In addition to the MAT requirements the candidate must have a bachelor's degree overall grade point average of 2.50 and a 2.75 grade point average in the major field of concentration for **unconditional** admission.

For **conditional** admission into a graduate program the candidate must have a bachelor's degree overall grade point average of 2.25 and a 2.40 grade point average in the major field of concentration. The conditional student must maintain a 3.0 grade point average during the first 9 to 18 semester hours of graduate work in order to gain unconditional status.

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All applicants must complete the prescribed application forms of the College of Education and Health Sciences and Graduate School.

Two letters of reference must be obtained by the applicant from educational field employers or college/university professors who can recommend the applicant as having strong potential for success in graduate studies and in potential continued service to the education profession.

ELH 604 is strongly recommended as the first course taken by all degree candidates. Other core courses that are mandated in all professional education and counseling programs within the College of Education and Health Sciences are ELH 605 and ELH 606. It is recommended that the three required core courses be completed during the first 12 semester hours of the student's program.

Students should consult with their advisor for departmental program requirements.

The Education Reform Act requires that after July 1, 1988, all persons seeking early childhood, elementary, special, high school, school service personnel, or administrative certificates in Illinois must pass both a test of basic skills and a test of subject-matter knowledge. Those persons covered include new graduates from teacher preparation programs, educators moving to Illinois from other states, and Illinois educators applying for additional certification.

All professional education programs requiring certification at Bradley University have been approved by the Illinois State Board of Education and accredited by the National Council for the Accreditation of Teacher Education.

Master of Science in Nursing (M.S.N.)

The purpose of the graduate program is to educate the professional nurse for advanced nursing practice in hospitals, community health settings, nursing homes, and other health-related agencies. The curriculum provides a foundation for doctoral study.

Admission to the M.S.N. program is based on a thorough review of each applicant's documents. Requirements include:

1. B.S.N. from an NLN accredited program.
2. licensed or license-eligible as a registered nurse in Illinois.
3. three letters of recommendation from individuals qualified to comment on the applicant's ability to successfully complete graduate study (employers, supervisors, and former instructional faculty members are suitable references).
4. an undergraduate cumulative grade point average of 3.0 or higher and a 3.0 or higher cumulative grade point average in nursing courses based on a 4.0 scale.
5. completion of at least one year of work as a professional nurse; nurse administered anesthesia applicants must have worked at least one year in an adult critical care setting.
6. completion of a statistics course with a grade of "C" or better.

7. completion of a course in health assessment or its equivalent.
8. completion of an undergraduate nursing research course.
9. completion of undergraduate organic and inorganic chemistry courses (nurse administered anesthesia major applicants only).
10. have completed the Graduate Record Examination Aptitude Test (GRE) or Miller Analogies Test (MAT) within five years prior to admission.
 - a. for unconditional admission, an applicant must possess a GRE combined score (verbal & quantitative) of 1000 or a MAT score of 37.
 - b. for conditional admission, an applicant must possess a GRE combined score (verbal & quantitative) of 850 or a MAT score of 27.
11. have completed the Test of English as a Foreign Language (TOEFL) with a minimum score of 500 (foreign applicants only).
12. evidence of a satisfactory interview with a graduate faculty member in the relevant major; applicants for the nurse administered anesthesia major will also have an additional interview with anesthesia faculty members.

Applicants with deficiencies in the requirements will be evaluated on an individual basis.

A flexible entry option is available for graduates of non-BSN programs.

Nursing Administration

The 36-semester-hour curriculum has three components: core, research, and nursing administration.

Nurse Administered Anesthesia

The 48-semester-hour curriculum has three components: core, research, and nurse administered

anesthesia.

Educational Leadership and Human Development

Lori A. Russell-Chapin,
Chair

Administration Programs

Accredited by the National Council for the Accreditation of Teacher Education (NCATE).

The Department of Educational Leadership and Human Development offers two administration programs leading to the Master of Arts degree: leadership in educational administration and leadership in human service administration. The programs develop qualities associated with leadership and informed decision making through coursework that engages students in "making the connections" that are fundamental to success as an administrator. Coursework focuses on establishing connections between theory and practice, and culminates in a supervised field experience.

Leadership in Educational Administration Master's Degree Program

The Leadership in educational administration program is a 36-hour program accredited by NCATE, approved by the Illinois State Board of Education, and satisfying requirements for a Type 75 certificate with the general administrative endorsement necessary for entry level school administrators. The ISBE certification requirements include a teaching certificate and two years of teaching experience.

In addition, the department offers a Type 75 certification program sequence for a person with a master's degree who wishes to obtain a Type 75 certificate with the general administrative endorsement. The number of hours required will normally vary from 18 to 30, depending upon how the educational background of the student fulfills requirements of the college core and the other required courses. Upon receipt of an application, available from the department chair in Westlake Hall, each student's transcript is evaluated and required courses established.

Graduate Core 9 hrs.

ELH 604 Research Methodology and Applications 3 hrs.
ELH 605 Legal and Social Change 3 hrs.
ELH 606 Interpersonal and Organizational Behavior 3 hrs.

Departmental Required Courses 21 hrs.

ELH 673 Leadership Perspectives 3 hrs.

ELH 611 Principles and Problems of Curriculum Planning 3 hrs.
ELH 670 Supervision and Evaluation of Instruction 3 hrs.
ELH 677 Educational Finance 3 hrs.
ELH 678 Educational Law 3 hrs.
ELH 676 The School Principalship 3 hrs.
ELH 686 Field Experiences in Administration 3 hrs.

Suggested Electives 6 hrs.

ELH 510 Statistical Procedures 3 hrs.
ELH 550 Independent Study 3 hrs.
ELH 586 Counseling Diverse Populations 3 hrs.
ELH 612 Institutional Planning and Evaluation 3 hrs.
ELH 620 Human Development Counseling 3 hrs.
ELH 651 Community Counseling 3 hrs.
ELH 662 Community Relations 3 hrs.
ELH 661 Couples and Family Counseling 3 hrs.
ELH 669 Supervision and Administration in Special Education 3 hrs.
ELH 681 Seminar in Educational Administration 3 hrs.
ELH 699 Thesis 3-6 hrs.

Total Program Semester Hours 36 hrs.

Leadership in Human Service Administration Master's Degree Program

The leadership in human service administration program also requires 36 hours and is an option for persons seeking administrative positions in human service agencies. The fundamental goal of the Department of Educational Leadership and Human Development is to provide its students with quality professional programs and an environment that will aid them in preparing for future responsibility and desired leadership roles in human service professions. The courses in this program provide a human development foundation and integrate a human relations orientation with conceptual and technical skills required for effective administration in a variety of human service organizations.

Graduate Core 9 hrs.

ELH 604 Research Methodology and Applications 3 hrs.
ELH 605 Legal and Social Change 3 hrs.
ELH 606 Interpersonal and Organizational Behavior 3 hrs.

Departmental Required Courses 21-24 hrs.

ELH 673 Leadership Perspectives 3 hrs.
ELH 612 Institutional Planning and Evaluation 3 hrs.
ELH 620 Human Development Counseling 3 hrs.
ELH 662 Community Relations 3 hrs.
ELH 681 Seminar on Issues in Human Service Administration 2 hrs.
ATG 505 Accounting Principles-Financial 2 hrs.
ATG 506 Accounting Principles-Managerial 2 hrs.
ELH 686 Field Experiences in Administration 3-6 hrs.

Suggested Electives 3-6 hrs.

ELH 540 Human Growth and Development 3 hrs.
BMA 542 Legal Environment of Business 2 hrs.
ELH 550 Independent Study 3 hrs.

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ELH 586 Counseling Diverse Populations	3 hrs.
ELH 641 Appraisal of the Individual	3 hrs.
ELH 651 Community Counseling	3 hrs.
ELH 678 Educational Law	3 hrs.
ELH 681 Seminar in Educational Administration ...	3 hrs.
ELH 699 Thesis	3-6 hrs.
Total Program Semester Hours	36 hrs.

Course Descriptions

ELH 611 Principles and Problems of Curriculum Planning

3 hrs.

Problem solving approach to general curriculum development from an administrative perspective, focusing on basic curriculum decisions, processes of change associated with curriculum planning, and contemporary issues and trends at state and national levels.

ELH 612 Institutional Planning and Evaluation

3 hrs.

Identification, analysis, and application of techniques and tools of institutional planning and evaluation. Program, personnel, financial, facility, and institutional planning.

ELH 662 Community Relations

3 hrs.

Developing effective community relations through a four-step process involving two-way communication and researching, planning, communicating, and evaluating.

ELH 669 Supervision and Administration in Special Education

3 hrs.

Administrative, legal, and operational considerations in special education: personnel, programs, evaluation, interagency involvement, new trends. Interrelationships of special education and regular education.

ELH 670 Supervision and Evaluation of Instruction

3 hrs.

Survey of the major approaches to supervision and evaluation in K-12 education; examination of the relationship between evaluation practices, professional development, and the improvement of instruction; and exercises to develop skills of classroom observation and conferencing.

ELH 673 Leadership Perspectives

3 hrs.

Concepts of leadership, organizational theory, and decision making presented from multiple perspectives; focus on the practice of educational and human service administration. Prerequisite: ELH 606 or consent of instructor.

ELH 676 The School Principalship

3 hrs.

Various components, background, and training for an entry-level elementary or secondary school principal. Prerequisite: ELH 673 or consent of instructor.

ELH 677 Educational Finance

3 hrs.

Theory and practice; historical and present sources of revenue and allocation of funds.

ELH 678 Educational Law

3 hrs.

Legal aspects of education. Constitutional, statute, and administrative laws related to public and private education.

ELH 681 Seminar in Educational Administration

1-6 hrs.

Special problems, areas, or current issues in student's chosen field within educational administration/supervision. Maximum of three hours may be taken under a single topic.

ELH 686 Field Experiences in Administration

3-6 hrs.

A culminating experience to give the student the opportunity to work with a practicing administrator in the application of theoretical knowledge from previous coursework to administrative tasks. Accompanying seminars focus on selected topics associated with leadership and administration. Requires 150 hours of supervised activity for three hours of credit.

Human Development Counseling

Accredited by the Council for Accreditation of Counseling and Related Educational Program (CACREP) and the National Council for the Accreditation of Teacher Education (NCATE).

The human development counseling program is designed to prepare students for positions as counselors in a variety of settings. The counselor education faculty believes that the work of the professional counselor is to promote the positive growth and development of the clients with whom the counselor interacts.

The human development counseling model for preparing counselors recognizes the profound interactive effect of people and human systems. We believe there is a need for social science translators—people who are in touch with the best in theory and research—who can translate this knowledge into effective programs, and who can eventually evaluate these programs. Because we believe that counselors should experience personal growth and development as persons and as professionals, all courses are designed to provide both cognitive and experiential learning.

Areas of specialization are offered in community and agency counseling and school counseling (NCATE accredited and ISBE approved). The program prepares the student to sit for the exam for certification as a National Certified Counselor or for Illinois certification in school guidance and personnel services. Both areas are CACREP accredited. In addition, courses of continuing professional education are offered to practicing counselors who wish to increase competencies to meet emerging needs of their profession.

Program of Study

The program in human development counseling requires 51 semester hours of graduate work at the master's level for completion. The program consists of a graduate core of nine semester hours and a program core of 27 semester hours of study required of all candidates. In addition, students take an additional 15 semester hours of specialty area course work that may, in concert with the internship and practicum work required in the core program, permit them to develop a specialty area consistent with plans for future employment. Areas of study include, but are not limited to, school counseling and community and agency Counseling. All students should consult with their advisor to determine specific courses that will meet their professional goals.

Graduate Core	9 hrs.
ELH 604 Research Methodology and Applications	3 hrs.
ELH 605 Legal and Social Change	3 hrs.
ELH 606 Interpersonal and Organizational Behavior	3 hrs.

Program Core	27 hrs.
ELH 540 Human Growth and Development	3 hrs.
ELH 620 Human Development Counseling	3 hrs.
ELH 621 Vocational Guidance and Career Development	3 hrs.
ELH 623 Pre-Practicum	3 hrs.
ELH 624 Theories and Techniques of Counseling	3 hrs.
ELH 625 Principles of Group Counseling	3 hrs.
ELH 641 Appraisal of the Individual	3 hrs.
ELH 690 Practicum (appropriate to specialty)	3 hrs.
ELH 691 Internship (appropriate to specialty)	3 hrs.

Specialty Area **15 hrs.**
Students should use the remainder of the program to structure course work around a special area of interest from among those possibilities listed below. These specialties should be consistent with and support activities in the student's proposed internship placement. Other areas unique to a student's interests may be designed in consultation with members of the department.

I. School Counseling **15 hrs.**
Intended to prepare students for positions as guidance specialists or student personnel workers in elementary and/or secondary schools. Degree requirements satisfy ISBE guidelines for certification as a school counselor.

Required	9 hrs.
ELH 586 Counseling Diverse Populations	3 hrs.
ELH 652 Foundations of School Guidance	3 hrs.
ELH 654 Consultation in the Helping Professions	3 hrs.

Electives **6 hrs.**
For students seeking certification as Guidance Specialists in Illinois public schools, the State Board of Education requires the following:

1. Guidance specialists must hold or be qualified for a standard teaching certificate.
2. Guidance specialists must hold a master's degree.
3. Guidance specialists must have completed an approved program in guidance from a recognized college or university consisting of 32 semester hours of coursework. An approved program shall include a supervised practicum experience. Coursework should be from the eight areas of competency listed below. Appropriate courses in areas a, b, c, d, e, f, and h are a minimum requirement. Not more than 6 semester hours shall be acceptable at the undergraduate level (for certification only).
 - a. Principles and techniques of guidance.
 - b. Appraisal techniques.
 - c. Human growth and development.
 - d. Principles and practices in counseling.
 - e. Occupational, educational, personal, and social information.
 - f. Mental hygiene and/or personality dynamics.
 - g. Organization of guidance services.
 - h. Research.

- II. Community and Agency Counseling 15 hrs.**
 Instruction for students working or planning to work as clinical mental health counselors in community mental health centers, human service agencies, and not-for-profit community support programs, and for those interested in providing counseling services to employees and their families within the context of business or industrial settings.
- Required 12 hrs.**
 ELH 651 Community Counseling
 ELH 663 Counseling and Dynamics of Aging
 ELH 661 Couples & Family Counseling
 ELH 586 Counseling Diverse Populations
- Electives 3 hrs.**

- ELH 623 Pre-Practicum in Counseling 3 hrs.**
 Instruction, demonstration, practice, and evaluation in basic interviewing and response skills. Emphasis on practice and skill development. (Area d) Prerequisite: ELH 620 or concurrent enrollment.
- ELH 624 Theories and Techniques of Counseling 3 hrs.**
 Study and evaluation of major theories of counseling toward developing a working theory of counseling and understanding of dynamics of human behavior. (Area d) Prerequisite: ELH 623 or concurrent enrollment; consent of instructor.

- ELH 625 Principles of Group Counseling 3 hrs.**
 Group theory and dynamics as applied in group counseling. Group practices, methods, procedures, and group leader facilitation skills. Supervised practice and experience in group counseling as leader and participant. Prerequisites: ELH 624; consent of instructor.

Course Descriptions

ELH 540 Human Growth and Development 3 hrs.

Cognitive and experiential learning in human growth and development. Cognitive learning through reading and research into developmental patterns of humans through the various developmental stages: birth; infancy; early childhood; primary, middle, and high school years; adulthood; geriatrics. Experiential activities emphasize personal contact and on-site work with people of different ages and stages of physical and psychological development (Area c)

ELH 551 Substance Abuse Counseling 3 hrs.

Basic counseling interventions for prevention, remediation, and treatment of substance abuse.

ELH 584 Topics in Human Development Counseling 1-6 hrs.

Topics of special interest which may vary each time course is offered. Topic stated in current Academic Handbook. May be repeated under different topics for a maximum of six hours credit.

ELH 586 Counseling Diverse Populations 3 hrs.

Value systems in diverse groups; the use of philosophies and models of diversity in establishing an effective, helping relationship.

ELH 620 Human Development Counseling 3 hrs

Counseling as the promotion of human development. Historical development of the counseling field; survey of relevant skills, client populations, and settings; review of standards for ethical and professional practice in counseling.

ELH 621 Career and Life Planning Across the Life Span 3 hrs.

Basic counseling skills for career planning, exploration, and decision-making. Vocational guidance and career development of elementary and high school students; emerging roles of women entering the work force; physically handicapped workers; inner city youth; adult workers making vocational changes in middle life; older workers preparing for retirement. Practical experience in interviewing, vocational assessment, career information gathering and distribution; field trips to industrial sites; labor market research. (Area e)

ELH 641 Appraisal of the Individual 3 hrs.

Development of a framework for understanding the individual. Methods of data gathering and interpretation, individual and group testing, case study approaches, and study of individual differences—ethnic, cultural, and sex factors. (Area b)

ELH 651 Community Counseling 3 hrs.

How communities and community agencies can work to promote human development. Role of the counselor as a change agent and client advocate within the network of community agencies. Prerequisite: ELH 620 or consent of instructor.

ELH 652 Foundations of School Guidance 3 hrs.

Elementary and secondary school guidance programs; cognitive and experiential skills. History and development of school guidance; elementary and secondary school guidance programs (similarities and differences); group and individual counseling; the counselor's role in school testing; career planning and exploration. Practical experiences. (Area d) Prerequisite: ELH 620 or consent of instructor.

ELH 654 Consultation in the Helping Professions 3 hrs.

A conceptual understanding of effective consultation and its relevance to the helping professional. Demonstration of knowledge and skills necessary to deliver effective consultative services within the client setting. Prerequisites: ELH 620 and foundational concentration course (ELH 651 or 652); consent of instructor.

ELH 661 Couples and Family Counseling 3 hrs.

Theories and techniques of couples and family counseling. Emphasis is on working with couples, families, and children to promote human development, including the role of the family counselor within the network of school and community agencies. Prerequisite: ELH 651 or 652.

ELH 663 Counseling and the Dynamics of Aging
3 hrs.

The mental health dynamics of aging and its impact on the human service professions. Practical skills of gerontological counseling and their relationship to the concerns of aging.

ELH 684 Seminar in Personnel Services
2-6 hrs.

Seminar for students specializing in counseling who desire to concentrate on special problems or areas. A variable credit course that may be taken more than once to a maximum of 6 credits.

ELH 690 Practicum
3 hrs.

Supervised counseling experience with individuals and groups in student's area of interest. (Area d)
Prerequisite: ELH 625; consent of instructor.

ELH 691, 692 Internship
3 hrs. each

Individually supervised post-practicum work experience appropriate to student's career goals.
Prerequisite: ELH 690; consent of instructor.

ELH 699 Thesis
3-6 hrs.

Curriculum and Instruction

Barbara Penelton
Chair, Department of Teacher Education

The professional education unit is accredited by the National Council for the Accreditation of Teacher Education (NCATE).

The curriculum and instruction master's program builds upon the foundation laid at the undergraduate level and continues the emphasis on prekindergarten through twelfth-grade teachers as educational leaders and informed decision makers. Teachers who wish to assume leadership roles within their school systems need to remain current, increase their skill levels, add to their knowledge bases, and increase their repertoire. As informed decision makers who take responsibility for their own continuing education, they also need to participate in the creation of their own professional development plans.

The curriculum and instruction master's program is designed to provide for these needs. While making allowances for individual tailoring, the program includes a common core of courses intended to increase graduate students' skill levels and knowledge base in: technology applications (ETE 551), educational research (ELH 604), legal and social issues (ELH 605), interpersonal and organizational behavior (ELH 606), curriculum theory (ETE 651), instructional design (ETE 653), and assessment strategies (ETE 552, ETE 654). In addition, the program offers practica, original research, and creative contributions options. Working with a faculty advisor, graduate students plan a program of study which addresses their needs, interests, and professional development goals. These plans may include reading, early childhood education, and gifted education within the program of study.

The goal of the curriculum and instruction master's program is to prepare prekindergarten through twelfth-grade teachers to accept greater responsibility in their roles as educational leaders and informed decision makers by increasing their skill levels, adding to their knowledge bases, and informing their attitudes.

The objectives of the curriculum and instruction master's program are to:

1. Integrate theory with reflective practice.
2. Draw connections between the knowledge base and the professional skills necessary for the success of educational leaders and informed decision makers.
3. Assist teachers in remaining current with regard to educational issues and the elements of best practice.
4. Engage teachers in collaborative learning with colleagues who offer similar, as well as diverse, backgrounds, experiences, and views.
5. Individualize programs of study to meet the particular needs of graduate students.
6. Facilitate the development of teachers as decision makers, who are capable of informing their instructional practices through appropriate application of research results.

College/Department Admissions Requirements

An applicant must earn a Miller Analogies raw score of 37 (50th percentile) or a GRE combined general test score of 1440 (50th percentile) to be accepted unconditionally.

For conditional admission a candidate must earn a minimal MAT score of 27 (25th percentile) or GRE combined general test score of 1200 (25th percentile). The MAT may be retaken one time.

In addition to the MAT requirements, for unconditional admission the candidate must have a bachelor's degree overall grade point average of 2.5 and a 2.75 grade point average in the major field of concentration.

For conditional admission into a graduate program, the candidate must have a bachelor's degree overall grade point average of 2.25 and 2.4 grade point average in the major field of concentration. The conditional student must maintain a 3.0 grade point average during the first 9 to 18 semester hours of graduate work in order to gain unconditional status.

All applicants must complete the prescribed application forms of the College of Education and Health Sciences and Graduate School.

Two letters of reference must be obtained by the applicant from educational field employers or college/university professors who can recommend the applicant as having strong potential for success in graduate studies and in potential continued service to the education profession.

Graduation requirements for the thesis and non-thesis options have in common the following components: a nine-hour professional core (ELH 604, ELH 605, ELH 606), a three-hour educational technology course (ETE 551), a six-hour curriculum and instruction core (ETE 651, ETE 653), a three-hour assessment course (ETE 552 or ETE 654), and six hours of approved graduate level electives which may be taken within or outside the department.

Those graduate students electing the non-thesis option also must complete six additional hours of curriculum and instruction electives. They will be encouraged to build research opportunities into their curriculum and instruction elective hours with the Creative/Research Contribution (ETE 698) option. In addition, those electing the non-thesis option will complete a written comprehensive examination which is tailored to their programs of study.

In addition to the requirements already outlined, those graduate students electing the thesis option must complete six hours of thesis (ETE 699), in which they design and conduct an original research study under the guidance of their advisors. For thesis option students, a comprehensive examination will be administered orally at the time of the thesis defense.

Curriculum and Instruction Master's Degree Program

Professional Core: 9 hours

ELH 604 Research Methodology and Applications (3)
ELH 605 Legal and Social Change (3)
ELH 606 Interpersonal and Organizational Behavior (3)

Educational Technology Component: 3 hours

ETE 551 Technology Applications and Integration (3)

Curriculum and Instruction: 6 hours

ETE 651 Curriculum Theory and Development (3)
ETE 653 Instructional Strategies and Designs (3)

Assessment: 3 hours

A minimum of 3 semester hours taken from the following selections.

ETE 552 Assessment Alternatives (3)
ETE 654 Program Evaluation (3)

Curriculum and Instruction Electives: 6 hours

A minimum of 6 semester hours must be taken from the following selections.

ETE 506 Reading in the Content Fields (3)
ETE 544 Remedial Reading (3)
ETE 553 Cultural Diversity and Schooling (3)
ETE 560 Testing in Reading (3)
ETE 570 Practicum in Reading (1-5)
ETE 616 Analysis and Evaluation of Children's Literature (3)
ETE 644 Practicum in Remedial Reading (3)
ETE 650 Topics in Curriculum, Instruction, and Technology (1-3)
ETE 652 Instructional Leadership in PreK-12 Education (3)
ETE 659 Curriculum and Instruction Practicum (1-5)
ETE 661 Child Growth and Development (3)
ETE 662 Family Intervention (3)
ETE 668 PreKindergarten Practicum (1-5)
ETE 669 Primary Practicum (1-5)
ETE 698 Creative/Research Contribution (1-5)
ETE 699 Thesis (1-3)
ELH 670 Supervision and Evaluation of Instruction (3)

Approved Electives: Minimum of 6 hours

At least six hours must be acquired from any graduate level ETE, ELH, or other graduate courses which have been approved by the student's advisor and the Graduate School.

Total Program: Minimum of 33 hours

Reading Endorsement (optional)

A minimum of eighteen (18) semester hours must be taken from the courses listed below.

At least three (3) semester hours must be acquired in each lettered section.

- A. ETE 325 Introduction to Teaching
Reading 3 hrs.
ETE 506 Reading in the Content Fields 3 hrs.
- B. ETE 544 Remedial Reading 3 hrs.
- C. ETE 560 Testing in Reading 3 hrs.

- D. ETE 570 Practicum in Reading 1-5 hrs.
 ETE 644 Practicum in Remedial Reading 3 hrs.
 E. ETE 260 Children's Literature 3 hrs.
 ETE 616 Analysis and Evaluation of
 Children's Literature 3 hrs.

Please note that these requirements may be fulfilled by a combination of undergraduate and graduate courses.

Course Descriptions

ETE 506 Reading in the Content Fields

3 hrs.

Instructional and reading strategies to enhance students' comprehension.

ETE 544 Remedial Reading

3 hrs.

Methods and procedures for diagnosis and correction of reading difficulties; interpretation and use of reading tests for diagnosis. Prerequisite: a basic reading course.

ETE 550 Independent Study

1-3 hrs.

Student selects subject of study with advisor approval. Multiple sections may be taken concurrently. Maximum of 6 semester hours may be applied to a degree program. Prerequisite: approval of department chair and Dean of College of Education and Health Sciences.

ETE 551 Technology Applications and Integration

3 hrs.

Integrating technology into PreK-12 curriculum. Emphasizes computer as tutor, tool, and tutee; multimedia; HyperCard; telecommunications and networking; and future impact.

ETE 552 Assessment Alternatives

3 hrs.

Qualitative and quantitative student assessment methods. Creative alternatives to traditional techniques.

ETE 553 Cultural Diversity and Schooling

3 hrs.

Multicultural issues, perspectives, and current trends. Role of the teacher as decision-maker and change agent. Evaluation of materials, methods, and programs.

ETE 560 Testing in Reading

3 hrs.

Reading assessment techniques that identify students' reading strengths and difficulties prior to diagnostic prescriptive teaching. For teachers of grades 1-9. Prerequisites: a basic reading course; ETE 544.

ETE 570 Practicum in Reading

1-5 hrs.

Field experience in elementary reading. Focuses on current research to guide reading practice. Emphasizes alternative methods of reading instruction, other than basal approaches. May be repeated for a maximum of 6 hours credit. Prerequisite: a basic reading course.

ETE 616 Analysis and Evaluation of Children's Literature

3 hrs.

Selection and evaluation of children's literature; emphasis on recent material. Individual in-depth study of a specific topic required. Current trends, controversies, and problems.

ETE 644 Practicum in Remedial Reading

3 hrs.

Practicum in diagnosing and treating reading difficulties. Prerequisite: ETE 544; consent of instructor.

ETE 650 Topics In Education

1-3 hrs.

Topics of special interest which may vary each time course is offered. Multiple sections may be taken concurrently. Maximum of 6 semester hours may be applied to a degree program. Prerequisite: Consent of instructor and department chair.

ETE 651 Curriculum Theory and Development

3 hrs.

Curriculum models and theories. Curriculum development processes and the teacher's role.

ETE 652 Instructional Leadership in PreK-12 Education

3 hrs.

Instructional leadership styles and behaviors. Teacher's role as decision-maker, instructional innovator, and change agent.

ETE 653 Instructional Strategies and Designs

3 hrs.

PreK-12 instructional strategies and designs. Emphasis on developmentally appropriate educational opportunities that actively engage the learner.

ETE 654 Program Evaluation

3 hrs.

Qualitative and quantitative models and techniques for evaluating educational programs. Prerequisite: ELH 604 or consent of instructor.

ETE 659 Curriculum and Instruction Practicum

1-5 hrs.

Supervised field experience. Application of knowledge and skills to contexts and environment selected by the student and advisor. May be repeated for a maximum of 6 hours credit. Prerequisite: curriculum and instruction course or consent of instructor.

ETE 661 Child Growth and Development

3 hrs.

Interaction of learning and developmental processes from birth through age 8. Influence of sociocultural and ecological factors.

ETE 662 Family Intervention

3 hrs.

The role of the family and community in the education of infants, toddlers, pre-primary, and primary-aged children. Analysis of family systems including resource development and family program development.

ETE 668 PreKindergarten Practicum

1-5 hrs.

Supervised field experience in prekindergarten setting. Provides opportunities to synthesize knowledge and skills and to demonstrate competencies as an early childhood professional. May be repeated for a maximum of 6 hours credit. Prerequisite: curriculum and instruction course or consent of instructor.

ETE 669 Primary Practicum

1-5 hrs.

Supervised field experience in primary setting. Provides opportunities to synthesize knowledge and skills and to demonstrate professional competencies as an early childhood professional. May be repeated for a

maximum of 6 hours credit. Prerequisite: curriculum and instruction course or consent of instructor.

ETE 698 Creative/Research Contribution

1-3 hrs

Individual study on a topic selected by student with advisor approval. Integration and application of research. Student must produce a product such as a software program or journal article. May be repeated for a maximum of 6 hours credit. Student may not receive credit for both ETE 698 and ETE 699.

ETE 699 Thesis

1-3 hrs.

Design and implement a research proposal which has implications for preK-12 education. May be repeated for a maximum of 6 hours credit. Student may not receive credit for both ETE 698 and ETE 699. Prerequisite: consent of department chair.

Learning Disabilities

Barbara Penelton

Chair, Department of Teacher Education

The professional education unit is accredited by the National Council for the Accreditation of Teacher Education (NCATE).

The learning disabilities master's degree program allows teachers to continue development as educational leaders and informed decision-makers. This program meets the needs of teachers who wish to improve skills in individualizing instruction for all children, including the exceptional child in their classrooms, as well as teachers who wish to teach in special educational settings, such as self-contained learning disabilities classes and resource programs.

The program is designed to prepare educational personnel to meet Illinois State Certification requirements in the area of learning disabilities (Type 10 certificate, K-12). It is structured to develop necessary competencies in the areas of identification, diagnosis, educational strategies, behavior management, and program management.

The learning disabilities program at Bradley University is designed to provide students with the following competencies:

1. To act as an advocate for exceptional children and youth programs designed to educate them.
2. To know the theoretical background and literature in the area of learning disabilities.
3. To know current issues and trends in special education and the laws and regulations.
4. To identify a child or adolescent with learning problems, educationally assess and evaluate skills, plan and implement an individual educational program (IEP), and evaluate the educational process.
5. To diagnostically teach children or adolescents individually, within small groups, and within large group settings.
6. To be able to analyze the child, task, setting, and appropriately teach the necessary academic and social skills.
7. To communicate effectively and consult with parents, other educators, administrators, and nonschool personnel concerning education of exceptional students.

For admission to the learning disabilities program, the candidate must: (1) hold a standard elementary, secondary, or special certificate; (2) meet the requirements for admission to the Graduate School; (3) meet the requirements for admission to the department; (4) have an acceptable score on the Miller Analogies Test; and (5) have had ETE 324, The Exceptional Child, or its equivalent.

Master of Arts Degree in Learning Disabilities

Graduate Core	9 hrs.
ELH 604 Research Methodology and Applications	3 hrs.
ELH 605 Legal and Social Change	3 hrs.
ELH 606 Interpersonal and Organizational Behavior	3 hrs.
Department Core	18 hrs.
ETE 543 Assessment and Evaluation Procedures for Exceptional Children	3 hrs.
ETE 627 Characteristics of Children with Learning and Behavior Problems	3 hrs.
ETE 628 Educational Procedures for Teaching Children with Learning Disabilities	3 hrs.
ETE 643 Assessment and Evaluation Practicum	3 hrs.
*ETE 694 Advanced Student Teaching in Special Education	3 hrs.
**ETE 696 Practicum in Special Education	3 hrs.
**ETE 697 Advanced Practicum with Handicapped Children	3 hrs.
Electives	6-7 hrs.
(Must have approval of advisor)	
ETE 687 Seminar in Special Education	3 hrs.
ETE 695 Field Study in Special Education	3 hrs.
(Enrollment is required for those students who have had no previous teaching experience with children identified as "learning disabled.")	
ETE 550 Independent Study	1-3 hrs.
ETE 650 Topics in Education	1-3 hrs.
ELH 669 Supervision and Administration of Special Education	3 hrs.
and other appropriate coursework closely related to Special Education in the College of Education and Health Sciences or the Department of Psychology.	
*Total Semester Hours in Program	33 or 34 hrs.

*34 semester hours are required for students without previous teaching experience. These students must enroll for ETE 694 rather than ETE 696 and ETE 697.

** 33 semester hours are required for students with previous teaching experience (three months minimum), and these students must enroll for ETE 696 and ETE 697, rather than ETE 694.

Course Descriptions

ETE 543 Evaluation Procedures for Exceptional Children 3 hrs.

Diagnostic processes for exceptional children, pre-school through high school. Screening; formal and informal assessment and evaluation techniques. Practice in test administration, scoring, evaluation; individualized educational programs (IEP's).

ETE 550 Independent Study 1-3 hrs.

Student selects subject of study with advisor approval. Multiple sections may be taken concurrently. Maximum of 6 semester hours may be applied to a degree program. Prerequisite: approval of department chair and Dean of College of Education and Health Sciences.

ETE 627 Characteristics of Children with Learning and Behavior Problems 3 hrs.

Interdisciplinary study of literature and research in learning disabilities and behavior disorders. Social, educational, psychological, and legal implications.

ETE 628 Educational Procedures for Teaching Children with Learning Disabilities 3 hrs.

Educational strategies and behavior management techniques; practical applications. Developing diagnostic teaching skills and exploring methodologies related to cognitive and effective variables. Prerequisite: ETE 627.

ETE 643 Assessment and Evaluation Practicum with Exceptional Children 3 hrs.

Practicum: Use of psycho-educational tests and diagnostic teaching techniques. Preparation of a complete formal and informal educational assessment of a child including a professional report written in a specified format. Prerequisite: ETE 543.

ETE 650 Topics in Education 1-3 hrs.

Topics of special interest which may vary each time course is offered. Multiple sections may be taken concurrently. Maximum of 6 semester hours may be applied to a degree program. Prerequisite: Consent of instructor and department chair.

ETE 687 Seminar in Special Education 1-6 hrs.

In-depth study of various special education content areas from a "state of the art" perspective. Maximum of 3 semester hours may be taken under a single topic. Prerequisites: graduate standing and consent of instructor.

ETE 694 Advanced Student Teaching in Special Education 6 hrs.

For students who have never been employed as a teacher for three or more months in a single setting. Supervised experience with exceptional children and youth. Assessment, planning, teaching, evaluation, materials selection and use, behavior and classroom management. Appropriate sites determined

individually. Includes a required seminar. Prerequisite: consent of instructor.

ETE 695 Field Study in Special Education
1-3 hrs.

Provides appropriate experience with learning disability programs and students in the public schools. Ranges from directed observation to supervised participation, tailored to each individual's needs. May fulfill clock hour requirements for Illinois state teacher certification (25-75 clock hours or more, depending on need).

ETE 696 Practicum in Special Education
3 hrs.

For students with teacher certification and prior teaching experience. Supervised experiences with exceptional children. Advanced experiences in assessment program design and implementation, instructional strategies and materials, behavior and classroom management. Appropriate site determined individually. Prerequisite: consent of instructor.

ETE 697 Advanced Practicum with Handicapped Children
3 hrs.

Supervised experience with exceptional children and youth for further professional growth. Tailored to meet the needs of the individual student. Prerequisite: ETE 696.

Supportive Courses

Education

ELH 510 Statistical Procedures
3 hrs.

Principles and procedures for statistical interpretation of data. Study of measures of central tendency, variability, correlation, and introductory predictive and inferential statistics.

ELH 604 Research Methodology and Applications
3 hrs.

Focus on quantitative and qualitative methods of research utilized in the areas of education and social science. Examination of sources of information for research, various designs, basic statistics, interviewing strategies, and observational techniques. Students will learn to critique, research and write research proposals. Prerequisite: graduate standing.

ELH 605 Legal and Social Change
3 hrs.

Analysis of the effects of legal and social change on the lives of young people and on the work of educators and other helping professionals; focus on selected issues of legal and social change. Prerequisite: graduate standing.

ELH 606 Interpersonal and Organizational Behavior
3 hrs.

Skills related to interpersonal communication, organizational behavior, and educational leadership. Principles for building effective relationships. Extensive opportunities for practicing and evaluating personal communication skills. Prerequisite: graduate standing.

Family and Consumer Sciences

FCS 536 The World of Fashion
2-6 hrs.

Intensified study in a major fashion market: merchandising, public relations, advertising, and career opportunities. May be repeated for a total of 6 hours. Prerequisite: 10 hours in clothing and textiles; or consent of instructor.

FCS 585 Topics in Family and Consumer Sciences
1-6 hrs.

Topic of special interest which may vary each time course is offered. Topic stated in current Academic Handbook. Prerequisites: senior or graduate standing and consent of instructor.

Nursing

Francesca A. Armmor,
Chair, Department of Nursing

Bradley University offers a Master of Science in Nursing (M.S.N.). Students may choose one of two majors: nursing administration or nurse administered anesthesia. The nurse administered anesthesia major is offered in cooperation with Decatur Memorial Hospital.

Degree requirements can be met on a full-time or part-time basis. Enrollment in the nurse administered anesthesia internship must be on a full-time basis. Graduation requirements must be fulfilled within five years of enrollment.

Graduates with a major in nursing administration are prepared for first line management as executives in a variety of health care settings.

Graduates with a major in nurse administered anesthesia will be eligible to write the certification examination.

The student must maintain an academic average of 3.0 (4.0 scale), achieve a "B" or better in each required nursing course, and earn a "C" or better in each course applied to graduation requirements.

The curriculum is subject to continuous review and evaluation which may necessitate revision of courses and requirements.

Thesis/Directed Research

Students may meet program requirements by completing either a thesis (4 semester hours) or directed research (2 semester hours).

Comprehensive Examinations

Nursing Administration Major: A written comprehensive examination is administered during the last semester of administration theory.

Nurse Administered Anesthesia Major: Written comprehensive examinations are administered at the end of the second and third year of the course of study.

Master of Science in Nursing

Core Component 8 hrs.

NUR 600 Nursing Theories: Analysis and Development 3 hrs.

NUR 605 Leadership in the Health Care System 3 hrs.

NUR 610 Legal Issues in Nursing 2 hrs.

Research Component 7-9 hrs.

NUR 620 Research Methods in Nursing 3 hrs.

NUR 625 Nursing Research Seminar 2 hrs.

NUR 699 Thesis 4 hrs.

or

NUR 698 Directed Research 2 hrs.

Nursing Administration Major 19-21 hrs.

NUR 630 Nursing Administration I, Theory 3 hrs.

NUR 631 Nursing Administration I, Practicum 4 hrs.

NUR 632 Nursing Administration II, Theory 3 hrs.

NUR 633 Nursing Administration II, Practicum 4 hrs.
Electives 5-7 hrs.

36 hrs.

Nurse Administered Anesthesia Major 31-33 hrs.

PHY 555 Independent Study 2 hrs.

CHM 500 Chemical Topics 2 hrs.

BIO 570 Seminar: Contemporary Physiology 3 hrs.

BIO 525 Advanced Physiology 3 hrs.

NUR 500 Health Assessment 4 hrs.

Electives 3-5 hrs.

NUR 670 Nurse Administered Anesthesia Principles 6 hrs.

NUR 672 Pharmacology I 4 hrs.

NUR 673 Pharmacology II 4 hrs.

NUR 675 Nurse Administered Anesthesia Internship 0 hrs.

48 hrs.

Course Descriptions

NUR 600 Nursing Theories: Analysis and Development

3 hrs.

Analysis of theoretical models. Emphasis on assessment and implications of models for advanced professional nursing practice and research. Prerequisite: nursing majors only.

NUR 605 Leadership in the Health Care System

3 hrs.

Leadership theory: role of the nurse as a leader, colleague, and consultant in health care systems. Prerequisite: nursing majors only.

NUR 610 Legal Issues in Nursing

2 hrs.

Legal and ethical issues that influence the practice of advanced nursing and leadership in health care systems. Critical assessment of the ethical implications of law and public policy in health care. Case studies. Prerequisite: nursing majors only, or consent of instructor or Department Chair.

NUR 620 Research Methods in Nursing

3 hrs.

In-depth study of the research process; the significance of nursing theory as a basis for nursing research. Various research designs. Development of a testable hypothesis applicable to advanced nursing practice. Prerequisite: undergraduate statistics course or ELH 510; nursing majors only.

NUR 625 Nursing Research Seminar

2 hrs.

Trends in nursing and society that influence the direction of nursing research. Problems from clinical practice. Identification and refinement of specific researchable questions through a hypothetico-deductive process. Prerequisites: NUR 600, 605, 620; or consent of instructor.

NUR 630 Nursing Administration I (Theory)

3 hrs.

Theories, concepts, and principles from nursing and related disciplines as a foundation for nursing administration. Theories of change, role, adaptation,

need, and leadership as related to nursing management. Prerequisites: NUR 600, 605. Corequisite: NUR 631 or consent of department chair.

NUR 631 Nursing Administration I (Practicum)
4 hrs.

Practicum applying concepts, theories, and principles from NUR 630. Use of relevant research findings. Advanced practice in management. Prerequisites: NUR 600, 605. Corequisite: NUR 630 or consent of department chair.

NUR 632 Nursing Administration II (Theory)
3 hrs.

Advanced concepts and principles relevant to external and internal nursing organizational situations including power, authority, and politics. Review of various organizational patterns and their relationship to nursing personnel management, budgeting, public relations, leadership style, and research. Prerequisites: NUR 630, 631. Corequisite: NUR 633 or consent of department chair.

NUR 633 Nursing Administration II (Practicum)
4 hrs.

Practicum applying advanced concepts, theories, and principles from NUR 632. Use of management skills such as staffing, budgeting, and developing positive public relations. Prerequisites: NUR 630, 631. Corequisite: NUR 632 or consent of department chair.

NUR 670 Nurse Administered Anesthesia Principles
6 hrs.

Introduction to clinical nurse administered anesthesia: practice, ethics, professional organizations, psychology, history of anesthesia. Emphasis on nursing process in perioperative and operative patient care; equipment and technology. Laboratory experience included. Prerequisites: BIO 570, 525; CHM 500; PHY 555; nurse-administered anesthesia majors only.

NUR 672, 673 Pharmacology I, II
4 hrs. each

Pharmacology principles related to administration of anesthesia and adjunct drugs. Drug receptor theory, biotransformation, structure activity relationships, uptake, distribution, elimination. Systemic pharmacology and drug interactions. Prerequisites: NUR 500; CHM 500; BIO 570, 525; PHY 555; nurse-administered anesthesia majors only. NUR 672 is prerequisite for NUR 673.

NUR 675 Nurse Administered Anesthesia Internship
0 hrs.

Internship under direct supervision of cooperating agency CRNA or anesthesiologist. Use of nursing process (assessment, planning, intervention, and evaluation) to support patient's physiological and emotional status into post-operative period. Regularly-scheduled conferences. Prerequisites: nurse administered anesthesia majors only; completion of Year I and Summer I of required course sequence.

NUR 682 Seminar in Nursing
1-6 hrs.

Seminar on special problems or areas in nursing. A variable credit hour course; may be taken more than once for a maximum of 6 credits total. Prerequisite: consent of instructor or department chair.

NUR 689 Independent Research
1-6 hrs.

Readings, research, or project complementing the student's program of study. May be repeated for a maximum of six hours. Prerequisite: consent of instructor.

NUR 698 Directed Research in Nursing
2 hrs.

A research-oriented, student-initiated endeavor that culminates in a scholarly paper suitable for publication or presentation. Required for MSN students who do not select the thesis option. Prerequisites: NUR 620, NUR 625, and consent of instructor.

NUR 699 Thesis
1-4 hrs.

Design and implement a research proposal which has implications for nursing practice. May be repeated for a maximum of four semester hours. Prerequisites: NUR 620, 625; consent of department chair.

Supportive Courses in Nursing

NUR 500 Health Assessment
3-4 hrs.

Systematic method for collecting data used in holistic health assessment of children and adults. Interviewing techniques for history taking; physical assessment skills. Prerequisites: R.N. with B.S. major in nursing; or R.N. with consent of instructor.

NUR 533 Seminar in International Nursing
3 hrs.

Study of nursing in a foreign country; selected hospitals and universities. Establishing nursing administration and research networks.

Physical Therapy

Mary Jo Mays,
Chair, Department of Physical Therapy

Mission

The mission of the Department of Physical Therapy is to provide students with relevant and appropriate learning experiences, which are guided and facilitated by high quality instruction. The department's faculty are committed to preparing: (1) undergraduate students to meet the challenges inherent to the health care industry, and (2) graduate students to serve as physical therapist general practitioners.

The Department of Physical Therapy will offer a Master of Physical Therapy degree beginning in the year 2000. The purpose of the program is to prepare graduates for entry into the general practice of physical therapy.

Admission Requirements

In addition to meeting admission requirements for the Graduate School, students must meet the following requirements:

1. A baccalaureate degree.
 2. Completion of the following courses or equivalents*

BUS 100 Contemporary Business	3 hrs.
BIO 123, 124 Principles of Biology I, II	8 hrs.
BIO 200, 203 Human Anatomy and Physiology (with lab)	5 hrs.
BIO 205 Pathophysiology	3 hrs.
CHM 161, 166 General Chemistry I, II	9 hrs.
MTH 115 or 121 Calculus I	4 hrs.
PHY 107, 108 General Physics I, II	8 hrs.
ELH 510 Statistical Procedures OR PSY 205 Quantitative Methods	3 hrs.
FCS 303 Nutrition	3 hrs.
ELH 370, 375 Human Relations Development (with lab)	3 hrs.
HS 110 Introduction to Health Science	1 hr.
HS 320 Integration of Science and Physical Therapy	3 hrs.
HS/ETE 402 Educational Methods, Strategies, and Evaluation Techniques	3 hrs.
HS 410 Motion Analysis	3 hrs.
HS 460 Basic Science of Human Movement ..	3 hrs.
<i>Plus two of the following:</i>	
HS/FCS 220 Consumer Issues in Health Care	3 hrs.
NUR 217 Men's Health Issues	2 hrs.
NUR 219 Women and Health	3 hrs.
- Total 67-68 hrs.

*Similar courses taken at other institutions and documented formal experience will be judged for relevance by the physical therapy faculty. Please refer to the Bradley University Undergraduate Catalog for course descriptions.

3. Minimum 3.1 gradepoint average in mathematics and science courses, with no grade lower than a C. Courses required include the following: two years of college biology/zoology/physiology (the first year at the level required for a major in that area); one year of college physics; one year of college chemistry (at the level required for a major in chemistry). Science courses more than 10 years old will not be accepted.
4. Minimum 3.1 gradepoint average in the last 60 hours of undergraduate education.
5. GRE
6. TOEFL score 600 or higher (for international students only)
7. Application with an essay to articulate nature of profession of physical therapy, including practice, settings, service, and advantages and disadvantages of the profession.
8. Skills in computer literacy (word processing), statistics, kinesiology, communication (written and oral), medical terminology.
9. Portfolio reflecting undergraduate activities in leadership, humanitarian/community service; copies of major papers; resume which includes work and volunteer experiences; awards and scholarships; samples to indicate computer literacy; and a paper which explains the make-up and value of an interdisciplinary health care team.

Additional Requirements

In addition to the University's student health form requirement, and prior to enrollment in the first physical therapy course that includes a clinical experience, each student must verify:

1. liability insurance (renewable annually).
2. immunity to rubeola (measles) by one of the following:
 - a. a rubeola (measles) immunization received in 1990 or later, or
 - b. written verification from a physician of having had the disease, or
 - c. a birth date prior to 1957.
3. immunity to rubella (German measles) by one of the following:
 - a. written verification of having had the immunization, or
 - b. written verification of rubella titer greater than 1:10.
4. immunity to hepatitis B virus.
5. written verification of tuberculosis test results (renewable annually).
6. CPR certification (renewable annually).

Student membership in the American Physical Therapy Association is recommended.

Contact the department for the most current additional requirements.

Curriculum

Students in the physical therapy curriculum pursue the following coursework. Full-time enrollment is required, including interim and summer sessions as indicated.

First Year

May 8-Week Interim

PT 506 Functional Anatomy	3 hrs.
PT 508 Gross Anatomy	3 hrs.
	6 hrs.

Fall Semester

PT 512 Patient Problems and Procedures I (Physical Therapy Techniques)	4 hrs.
PT 520 Patient Problems and Procedures II (Functional Neuroanatomy and Neurophysiology)	4 hrs.
PT 516 Research	3 hrs.
	11 hrs.

January Interim

PT 530 Clinical Education I	2 hrs.
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Spring Semester

PT 542 Patient Problems and Procedures III (Neurorehabilitation)	4 hrs.
PT 546 Administration/Health Care Policies and Resources	4 hrs.
PT 554 Research Projects I	2 hrs.
PT 558 Professional Issues	2 hrs.
	12 hrs.

Second Year

Summer

PT 600 Research Projects II	2 hrs.
PT 602 Patient Problems and Procedures IV (Orthopaedics)	4 hrs.
PT 604 Patient Problems and Procedures V (Cardiopulmonary)	4 hrs.
	10 hrs.

Fall Semester

PT 610 Clinical Education II (8 weeks)	4 hrs.
PT 620 Clinical Education III (8 weeks)	4 hrs.
Elective	2-3 hrs.
	10-11 hrs.

Spring Semester

PT 644 Differential Diagnosis in Physical Therapy (8 weeks)	4 hrs.
PT 648 Clinical Education IV (8 weeks)	4 hrs.
Elective	2-3 hrs.
	10-11 hrs.

Summer

PT 660 Clinical Education V (8 weeks)	4 hrs.
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Total	65-67 hrs.
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Course Descriptions

PT 506 Functional Anatomy

3 hrs.

Applied human anatomy along with basic skills of musculoskeletal evaluations and therapeutic interventions will be presented.

PT 508 Gross Anatomy

3 hrs.

Discussion of the gross structures of the upper extremities, head, neck, and back, and spinal cord, with an emphasis on musculoskeletal and neuromuscular structures and their relationship to human movement. Dissection of human cadaver included.

PT 512 Patient Problems and Procedures I (Physical Therapy Techniques)

4 hrs.

An introduction to clinical applications of the following areas: a. basic physical therapy evaluation procedures including posture, range of motion, joint play, flexibility, muscle strength, gait; b. electrotherapy theory and techniques; and c. soft tissue techniques and thermal agents.

PT 516 Research in Physical Therapy

3 hrs.

Application of research principles, methods, design, and statistical analysis of data.

PT 520 Patient Problems and Procedures II (Functional Neuroanatomy and Neurophysiology)

4 hrs.

In-depth discussion of peripheral and central nervous system anatomy and physiology with an emphasis on the sensory and motor systems as they relate to human movement. The scientific basis of sensory/motor evaluation and treatment will be discussed as well as the basic skills of sensory/motor evaluation and treatment as they relate to persons with neurological involvement.

PT 530 Clinical Education I

2 hrs.

The introductory full-time, supervised clinical experience requiring utilization of communication skills, teaching interpersonal and evaluation skills, and offering an opportunity to apply basic physical therapy procedures and begin professional socialization. Pass/Fail.

PT 542 Patient Problems and Procedures III (Neurorehabilitation)

4 hrs.

Evaluation, treatment planning, and treatment of persons with neurological involvement.

PT 546 Physical Therapy Administration/Health Care Policies and Resources

4 hrs.

Utilization of health care policies, community resources, and administrative principles to provide health care in today's settings. Opportunity to design and utilize community programs for wellness, prevention, maintenance, and rehabilitation of persons in need of health care.

PT 554 Research Project I**2 hrs.**

Beginning of the project designed in PT 516. Setting up subjects, collecting data, and adding to the review of literature. Writing up any revisions in methodology and results.

PT 558 Professional Issues**2 hrs.**

Discussions on current issues affecting composition and design of the health care industry, environmental factors, recruitment and hiring practices, delivery of health care, and education and practice of physical therapists and related health care positions. Reimbursement, legislation, manpower, and other factors will be addressed.

PT 600 Research Project II**2 hrs.**

Continuation of data collection and analysis and completion of research paper.

PT 602 Patient Problems and Procedures IV (Orthopaedics)**4 hrs.**

Acute and long-term diagnoses will be presented, with the student applying appropriate evaluation and treatment applications.

PT 604 Patient Problems and Procedures V (Cardiopulmonary)**4 hrs.**

Acute and long-term diagnoses will be presented, with the student applying appropriate evaluation and treatment applications.

PT 610 Clinical Education II**4 hrs.**

The second of five full-time, supervised clinical experiences requiring utilization of communication skills and teaching interpersonal and evaluation skills. Opportunity to advance physical therapy procedures and continue to develop professional socialization. Pass/Fail.

PT 620 Clinical Education III**4 hrs.**

The third of five full-time, supervised clinical experiences offering the opportunity for continued development of clinical management of patients in one of a variety of clinical settings. Continued professional socialization and growth. Pass/Fail.

PT 644 Physical Therapy Differential Diagnosis**4 hrs.**

Utilization of previously and currently obtained skills to determine a physical therapy diagnosis and treatment for given patient cases.

PT 648 Clinical Education IV**4 hrs.**

The fourth of five full-time, supervised clinical experiences requiring utilization of advanced communication skills and teaching interpersonal and evaluation skills. Opportunity to further develop clinical management of patients in a different clinical setting. Continued professional socialization and growth. Pass/Fail.

PT 660 Clinical Education V**4 hrs.**

The fifth of five full-time, supervised clinical experiences requiring utilization of advanced communication skills and teaching interpersonal and evaluation skills. Opportunity to further develop clinical management of patients in a different clinical setting. Continued professional socialization and growth. Pass/Fail.

Courses for Bachelor's Degree

*(being phased out)***PT 505 Health Care Policies and Resources****2 hrs.**

Policies and resources in health care as they relate to the physical therapist's practice and patient's needs. Prerequisite: consent of the department.

PT 510 Professional Issues**2 hrs.**

Current professional topics including ethical and legislative issues. Prerequisite: consent of the department.

PT 515 Physical Therapy Differential Diagnosis**3 hrs.**

Comparing physical and subjective findings of several diagnoses identifying the differential characteristics and relating to the evaluations required to make the differential diagnosis. Prerequisite: consent of the department.

COLLEGE OF ENGINEERING AND TECHNOLOGY

John Francis, Dean

James Seckler, Associate Dean

Robert Podlasek, Assistant Dean

The College of Engineering and Technology offers degrees leading to the Master of Science in Civil Engineering, Master of Science in Electrical Engineering, Master of Science in Industrial Engineering, Master of Science in Mechanical Engineering, and the Master of Science in Manufacturing Engineering. Students majoring in engineering are required to complete from 30 to 33 semester hours of course work, depending on the program they are pursuing. Students should consult the department graduate advisor for a plan of study prior to registration.

For international graduates of a non-ABET-accredited program (unless from an English speaking country), a minimum TOEFL score of 525 is required for unconditional admission. The GRE is required by some departments and suggested for others.

A cumulative GPA of 3.0 for the entire undergraduate career or 3.0 for the last 60 credit hours is normally needed for unconditional admission.

However, some programs may have other requirements for unconditional admission. Prospective graduate students who have a GPA below 3.0 or a TOEFL score below 525 may be admitted conditionally. TOEFL and GRE scores are taken into consideration for admission and when making assistantship award decisions.

Special Academic Programs

Practicum

Many graduate students enrolled in chemistry, civil engineering, computer science, electrical engineering, industrial engineering, manufacturing engineering, mechanical engineering, and physics may have an opportunity for employment for 10-20 hours per week on a practicum program which partners industry and the university. Generally, the practicum is on-site work in an industrial setting. Students are assigned technically challenging projects with a near-term economic payback. Participating students will be enrolled in EGT 500 for zero credit.

Internship

Engineering internships provide engineering and technology students an opportunity to participate in a full-time internship semester and/or summer away from campus providing career-related work experience. This internship is equivalent in work-time to a full-time cooperative education assignment, and interns will be monitored in the same way as EGT cooperative education students. Participating graduate students will enroll in EGT 510 for zero credit hours. While on a full-time internship assignment, students are considered to have full-time student status, making normal progress toward a degree in a recognized University program, and are entitled to all student privileges at the University. Also while on a full-time internship assignment, students may register for additional hours of classroom study upon departmental approval.

Course Descriptions

EGT 500 Graduate Engineering Practicum 0 hrs.

Solving challenging problems with a near-term economic benefit. Only for students approved for practicum by the Dean's Office. Pass/fail. Prerequisite: graduate student.

EGT 510 Graduate Engineering Internship 0 hrs.

Full-time internship away from campus for engineering & technology students to gain academic or career-related work experience in industry. May be repeated only with consent of internship coordinator and internship faculty advisor. Satisfactory/Unsatisfactory. Prerequisites: engineering and technology graduate student. Newly admitted graduate student must be unconditionally admitted and continuing student must have a minimum of 3.0 gradepoint average in graduate courses. Approval of internship coordinator and internship faculty advisor.

Civil Engineering

Robert Fuessle,
Graduate Advisor

The Department of Civil Engineering and Construction offers an M.S.C.E. degree program that prepares graduates for thriving engineering careers characterized by continued professional growth. Our graduates have the talents and skills needed in a highly technical society facing serious problems in the environment and infrastructure. Our program will provide you with opportunities and challenges necessary for a fruitful and successful career in the practice of civil engineering and construction management. The faculty are renowned worldwide and have published more textbooks (25) than any other civil engineering or construction department of similar size in the United States. Faculty and graduate students have received research grants from Caterpillar Inc., state agencies, the National Science Foundation, and other private and government sources.

Graduate students have numerous opportunities to develop through professional activities such as the student chapters of ASCE and AGC. These organizations sponsor noted speakers on a variety of topics and provide a forum for interaction between students and industry. In addition, they may become involved with community projects such as the Bridge Pal program that fosters engineering interest in high school seniors.

Research and teaching assistantships are available for qualified graduate students through the department and ongoing funded research projects. In addition, the department has several endowed scholarships and some of these funds provide fellowships to selected graduate or undergraduate students. The department has major laboratories with state-of-the-art equipment in geotechnical, concrete, asphalt, environmental, surveying, structural, microcomputers, CAD, experimental stress, construction, design, projects, research, and fluids. These laboratories are equipped to satisfy the educational needs of students and research objectives of graduate students and faculty.

After selecting core courses, the student may study in any one of four areas of concentration: construction management, geotechnical, structural, or environmental/water resources. The student has the opportunity of selecting a thesis or a non-thesis option. The thesis option requires 6 semester hours of CE 699 (Thesis). The non-thesis option requires a minimum of 6 semester hours in an area of concentration. Both options require a minimum of 3 semester hours of mathematics and 18 semester hours in CE courses. The M.S.C.E. program requires a minimum of 30 semester hours beyond the bachelor's degree.

In addition to the requirements of the Graduate School, the Department of Civil Engineering and Construction has the following special policies:

1. A plan of study is required by the end of the first semester. This plan may be changed by filing a request for amendment. This request must be filed with and approved by the graduate advisor prior to registering for courses. Courses not on the approved study plan may not be counted towards the M.S.C.E. degree.

- Admission of undergraduate students into 500-level courses requires that the student has the necessary prerequisites and a minimum average of 2.5/4.00 in the major field.
- Admission into the M.S.C.E. program requires a bachelor's degree in civil engineering. Qualified graduates from other engineering or related fields may be admitted conditionally. The conditional status can only be changed after all deficiencies are removed.
- Each student is required to pass a comprehensive examination during the last semester of his/her study.
- Exceptions to departmental requirements may be made by the graduate advisor.

Course Descriptions

CON 500, 501 Special Topics I, II **1-3 hrs.**

Topics of special interest in civil engineering and construction which may vary each time course is offered. Topic stated in current Academic Handbook. Prerequisite: senior or graduate standing; consent of department chair.

CE 504 Advanced Hydraulics **3 hrs.**

Hydraulic transients in pipeline and open channel flow; gradually varied, spatially varied, and rapidly varied flow in open channels; sedimentation mechanics, stream channel mechanics. Computer and design applications. Prerequisite: CE 304.

CE 508 Advanced Soil Mechanics **3 hrs.**

Consolidation theory and settlements, stress-path method, strength and deformation behavior of soils, failure theories, confined flow, flow nets, numerical analysis of flow, unconfined flow, seepage through earth dams. Laboratory experiments on consolidation and shear strength. Prerequisites: CE 308.

CE 510 Advanced Numerical Methods with Engineering Applications **3 hrs.**

Selected numerical methods and applications chosen to meet current needs for solving problems in civil engineering. Prerequisite: CE 202 or equivalent.

CE 511 Advanced Mechanics of Materials **3 hrs.**

One, two, and three dimensional stresses and strains at a point; theories of elastic strength; effect of loading on the member; torsion of noncurricular sections; curved beams; unsymmetrical bending. Prerequisites: CE 301; senior or graduate standing; consent of instructor.

CE 518 Subsurface Flow in Porous Media **3 hrs.**

Fundamentals of groundwater flow: theory of flow in anisotropic media; transient well testing techniques; analytical and computer solutions of flow problems; dispersion phenomena. Cross listed as GES 518. Prerequisites: MTH 224; senior or graduate standing in geology or civil engineering.

CE 530 Prestressed Concrete **3 hrs.**

Theory and analysis of prestressed concrete members by various methods of prestressing; linear and circular prestressing, design of simple and continuous beams and slabs; extensive study of materials used in prestressed concrete. Prerequisites: CE 403, 359; senior or graduate standing; consent of instructor.

CE 545 Structural Dynamics **3 hrs.**

Single degree of freedom systems, lumped-mass multidegree systems, and multidegree of freedom systems. Numerical evaluation of system responses due to blasts, wind, and earthquake loading. Applications. Prerequisites: CE 202, 359.

CE 555 Solid and Hazardous Waste Management **3 hrs.**

Toxicological, risk assessment, and regulatory aspects of solid and hazardous waste management; characterization of hazardous wastes and materials; waste reduction strategies; collection, storage, and transportation methods; engineering processes for the chemical, biological, and physical treatment of toxic and hazardous wastes; remediation of contaminated soil and groundwater at existing disposal sites. Prerequisite: CE 360.

CE 557 Analysis of Environmental Systems **3 hrs.**

Areas of environmental engineering not covered in CE 360: pollutant transport in air, surface water, and groundwater; environmental management of air and water resources. Prerequisites: senior or graduate standing; consent of instructor.

CE 558 Industrial Waste Treatment Process Design **3 hrs.**

Industrial survey and treatment technologies for liquid, solid, and gaseous wastes. Mixing of wastes and stream sanitation. Applications and design of treatment processes with emphasis on the aqueous chemistry of heavy metals and organic contaminants. Applied electrochemistry and redox reactions, and interfacial phenomena. Prerequisite: CE 360.

CE 559 Management Models in Environmental Engineering **3 hrs.**

Development, solution, and interpretation of management models used in environmental planning and management; mathematical programming techniques from operations research; trade-off analysis and risk assessment; management problems for conventional and toxic wastes in surface water, ground water, and air. Prerequisite: CE 360.

CE 562 Advanced Structural Design I **3 hrs.**

Multi-story steel frame analysis and design; rigid frame design; plate girder design. Extensive use of computer for design and analysis. Prerequisites: CE 359, 442; senior or graduate standing; consent of instructor.

CE 580 Advanced Cost Estimating for Construction Projects **3 hrs.**

Cost estimating for material, equipment, and labor for construction projects. Taking-off quantities, pricing techniques, computer estimating, and bidding strategy

models. Prerequisites: IE 301; consent of graduate advisor.

CE 582 Construction Project Management
3 hrs.

Procedures, techniques, and research efforts regarding improvement of construction productivity. On-site laboratories to utilize and evaluate productivity improvement techniques. Prerequisites: IE 301; consent of graduate advisor.

CE 584 Construction Contract Administration
3 hrs.

Issues in the implementation of a construction contract. Coordinating and controlling the construction project under legal and ethical considerations. Prerequisites: CON 492 or consent of instructor.

CE 615 Advanced Foundation Engineering
3 hrs.

Advanced pile capacity formulations, buckling, and lateral loading. Mat foundations, finite difference solutions. Foundations on difficult soils. Slope stability; stability of earth dams. Excavations; geotechnical instrumentation. Prerequisite: CE 422.

CE 630 Theory of Elasticity
3 hrs.

Elastic analysis of deformable bodies based on considerations of equilibrium, boundary conditions and compatibility. Stress-strain relations and applications to two-dimensional problems using rectangular coordinates and polar coordinates. Fundamentals and applications of the energy method. Prerequisites: CE 511; MTH 501.

CE 674 Construction of Temporary Facilities
3 hrs.

Temporary facilities employed by the construction industry for various projects. Design and construction: formwork, falsework, scaffolding, cofferdams, cableways, winter protection systems. Examples from recent literature. Prerequisites: CE 320, 351; consent of graduate advisor.

CE 691, 692 Topics in Civil Engineering
3 hrs. each

Topics of special interest which may vary each time course is offered. Topic stated in current Academic Handbook. Prerequisites: graduate standing and consent of instructor.

CE 699 Thesis
3-6 hrs.

Research on a topic selected by the student and approved by the thesis advisor. Prerequisite: graduate standing in CE.

Electrical Engineering

Winfred Anakwa,
Graduate Advisor

The Department of Electrical and Computer Engineering and Technology offers a graduate program leading to the degree Master of Science in Electrical Engineering. The curriculum is structured to give the graduate of the program a balanced technical background in core areas of modern electrical engineering and a significant experience in advanced design via a thesis or a project.

Students work closely with a faculty advisor in tailoring an overall program best suited to their background and interests. Course sequences, design projects, and research are available in applied electromagnetics, communication theory, control theory, digital systems and computers, electronics and microprocessor applications, power systems, and signal processing. The ECET department has excellent computer and/or laboratory facilities to support advanced studies in these areas. Applicants from non-ABET-accredited schools of engineering are required to take the general test of the GRE.

Degree Requirements

A total of 33 semester hours is required for the degree and all students must do either a thesis (thesis option) or design project (design option). The specific requirements for each option are as follows:

Thesis Option

- Graduate design seminar, 3 hours
- Thesis, 6 hours
- 18 hours of electrical engineering courses with two 6-hour specializations
- 6 hours of EE or approved technical electives

Design Option

- Graduate design seminar, 3 hours
- Design Project, 3 hours
- 21 hours of electrical engineering courses with two 6-hour specializations
- 6 hours of EE or approved technical electives

Approved technical electives are chosen from graduate courses offered by departments other than electrical engineering, such as computer science, math, physics, or mechanical engineering. The one-semester graduate design seminar introduces the student to advanced design techniques via several projects in key areas of electrical engineering, and supplies an excellent foundation for thesis or project work. Students who are unconditionally admitted may replace the graduate design seminar with a graduate electrical engineering course if they have adequate design experience in their background. Such students must petition the ECET graduate committee and supply

appropriate documentation. Students receiving a grade of less than "B" in the graduate design seminar may have to take remedial work including courses for which graduate credit cannot be earned. All students must pass a comprehensive exam in their last semester as required by Graduate School regulations.

Typically, an undergraduate electrical engineering degree is required for admission. However, plans of study are available for those with non-electrical engineering or non-engineering undergraduate degrees. These plans require a number of undergraduate foundation courses to be successfully completed. Further information can be obtained by contacting the ECET graduate advisor.

Course Descriptions

EE 530 Random Variables and Signals 3 hrs.

Correlation functions; power-density spectra; transmission of random signals through linear and non-linear systems; linear mean square estimation. Prerequisite: EE 302 or graduate standing.

EE 531 Communication Theory 3 hrs.

Optimum filtering; analogue and digital communication; detection theory. Prerequisite: EE 530.

EE 532 Information Theory 3 hrs.

Coding theory; memory and memoryless systems. Prerequisite: EE 530.

EE 533 Digital Image Processing 3 hrs.

Design of computer-based imaging systems; multidimensional filtering and quantization methods for image enhancement, restoration, and pattern recognition. Prerequisite: EE 302 or MTH 325.

EE 534 Digital Signal Processing 3 hrs.

Representation and analysis of discrete time signals and systems. Finite and infinite impulse response filter design; computer-aided-design; Fast Fourier Transform; implementation of digital filters. Prerequisites: EE 302.

EE 540 Dynamic Systems Analysis 3 hrs.

Advanced techniques for analysis of electrical, mechanical, and electromechanical systems. State function concepts are emphasized with methods for determining state equations, system stability, and control. Prerequisite: EE 302 or graduate standing.

EE 550 Electromagnetic Theory 3 hrs.

Time-varying electric and magnetic fields; Maxwell's equations; plane waves in conducting and dielectric media; transmission lines; wave guides; antennas. Prerequisite: EE 381.

EE 551 Radio Frequency Circuits and Systems 3 hrs.

Review of transmission lines, impedance matching and transformations, S-parameters, passive R.F. junctions, R.F. amplifier design, R.F. systems, and front end design. Prerequisites: EE 205, 206.

EE 561 Digital Systems: Logic Design 3 hrs.

Boolean algebra; logical design; storing and switching phenomena. Prerequisite: EE 304 or graduate standing.

EE 562 Digital Systems: Computer Structures 3 hrs.

Use of hardware programming language to design a small computer or other digital system; busing; control units; interfacing; transfer design. Prerequisite: EE 201.

EE 563 Advanced Electronics - VLSI System Design 3 hrs.

Design and implementation of very-large-scale integrated systems (VLSI). Integrated circuit devices, subsystems, and architecture. Computer-aided-design (CAD) and design testing. Prerequisites: EE 304 or graduate standing.

EE 565 Microprocessors 3 hrs.

Design of microprocessor based systems applied to real situations; control and data acquisition. Programming practice on several commercial microprocessors. Prerequisite: EE 201 or consent of instructor.

EE 566 Digital Systems: Memory and Interfacing 3 hrs.

Design of memory systems. Peripheral interfaces to universal bus structures. Design of selected common buses: unibus, multibus, and VME bus. Prerequisites: EE 304, 562.

EE 571 Semiconductor Electronics 3 hrs.

Qualitative and quantitative study of electronic and thermal properties of semiconductor materials and devices. Prerequisite: PHY 501.

EE 575, 576 Power Systems I, II 3 hrs. each

Analysis of electric power systems; fault studies; load flow; economic loading; stability; relaying; high voltage DC transmission; lightning and switching transients. Prerequisite: senior or graduate standing in EE. EE 575 is prerequisite for EE 576.

EE 631 Advanced Communication Theory 3 hrs.

Continuation of Electrical Engineering 531. Prerequisites: EE 531, 540.

EE 642 Advanced Control Systems 3 hrs.

Continuation of EE 540. Prerequisite: EE 540.

EE 643 Optimal Control Systems 3 hrs.

Analysis and design of multivariable control systems: stability, observability and controllability, deterministic/stochastic linear optimal regulator and observers, and multivariable stability robustness. Prerequisite: EE 540 or permission of instructor.

EE 651 Advanced Electrodynamics 3 hrs.

Continuation of EE 550. Special theory of relativity; plasma dynamics. Prerequisites: EE 540, 550.

EE 681, 682 Research 3-6 hrs. each

Graduate research on a project selected by student and advisor.

EE 691, 692 Topics in Electrical Engineering

1-3 hrs. each

Topics of special interest which may vary each time course is offered. Topic stated in current Academic Handbook.

EE 699 Thesis

3-6 hrs.

Advanced electrical engineering research or design under the guidance of a faculty advisor. Required of students choosing thesis option. Total of 6 semester hours to be taken in one or two semesters.

Prerequisites: consent of Department Chair; unconditional status.

Industrial and Manufacturing Engineering and Technology

The Department of Industrial and Manufacturing Engineering and Technology offers two graduate programs leading to the Master of Science degree: M.S.I.E. in industrial engineering and M.S.Mf.E. in manufacturing engineering.

These degree programs respond to a wide range of manufacturing and service industry needs.

Each program has a graduate advisor. The admission requirements for each are stated in the following program statements.

Industrial Engineering

Fariborz Tayyari,
Graduate Advisor

The industrial & manufacturing engineering and technology department offers a graduate program leading to the M.S.I.E. degree stressing the role of industrial engineers as problem solvers at managerial and staff levels in both manufacturing and service industries. The program offers the opportunity to tailor-make a plan of study, beyond an IE core, for each student based on his/her educational background and career objectives. Courses will be drawn from such disciplines as engineering, science, mathematics, and business administration.

Admission is selective and is open to holders of an undergraduate degree in engineering, science or mathematics who meet Graduate School admission requirements. Students without an IE undergraduate degree may be required to make up undergraduate deficiencies. Those who do not have an engineering degree should have worked in an engineering environment for at least three years. International graduates of a non-ABET accredited program should have a TOEFL score of 550 for unconditional admission and a score of 52 on part 1 of the test. Both part-time and full-time students are welcome.

Degree Requirements

The total program is 30 semester hours of graduate level work of which a minimum of 18 hours must be taken from IE designated courses, including 3 semester hours of a project course to demonstrate ability to identify, define and solve unstructured IE related problems. Most entering students who do not have the undergraduate degree in IE must complete IE 500, Engineering Economy and Costs, and IE 503, Engineering Quantitative Analysis. Neither will count towards graduate credit. A 36-hour, non-project program is also available.

A course of study must be prepared by each student in consultation with the academic advisor and must be approved by the department as early as possible but

not later than the beginning of the second semester of study at Bradley.

Course Descriptions

IE 500 Engineering Economy and Costs **3 hrs.**

Analysis of the economic aspects of engineering decisions including the time value of money and the techniques of obtaining cost data. Does not count toward MSIE. Prerequisite: graduate standing in engineering or consent of instructor.

IE 503 Engineering Quantitative Analysis **3 hrs.**

Probability, random variables, distributions, inference, regression, linear programming, simulation. Does not count towards MSIE. Prerequisites: graduate standing in engineering or consent of instructor.

IE 511 Engineering Statistical Analysis **3 hrs.**

Concepts in probability and statistics from practical and theoretical angles. Definition of probability, random variable, distribution, important discrete and continuous distributions, sampling distribution of \bar{X} , Central Limit Theorem, t , chi-squared and F distributions, estimation, hypothesis testing, regression analysis, and analysis of variance. Prerequisite: IE 503 or consent of instructor.

IE 512 Design and Analysis of Experiments **3 hrs.**

Design and analysis of experiments in research, development, and production activities. Experimental designs for evaluating significance of main effects and interactions of several variables. Treatment of problems of measurement, planning, and evaluating programs. Prerequisite: two semesters of statistics or consent of instructor.

IE 514 Introduction to Operations Research **3 hrs.**

Mathematical model building and use of deterministic and non-deterministic tools in problem solving. Problem solving structure, linear programming, transportation and assignment algorithms, game theory, networks, branch and bound algorithms, dynamic programming, deterministic and stochastic inventory models, markov chains, queueing theory and simulation. Prerequisite: IE 503 or consent of instructor.

IE 515 Linear Programming **3 hrs.**

Theoretical and computational aspects of linear programming; application to practical problems. Prerequisite: MTH 202; consent of instructor.

IE 516 Simulation of Man/Machine Systems **3 hrs.**

Procedures and rationale for planning, designing, and implementing computer simulation experiments used to analyze human-machine systems in engineering, business, and social sciences. Prerequisite: MTH 202, IE 311 or equivalent.

IE 522 Manufacturing Quality Control **3 hrs.**

Analysis of factors affecting product quality during manufacturing; process control charts; process

capability studies; error of measurement; sampling plans; motivation programs; quality audit; organization. Prerequisites: one semester of statistics or consent of instructor.

IE 528 Human Factors Engineering **3 hrs.**

Functional anatomy and physiology of muscle and skeletal systems and their relationship to work design. Work physiology, kinesiology, and anthropometry in relation to their application in work-place design and hand tool design. Utilization of physical work capacity and job demands for job design, personnel assignment, and assessment of work-rest scheduling. Prerequisites: IE 306, 312; CE 240; or consent of instructor.

IE 530 Reliability Engineering **3 hrs.**

Specification, prediction, and evaluation of product reliability and maintainability. Use of models for failure distribution—exponential, Weibull, lognormal—and analytical and graphical methods for failure data analysis. Test plans and accelerated testing models. Design methods for increasing reliability and maintainability. Prerequisite: IE 511 or consent of instructor.

IE 564 Production Planning and Control **3 hrs.**

Analysis of production-inventory systems using common planning and scheduling techniques. Mathematical models for project planning, aggregate planning, master scheduling, and inventory analysis. Interface with quality control and computer systems. Prerequisite: IE 306; minimum grade of C in IE 312 and IE 314.

IE 582 Advanced Quality Control **3 hrs.**

Comparative study of philosophies of using quality as a business management tool, with special reference to Deming's Theory of control charts and a study of their strengths and weaknesses. Special control charts such as CUSUM chart, median chart, moving average chart, and their application. The latest published articles used to keep up-to-date in quality technology. Prerequisite: IE 522 or consent of instructor.

IE 584 Advanced Production Planning **3 hrs.**

Planning methods for converting to or creating Just-in-Time and/or group technology systems. Analytical and behavioral aspects. Prerequisite: IE 564 or consent of instructor.

IE 588 Introduction to Expert Systems **3 hrs.**

Knowledge-based systems design and implementation; expert system shells and programming environments; validation and implementation of expert systems; case studies/laboratories. Cross-listed as CIS 588. Prerequisites: two semesters of computer programming and one semester of statistics, or consent of instructor.

IE 590 Topics in Industrial Engineering **1-3 hrs.**

Topics of special interest which may vary each time course is offered. Topic stated in current Academic Handbook. May be repeated up to a maximum of 6 hrs. Prerequisite: consent of instructor.

IE 605 Advanced Industrial Engineering Problems
3 hrs.

Critical investigation and analysis in management systems design, facilities design, or industrial economics. Prerequisites: previous courses in the area of concentration; consent of instructor.

IE 681 Research
0-6 hrs.

Research on a project selected by student and advisor; to maintain progress, student must register for zero hours. Prerequisite: unconditional graduate status.

IE 699 Thesis
0-6 hrs.

Required of students choosing thesis option. Total of six hours to be taken; any semester after six hours requires student to register for zero hours to maintain progress. Prerequisites: unconditional status, consent of graduate advisor.

Manufacturing Engineering

Saeed Saboury,
Graduate Advisor

The Department of Industrial and Manufacturing Engineering and Technology offers a graduate program leading to the Master of Science in Manufacturing Engineering. The objective of the program is to educate professionals who will design, build, operate, and control world class manufacturing systems with enhanced productivity and competitiveness.

The program is structured with five interrelated areas: design, materials, processes, systems, and automation and integration.

Students applying for admission to the program must have a baccalaureate degree in engineering or science and must meet the gradepoint requirements of the Graduate School. Transcripts of all prior work at the college level and two letters of recommendation must accompany the application. All applicants will be considered on an individual basis. Successful applicants will have a background in the areas of processes, materials, mathematics, mechanics, computer science, and manufacturing systems. If a candidate does not have the required level or breadth of preparation in the areas specified above, the candidate may be admitted conditionally and will be advised of appropriate preparatory courses or conditions for full unconditional entrance to the program.

A total of 33 graduate credit hours is required. Of the total credit hours:

- A. A minimum of 15 semester hours must be taken from the list entitled Manufacturing Engineering Areas. At least one course must be taken from each of the five manufacturing engineering areas. Selected topic courses and professional projects do not fulfill this requirement.
- B. Six semester hours should be devoted to thesis work. If a student elects not to undertake a thesis, a minimum of 3 semester hours must be devoted to project work.
- C. A minimum of 3 semester hours will be taken in advanced mathematics.
- D. A minimum of 6 semester hours must be taken outside of the program. A list of suggested courses is available from the graduate advisor.
- E. All students must enroll in MFE 690 Manufacturing Seminar course (for zero credit) each fall and spring term they are enrolled at the University. A student must receive at least two satisfactory grades in MFE 690.

The student must file and secure approval for a plan of study with the departmental graduate advisory committee prior to completing 9 semester hours. Such a plan will specify the courses to be taken and the proposed thesis or project topic. In the event that a change in the plan is necessary, such a change can be accomplished by filing a request for amendment with the advisory committee. This amendment must be approved prior to taking the alternative course. Candidates will be expected to demonstrate their

capacity to draw upon and integrate their knowledge from all courses presented for their degree in a written comprehensive examination. Scheduling, grade reporting, and retakes will conform to the rules of the Graduate School.

Manufacturing Engineering Areas

Design

MFE 520 Geometric Modeling
MFE 525 Design for Manufacturability

Materials

MFE 531 Nonmetallic Materials
MFE 533 Composite Materials

Processes

MFE 541 Forming Processes
MFE 543 Materials Removal Processes
MFE 545 Joining and Fabrication

Systems

MFE 550 Just-in-Time Manufacturing
MFE 551 Process Engineering
MFE 555 Artificial Intelligence in Manufacturing

Automation and Integration

MFE 563 Advanced Computer Aided Manufacturing
MFE 565 Computer Integrated Manufacturing
MFE 667 Industrial Machine Vision

Course Descriptions

MFE 520 Geometric Modeling

3 hrs.

Computer-based representations of the shape and spatially dependent attributes of real or conceived physical objects. Techniques and concepts needed to couple the digital computer with the techniques of geometric modeling and graphics display for analysis and viewing. Prerequisite: MFE 272; MTH 223.

MFE 525 Design for Manufacturability

3 hrs.

The design process; interaction of materials, processes, and design; economic considerations; design considerations for machining, casting, forging, extrusion, forming, powder metallurgy; designing with plastics; design for assembly; projects and case studies. Prerequisites: MFE 272; MFG 360.

MFE 531 Nonmetallic Materials

3 hrs.

Recent developments and applications of polymeric and ceramic materials. Selection and design criteria, material properties, process engineering, quality considerations, and failure prevention. Prerequisite: MFE 371.

MFE 533 Composite Materials

3 hrs.

Science and technology of modern composite materials: properties, design, toughening mechanisms, fabrication methods, evaluation, mechanisms of failure and quality assurance. Prerequisite: MFE 371.

MFE 541 Forming Processes

3 hrs.

Analytical methods in metal forming processes including slab approach, upper bound techniques, slip-line field and visio-plasticity methods. Forging, rolling, extrusion, drawing, sheet forming, near net-shape processes, and CAD/CAM. Prerequisite: MFE 374.

MFE 543 Material Removal Processes

3 hrs.

Current and future trends in: mechanics of chip generation; forces and energies in cutting and dynamometry; thermal aspects of machining; cutting tool materials; friction, wear, vibrations and tool life; applications of engineering fundamentals to design and analysis of machining operations with emphasis on computer control. Prerequisites: MFE 373 or MFG 360.

MFE 545 Joining and Fabrication

3 hrs.

Principles of advances in joining and fabrication of engineering materials including metallic, nonmetallic, and electronic materials. Process science and technology with emphasis on casting, welding, and microjoining of electronic components. Physical and mathematical modeling of various processes. Prerequisite: MFE 371.

MFE 550 Just-In-Time Manufacturing

3 hrs.

Just-in-Time production (stockless production, zero inventories) for improving manufacturing productivity. Implementation techniques and results in Western and Japanese manufacturing environments; an integrated implementation plan. Prerequisite: MFE 370.

MFE 551 Process Engineering

3 hrs.

The process design function interaction with product design, and the responsibilities within a manufacturing organization. Selection and design of machinery, tools, and methods. Computer aided process design and interactive accessing of machining data and tooling element of group technology and expert systems. Prerequisites: MFE 272, 374.

MFE 555 Artificial Intelligence in Manufacturing

3 hrs.

Concept of intelligent manufacturing. Manufacturing communication and information systems. Voice and vision systems. Knowledge-based expert system. Knowledge representation. Inference engineering, knowledge data base and manufacturing applications. Prerequisites: MFE 170 or equivalent.

MFE 563 Advanced Computer Aided Manufacturing

3 hrs.

Computer Aided Manufacturing (CAM) within the CAD/CAM and CIM contents. Computer Assisted Process Planning (CAPP), Computer Assisted Tool Design, Computer Assisted NC Programming (APT), Interactive Graphics, NC Programming, and the elements of computer control of manufacturing equipment (CNC). A semester project. Prerequisite: MFE 375.

MFE 565 Computer Integrated Manufacturing

3 hrs.

Computer Integrated Manufacturing (CIM); elements of hardware and software within the manufacturing automation environment. Islands of factory automation

and their interactions, information flow and Local Area Networks within the CIM architecture, standardization of electronic data and interfaces. Prerequisite: MFE 370.

MFE 581 Selected Topics in Manufacturing Engineering

1-3 hrs.

Topics of special interest which may vary each time course is offered. Topic stated in current Academic Handbook; advances in manufacturing processes, materials, design, computer applications, manufacturing productivity, etc. Course may be repeated to a maximum of 6 hours credit. Prerequisite: senior or graduate standing.

MFE 667 Industrial Machine Vision

3 hrs.

Fundamental concepts of image gathering, processing, and analysis for industrial applications; artificial vision; basic concepts of computer vision appropriate to the manufacturing environment; strategies for image processing to guide a robot; description of the required hardwares and softwares; highlights of research and development trends in the area of robot-vision. Prerequisites: MTH 324; CE 301.

MFE 681, 682 Professional Projects

1-3 (each)

Research project or professional problem to be selected by student and advisor. May be repeated to a maximum of 3 hours credit each. Prerequisite: consent of instructor.

MFE 690 Manufacturing Seminar

0 hrs.

Reports on current research by visiting scholars and departmental faculty and students. All graduate students are required to register and attend each semester. Prerequisite: consent of graduate advisor.

MFE 699 Thesis

3-6 hrs.

A maximum of 6 hours may be applied toward the master's degree. Prerequisite: consent of Dept. Chair.

MFG 503 Supervision of Industrial Operations I

3 hrs.

Principles in supervision of industrial operations: functional supervision for planning, organizing, and controlling industrial operations; relevant current philosophies of supervision.

MFG 513 Advanced Manufacturing Processes

3 hrs.

Materials, elements, machines, and devices in modern manufacturing processes and practices. Prerequisite: consent of department chair.

MFG 514 Process Planning and Estimating

3 hrs.

Analytical models and techniques in manufacturing, cost estimating, processing, materials selection, and related problems in manufacturing control. Prerequisites: MFG 313; CS 104.

MFG 518 Operations Control

3 hrs.

Production inventory systems concepts applicable to various processing environments: forecasting; operations planning; inventory planning and control; operations scheduling and dispatching; process control. Prerequisite: MFG 415.

MFG 601 Advanced Industrial Safety

3 hrs.

Properties of a safe working environment. Federal regulation: the National Health and Safety Act. Prerequisite: MFG 412.

MFG 603 Supervision of Industrial Operations II

3 hrs.

The interfaces between manufacturing operations and their supporting functions: techniques for formulating, installing, and maintaining company operations plans.

MFG 615 Plant Design

3 hrs.

Design factors in facility layout: processing and materials handling equipment; offices and other service facilities. Prerequisite: MFG 415.

MFG 672 Organization and Supervision of Industrial Training

3 hrs.

Philosophy and responsibilities of the training department. Methods of organizing, operating, and evaluating training programs for manufacturing distribution, field services, and related functions.

Mechanical Engineering

D. Paul Mehta,
Graduate Program Director

The Department of Mechanical Engineering offers opportunities for graduate study providing for advanced professional competency and leading to the degree of Master of Science in Mechanical Engineering. The main goal of the graduate program in mechanical engineering is to strengthen the ability of the student to solve complex technological problems in a creative way. To achieve this, the program of study is designed to broaden the student's knowledge, to provide for in-depth study in an area of concentration, and to complement theoretical study with relevant and significant research and/or design. The student will ordinarily concentrate in either the mechanical systems design area or in the area of energy systems/thermosciences.

To qualify for unconditional admission, applicants should have the equivalent of an undergraduate degree in mechanical engineering with an overall grade point average of 3.0/4.0. Transcripts of all prior work at the college level and two letters of recommendation should accompany the application. Students with undergraduate degrees in related fields of science and engineering or those who do not meet the minimum grade point requirement can be admitted conditionally at the discretion of the department. Requirements for removal of conditional status will be specified in the letter of admission. For students whose primary language is not English, a TOEFL score of at least 525 is required for unconditional admission. All applicants must submit GRE general test scores by the end of their first regular semester in attendance.

Students with undergraduate degrees in mechanical engineering from institutions other than Bradley University may be required to take undergraduate course work if their transcripts do not show a satisfactory level of preparation in certain areas.

New students who are planning to take their course work at an off-campus site must submit copies of their transcripts for evaluation purposes with their first application for off-campus registration. To ensure that appropriate academic advising takes place, all continuing students, including those off-campus, will have their registration capability encumbered each semester until they have met with their advisor or appropriate faculty representative from the Department of Mechanical Engineering.

The student must file an approved plan of study with the graduate program director that describes the courses to be taken and any proposed research. It must be filed prior to registering for more than nine semester hours that will be applied toward satisfying degree requirements. The plan of study must be approved by the graduate program director and by the student's advisor.

Of the minimum requirement of 30 semester hours, three semester hours must be taken in advanced mathematics topics as appropriate to the student's

program (plan of study). Courses in statistics, numerical methods, and engineering analysis are applicable to this requirement.

To achieve breadth, students concentrating in the area of mechanical systems will be required to take at least one of the following courses: ME 501, ME 515, ME 521. Similarly, students concentrating in energy systems/thermosciences will be required to take at least one course from the following: ME 502, ME 540, ME 544, CE 511. Other courses not in the area of concentration may be substituted with approval of the graduate program director.

Students opting not to do a thesis will be required to register for three to nine semester hours of research (ME 681, 682) unless waived because of demonstrated experience. All students are required to pass a comprehensive examination in their respective area of concentration during the last semester.

Course Descriptions

ME 501 Advanced Thermodynamics 3 hrs.

Laws and concepts of classical thermodynamics; real gases and equations of state; availability; irreversibility; property relations; potential functions; equilibrium; multicomponent systems. Prerequisite: ME 302.

ME 502 Problems in Advanced Dynamics 3 hrs.

Application of analytical and graphical methods to problems involving velocities, accelerations, working and inertia forces. Prerequisite: ME 341.

ME 503 Internal Combustion Engines 3 hrs.

Thermodynamic analysis, thermo-chemistry, and performance characteristics of spark ignition and compression ignition engines. Prerequisites: ME 301; ME 302 or consent of instructor.

ME 509 Solar Engineering 3 hrs.

Nature and characteristics of solar energy as a renewable energy source. Solar geometry and radiation. Thermodynamics of solar systems; emphasis on 2nd Law considerations. Performance characteristics of collectors, storage systems, house heating systems, cooling and refrigeration, and photovoltaics. Comprehensive design project. Theory and performance characteristics of solar devices and application to design of a comprehensive solar energy system. Prerequisite: ME 415 or consent of instructor.

ME 511 Heat Transfer - Conduction 3 hrs.

General conduction equation in cartesian, cylindrical, spherical, parabolic, and paraboloidal coordinate systems solved for various boundary conditions. Inversion theorem and residue theorem used to solve Laplace transform equation. Prerequisite: ME 415.

ME 512 Heat Transfer - Convection 3 hrs.

Non-isothermal flow of fluids in cartesian, cylindrical, spherical, and other coordinate systems: slug flow, laminar flow, flow entrance effects, property variation effects, and turbulent flow. Prerequisite: ME 415.

ME 515 Intermediate Heat Transfer**3 hrs.**

In-depth treatment of the three modes of heat transfer; design applications. Development of analytical and specific numerical skills needed for solving design problems involving heat transfer. Prerequisite: ME 415.

ME 520 Gas Dynamics**3 hrs.**

One dimensional flow; wave and shock motion in subsonic and supersonic flow; flow with heat transfer and friction; viscosity effects; similarity. Introduction to multidimensional flow. Prerequisite: ME 308.

ME 521 Intermediate Fluid Mechanics**3 hrs.**

Analysis of statics and dynamics of non-viscous and viscous fluids. Derivation of differential equations of motion. Potential flow; vortex motion; creeping motion; introduction to boundary layer theory; turbulence. Prerequisites: MTH 224; CE 304.

ME 533 Propulsion Systems**3 hrs.**

Gas turbine analysis; stationary power plants; turboprop, turbojet, and ramjet engines; rocket propulsion; applications of thermodynamics. Prerequisite: ME 308.

ME 534 Environmental Engineering - Air Conditioning**3 hrs.**

Heating and cooling of moist air; solar radiation; computation of heating and cooling loads; study of heating, ventilating, and cooling systems and equipment; design project. Prerequisite: ME 301.

ME 535 Environmental Engineering - Refrigeration**3 hrs.**

Mechanical vapor compression refrigeration cycles; refrigerants; absorption refrigeration; miscellaneous refrigeration processes; cryogenics; semester design project. Prerequisite: ME 301.

ME 537 Building Energy Management**3 hrs.**

The energy problem. Energy consumption patterns in existing and new buildings. Analysis of energy saving strategies for existing buildings; developing designs for new, energy efficient buildings, including reliability, comfort, and economic considerations. Formal oral presentations.

ME 540 Advanced Mechanical Vibrations**3 hrs.**

Principles of vibration in one or more degrees of freedom; application to machine members. Prerequisite: ME 341; MTH 224.

ME 541 Advanced Design**3 hrs.**

Practical design of complete project, requiring comprehensive engineering knowledge and resourcefulness. Prerequisite: ME 342.

ME 542 Kinematic Synthesis of Linkages**3 hrs.**

Design of planar and spatial linkage mechanisms to satisfy input-output motion requirements: rigid-body motion of the coupler for finitely-separated positions; coordination of shaft rotations; coupler-point path problems. Prerequisite: ME 344; MTH 202, 224.

ME 544 Mechanical Systems Analysis**3 hrs.**

Mathematical modeling of mechanical, electrical, pneumatic, hydraulic, and hybrid physical systems emphasizing a unified approach such as the Bond graph technique. LaPlace, state-variable, and matrix formulation of models. Systems response characteristics, prediction, and analysis. Prerequisite: ME 341.

ME 547 Fluid Power Control Systems**3 hrs.**

Definition and scope of fluid power control systems. Fluid properties. Continuity and power balance equations. Components function, operation, and dynamic performance. Use of perturbation theory for developing linearized transfer functions. Application of conventional control theory. Prerequisites: ME 301; CE 304.

ME 548 Optimization of Mechanical Systems**3 hrs.**

Development and application of optimization techniques in design of engineering systems and elements; mathematical modeling and formulation of design problems for optimization; different optimization methods including linear, non-linear, geometric and dynamic programming; shape optimization. Emphasis on development and choice of appropriate search methods, sensitivity analysis, and programming. Prerequisite: senior standing in engineering or consent of department.

ME 549 Microprocessor Interfacing in Mechanical Systems**3 hrs.**

Principles of microprocessor hardware and software; integration of microprocessor hardware and software in mechanical systems for data acquisition and control purposes (e.g., robotics, internal combustion engine monitoring systems, and pneumatic controls). Intensive hands-on laboratory exercises and practical problem solving. Introduction of "mechatronics." Prerequisites: ME 303; EE 328; proficiency in at least one computer language; or consent of instructor.

ME 554 Fracture of Solids**3 hrs.**

Mechanical failure caused by the stresses, strains, and energy transfers in mechanical parts: conventional design concepts relationship to occurrence of fracture; mechanics of fracture; fracture toughness; macroscopic and microscopic aspects of fracture; high and low cycle fatigue failures; creep; stress rupture; brittle fracture; wear; case studies of failure analysis. Emphasis on time-dependent failures. Prerequisites: ME 354 and CE 301.

ME 556 Mechanics of Composite Materials**3 hrs.**

Mechanical behavior, analysis, and design of various advanced composite materials: introduction to composite materials and their applications: elasticity of anisotropic solids; micromechanics of fiber reinforced composites and particulate composites; short fiber composites; macromechanics of laminated composites; thermal stresses; failure criteria; fracture and fatigue, reliability, testing, and design of composite materials. Emphasis on developing simple microcomputer programs for analysis. Projects involve curing and testing composites. Prerequisite: CE 301.

ME 562 Analysis and Design of Robotic Systems**3 hrs.**

Underlying theories of robotic systems; implications for engineering design. Kinematic, dynamic, and control analysis of robotic arms; robotic systems design. Plant visits to observe robots in action; hands-on experience using open-loop and closed-loop robots. Prerequisites: ME 344, 304, 441; EE 328; or consent of department.

ME 573 Methods of Engineering Analysis**3 hrs.**

Application of principles of analog and digital computers and numerical methods to solve mechanical engineering problems. Prerequisites: ME 341; MTH 202, 224.

ME 577 Finite Element Methods in Engineering**3 hrs.**

Theory of finite element methods and applications in mechanical engineering; review of matrix algebra and basic theorem of elasticity. Direct formulation of plane truss element and variational formulations of plane stress/strain, axisymmetric solids, flexural beam, and flat plate elements. Element analysis and isoparametric formulation. Applications to problems of stability, vibrations, thermal stress analysis, and fluid mechanics. Computer programming techniques. Prerequisite: senior standing in ME or consent of instructor.

ME 591 Topics in Mechanical Engineering**1-4 hrs. each**

Topics of special interest which may vary each time course is offered. Topic stated in current Academic Handbook. Graduate students may repeat the course up to a maximum of 8 credits. Prerequisite: consent of instructor.

ME 604 Design of Internal Combustion Engines**3 hrs.**

Detailed study of design of internal combustion engines. Gas-pressure and inertia-force diagrams; determination of bearing loads; torsional vibration analysis; stress analysis and design of components, including piston, connecting rod, crankshaft, flywheel, valve mechanism, and cam layout. Prerequisites: undergraduate courses in dynamics of machines, internal combustion engines, and machine design, or consent of instructor.

ME 621 Boundary Layer Theory**3 hrs.**

Fundamentals of vector and tensor notation; derivation of Navier-Stokes equations; exact solutions; laminar boundary layer flow; similarity solutions; numerical solutions; integral solutions; fundamental transformations; thermal boundary layers; introduction to turbulent boundary layers. Prerequisite: ME 521.

ME 631 Air Pollution and Engine Emissions**3 hrs.**

Internal combustion engine as related to air pollution and smog formation; emission monitoring methods; formation, release, and atmospheric reaction of spark and compression ignition engine pollutants; effect of engine parameters on emission control methods; effect of emission control strategies on performance and economy. Prerequisites: ME 501, 503; or consent of instructor.

ME 648 Advanced Computer Aided Design**3 hrs.**

Augmentation of mechanical design through application of computer graphics. Hardware/software characteristics; elements of geometric/solid modeling. Emphasis on integration in the application of the design process through packages for geometric/solid modeling, finite element analysis, and mechanisms and system simulation. Prerequisites: BSME; or background in mechanical and thermal systems and consent of Department Chair. Students without a BSME degree may take ME 342, ME 344, ME 415, and ME 411 to help develop an appropriate background for the course.

ME 681, 682 Research**1-6 hrs. each**

Research on a project selected by student and advisor.

ME 691 Topics in Mechanical Engineering**3 hrs.**

Topics of special interest which may vary each time course is offered. Topic stated in current Academic Handbook. Prerequisite: consent of instructor.

ME 699 Thesis**3-6 hrs.**

Maximum of 6 semester hours total of research and/or thesis may be applied toward the master's degree. Prerequisite: consent of department.

COLLEGE OF LIBERAL ARTS AND SCIENCES

Claire Etaugh,
Dean

Jerome Hahn,
Associate Dean

The mission of the College of Liberal Arts Sciences is to:

1. Provide an environment for students to develop an awareness of the great issues facing humanity.
2. Encourage students to be imaginative, critical, intellectually curious individuals, who will aspire to life-long learning.
3. Develop career interests and abilities appropriate to the needs of the students.
4. Foster in students communicative and evaluative competencies. Develop self-renewing people in a value-centered interdisciplinary, intercultural, and humanistic context that puts career goals of students into a societal context in ways that will have significant impact on contemporary and future society, and will bring continuing personal satisfaction to them.

Biology

Barbara A. Frase,
Graduate Advisor

A student desiring a Master of Science in biology will need to complete 32 semester hours of graduate work. A minimum of 26 hours will be in biology; the remaining hours may include cognate courses (e.g. in education, psychology, or computer science) approved by the graduate advisor. Twelve hours must be taken at the 600 level. A research thesis is required; a student must enroll in at least three hours of thesis (BIO 699).

In the student's first year, a committee of three members of the graduate faculty (including the thesis advisor) will be chosen in consultation with the graduate advisor; this committee will advise and assist the student in his or her thesis work. The student must submit a thesis proposal to the committee for approval prior to enrolling in BIO 699 (thesis).

Upon completion of the thesis, a student will usually present a departmental seminar. The student must pass an oral comprehensive exam and successfully defend the thesis to the committee members.

Course Descriptions

BIO 501 Biology of Fishes

3 hrs.

Fishes: organ-system structure and function, ecology, embryology, behavior, and economic importance. Prerequisites: BIO 312 or 323 or consent of instructor.

BIO 506 Advanced Microbiology

3 hrs.

Comprehensive analysis of selected topics of current interest in bacteriology, immunology, and virology: genetic engineering, plasmid research, bactericidal and bacteriostatic agents, complement system, viruses,

tumor formation, and cancer. Prerequisites: one semester of laboratory bacteriology; organic chemistry; or consent of instructor.

BIO 508 Enzyme Chemistry

3 hrs.

Enzymes: kinetics, structure, specificity, reaction mechanisms, inhibition, and regulation. Cross listed as CHM 508. Prerequisites: 2 semesters of organic chemistry; one semester of differential and integral calculus; introductory biochemistry; or consent of instructor.

BIO 509 Human Genetics

3 hrs.

Genetic theory and methodology applied to humans. Prerequisites: BIO 224 or consent of instructor.

BIO 510 Population and Evolutionary Ecology

3 hrs.

Emphasis on structure, growth patterns, and interactions of populations; relationship to evolutionary theory. Prerequisites: MTH 115; one semester of environmental biology or consent of instructor.

BIO 519 Comparative Animal Behavior

3 hrs.

Animal communication, social behavior, and evolution of behavior. Comparisons of a wide variety of vertebrates and invertebrates. Prerequisites: 6 hours of college level biology or zoology.

BIO 525 Advanced Physiology

3 hrs.

Detailed study of the structure and function of animals; special reference to the human body; theories and methods of investigation mostly at organ system level; adaptational strategies to special conditions. Prerequisite: one semester of physiology or consent of instructor.

BIO 530 Plant Systematics

3 hrs.

Evolution, classification, and characteristics of various flowering plant families. Prerequisites: one semester of plant systematics or consent of instructor.

BIO 545 Biophysics

3 hrs.

Applications of physics principles and methods of investigation of biological systems. Emphasis on physical environmental effects on biological systems. Cross listed as PHY 545. Prerequisites: PHY 108 or 201; senior standing; or consent of instructor. PHY 345 recommended.

BIO 561 Natural History of Vertebrates

3 hrs.

Vertebrates as integrated organisms: emphasis on activities and interaction with environment under natural conditions. Field work on local fauna. Introduction to classification. Prerequisite: 6 hours of college level biology or zoology.

BIO 563 Advanced Plant Ecology

3 hrs.

Physiological and growth responses of plants to environmental stresses, and consequences to the structure and function of communities and ecosystems. Prerequisites: CHM 250; 1 plant biology course, 1 ecology course, or consent of instructor.

BIO 564 Advanced Molecular Biology

3 hrs.

Selected topics in molecular biology. Emphasis on proteins and nucleic acids. Prerequisites: BIO 365 or consent of instructor.

BIO 565 Aquatic Ecology

3 hrs.

Emphasis on survival and dispersion of natural aquatic populations as related to environmental degradation in lakes, rivers, and streams. Prerequisites: one semester of environmental biology or consent of instructor.

BIO 566 Advanced Biochemistry

3 hrs.

Quantitative aspects of all areas of biochemistry. Emphasis on metabolism. Prerequisite: one semester of biochemistry or physical chemistry, or consent of instructor.

BIO 570 Seminar

1-3 hrs.

Selected topics in biological sciences. May be repeated under different topics for a maximum of 6 hours credit. Prerequisites: 3.0 grade point average in student's major; senior or graduate standing; consent of instructor.

BIO 580 Readings

1-3 hrs.

Individual assignments of relevant topics in biological sciences. Prerequisites: 3.0 grade point average in student's major; senior or graduate standing; consent of instructor.

BIO 585 Research

1-6 hrs.

Individual research for qualified students in special areas of biology. Prerequisites: 3.0 grade point average in student's major; senior or graduate standing; consent of instructor.

BIO 681 Readings

1-6 hrs.

Readings in an area of interest to the student. Prerequisites: graduate standing and consent of instructor.

BIO 683 Research

1-6 hrs.

Research in an area of interest to the student. Prerequisites: graduate standing and consent of advisor.

BIO 699 Thesis

1-6 hrs.

Research and thesis preparation. Repeatable for up to 6 hours credit. A student can receive no more than a total of 6 hours credit in BIO 699 or CHM 699 or PHY 699. Prerequisite: consent of program coordinator.

Chemistry

Kurt W. Field,
Graduate Advisor

The Department of Chemistry has long offered a Master of Science degree in chemistry. The program is designed for students who are locally employed and wish to advance their knowledge and professional careers by taking advanced work in chemistry and related disciplines. Most courses are offered in the late afternoon or evening. Candidates for the M.S. degree must take a minimum of 30 semester hours in chemistry and related subjects. Of these hours, 6 semester hours must be devoted to original research. A publishable thesis is required for graduation based on this research. Of the remaining 24 semester hours, up to a maximum of 12 semester hours may be taken at the graduate level in cognate fields such as engineering, education, mathematics, business or biology. Individual programs are developed in conference between the student and the advisor.

Course Descriptions

CHM 500 Chemical Topics

1-3 hrs.

Topics of special interest which may vary each time course is offered. Topic stated in current Academic Handbook. Prerequisite: CHM 351, 461.

CHM 508 Enzyme Chemistry

3 hrs.

Enzymes: kinetics, structure, specificity, reaction mechanisms, inhibition, and regulation. Cross listed as BIO 508. Prerequisites: two semesters of organic chemistry; one semester of differential and integral calculus; introductory biochemistry; or consent of instructor.

CHM 509 Advanced Inorganic Chemistry

3 hrs.

Theoretical-descriptive approach to inorganic chemistry. Emphasis on dependence of selected chemical and physical characteristics of elements and compounds on extranuclear structure. Prerequisites: CHM 320, 461.

CHM 510 Advanced Inorganic Chemistry Laboratory

1 hr.

Laboratory work in inorganic chemistry. Prerequisite: CHM 509 or concurrent enrollment.

CHM 530 Advanced Analytical Chemistry

4 hrs.

Theory and applications of modern qualitative, quantitative, and instrumental methods. Prerequisite: CHM 320, 462.

CHM 550 Industrial Organic Chemistry

1 hr.

Survey of modern industrial organic chemistry; emphasis on petroleum derivatives. Prerequisite: one year of organic chemistry.

CHM 551 Advanced Organic Chemistry

3 hrs.

Organic reactions and reaction mechanisms.

Prerequisite: CHM 351.

CHM 553 Qualitative Organic Analysis

4 hrs.

Laboratory: systematic identification of pure organic compounds; analysis of mixtures. Prerequisites: CHM 320, 351, 392.

CHM 630 Advanced Chemical Instrumental Analysis

3 hrs.

Modern chemical instrumental analysis: theory of operation of instruments and related chemical theory. Lecture and laboratory. Prerequisite: CHM 530.

CHM 652 Advanced Organic Chemistry

3 hrs.

Theoretical aspects of organic chemistry: stereoisomerism, conformational analysis, molecular rearrangements, and electronic interpretations of organic reactions. Prerequisite: CHM 551.

CHM 655 Carbohydrates

3 hrs.

Simple sugars and certain polysaccharides: determination of structure, stereochemistry, typical chemical transformation, identifications, and physiological importance. Prerequisites: 8 hours of organic chemistry; consent of instructor.

CHM 658 Macromolecules

3 hrs.

Physical and chemical aspects of synthetic and natural polymers. Prerequisites: CHM 351, 462.

CHM 671 Reading in Chemistry

1-6 hrs. total

Directed reading for qualified students. Maximum of 3 hrs. per semester. Prerequisite: CHM 509 or 551.

CHM 681 Fermentation Biochemistry

3 hrs.

Microbial metabolism, particularly in fermentation processes. Emphasis on biochemistry of enzyme catalyzed reactions. Prerequisite: consent of instructor.

CHM 683 Research

1-6 hrs.

Required of all candidates for the Master of Science degree in chemistry. Prerequisite: accepted thesis proposal.

CHM 699 Thesis

1-6 hrs.

Research and thesis preparation. Open to students in the MNS program only. Repeatable for up to 6 hours credit. A student can receive no more than a total of 6 hours credit in BIO 699 or CHM 699 or PHY 699. Prerequisite: consent of program coordinator.

Computer Science and Information Systems

Jiang B. Liu,
Graduate Advisor

The Department offers graduate programs leading to the degrees of Master of Science in computer science and Master of Science in computer information systems. These courses of study are designed to prepare students for professional careers in the field of computing and information processing or for further study and research.

Computer scientists are developers of basic computer technology such as operating systems, language translators, data management software and other programming, processing, and operating aides to be used in conjunction with computer hardware. They are usually employed by computer manufacturers and software houses specializing in systems software. Computer information systems specialists are principally users of computer technology, usually in systems projects for applications in business, industry, or government.

In addition to satisfying all the Graduate School requirements for the degree, all candidates for the master's degree must satisfy the following departmental requirements:

1. At least 36 hours of graduate-level coursework.
2. No "D" grades can be counted in the completion of requirements for the degree.
3. Every student must pass a written comprehensive examination that will be based on the core requirements for the program pursued.
4. The Department of Computer Science and Information Systems has instituted a programming examination which all its graduate students must pass as part of their degree requirements. It is to be administered before the student has completed nine hours of graduate work. The students who fail are advised to take appropriate undergraduate courses before attempting the exam again. Students are to be given three opportunities to pass the examination. It is given early in the program in order to function as an effective diagnostic.

Interested and qualified students are offered the option of writing a master's thesis. Students selecting this option are encouraged to choose an advisor and topic as early as possible in order to plan the thesis development and any needed supporting coursework. The following policies apply to theses:

1. A minimum grade point average of 3.5 in computer science and computer information systems graduate courses is required for students enrolling in CS 699 (Thesis).
2. No student may register for CS 699 until 18 hours of graduate courses have been completed in the department.

3. Six credit hours of CS 699 are required and, upon completion, the thesis must be defended in an oral examination. No grade will be given for CS 699 until after the oral defense.
4. A written outline of the thesis project and a tentative schedule must be submitted to and approved by the graduate advisor and the chair prior to the registration for CS 699.

Admission requirements and graduation requirements specific to computer science and computer information systems are given below. Note that prospective students who do not meet the conditions for admission may be admitted conditionally, in which case the department will prescribe a program for the removal of such admission conditions. Conditional status must be removed prior to graduation.

Computer Science

In addition to meeting all the general requirements of the Graduate School and of the department as stated above, candidates for the master's degree in computer science must satisfy the following requirements.

1. At least 30 of the 36 hours required must be in computer science courses. At most, six hours may be earned in approved courses other than those labeled CS.
2. The following core requirements must be satisfied (either by taking the course or showing evidence of the completion of an equivalent course elsewhere): CS 503 or CS 615, CS 516, CS 517, CS 519, CS 550 or CS 643, CS 682, CS 609, CS 521 or CS 514.
3. Two of the following two-courses sequences must be completed: CS 517 and CS 518, CS 615 and CS 616, CS 514 and CS 614, CS 521 and CS 522, CS 530 and CS 550, CS 510 and CS 511, CS 519 and CS 570.

For admission into the computer science program, a student must have completed discrete mathematics, at least two semesters of calculus, matrix or linear algebra, and at least one semester of calculus-based statistics; must have at least 15 hours of computer science coursework including knowledge of one structured programming language such as C/C++, elementary data structures, assembly language, advanced data structures, and introductory computer architecture; and must have approval of the Department.

Computer Information Systems

In addition to meeting all the general requirements of the Graduate School and of the department as stated above, candidates for the master's degree in computer information systems must satisfy the following requirements:

1. At least 21 of the 36 hours required must be in computer information systems or computer science courses.
2. A minimum of 12 hours must be taken in courses outside the department. These courses must form a coherent program in an applications area and must be approved by the graduate advisor.

3. The following core requirements must be met (either by taking the course or by showing evidence of having completed an equivalent course elsewhere): CIS 571, CIS 572, CIS 588, CIS 607, CIS 608, and CS 609. (CS 615 and CS 643 are recommended).

The admission requirements for the computer information systems program are one semester of calculus, one semester of calculus-based statistics, two semesters of accounting, one semester of finance, two semesters of programming and data structures in a structured programming language such as C/C++, and one semester of data communications.

Course Descriptions

Computer Information Systems

CIS 571 Computer Law **3 hrs.**

Ethical considerations of computer scientists and computer-related security and privacy issues; copyright, patent, trademark, and trade secret issues, deceptive trade practices, computer crime, contract issues, venture capitalists, tax issues, computer torts, constitutional issues, and international trade considerations. Prerequisite: one semester of programming.

CIS 572 Computing Services Management **3 hrs.**

Management of computing resources: planning for computing services; operational considerations; evaluation of service. Prerequisites: CS 302 or 310.

CIS 588 Introduction to Expert Systems **3 hrs.**

Knowledge-based systems design and implementation; expert systems shells and programming environments; validation and implementation of expert systems: case studies/laboratories. Cross listed as IE 588. Prerequisites: two semesters of programming and one semester of statistics, or consent of instructor.

CIS 606 Software Systems Design **3 hrs.**

Planning, writing, debugging, and documenting large software systems. Consult with instructor for details on programming language to be used. Prerequisites: CS 121; consent of instructor.

CIS 607 File Organization and Management **3 hrs.**

File organizations and access methods. Sort/merge operations; hashing schemes for storage and retrieval. Projects involve data validation; creation and updating of files; simulation and/or implementation of direct and indexed files. Prerequisite: CS 121 or equivalent.

CIS 608 System Specification and Development **3 hrs.**

Techniques and tools of system specification and development. Case studies; problems. Prerequisite: CS 302 or 310.

Computer Science

CS 500 Multimedia, Internet, and Applications **3 hrs.**

Human and computer interaction; Internet and the World Wide Web; hypertext, design and building of multimedia systems; forms and interactive applications on the Web with Common Gateway Interface (CGI) scripting and PERL; Java and VRML. Prerequisites: 24 semester hours in mathematics, logic, science, and technology courses, including at least 6 hours of CS.

CS 503 Programming Methodology **3 hrs.**

Predicate calculus, Dijkstra's methodology of algorithm development. Algorithm development. Algorithmic language characteristics; syntax, semantics. Postconditions and preconditions. Verification of postcondition states satisfied by algorithmic programs executed from preconditions. Problems. Prerequisites: MTH 120, 302.

CS 505 Advanced Topics in Databases **3 hrs.**

Current trends in information technology. Hypertext navigation, intelligent navigation with expert systems and neural nets, multimedia, text management and retrieval, deductive and object-oriented databases, distributed databases, the integrated intelligent database.

CS 510 Numerical Methods I **3 hrs.**

Introduction to numerical and computational aspects of various mathematical topics: finite precision, solutions to nonlinear equations, interpolation, approximation, linear systems of equations, and integration. Cross listed as MTH 510. Prerequisites: CS 104 or 106; MTH 207 and 223.

CS 511 Numerical Methods II **3 hrs.**

Continuation of CS/MTH 510: further techniques of integration, ordinary differential equations, numerical linear algebra, nonlinear systems of equations, boundary value problems, and optimization. Cross listed as MTH 511. Prerequisites: MTH 224 or 345; CS/MTH 510.

CS 514 Algorithms **3 hrs.**

Design and analysis of algorithms. Dynamic structures maintenance and hashing. Searching, sorting, and traversal. Time and space requirements; simplification; computational complexity; proof theory and testing; NP-hard and NP-complete problems. Prerequisites: CS 302; MTH 325 or IE 311 or BMA 262.

CS 516 Programming Languages **3 hrs.**

Design concepts of high-level languages. Description languages; grammars and syntax; expressions and data structures; selection and control structures; constructs for input and output; subprograms and parameter communications. Prerequisite: CS 302 or 310.

CS 517 Translator Systems I (Assemblers and Parsing)
3 hrs.

Introduction to programming language translation: assembly language translation; parsing methods for high level languages. Prerequisite: CS 206. Co-requisite: CS 516.

CS 518 Translator Systems II (Compilation)**3 hrs.**

Continuation of CS 517: code generation, error recovery, optimization, interpretation, and threaded interpreted languages. Prerequisite: CS 517.

CS 519 Introduction to Operating Systems**3 hrs.**

Design principles of software for operation of computers. Storage, processor, device, and file management as an integrated system; input/output control. Prerequisite: CS 206.

CS 521 Introduction to Artificial Intelligence**3 hrs.**

Basic concepts and techniques of artificial intelligence: philosophical considerations, examples, pattern recognition, search strategies, game playing, knowledge representation, logic and resolution, planning, vision, natural language processing, programming in LISP. Prerequisites: CS 302 or consent of instructor.

CS 522 Neural Networks, Knowledge-based Systems, and Applications**3 hrs.**

Theorem proving, logic programming, expert systems, uncertainty, fuzzy logic, machine learning, neural networks, programming in PROLOG. Prerequisites: CS 302 and one course in statistics or consent of instructor.

CS 530 Microcomputer Systems**3 hrs.**

Review of microcomputer architecture. Bus structures; examples. Operating systems concepts. Practical use of a microcomputer in client/server environment. Prerequisite: CS 206 or consent of instructor.

CS 535 Introduction to Computer Graphics**3 hrs.**

Mathematics and algorithms of computer graphics. Device differences, lines, arcs, curves, transformations, input and output primitives. Data structures for geometric entities. Prerequisites: MTH 207, 223; CS 302.

CS 550 Advanced Computer Architecture**3 hrs.**

Fundamental computer sub-systems: central processing unit; memory systems; control and input-output units. General purpose computing systems design. Examples from existing typical computers. Prerequisite: CS 350.

CS 570 Systems Performance and Modeling**3 hrs.**

Techniques of modeling processes and the resources they share: intuitive, simulation, and analytical approaches. Performance prediction, bench marking, and synthetic loading. Prerequisites: CS 310 or 302; one semester or calculus-based statistics.

CS 609 Database Management Systems**3 hrs.**

Relational, hierarchical, and network database models. Conceptual and physical schema. Data definition and

data manipulation languages. Normal forms and database design. Database administration, security, integrity, and backup recovery. Query optimization. Latest developments in databases. Prerequisite: CIS 607 or equivalent; or consent of instructor.

CS 610 Advanced Topics**3 hrs.**

Special projects under staff supervision on advanced problems in numerical or nonnumerical branches of computer science. May be taken more than once under different topics. Prerequisite: consent of instructor.

CS 611 Directed Individual Studies**1-3 hrs.**

Individual study in an area of computer science relevant to the student's professional goals and not covered in a formal course offered by the department. May be repeated twice for a maximum of 6 hours credit. Prerequisites: consent of the department chair and instructor.

CS 614 Parallel Algorithms**3 hrs.**

Parallel algorithms for multi-processor computer architectures: concurrent programming, SIMD and MIMD systems, and time complexity. Prerequisite: CS 514 or concurrent enrollment.

CS 615 Software Engineering I**3 hrs.**

Software engineering: technical management; project management, estimation, and control; economics; environments; standards; products and their phases. Prerequisites: CS 503, 608.

CS 616 Software Engineering II**3 hrs.**

Background and overview of software production: requirements for engineering and analysis; software specifications, design, coding, qualification, manufacture, support, and standards. Emphasis on a specific topic in software engineering. Prerequisites: CS 503, 608.

CS 643 Data Communications and Distributed**Computing****3 hrs.**

Introduction to communication technologies. Emphasis on application to computer networks, information and coding theory, design considerations, and architecture, including topologies, implementation techniques, and standard distributed computing architectures. Prerequisites: MTH 120, 325; CS 519.

CS 682 Theory of Computation**3 hrs.**

Theory of formal languages and computability. Automata, turing machines, grammars. Context-free and context-sensitive languages; parsing. Recursion theory: limits of effective computability. Unsolvability, reducibility, complexity. Prerequisites: MTH 120, CS 320; or consent of instructor.

CS 699 Thesis**3-6 hrs.**

Computer science research and thesis preparation. Required of candidates choosing the thesis option. Total of 6 semester hrs. to be taken in one or two semesters. Prerequisite: consent of department chair.

English

Robert Prescott
Graduate Studies Coordinator

The Master of Arts in English provides post-baccalaureate students with study in the theory and practice of English. It is intended to prepare students for professional advancement and for further study in either literature or writing. The literature track emphasizes the study of literary texts with related study of writing, theory, and methods. The literature track also requires an internship within the context of an undergraduate literature course, a portfolio of written work, and a written comprehensive exam over selected work taken in the program. The writing track emphasizes the study and practice of writing with related study of literature, theory, and methods. The writing track also requires an internship within the context of an undergraduate writing course, a portfolio of written work, and a written comprehensive exam over selected work taken in the program.

Because the master's program is predicated upon the complementary relationship between theory and practice in the study of English, both tracks of the program require ENG 500 Theory and Practice of English, another course in theory, and the internship. Students in either program not only will become familiar with the aesthetic, formal, and theoretical underpinnings of their field of study, but also will learn how to address their audiences by means of professional discourse. In this way, the Master of Arts in English focuses on ways candidates for the degree may enhance their professional lives and communicate to others their understanding of the uses of the discipline in the classroom and the workplace.

Special Admission Requirements

In addition to the admission requirements of the Graduate School, the applicant shall present the following material with the application:

1. An essay of under 1500 words stating what the applicant expects to achieve from the study of English (literature or writing) at the master's level.
2. A writing sample (professional, critical, creative) that the applicant deems to be representative of the quality of his or her work. The sample may be an undergraduate paper, professional work, or work prepared for personal use. (The sample will not be returned. Submit a copy.)
3. Two letters of recommendation from references whose discipline is English literature or writing or from employers who have experience in the field of literature or writing. For those applicants who no longer have contact with either, the recommendations should be from those who can comment on the applicant's ability to benefit from a graduate program in English.

Programs of Study

Literature Emphasis Requirement

Theory and Practice of English	3 hrs.
Language Theory or Writing Theory or Literary Criticism	3 hrs.
American or English Periods	6 hrs.
Selected Authors/Genres	6 hrs.
Internship in Literature	3 hrs.

Writing Emphasis Requirement

Theory and Practice of English	3 hrs.
Writing in the Professions and/or Workshop for Writers and/or Creative Non-Fiction	6 hrs.
Language Theory or Writing Theory or Literary Criticism	3 hrs.
Literature Courses	6 hrs.
Internship in Writing	3 hrs.

To complete either 30-hour program, students elect 3 courses (9 credits) from literature, writing, theory, or independent study.

Course Descriptions

ENG 500 Theory and Practice of English 3 hrs.

Overview of the practices, theories, and history of the field of English and an introduction to the Bradley program. Required of all graduate students. Must be taken in first nine hours.

ENG 503 Creative Non-Fiction 3 hrs.

Practice in writing non-fiction genres, such as autobiography, biography, nature writing, and travel writing. Prerequisite: submission to instructor of an acceptable manuscript.

ENG 506 Writing in the Professions 3 hrs.

Study and practice of the writing conventions and rhetorical characteristics of individual professions.

ENG 507 Workshop for Writers 3 hrs.

Individual guidance in creative writing projects. May be repeated for a maximum of six hours credit. Prerequisite: consent of instructor, after submission of an acceptable manuscript.

ENG 550 Language Theory 3 hrs.

Study of the relationships between language and writing, thinking, and society. Prerequisite: senior or graduate standing.

ENG 560 Writing Theory 3 hrs.

Theoretical approaches to the study of writing. Prerequisite: senior or graduate standing.

ENG 570 Contemporary Literary Criticism 3 hrs.

Advanced study of contemporary critical approaches to literature, including, but not limited to, feminism, semiotics, cultural criticism, post structuralism. Study of the critical theories and applications of the criticisms to literary texts.

ENG 580 Theories and Methods of Teaching Composition
3 hrs.

Theoretical and pedagogical issues and approaches in teaching composition.

ENG 630 American Periods
3 hrs.

Study of selected periods or movements from the 17th century to the present. May be repeated under a different topic for a maximum of six hours credit.

ENG 640 English Periods
3 hrs.

Study of selected periods or movements from the 7th century to the present. May be repeated under a different topic for a maximum of six hours credit.

ENG 650 Selected Authors
3 hrs.

Study of one or two authors who write in English. May be repeated under different authors for a maximum of six hours credit.

ENG 660 Genres
3 hrs.

Study of a single genre: fiction, prose, poetry, or drama. May be repeated under a different genre for a maximum of six hours credit.

ENG 690 Internship in Literature
3 hrs.

Theory, analysis, and practice of literature within the context of an undergraduate literature course. Prerequisites: 21 hrs. English graduate courses.

ENG 691 Internship in Writing
3 hrs.

Theory, analysis, and practice of writing within the context of an undergraduate composition class. Prerequisite: 21 hrs. English graduate courses.

ENG 695 Independent Study
3 hrs.

Independent research in literature, writing, or theory.

ENG 699 Thesis
3-6 hrs.

Independent research. Three hours required in the first program (traditional M.A.). Prerequisite: consent of department chair.

Liberal Studies

Max Taylor
Acting Director, Liberal Studies Program

Definition and Purpose

The purpose of the Master of Liberal Studies program is to provide motivated adults with opportunities to continue intellectual growth by integrating knowledge and perspectives from different disciplines in an innovative and challenging manner. The program introduces students to the pleasures and principles of science, the arts, technology, business, and the humanities as a means of exploring the problems and possibilities of life in modern society.

The program is designed for the adult student who wants a flexible part-time program offered during evening and weekend hours. Courses in the program bring Bradley's most distinguished faculty together with practitioners of business, education, law, medicine, journalism, and others who seek to understand the most controversial issues of the age and to extend their intellectual knowledge and vision.

Special Regulations

The M.L.S. degree meets the standards and policies of the Graduate School of Bradley University. But as with other programs, it has its own curriculum and integrity which require special regulations.

Admission

Admission to the M.L.S. program is limited to those who qualify for unconditional admission to the Graduate School. A personal letter of intent and an interview will be required in addition to the customary transcript and two recommendations.

Course Requirements

All work must be on the 600 level in M.L.S. courses. Thirty semester hours are required for the degree.

Transfer of Credit

The M.L.S. program ordinarily does not allow for transfer of credit. However, the Dean of Liberal Arts and Sciences will act on individual petitions.

Colloquium

In the final semester of the program, the candidate will participate in a colloquium with members of the M.L.S. faculty. The M.L.S. faculty in cooperation with each candidate shall devise the colloquium.

Course Descriptions

MLS 601 Physical Science Concepts and Society
3 hrs.

Great concepts of modern physical science and their impact on society. The scientists and their creative insights; influence of governmental policies on science.

MLS 602 Physics: Resonance With Reality**3 hrs.**

Influence of historical and cultural notions (such as the world being organism, pure number, and total harmony) on creative minds of the West, and how these notions are enmeshed in modern physics theories and developments.

MLS 603 Origins, Structure, and Dependability of Information**3 hrs.**

Eastern and Western attitudes in the 20th Century concerning the source, nature, and accuracy of human knowledge. Analysis of artistic creativity, psychological experiments of left and right hemispheric brain activity, and methods of scientific discovery.

MLS 604 Philosophical Foundations and Law**3 hrs.**

"Law" as an idea and as seen from a general perspective. Existing and proposed laws are explored in terms of underlying, fundamental considerations to develop a meaningful concept of law in the context of the student's own life.

MLS 605 A Philosophical Description of the Human Condition**3 hrs.**

A rigorous investigation of our presuppositions about what a "better" way of being human should be, in context of developments in the life sciences that allow persons to alter or modify their own nature.

MLS 606 The Development of Social Thought**3 hrs.**

Survey of theoretical perspectives for critical social science; emphasis on classic socio-economic thought of the 19th and 20th century. Construction of a theoretical framework for critical analysis of late industrial societies. Importance of Marxian theory to analyses of cultural forms and quality of everyday life. Relation of thought and social structures; doctrine of ideology; social organization of scientific and intellectual activities; processes of bureaucratization, rationalization, and alienation; social status; the role of intellectual activity in processes of revolution and social criticism.

MLS 608 American Egalitarianism and Mass Education**3 hrs.**

Investigation of the ambivalence in American culture and educational philosophy between commitment to mass education as a force for democratization and suspicion of the educated as fostering an undemocratic elitism. The effects of this ambivalence on American education.

MLS 609 Popular Music and Poetry in the Twentieth Century**3 hrs.**

Techniques and broad historical outlines of all forms of twentieth century music and poetry. Emphasis on the inter-relatedness of the two arts, and on familiar popular forms. Practice writing, analyzing, and criticizing popular music and poetry.

MLS 610 Weimar Germany: Culture and Politics Before Hitler**3 hrs.**

Interdisciplinary, conceptual study of the profound changes that shaped the evolution of Weimar Germany. The disintegration of the values of old Germany, post-World War I alienation, and Weimar political and economic chaos as contrasted with the enormous creativity that brought forward exciting developments in art, film, architecture, science, literature, and popular culture.

MLS 611 Contemporary World Issues**3 hrs.**

Sophisticated analysis of major contemporary international issues such as relations among industrial societies, the North-South dialogue, nationalism, and global economic problems. No more than four issues will be explored in depth in any one semester.

Prerequisite: graduate standing.

MLS 612 Perspectives on United States International Relations**3 hrs.**

In-depth analysis of United States foreign relations from North American, European, Asian, African, and Latin American perspectives. Prerequisite: graduate standing.

MLS 613 The Energy Situation: An Overview**3 hrs.**

In-depth study of the U.S. and world energy situation, problems and methods associated with energy production, and effects of various factors such as population on the energy problem. Technical, social, economic, political, and moral implications of the energy situation. Prerequisite: graduate standing.

MLS 614 Cultural Dimensions of Psychological Theory**3 hrs.**

Ideological roots of psychological science in American culture. Social science understandings of the good person and the good society.

MLS 615 Philosophy, Psychology, and Religion in the Works of William James**3 hrs.**

How William James brought together studies in psychology, philosophy, and religion to develop a comprehensive theory of human nature. James's writings as an exemplary attempt to build a model of human experience in its many and varied expressions (philosophical anthropology).

MLS 616 Female and Male: Origins of Sex Differences in Behavior**3 hrs.**

Critical analysis of research findings and theories concerning the origin and development of differences in the behaviors of females and males; psychological, sociological, and biological factors.

MLS 617 All Reality is Astronomy**3 hrs.**

The impact of astronomy on our present culture; our place in the cosmic environment. Planetarium scenarios and models display visually how various cultures in the past viewed our place in the universe, and also project modern cultural and cosmic views and theories. A cooperative venture with Lakeview Planetarium.

MLS 618 Controversial Issues in Biology**3 hrs.**

A detailed examination of the important topical issues that are currently under intense debate in biology. Topics such as genetic engineering, the patenting of life forms, sperm banks, and nuclear waste disposal discussed from a scientific, political, moral, and religious point of view.

MLS 619 Controversial Psychological Issues and Society**3 hrs.**

Topics in psychology that have stimulated heated controversy in both the professional and public arenas because of their potential impact on individuals and on society. Topics such as control of human behavior, use of psychosurgery, effectiveness of psychotherapy, effects of televised violence, and states of altered consciousness.

MLS 620 Literature and Society**3 hrs.**

The primary "social" theories of literature; the relationships between society and literature as an institution; and literary documents themselves.

MLS 621 Communicating Change and Innovation**3 hrs.**

Basic communication principles used in creating change and having change and innovation adopted by people and/or organizations. Practical examples used to demonstrate effective communication channels and means for getting change accepted.

MLS 622 La Tissue Urbaine: The City as a Living Organism**3 hrs.**

Physical structure or tissue of human settlements; urban emphasis. Their physical evolution, common universal characteristics, and unique differences; their value, importance, and integrity. The ideal or utopian human settlement. Global and local examples. Prerequisite: enrollment in the M.L.S. program.

MLS 623 Death and Dying: An Interdisciplinary Inquiry**3 hrs.**

Interdisciplinary investigation of the human experience of death. Modernism and death, religion and death, euthanasia, the mourning and bereavement process, psychoanalytic interpretation of death anxiety.

MLS 624 The North American Frontier in Literature**3 hrs.**

Literature relating to the North American Frontier as both a body of themes and as a group of conditions surrounding literature: gender, genre, language, region, and nationalism. United States, Canadian, Colonial, and European literatures.

MLS 625 Music and Western Society**3 hrs.**

Relationship of music to other areas of human endeavor. Basic elements of music; various beliefs and myths about music. Required concert attendance.

MLS 626 Three Ideas That Formed Western Culture**3 hrs.**

Diagnostic examination of the origins in Greek, Hebrew, and Roman antiquity of three pillars of Western culture: Protestant Christianity, natural

science, and democratic self-government. Prerequisite: graduate standing.

MLS 627 Religion in the Modern World**3 hrs.**

Sociological, psychological, and philosophical issues confronting religion in the late twentieth century.

MLS 628 The Western Legal Tradition**3 hrs.**

A survey of Western legal history from the Roman Republic to the present.

MLS 629 Critical Thinking & Reasoning**3 hrs.**

Study of critical thinking, defined as the ability to weigh evidence judiciously in making decisions. Application of the scientific method to everyday decision making. Examination of examples from a broad array of disciplines and media. Prerequisite: graduate standing.

MLS 630 Nature Writers and Writing**3 hrs.**

Selected American nature writers from Thoreau to the present, concentrating on the cultural implications of the genre for writers, general readers, and environmentalists.

MLS 631 Controversial Legal Issues**3 hrs.**

An analysis of controversial legal issues and the arguments that support them, with emphasis on contemporary conflicts. Prerequisite: graduate standing.

MLS 690 Independent Study**3 hrs.**

Student pursues a topic of interest in depth under the guidance of a single instructor. Subject must naturally evolve from study undertaken in one or more courses in the student's MLS program. To be undertaken only after 21 semester hours have been completed.

Supportive Courses

The following courses are offered by departments in liberal arts and sciences to graduate students and qualified undergraduates. Graduate students who intend to use them as an integral part of their degree program should consult both their graduate advisor and the chair of the department concerned.

Geological Sciences (Earth Science)

GES 505 Field Observation in Natural History 4 hrs.

For non-majors: field oriented investigation of diverse topographic forms, mountain structures, and materials composing the earth. Develops understanding of rapidly deteriorating environment through observation of geophysical, astronomical, and biological variations. One week of classes; three week bus trip to marine station, and return. Not open to undergraduate geological sciences majors.

GES 518 Subsurface Flow in Porous Media 3 hrs.

Fundamentals of groundwater flow: theory of flow in anisotropic media, transient well testing techniques, analytical and computer solutions of flow problems; dispersion phenomena. Cross listed as CE 518. Prerequisites: MTH 224; senior or graduate standing in geology or civil engineering.

GES 691 Directed Study in Geological Sciences 1-4 hrs.

Projects designed to supplement departmental offerings in geological sciences. Prerequisite: consent of instructor.

History

HIS 505, 506 Seminar in Directed Reading 1-3 hrs. each

Program of directed readings; analysis, synthesis, and interpretation of materials. Prerequisites: senior or graduate standing; 15 hrs. of college-level history with at least a B average; consent of department chair.

HIS 507, 508 Area Study in Directed Reading 1-3 hrs. each

Projects and readings in area studies; e.g. Asia, Russia, Africa, or South America. Prerequisites: 15 hours of college-level history with at least a B average; consent of department chair.

Mathematics

MTH 501 Topics in Applied Mathematics I 3 hrs.

Theory, applications, and algorithms for basic problems of modern applied mathematics. Symmetric linear systems, minimum principles, equilibrium equations, calculus of variations, orthogonal expansions, and complex variables. Prerequisite: MTH 224 or 345.

MTH 502 Topics in Applied Mathematics II 3 hrs.

Continuation of MTH 501. Selected numerical algorithms: Fast Fourier transform, initial value problems, stability, z-transforms, and linear programming. Prerequisite: MTH 501 or consent of instructor.

MTH 503 Complex Variables II 3 hrs.

Continuation of MTH 403. Advanced topics in complex analysis. Prerequisite: MTH 403 or consent of instructor.

MTH 510 Numerical Methods I 3 hrs.

Introduction to numerical and computational aspects of various mathematical topics: finite precision, solutions of non-linear equations, interpolation, approximation, linear systems of equations, and integration. Cross listed as CS 510. Prerequisites: CS 104 or 106; MTH 207 and 223.

MTH 511 Numerical Methods II 3 hrs.

Continuation of CS/MTH 510: further techniques of integration, ordinary differential equations, numerical linear algebra, nonlinear systems of equations, boundary value problems, and optimization. Cross listed as CS 511. Prerequisites: MTH 224 or 345; CS/MTH 510.

MTH 514 Partial Differential Equations 3 hrs.

Fourier series and applications to solutions of partial differential equations. Separation of variables, eigenfunction expansions, Bessel functions, Green's functions, Fourier and Laplace transforms. Prerequisite: MTH 224 or 345.

MTH 515 Finite Element Analysis 3 hrs.

Mathematics of finite elements, variational and residual methods, error analysis, element analysis, ordinary and partial differential equations, various boundary conditions, and selected applications. Prerequisite: MTH 224 or 345.

MTH 590 Special Topics 3 hrs.

Topics of special interest which may vary each time course is offered. Topic stated in current Academic Handbook. Prerequisite: consent of instructor.

Philosophy

PHL 551, 552 Readings in Philosophy 1-3 hrs. each

Directed individual study. Prerequisites: 6 hours in philosophy; senior or graduate standing; consent of department chair.

Physics

PHY 501 Quantum Mechanics I 3 hrs.

Inadequacies of classical physics when applied to problems in atomic and nuclear physics. Development of mathematical formalism used in basic quantum

theory. Applications to simple models of physical systems. Prerequisites: PHY 202, 301, 306; consent of instructor. MTH 207 recommended.

PHY 502 Quantum Mechanics II
3 hrs.

Mathematical formalism of quantum mechanics. Applications to problems of electron spin and many-particle systems. Development of approximation techniques with applications to complex physical systems. Prerequisite: PHY 501.

PHY 510 Experimental Physics Topics
3 hrs.

Discussion of applications of physics principles; detailed evaluations of recent experimental physics. Emphasis on laboratory measurements, including laboratory practice at local and regional research sites. Prerequisites: any advanced undergraduate course with laboratory; consent of instructor.

PHY 539 Topics in Theoretical Physics
3 hrs.

Topics of special interest which may vary each time course is offered. Topic stated in current Academic Handbook. Prerequisites: PHY 301, 305, 501; or consent of instructor.

PHY 545 Biophysics
3 hrs.

Applications of physics principles and methods to investigation of biological systems. Emphasis on physical environmental effects on biological systems. Cross listed as BIO 545. Prerequisites: PHY 108 or 201; senior standing; or consent of instructor. PHY 345 recommended.

PHY 555 Independent Readings
1-3 hrs.

Individual assignments of relevant topics in physics or astronomy. Prerequisites: senior or graduate student standing; background appropriate to the study; consent of instructor.

PHY 561 Physical Electronics
3 hrs.

Electronic principles; applications to measurement devices utilized in science research. Paced self-instruction and laboratory work. Prerequisites: PHY 202; MTH 224.

PHY 563 Special Problems in Physics
1-3 hrs.

Qualified students work on an individually assigned problem and prepare oral and written reports on the problem solution. Approved for off-campus programs when required. May be repeated for a maximum of 6 hours credit. Prerequisites: physics preparation sufficient for the problem; consent of instructor and Department Chair.

PHY 567 Thermophysics and Statistical Mechanics
3 hrs.

Rigorous treatment of classical thermodynamics; applications of the first and second laws. Classical quantum statistics with applications to the ideal gas, electrons in metals, and other electronic and photon processes in matter. Prerequisites: PHY 202, 301; consent of instructor.

PHY 568 Condensed Matter Physics
3 hrs.

Introduction to condensed matter physics for students of physics, materials science, and engineering. Structure of crystals; binding energy of solids; thermal properties; semiconductors; superconductivity. Prerequisites: MTH 224; consent of instructor. PHY 501 recommended.

PHY 681 Readings in Physics
1-6 hrs.

Directed reading for qualified students. Maximum of 3 hours per semester. Prerequisites: physics at the 500 level and consent of instructor.

PHY 683 Research
1-6 hrs.

Basic experimental or theoretical research in physics or astronomy. Prerequisite: accepted graduate research proposal.

PHY 699 Thesis
1-6 hrs.

Research and thesis preparation. Open to students in the MNS program only. Repeatable for up to 6 hours credit. A student can receive no more than a total of 6 hours credit in BIO 699 or CHM 699 or PHY 699. Prerequisite: consent of program coordinator.

Political Science

PLS 583, 584 Reading in Political Science
1-3 hrs. each

Individual in-depth work on a subject approved and supervised by a PLS faculty member. For highly qualified students. Prerequisites: senior standing; political science major; consent of instructor.

Psychology

PSY 532 Personality Theories and Theorists
3 hrs.

Comprehensive survey of views on structure and function of personality, contemporary research, and methods of assessment. Prerequisite: PSY 445 or consent of instructor.

PSY 536 Statistical Methods for Research
3 hrs.

Advanced statistical techniques for psychological research, including univariate and multivariate procedures. Prerequisite: introductory statistics.

PSY 537 Advanced Regression/Correlation Analysis
3 hrs.

Comprehensive treatment of regression/correlation procedures. Fundamentals, assumptions, model fitting, multicollinearity, outlier analysis, specification errors, and transformations. Prerequisites: PSY 205 or MTH 111 or QM 262 or equivalent.

PSY 630 Practicum in Assessment and Therapeutic Intervention
3 hrs.

Development of treatment planning skills in applied settings. Consolidates and integrates the training initiated in assessment and therapeutic intervention courses. Prerequisites: PSY 633, 635.

PSY 631, 632 Internship I, II**2 hrs. each**

Supervised internship experience. Prerequisite: candidacy in community-clinical degree program.

PSY 633 Psychotherapy I: Psychotherapy Systems and Process**3 hrs.**

Introduction to theoretical and technical approaches to psychotherapy; process issues in the therapeutic relationship. Prerequisite: graduate standing in psychology or consent of instructor.

PSY 634 Assessment I: Behavioral**3 hrs.**

Theory and methods of behavioral assessment; use of single case designs. Prerequisite: graduate standing in psychology or consent of instructor.

PSY 635 Assessment II: Psychological**3 hrs.**

Methods of diagnostic interviewing; major objective psychological tests. Prerequisite: graduate standing in psychology or consent of instructor.

PSY 636 Psychotherapy II: Cognitive and Behavioral Interventions**3 hrs.**

Cognitive interventions, behavior therapy, and behavior modification. Theoretical basis and clinical application of major treatment techniques. Prerequisite: PSY 633 or consent of instructor.

PSY 681, 682 Readings I, II**1-3 hrs. each**

Readings in area selected by student. Prerequisites: graduate standing and prearrangement with instructor.

PSY 691, 692 Research I, II**1-3 hrs. each**

Research in area selected by student. Prerequisites: graduate standing and prearrangement with instructor.

Sociology

Undergraduate registration in any 500-numbered course requires the permission of the chair of the sociology department.

SOC 571 Field Studies**1-3 hrs.**

Individual research. Prerequisite: senior or graduate standing and consent of department chair.

ADMINISTRATION AND FACULTY

Administration

John R. Brazil, Ph.D., President of the University
Sharon Murphy, Ph.D., Provost and Vice President for Academic Affairs
Ahmad Fakheri, Ph.D., Acting Associate Provost and Dean of the Graduate School
 Director of Graduate Admissions

Staff

Sheryl Kristensen, Administrative Assistant
Holly Kupper, Admissions Secretary
Joyce Hislope, Admissions Secretary
Karen Thieme, Administrative Secretary

Executive Committee of the Graduate Faculty

Permanent Member

Ahmad Fakheri, Ph.D., *Acting Associate Provost and Dean of the Graduate School, Chair*

Elected Members

Rita Jensen, Ph.D., *College of Education and Health Sciences*

Nancy Sherman, Ph.D., *College of Education and Health Sciences*

S. N. Prasad, Ph.D., *College of Engineering and Technology*

Elizabeth Linn, M.F.A., *The Henry Pindell Slane College of Communications and Fine Arts*

Margaret Carter, Ph.D., *College of Liberal Arts and Sciences*

James Miller, D.Ed., *College of Liberal Arts and Sciences*

Ray Wojcikewych, Ph.D., *Foster College of Business Administration*

John Gillett, Ph.D., *Foster College of Business Administration*

Linda Lyman, Ph.D., *Secretary*

Appointed Member

Mary Ann Akers, *Student Representative*

Graduate Faculty

Jeries Abou-Hanna, Ph.D., Professor of Mechanical Engineering
James J. Adrian, Ph.D., Professor of Civil Engineering and Construction
In Soo Ahn, Ph.D., Associate Professor of Electrical and Computer Engineering and Technology
Amir W. Al-Khafaji, Ph.D., Professor of Civil Engineering and Construction
Winfred K. N. Anakwa, Ph.D., Professor of Electrical and Computer Engineering and Technology
Linda T. Anglin, D.A., Associate Professor of Nursing
Francesca Armmer, Ph.D., Assistant Professor of Nursing

Robert Baer, Ph.D., Professor of Marketing
James Ballowe, Ph.D., Professor of English
Himat Batra, Ph.D., Associate Professor of Computer Science and Information Systems
Shyam B. Bhandari, Ph.D., Professor of Finance
Susan B. Brill, Ph.D., Associate Professor of English
Elda W. Buchanan, Ed.D., Associate Professor of Education
Aaron Buchko, Ph.D., Associate Professor of Management

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