

Clarion University of Pennsylvania

Clarion, Pennsylvania 16214-1232

Catalog Issue 1995-1997

Member of
American Association of Colleges for
Teacher Education

Member of
American Association of State
Colleges and Universities

Library Science Graduate Program
accredited by
American Library Association

Speech Pathology and Audiology Program
accredited by
Educational Standards Board of the American
Speech-Language-Hearing Association

Accredited by
Middle States Association of Colleges
and Schools

Member of
American Assembly of Colleges
and Schools of Business

Educational Associate of
Institute of International Education

It is the policy of Clarion University of Pennsylvania that there shall be equal opportunity in all of its educational programs, services, and benefits, and there shall be no discrimination with regard to a student's or prospective student's race, color, religion, sex, national origin, disability, age, sexual **orientation/affection**, veteran status or other classifications that are protected under Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973 and other pertinent state and federal laws and regulations. Direct equal opportunity inquiries to: Assistant to the President for Social Equity, 216 Carrier Administration Building, Clarion, PA 16214-1232, (814) 226-2000, (or to the Director of the Office for Civil Rights, Department of Education, 330 Independence Avenue, SW, Washington, DC 20201).

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Clarion University

Academic Calendar 1995-96

(Subject to change without notice)

Summer Sessions 1995

Session I Pre-Session May 15-June 2
Session I Regular session June 5-July 7
Session II Regular session July 10-August 10

Fall Semester 1995

Registration for day and evening classes Monday, August 28
Classes begin 8 a.m. Monday, August 28
Labor Day holiday Monday, September 4
Mid-semester break begins 10p.m. Thursday, October 12
Mid-semester break ends 8am. Monday, October 16
Thanksgiving holiday begins 10p.m. Tuesday, November 21
Thanksgiving holiday ends 8am. Monday, November 27
Classes end 10 p.m. Friday, December 8
Reading day Saturday, December 9
Final examination period begins Monday, December 11
Final examination period ends 10p.m. Friday, December 15
Semester ends 10p.m. Friday, December 15
Winter Commencement Saturday, December 16
Semester grades due from faculty Thursday, December 21

Spring Semester 1996

Registration for day and evening classes Tuesday, January 16
Classes begin 8a.m. Tuesday, January 16
Winter holiday begins 10p.m. Friday, February 23
Winter holiday ends 8 a.m. Monday, March 4
Spring vacation begins 10p.m. Wednesday, April 3
Spring vacation ends 8 am. Wednesday, April 10
Classes end 10 p.m. Friday, May 3
Reading day Saturday, May 4
Final examination period begins Monday, May 6
Final examination period ends 10p.m. Friday, May 10
Semester ends 10p.m. Friday, May 10
Spring Commencement. Saturday, May 11
Semester grades due from faculty Thursday, May 16

Summer Sessions 1996

Session I Pre-Session May 13-May 31
Session I Regular session June 3-July 5
Session II Regular session July 8-August 8

Clarion University

Academic Calendar 1996-97

(Subject to change without notice)

Fall Semester 1996

Registration for day and evening classes	Monday, August 26
Classes begin 8a.m.	Monday, August 26
Labor Day Holiday	Monday, September 2
Midsemester break begins 10 p.m.	Thursday, October 3
Midsemester break ends 8 a.m.	Monday, October 7
Thanksgiving holiday begins 10 p.m.	Tuesday, November 19
Thanksgiving holiday ends 8am.	Monday, November 25
Classes end 10 p.m.	Friday, December 6
Reading day	Saturday, December 7
Final examination period begins	Monday, December 9
Final examination period ends 10 p.m.	Friday, December 13
Semester ends 10 p.m.	Friday, December 13
Winter Commencement	Saturday, December 14
Semester grades due from faculty	Thursday, December 19

Spring Semester 1997

Registration for day and evening classes	Monday, January 13
Classes begin 8a.m.	Monday, January 13
Martin Luther King, Jr. birthday observed	Monday, January 20
Winter holiday begins 10 p.m.	Friday, February 28
Winter holiday ends 8am.	Monday, March 10
Spring vacation begins 10 p.m.	Wednesday, March 26
Spring vacation ends 8 am.	Wednesday, April 2
Classes end 10 p.m.	Friday, May 2
Reading day	Saturday, May 3
Final examination period begins	Monday, May 5
Final examination period ends 10 p.m.	Friday, May 9
Semester ends 10p.m.	Friday, May 9
Spring Commencement.	Saturday, May 10
Semester grades due from faculty	Thursday, May 15

Summer Sessions 1997

Session I Pre-Session	May 12-May 30
Session I Regular session	June 9-July 11
Session II Regular session	July 14-August 15

Fall Semester 1997

Registration for day and evening classes	Monday, August 25
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Campus and Facilities

Clarion University of Pennsylvania

Founded in 1867 as Carrier Seminary under the aegis of the Erie Conference of the Methodist Episcopal Church, Clarion University has for well over a century endeavored to provide quality educational services for increasing numbers of students. The university has evolved from a seminary to a state normal school, to Clarion State Teachers College, to Clarion State College, and finally to Clarion University of Pennsylvania of the State System of Higher Education, with an enrollment of approximately 5,600. Now a multi-purpose institution, the university offers associate degrees in three areas, nearly 70 baccalaureate programs, and 11 graduate programs leading to the Master of Arts, Master of Business Administration, Master of Education, Master of Science, and Master of Science in Library Science. It is the goal of the university and the Graduate College to offer high quality educational programs staffed by an excellent faculty within a learning environment in which the rights of all people are respected.

The Clarion Campus has 99 acres and 43 buildings. It is within the Borough of Clarion some two miles north of Interstate 80 at Exits 9 and 10 and is approximately two and one-half hours' driving time from the urban centers of Pittsburgh, Erie, and Youngstown. High on the Allegheny Plateau overlooking the Clarion River, the rural setting is in the midst of one of Pennsylvania's most scenic resort areas. The rolling, wooded countryside, interspersed with small farms, affords some of the finest and most varied recreational opportunities to be found anywhere in Northwestern Pennsylvania. The Clarion River and its tributaries provide an ideal setting for summer boating, swimming, and aquatic sports.

Among facilities supporting graduate programs at Clarion University are modern science laboratories with excellent instrumentation; well-equipped clinical support areas for special education and speech pathology and audiology; a modern business administration building; technologically equipped classrooms for library science; a word processing lab; radio and television studios and experimental audio-visual facilities; and the George R. Lewis Computer Center with a VAX 11/785 and extensive microcomputer facilities.

Graduate Study at Clarion University

Eligibility for Admission

Individuals seeking regular full admission to a graduate program must meet the minimum admission requirements for the College of Graduate Studies and any additional requirements of the program. To meet the minimum requirements for admission to the College of Graduate Studies an applicant must provide evidence of:

- A bachelor's degree or its equivalent from an acceptably accredited college or university. Individuals who have not yet completed the baccalaureate degree may submit transcripts for course work completed, along with application materials. Final transcripts noting the completion of the degree will be required.
- A minimum quality-point average of 2.75/4.00 at the undergraduate level. Some programs require a higher undergraduate quality-point average. Please review the program admission requirements listed elsewhere in this catalog.

Individuals not meeting the quality-point average requirement of a graduate program *may* be eligible for regular admission when the lower quality-point average is evaluated in terms of supplementary factors, including letters of reference, examination scores on such instruments as the Graduate Record Examination, Graduate Management Admission Test, and/or the Miller Analogies Test, or achievement in graduate level course work.

Information regarding the Miller Analogies Test, the Graduate Record Examination (GRE) and the Graduate Management Admission Test (GMAT) may be obtained from the College of Graduate Studies.

Applicants should refer to the admission requirements of specific programs as listed in this bulletin.

Categories of Admission

Admitted applicants will be classified in one of the following categories of admission.

Regular Full Admission

Individuals meeting all of the admission requirements for a graduate program shall be granted regular full admission status. Only individuals with regular full admission status are eligible for graduate assistantships. Individuals must achieve regular full admission status before they graduate.

Provisional Admission

Individuals not meeting all of the admission requirements for a graduate program *may* be admitted on a provisional basis. In such cases, admission will be based upon specific conditions that the student must meet in order to be reclassified as regular full admission. Individuals admitted on a provisional basis are not eligible for graduate assistantships. Individuals admitted on a provisional basis are not guaranteed regular full admission status.

Courtesy/Transient Admission

A graduate student from another institution may enroll for graduate courses at Clarion University on a courtesy basis if he or she intends to transfer the credit for the course to another institution. Information about courtesy admission may be obtained from the College of Graduate Studies.

Non-Degree Status Admission

Occasionally individuals will want to engage in graduate study without entering a graduate program. Such individuals should apply for a ***non-degree admission status*** at the time of application. All admission requirements must be met. Individuals remaining in this status may not receive a graduate degree. Courses taken while a person is in this status will be identified as ***non-degree*** on the student's transcript. The non-degree student who, after taking courses in non-degree status determines to seek a graduate degree, must be formally admitted to a graduate degree program under regular admission procedures. Graduate programs may or may not accept courses taken while a student is in non-degree status. No program may accept more than nine credits taken in non-degree status. Applicants admitted on a non-degree basis are not guaranteed regular full admission status. Certain course restrictions may apply for non-degree students.

Admission Procedures

Application forms and information about graduate programs may be obtained by writing to:

College of Graduate Studies
Clarion University of PA
Carrier Administration Building
Clarion, PA 16214-1232

Routine admission policy requires that applicants submit:

1. a completed application form;
2. official transcripts of all undergraduate work (partial transcripts are acceptable, but evidence of a degree must be submitted before a student may enroll in classes);
3. three **current** letters of reference; and
4. a \$25 non-refundable application fee.

Some graduate programs require additional information or procedures.

Admission of International Students

Clarion University welcomes international students to its campus and has an Office of International Programs to assist students from other countries in achieving a successful educational experience at Clarion. International students may write to:

Office of International Programs
Clarion University of Pennsylvania
212 Founders Hall
Clarion, PA 16214-1232
U.S.A.

International students seeking admission to the Graduate College should follow directions specified for all students under “Admission and Degree Requirements.” In addition, the international student applicant must satisfy the following requirements:

1. Submit his or her application for admission at least four months prior to the term in which he or she wishes to begin study at Clarion.
2. Demonstrate English language proficiency. Acceptable evidence of proficiency is successful completion of Test of English as a Foreign Language (TOEFL) with a score of 550 (600 required for the program in communication, biology, and speech pathology and audiology); certification by an English language institute; or satisfactory completion of a bachelor’s degree from an accredited U.S. college or university. Additionally, speech pathology and audiology requires a score of 200 on the Test of Spoken English (TSE). Other evidence maybe approved by the Graduate College, such as affirmation of proficiency by a Clarion faculty member, other individual, or organization known to Clarion University.
3. Furnish evidence of adequate financial support on Affidavit of Support form. The applicant must provide an official statement from an authorized bank certifying that \$12,281, in addition to travel funds, is available to the student to cover costs of basic fees and general living expenses for one academic year of study in the United States. Immigration and Naturalization form 1-20 will not be issued until the international applicant has submitted the required evidence of financial support.
4. Carry a full program of studies (at least nine semester hours) upon admission and matriculation. The United States Immigration and Naturalization Service regulations require that students holding an “F” or “J” visa carry a full program of study.
5. Be covered by an insurance plan. Due to the high cost of health care in the United States, it is for the benefit of all international students that they are required to have some type of health insurance coverage. If you do not already have some type of coverage when you arrive at Clarion, you must enroll in a plan immediately. The Office of International Programs has information on several available insurance plans, including the plan that is available to all Clarion University students. For further information on insurance, please contact the Office of International Programs.

Academic Policies and Procedures

Good Academic Standing

All graduate students are expected to remain in good academic standing by maintaining a cumulative quality-point average of 3.00/4.00 and earning no more than six semester hours of “C” or lower grades in graduate courses.

Students who do not maintain a cumulative quality-point average of 3.00/4.00 and/or who earn more than six hours of credit with grades below a “B” are automatically placed on probation. A student placed on probation must return to “good academic standing” through grades earned in course work during the next semester or summer session in which he or she enrolls. A student may be removed from probation by:

- A. Taking additional courses in his or her program and earning grades sufficient to raise the cumulative average to 3.00/4.00 or above. This single measure may be sufficient unless the student has more than six semester hours of “C” grades.

- B. Repeating courses in which the original grade is less than “B.” A repeat course grade will replace the original grade for quality-point calculations. A maximum of six semester hours of credit may be repeated. Library science students receiving a grade of less than “B” in two courses are disqualified as a candidate in that degree program.

Failure to meet this requirement will result in the student being dropped from the graduate program in which he or she is enrolled.

A student placed on **probation** automatically loses his or her graduate assistantship. A reapplication for an assistantship will be required once he or she has returned to “good academic standing.”

Transfer of Credit

Some graduate programs allow students to transfer credit for graduate courses taken at other accredited institutions. It is university policy that no more than 30 percent of the total credits for a degree may be transfer credits. Courses transferred must be certified as graduate level on the transcript and must have a grade of ‘B’ or better. Transfer credit course grades are not computed in the Clarion quality-point average.

Courses already credited toward an earned degree may not be used for a second degree. Correspondence course credits are not accepted for transfer. Course credit will not be transferred until the course has been evaluated and approved. A student currently enrolled in a degree program at Clarion who wishes to take a course at another institution for transfer to Clarion should obtain prior approval from his or her advisor and department chair.

Residency

Seventy percent of all credits required for completion of a graduate degree must be earned in course work offered by Clarion University. All graduate degree programs require a minimum of 30 semester hours of credit. Individual programs may require more than 30 semester hours.

Timeliness of Enrollment and Completion of Degree

It is expected that an applicant admitted to graduate study will enroll for course work at once. Students who do not enroll at Clarion for graduate courses in programs to which they are admitted within 12 months following admission may be required to reapply before they can enroll. Information about eligibility to enroll in classes may be obtained from the Graduate College.

A degree must be completed within six years from the date of initial enrollment. Extensions may be allowed only by approval of the department chair, dean of the college in which the student’s program resides, and the dean of the College of Graduate Studies.

Full-Time Status

A graduate student enrolled in nine semester hours of course work in a term is considered a full-time student.

Withdrawals

All class withdrawals must be made through the Office of the Registrar. Classes from which a student withdraws during the period of drop/add will not appear on his or her record. Withdrawals between the end of the second and ninth weeks may be made without penalty. After the beginning of the tenth week of a semester or the second half of a summer

session, a course from which a student withdraws shall be finally reported with a grade of “E.” Exceptions may be made for withdrawals due to extenuating circumstances such as illness or some other unavoidable occurrence.

If a student is on probation at the time of withdrawal from all classes and the withdrawal is after the twelfth week of the semester, he or she will not be permitted to return for the following semester unless the withdrawal is based on extenuating circumstances.

If a withdrawal is not made through the Office of the Registrar, a failing grade will be recorded for the affected course(s).

Any student who withdraws from the university either during or at the end of a semester must notify the Office of the Registrar of his or her intention to withdraw and the reason for withdrawal. This is **necessary** for completion of the student’s permanent record. Failure to comply with this regulation will constitute an unofficial withdrawal and may affect the student’s chances of future readmission or his or her obtaining an honorable dismissal.

Auditing Courses

With the permission of the instructor, interested persons may audit courses if there is space available in the course from the first day of class and up until the end of the drop/add period. Students must declare their intentions in writing to the Office of the Registrar prior to the end of the **drop/add** period. Laboratory courses may not be taken as an audit. Students who enroll in a course for credit may change to an audit grade only during the **drop/add** period. Likewise, students who enroll in a course to audit may only change to credit during this same period.

Incomplete Grades

The “I” grade may be used when a student has completed the major portion of the requirements for a given course, but for reasons beyond expected control, such as illness or family emergency, cannot complete all requirements. An incomplete is used also for research or problems courses where projects necessarily extend beyond the termination of the semester or session. Normally, incomplete grades must be removed by the end of the first semester subsequent to the awarding of the incomplete. Extensions may be granted if the instructor awarding the incomplete deems that more time is necessary to fulfill course requirements. Research and thesis incomplete grades normally continue beyond one semester.

An incomplete that is not converted to a final grade by the end of the semester following its issuance and is not approved for extension by the instructor becomes a failing grade.

No one may be cleared for graduation with “I” grades on record.

Advisement

Upon admission to a graduate program, a student is assigned an advisor. The advisor will assist the student in planning an individual program and in maintaining **progress** within the program.

Research, Theses, and Comprehensive Examinations

Research, theses and/or comprehensive examination requirements are established by the individual graduate programs within the university. The student should refer to the section of this catalog presenting specific programs to determine exact requirements.

Student Responsibility for Academic Requirements

Provisions in the Clarion graduate catalog cannot be considered an **irrevocable** contract between the University and the student.

The University makes every effort to keep information in the catalog current. It must reserve the right, however, to amend any academic, administrative, or disciplinary policies or regulations and to update fees or service charges described in this catalog without prior notice to persons affected.

Students are held responsible for reading and understanding the academic, administrative, and disciplinary policies or regulations and for understanding the general education requirements as published in the catalog when they matriculate. They are held responsible for the requirements of a major in effect at the time they officially declare a major. If students change majors, they are responsible for the requirements of the major in effect when they officially change majors.

Requirements for graduation as well as those for various curricula and degree programs may change after students matriculate at Clarion. Such changes will not be retroactive, although students will have the option to elect to meet the new program requirements, if desired. Exceptions may be necessary when changes in professional certification or **licensure** standards mandate such changes in requirements or programs.

Fees for Graduate Study

All fees are subject to change without notice. Unless otherwise noted, all payments must be made by check or money order drawn to the Clarion University of Pennsylvania or CUPA.

Summary of Fees (Per Semester)

I. APPLICATION FEE (non-refundable)	\$25.00
II. BASIC GRADUATE FEES (subject to change without notice)	
Pennsylvania residents:	
Full-time (9-15 credits)	\$1,543.00
Each additional credit over 15	\$171.00
Part-time (fewer than 9 credits)	
Per credit	\$171.00
Non-Pennsylvania residents:	
Full-time (9-15 credits)	\$2,772.00
Each additional credit over 15	\$308.00
Part-time (fewer than 9 credits)	
Per credit	\$308.00
III. RESIDENCE HALL AND DINING FEES	
Residence and dining	\$1,462.00
All residence hall students must pay for both residence hall and dining	
Dining only	\$607.00
IV. INSTRUCTIONAL SUPPORT FEE	
This fee is a percentage of the tuition charge:	
PA Resident—10%.	Non-PA Resident—5.57%
V. AUXILIARY SUPPORT FEE	
This fee is a percentage of the tuition charge:	
PA Resident—10.5%.	Non-PA Resident—5.84%
VI. LATE FEE.	\$25.00
A late fee will be assessed to students who have not paid in full or have not made appropriate arrangements for payment by registration day.	

- VII. THESIS BINDING \$37.50
- Minimum **three** copies @ approximately \$12.50 per copy.
- Final cost may vary. Payment to be made after binding completed. Student must provide billing and mailing address to library.
- VIII. STUDENT ACTIVITY FEE
- All students with six or more credits are required to pay a Student Activity Fee assessed as follows:
- 1-8 credits: \$20.00
- 9 or more credits: \$40.00
- Ix. TRANSCRIPT FEE \$3.00
- One graduate transcript is issued free of charge. The charge for the second and subsequent transcripts is \$3.00 each.
- x. CAREER SERVICES CREDENTIALS FEE \$10.00
- A one-time fee to establish a credentials file. For processing each credential quest to employers \$3.00

Refund Policies

*Basic Fees, University Residence Hall,
Dining Charges, and Student Activity Fee*

Refunds are not granted on an automatic basis. A student eligible for a partial refund of basic fees and residence hall charges must officially withdraw from the university through the Registrar’s Office, located in 122 Carrier Administration Building. Even though withdrawal occurs after the ninth week, a student may be eligible for a partial refund of a meal ticket by notifying the Student Accounts Office. There is no refund for the late fee.

Partial refunds approved for payment are based upon percentage of the fees paid. The following schedule applies to both full-time and part-time students.

SEMESTER WITHDRAWALS	
1st and 2nd weeks	80% refund
3rd week	70% refund
4th week	60% refund
5th week	50% refund
After 5th week	0% refund

For refund purposes, each ‘week’ will be a university work week and will end on Friday at the close of the university business hours. The first week will end on the first Friday following the start of classes.

Policy Related to Returned Checks

It is the student’s responsibility to assure that funds are available when a check is presented for payment at his or her bank. If a check is returned for insufficient funds, the student will be notified that the check is uncollectible. He or she will then be required to pay the original amount plus a \$25 late registration fee and a \$10 penalty for handling the uncollectible check. Payments made in redeeming an uncollectible check and paying the related late fee and penalty must be by certified check or money order within 10 days of notification or the student will not be permitted to attend classes.

Graduate Student Support Services

Graduate Assistantships

Each year a limited number of graduate assistantships are awarded to individuals with regular full admission status to a graduate program. Graduate assistants work 10 or 20 hours a week in assignments related to academic programs or university-wide service. They are paid an hourly stipend and receive a tuition waiver for up to 15 credits a semester. There are no summer assistantships.

Recipients of a graduate assistantship must take at least 6 credits a semester, **perform** assigned duties in a satisfactory manner, and remain in good academic standing.

Students wishing to apply for a graduate assistantship should contact the College of Graduate Studies or their individual departments.

Financial Aid

In addition to graduate assistantships, the following financial aid may be available to graduate students.

Loans

FEDERAL PERKINS LOAN PROGRAM-To be eligible for consideration for this 5% loan, a student must complete an application form, have a current FAFSA form on file in the Office of Financial Aid, be a citizen of the United States or have declared his or her intention to obtain citizenship, and be enrolled or accepted for enrollment as a student.

These loans, which are non-interest bearing while a student is enrolled, are available to a maximum of \$1,500 each year.

FEDERAL STAFFORD LOAN PROGRAM-Loans with a cap of 9% interest are generally available from local banks and savings and loans associations. Loans are for a maximum of \$8,500 per academic year, with an overall limit of \$65,000 for graduate and undergraduate loans. Loans are based on need, which must be demonstrated through an approved need analysis system. Our approved form is the FAFSA application.

Veterans

Clarion University is approved to offer training under the various GI bills. Students who are entitled under one of these bills should contact the veterans counselor immediately after being accepted for admission to the university in order to secure additional instruction. This procedure is necessary so veterans may be included on the monthly payroll. The university veterans counselor is located in the Office of Financial Aid, 104 Egbert Hall, 814-226-2315.

Carlson Library

Carlson Library offers graduate students a broad collection of resources and services to support class work and research projects. In addition to over 350,000 volumes, university library facilities include periodicals, media, A-V equipment, and micro-computers. CD-ROM data bases (e.g. ERIC, PsycLIT, Business Index), mediated access to hundreds of on-line databases, and a computerized library catalog (GEAC) enhance research efforts. Inter-library loan service further enables users to expand research beyond the scope of locally available resources.

Library orientation sessions are scheduled each term to help students become familiar with the library. Library faculty and staff are pleased to assist users in making optimum use of library services.

Computing Services

The George R. Lewis Center for Computing Services, located on the ground floor of Still Hall, is the site of Clarion University's three major computer systems that provide academic, administrative, and library service. Academic and administrative services are supported by a large, integrated VAX cluster. The library service is supported by a GEAC 8000 computer system. A telecommunication network connects the major computer systems to terminals and microcomputers in the student labs on the Clarion and Venango Campuses.

Academic services for instruction and research include the following computer languages and packages: COBOL, FORTRAN, BASIC, PASCAL, RPG, TSP, SAS, VAX-1 1 MA-CRO, business simulations, and graphics.

The library service provides access to the automated library system that has an on-line public catalog search feature which makes it possible to determine which books are available at Carlson and Suhr Libraries.

Health Services

Clarion University Health Center strives to enhance the educational process of the university through health prevention, promotion, restoration, and maintenance. It assists the university in the removal of health-related barriers to learning and promoting an optimal level of well-being. This purpose is consistent with the university mission of seeking excellence in all areas of higher education and providing an environment that facilitates student development.

Health care **providers** and/or registered nurses are available for students five days a week from 8 a.m. to 8 p.m. and on Saturday and Sunday from 1 p.m. to 5 p.m. Although students are requested to make appointments to see a health care provider when needed, students without appointments are welcome to seek care at any time. Within this framework, students are treated according to the following priorities: (1) emergencies, (2) appointments, and (3) walk-ins.

Students will not be visited in their residences by health care providers or registered nurses. Individuals requiring intensive or expanded care are referred to the health agency of their choice. A contract with Clarion Hospital allows for the free transport of students to the Clarion Hospital for tests, treatments, procedures, and care with no cost to the student. If students must be transported by stretcher to Clarion Hospital, the cost of the ambulance is at the expense of the individuals. Other related expenses not covered by the student insurance programs are the responsibility of students.

Insurance

An accident and sickness insurance plan is available to all Clarion University students. For further information on this plan, contact the Student Affairs Office, 220 Egbert Hall, Clarion University, Clarion, PA 16214-1232, telephone 814-226-2351.

Due to the high cost of health care in the United States, it is for the benefit of all international students that they are **required** to have some type of health insurance coverage. If you do not already have some type of coverage when you arrive at Clarion, you must enroll in a plan immediately. The Office of International Programs has information on several available insurance plans, including the plan that is available to all Clarion University students. For further information on insurance, please contact the Office of International Programs.

Housing

Limited housing for graduate students is available in the university-supervised residence halls. For information, students should contact the Office of Residence Life, 228 Egbert Hall, telephone 814-226-2352.

Any arrangements for housing in the community is a business relationship between a student and the householder. The Office of Residence Life maintains a limited listing of available housing in the community, but the university does not approve or make recommendations related to private off-campus housing accommodations.

Parking and Automobile Regulations

All provisions of the Vehicle Code of the Commonwealth of Pennsylvania as supplemented by university parking regulations are enforced on the **Clarion** University campus. Authority for such enforcement rests with the director of public safety. Unpaid fines will be forwarded to the district magistrate and will be subject to additional fines and costs.

All persons who possess, maintain, or operate a motor vehicle on campus between 7:30 a.m. and 4:00 p.m. are required to register such vehicle with the Department of Public Safety, Thorn #1 Building, Thorn Street. Registration must be completed during the academic registration period.

1. Such persons must present a student I.D.
2. Any person acquiring the use of a motor vehicle after the regular registration period who intends to operate the vehicle on campus must register the vehicle within 24 hours with the Department of Public Safety, Thorn # 1 Building, Thorn Street. Motor vehicles must be registered even when their use is intermittent.

Career Services

The Office of Career Services is a centralized career development office serving all Clarion University students and alumni. Its goal is to provide quality career services as well as encourage student growth, initiative, and autonomy. Its primary objectives are to teach students career management skills that have life-long application and usefulness and to enable them to deal with changes occurring throughout their careers. Individual assistance, programs, and resources are provided to help students: (1) make informed career and educational decisions, (2) prepare for the job search, and (3) begin the transition from campus to career.

Since career planning is a continuous process, students are encouraged to make Career Services an integral part of their entire university experience. The services are designed to educate and guide students through the career planning process: discovering abilities and interests, exploring educational and career options, making decisions, planning activities to progress toward desired goals, implementing a job search, or applying to additional graduate programs.

For those initiating a job search, Career Services provides a credentials service; on-campus recruiting by employers; individual counseling for students with job search concerns; a career library of employer and graduate school information; technology for developing job search materials; the "Careerline" newsletter; job search workshops; an individualized resume service; a mock interview program; job fairs; and job bulletins.

Information on the post-graduation activities of Clarion's graduates is available upon request from the Office of Career Services.

Master of Science Degree in Biology

College of Arts and Sciences

Graduate Faculty

Professors: W. Barnes, W. Belzer, P. Dalby, R. McPherson, K. Mechling, T. Morrow, G. Twiest, J. Williams, E. Zielinski; **Associate Professors:** L. Bering, K. Eggleton, M. Ritter; Assistant Professors: S. Harris, W. Jetkiewicz, T. Martin, D. Smith, C. Williams

Program Objectives

The Master of Science program in biology is designed for those interested in biological research as a profession or as a preliminary step in pursuing a Ph.D. in biology.

The primary objectives of the Master of Science program in biology are to:

- Prepare professional biologists.
- Prepare individuals for leadership roles in environmental, educational, and laboratory-oriented science.
- Prepare biologists for research-oriented careers.
- Prepare individuals for further graduate work.

A candidate for the Master of Science program in biology may concentrate in one of the following areas of biological emphasis: physiology, ecology, genetics, microbiology, immunology, molecular biology, and systematic.

Admission Requirements

College of Graduate Studies admission requirements apply with the following addition:

- . Applicants must submit the Department of Biology's preliminary application form and Graduate Record Exam (GRE) general test scores.

Full admission status will be granted to applicants who have bachelor's degrees in biology and a 2.75 overall quality-point average (QPA) on a 4.0 scale. Applicants **are** expected to have completed the equivalent of the Clarion University undergraduate biology requirements in chemistry, mathematics, physics, as well as one year of general biology, and one semester each of cell biology, genetics, and ecology. Any deficiencies will be noted in the acceptance letter, and the student will be required to remove them by exam or by taking the course(s) as soon as possible.

Provisional admission status may be granted to applicants who have an overall QPA less than 2.75 and/or a bachelor's degree in a major other than biology. An applicant admitted to provisional status may be admitted to full status after completing nine semester hours of graduate study with an A or B grade in each course and removal of all deficiencies.

Degree Requirements

To fulfill the degree requirements for graduation, the student must:

- . Remove all deficiencies in a manner acceptable to the Department of Biology.
- . Complete 30 semester hours, including required courses, with a QPA of **3.0** or better.
- . Pass a written comprehensive examination after completing 18 credits with a cumulative QPA of not less than 3.00/4.00. At least three of the following areas must be included in the comprehensive examination:

Ecology
Evolution
Developmental Biology
Genetics

Morphology
Molecular Biology
Physiology
Systematic

- . **Conduct an original independent study and submit a written thesis.** A written prospectus of the research must be approved by the candidate's graduate committee before research is initiated. When a preliminary draft of the thesis is judged by the major advisor to be suitable, the candidate will provide each member of his or her committee with a copy of the preliminary draft. The date of the oral thesis defense must be announced to the general college faculty prior to the defense. The defense will be conducted by the candidate's graduate committee, which will report its approval or disapproval along with recommended revisions. At least five copies of the final draft of the thesis shall be prepared by the student, who will deliver them to the major advisor who will obtain the appropriate signatures and deliver the copies to the College of Graduate Studies. A binding fee will be charged to the student by the Office of Graduate Studies.
- . Complete a minimum of six credits of **Biology 700** and any and all courses that may be required for their programs as determined by their graduate committee. Candidates must take two Biology 500 Seminar courses, one of which must be in a general area outside their research area. It is the expectation of the Biology Department that the first priority of all graduate students is completion of the requirements for the master's degree. Reasonable progress as determined by the student's advisor and committee must be made.

Only 400,500\$600, and 700-level courses can be taken for graduate credit. No more than six semester hours of 400-level courses taken for graduate credit may count toward the master's degree.

Placement

A great need for good professional biologists exists at the present, and the need should continue in the foreseeable future. Projections for the 1990s by both industry and federal government sources indicate that the need for life scientists and health workers should increase rapidly. The need for individuals with additional training and more specialized training than required for a B.A. or B.S. degree is increasing. Placement of past graduates of the program has been excellent in teaching and research; federal, state, and local government; private industry; medical technology; dentistry; optometry; and doctoral and specialist programs.

Graduate Assistantships

A limited number of graduate assistantships and/or research assistantships are available. Graduate assistants are assigned to assist in **laboratory** supervision in the undergraduate program in biology. Research assistants generally work on a grant-funded project directed by a faculty member. Graduate assistants must have full admission status.

All applicants for graduate assistantships must first complete the regular admission procedure and submit the application for a graduate assistantship to the Department of Biology. Applicants for graduate teaching assistantships must request that their referees include in their three letters of recommendation a statement concerning the student's potential as a laboratory assistant.

All applicants for graduate assistantships will be required to complete an interview prior to appointment.

Applicants for graduate assistantships must submit completed applications no later than April 15; appointments are usually made by May 15 of each year.

Advisement

Before the first course work is begun, the successful applicant should meet with the general graduate advisor for orientation and assistance in planning the first semester program. The student should initiate the selection of a major advisor and a graduate committee during the first semester at Clarion. The student and the graduate committee shall develop an academic research program leading to the M.S. degree. The student will be responsible for scheduling a Graduate Committee meeting once per semester to evaluate progress toward the completion of the program. Minutes of the graduate meetings will become a part of the student's permanent file.

A minimum of nine credits per semester is considered a full load for graduate students. Twelve semester hours is a maximum load during the summer sessions. Exceptions may be authorized by the dean of the College of Graduate Studies upon recommendation by the Department of Biology acting **upon a written petition by the student**.

It is the candidate's responsibility to file, with the aid of his or her major advisor, an Application for Graduation prior to the published deadline during the semester in which he or she intends to graduate.

Courses

Courses may be taken from any curriculum in the Graduate Catalog. Students are encouraged to go outside the Department of Biology for courses if their program goals and career interests will be benefited as determined by their graduate committee.

While students can, and frequently do, take undergraduate courses at all levels of instruction, only 400, 500, 600, and 700-level courses can be taken for graduate credit. No more than six semester hours of 400-level courses may count toward the master's degree. The 400-level courses which may count toward the master's degree are BIOL 420, 424, 460, 461, 462, 464, 470, 471, 472, CHEM 453, and CHEM 463.

Definition of Terms

Departmental Graduate Committee—Committee which reviews all applications for admission to the M.S. in Biology Program and makes recommendations to the department concerning admission of students and the existence of deficiencies.

General Graduate Advisor—A designated advisor in the Department of Biology who meets all new graduate students and assists them in planning their first semester program of courses and/or recommends them to major advisors when desirable.

Major Advisor—A member of the graduate faculty who accepts a student for counseling and advisement during his or her course work and research and in the presentation and defense of his or her thesis or project report.

Graduate Committee—A committee of at least three members selected from the graduate faculty to aid the student in determining a course of study and to prepare, administer, and grade the student's comprehensive exam and thesis. The student's major advisor will chair this committee.

Physical Facilities

The Department of Biology is located in the Peirce Science Center, a modern four-story building. The department is provided with excellent laboratories, classrooms, and research areas. These facilities are well supplied with sophisticated equipment and instrumentation necessary for studying the many facets of biology. In addition, the department also maintains continually expanding herbarium and vertebrate biology collections, animal and aquarium rooms, an environmental chamber room, a cell culture laboratory, and a greenhouse located adjacent to the building. Field work is conducted on land owned by the college and adjacent to the campus or on the huge expanse of state, federal, or privately-owned land/waters in close proximity to the university. Ecologically interesting areas within a 100-mile radius of the campus include the Jennings Nature Preserve, Allegheny National Forest, Cook Forest State Park, Tionesta Scenic Area, Heart's Content Scenic Area, Presque Isle State Park, Power Mill Nature Reserve, and the Pymatuning Region.

Pymatuning Laboratory of Ecology

Because of a unique cooperative program with the University of Pittsburgh, Clarion University is able to offer an outstanding program of studies in ecology. Courses are taken at Clarion Campus during the academic year. In the summer, an excellent academic program is offered at the Pymatuning Laboratory of Ecology, a unit of the University of Pittsburgh. Classes are taught and research is directed by members of both institutions. The laboratory is located approximately one and one-half hours northwest of Clarion on the shores of the Pymatuning Reservoir.

The teaching and research facilities of the field laboratory are on a site within a wildlife sanctuary and propagation area managed by the Pennsylvania Game Commission. A hatchery of the Pennsylvania Fish Commission is adjacent to these facilities. The housing and dining area for the laboratory is located three miles away, on the public portion of the Pennsylvania Reservoir. A waterfront area is available for recreational use by students and staff.

Release of Data from M.S. Thesis-Publication Policy

Publications resulting from research done at Clarion University shall give credit to persons involved in the research, to Clarion University, and to any granting agencies which supported the research.

Biology Courses

BIOL 420:

VERTEBRATE BIOLOGY AND SYSTEMATICS

3 s.h.

A survey course dealing with the various aspects of classification, evolutionary relationships, morphology, zoogeography, ethology, ecology, and physiology of vertebrates, with special reference to those from Pennsylvania. Prerequisites: BIOL 153 and BIOL 202 or permission of the instructor. Spring, odd-numbered years.

- BIOL 424: FRESHWATER ICHTHYOLOGY** 3 s.h.
A study of the classification, evolutionary relationships, distribution, morphology, ethology, ecology, and physiology of fishes. Lab exercises emphasize the identification of families and species of fish from the Eastern United States, with emphasis on Pennsylvania forms. Pennsylvania fishing license required. Two lectures and three lab hours weekly. Fail, even-numbered years.
- BIOL 460: COMPARATIVE VERTEBRATE ANATOMY** 3 s.h.
This course traces the most important trends in the evolution of basic structures in vertebrate lines and conveys an appreciation of how the mammals came to possess the combination of characters that make this group unique. Two lectures and three laboratory hours weekly. Prerequisites: BIOL 153, 154. Spring, even-numbered years.
- BIOL 461: VERTEBRATE EMBRYOLOGY** 3 s.h.
A descriptive study of the development of vertebrates, including early processes and the formation of organ systems. Two lectures and three laboratory hours weekly. Prerequisite: One year of biology. Spring, odd-numbered years.
- BIOL 462: HISTOLOGY** 3 s.h.
A study of the microscopic structure of tissues comprising the organ system of animals, including man. One lecture and two double-period laboratories. Prerequisite: One year of biology. On demand.
- BIOL 464: DEVELOPMENTAL BIOLOGY** 3 s.h.
A study of the major processes in development and their underlying mechanism. Includes a descriptive study and mechanisms such as differentiation, induction, and morphogenesis. Materials deal primarily with animal development. Two lectures and three laboratory hours weekly. Prerequisites: BIOL 153, 154, 201, and General Chemistry. Fall, annually.
- BIOL 470: ANIMAL ECOLOGY** 3 s.h.
A course dealing with the interrelationships of animals and their environment, including physical and biological factors. Discussions and investigations will include animal distribution, predator-prey interactions, competition, species diversity, energetic, population, and community organization. Field and laboratory studies included. Prerequisite: BIOL 202. Spring, even-numbered years.
- BIOL 471: PLANT ECOLOGY** 3 s.h.
An in-depth approach to the interaction of plants with the physical and biotic environments at population, community, ecosystem, and landscape scales. Lecture and discussion will focus on current topics in plant ecology such as disturbance, succession, herbivory, dispersal, competition, and environmental stress. Laboratory will include field-based experimental and descriptive investigations of plant populations and communities. Two hours lecture/discussion and three laboratory hours weekly. Prerequisite: BIOL 202. On demand.
- BIOL 472: PARASITOLOGY** 3 s.h.
A study of parasites in relation to human beings and their domesticated animals. Emphasis is placed upon morphology and life histories in addition to the ecology of the parasite. Two lectures and three laboratory hours weekly. Fall, annually.
- BIOL 500: GRADUATE SEMINAR** 1-2 s.h.
A survey of current literature, concepts, and theories from selected fields of biology. Two discussion hours weekly. By arrangement.
- BIOL 502: EXPERIMENTAL DESIGNS IN BIOLOGY** 3 s.h.
Collection and presentation of biological data. Presents fundamental aspects of designing experiments with emphasis on applications to the biological research. Applications to graduate research currently in progress in the Department of Biology are incorporated. Three lecture hours per week.
- BIOL 503: SPECIAL TOPICS IN BIOLOGY** 1-4 s.h.
Semi-independent studies of topical material under the guidance of the instructor. Maximum credit allowable toward graduation: nine semester hours. Prerequisites: permission of instructor and the student's graduate committee.
- BIOL 520: TERRESTRIAL BOTANY** 3 s.h.
A field course emphasizing the identification, distribution, and ecology of upland vascular plants of Western Pennsylvania. Field and laboratory projects will focus on plant characteristics, taxonomic relations, floristics, habitat relationship, inventory methods, and plant community description and dynamics. (Pymatuning)
- BIOL 521: AQUATIC ENTOMOLOGY** 3 s.h.
Emphasis in this course is on identification of the major groups of invertebrates playing a role in natural communities and on the methods of quantifying their relative importance in the community. (Pymatuning)
- BIOL 522: AQUATIC BOTANY** 3 s.h.
Study of freshwater algae and aquatic vascular plants in field communities, methods of quantifying relative numbers and mass, and structural and physiological adaptations to the aquatic environment. (Pymatuning)
- BIOL 523: EXPERIMENTAL VERTEBRATE ECOLOGY** 3 s.h.
Designed to give knowledge of basic field identification, capture techniques, quantification, and natural history of some of the common vertebrates of Pennsylvania. (Pymatuning)

- BIOL 524: MICROBIAL PHYSIOLOGY** 4 s.h.
A study of the physiological reaction involved in the growth, reproduction, and death of microbes. Consideration is placed upon the metabolism of carbohydrates, proteins, vitamins, and fats. Enzymes, oxidation-reduction potentials, energy relationships, membrane potentials, and nutrients are considered. Prerequisites: General Microbiology and Biochemistry or permission of instructor. Two hours of lecture and four hours of lab per week.
- BIOL 525: FISHERIES BIOLOGY** 3 s.h.
Ecology of fish populations, including identification, age and growth, populations estimation and analysis, food habits, environmental requirements, and management considerations. Prerequisites: Environmental Biology or permission of instructor. Three hours lecture per week. Laboratory sessions held on Saturdays. Student must possess a valid Pennsylvania fishing license.
- BIOL 526: FIELD ICHTHYOLOGY** 3 s.h.
A field course dealing with the interrelationships of fish with their biotic and abiotic environment. Fish in their natural habitats, pollution, and improvements of aquatic habitats, and applied aspects of fish ecology and fishery management will be studied. (Pymatuning). Student must possess a valid Pennsylvania fishing license.
- BIOL 527: PLANT TAXONOMY AND FIELD BOTANY** 3 s.h.
A field-based course emphasizing the identification, classification, distribution, and evolutionary relationships of vascular plants with particular emphasis on the flora of Western Pennsylvania and adjacent regions. Two hours lecture and three hours laboratory or field work weekly. Prerequisite: BIOL 154; BIOL 202 is highly recommended. Fall, odd-numbered years.
- BIOL 543: VIROLOGY** 3 s.h.
A study of plant, animal, and bacterial viruses, including the biochemistry of viruses and viral life cycles, techniques in the study of viruses in relation to diseases, tumors, and cancer. Prerequisites: Microbiology or Biochemistry or permission of instructor. Three hours lecture per week.
- BIOL 544: IMMUNOLOGY** 4 s.h.
A study of cellular immunology, immunochemistry, and immunogenetics, with emphasis on the physiology of immune responses. Prerequisite: Permission of instructor. Three hours lecture and three hours lab per week.
- BIOL 546: PATHOGENIC MICROBIOLOGY** 4 s.h.
A study of the bacteria fungi, and viruses which cause human disease. Laboratory emphasis is on isolation and identification of pathogens and on elementary immunology. Two lectures and four laboratory hours weekly. Prerequisites: BIOL 341. Spring, annually.
- BIOL 550: CELL PHYSIOLOGY** 4 s.h.
The study of the molecular dynamics of eukaryotic cells. The material deals specifically with eukaryotic cells. Major topics include functional and structural organization of the cell, molecular regulation of cell function, and the cell as a biochemical transducer. Graduate students taking the course must complete an assigned class project. Two lecture sessions and four laboratory hours per week. Prerequisites: Completion of BIOL 153, 154, 201, 203, and CHEM 254 or permission of the instructor.
- BIOL 551: ADVANCED ANIMAL PHYSIOLOGY** I-3 s.h.
A detailed treatment of fundamental concepts and techniques of animal physiology. Includes literature reviews and individual investigations. Two hours lecture and three hours lab per week.
- BIOL 552: ADVANCED PLANT PHYSIOLOGY** 3 s.h.
Life processes and responses of plants to the environment. Topics include water relations, transpiration, translocation, photosynthesis, respiration, metabolism. plant hormones and morphogenesis, photoperiodism, temperature responses, environmental and stress physiology. Two lectures and three hours laboratory weekly. prerequisites: BIOL 201, 203, and CHEM 254. Spring, odd-numbered years.
- BIOL 555: ENDOCRINOLOGY** 3 s.h.
A survey of the chemical and physiological principles of hormonal integrations in animals. Three lecture hours per week.
- BIOL 556: ENTOMOLOGY** 3 s.h.
A general study of insects, including structure, physiology, classification, economic importance, and relationships. Two lectures and three hours of laboratory or field work weekly. Fall, odd-numbered years.
- BIOL 563: BEHAVIORAL ECOLOGY** 3 s.h.
An examination of the behavior of animals in relation to their natural environment with emphasis on the functioning of patterns of behavior in nature, intraspecific communication and social organization, behavioral relationships between species, and the regulation of behavior by the environment. (Pymatuning)
- BIOL 571: HABITAT ECOLOGY-AQUATIC** 6 s.h.
A detailed examination is made of the structure and functioning of selected aquatic ecosystems. Emphasis is placed on the interrelationships of functioning systems. (3 credits at Pymatuning)
- BIOL 572: TERRESTRIAL COMMUNITY ECOLOGY** 6 s.h.
A study of the composition, distribution, and dynamics of plants and animals in selected terrestrial communities. Major biomes to be included will be grassland, deciduous forest. coniferous forest, and tundra. Summers only: six weeks. (3 credits at Pymatuning)

- BIOL 573: LIMNOLOGY** 3 s.h.
A field oriented study of the physics, chemistry, and biology of standing and flowing inland waters.
- BIOL 574: ECOLOGY OF AQUATIC INSECTS** 3 S.h.
Examination of the ecological adaptations of aquatic insects with special emphasis on morphology, **habitat**, and trophic relationships. (Pymatuning)
- BIOL 575: EXPERIMENTAL ECOLOGY** 3 s.h.
Study of designs suitable for investigation of natural populations and communities **stressing** statistical analysis, and the logical control of experiments in natural situations. (Pymatuning)
- BIOL 576: FUNGAL ECOLOGY** 3 s.h.
Emphasis will be on the **role** of fungi in the decomposition of organic materials in terrestrial and aquatic communities, and the recycling of mineral nutrients. (Pymatuning)
- BIOL 577: FOREST ECOLOGY** 3 s.h.
Study of the composition, methods of analysis, **development**, and manipulation of forests in the United States. Emphasis is placed on methods of studying forest composition and development. (Pymatuning)
- BIOL 578: BIOME STUDIES** 3 s.h.
A travel-study program which offers opportunities for study in the various biomes, e.g., grasslands, **montane**, seashore, etc. **Summers** only. Prerequisites: Environmental Biology or permission of instructor.
- BIOL 579: ALPINE ECOLOGY** 3 s.h.
Students travel to the Beartooth Mountains in northern Wyoming where they may undertake field studies of aquatic and terrestrial communities along an altitudinal transect. Permission to register **granted** on an individual basis. (Students will share cost of travel and food. Tents and cooking facilities will be provided.) (Pymatuning)
- BIOL 581: MICROBIAL GENETICS** 3 s.h.
A study of bacterial and viral genetics with emphasis upon mutation, mutant selection, gene **action**, recombination genetic mapping gene regulation, and recombinant DNA technology. **Laboratory** sessions are on an **arranged** basis. Prerequisite: permission of instructor. Two lecture and three lab hours per week.
- BIOL 582: EVOLUTION** 3 s.h.
A study of the principles of evolution and its links with **areas** of biology. Topics to include the history of evolutionary **thought**, species concepts and **speciation** processes, phylogenetic patterns and their reconstruction, diversity of life, and the mechanisms of evolution. Completion of core curricula in biology or equivalent is required. Spring, even-numbered years.
- BIOL 583: MOLECULAR BIOLOGY** 4 s.h.
The study of the structural and functional **relationships** of the major biological **macro-molecules**, with emphasis on nucleic acid biology. Current systems, methods, and applications of biotechnology, including recombinant DNA techniques, will be emphasized in the laboratory. Two lectures and three laboratory hours weekly. Spring, annually.
- BIOL 585: BIOTECHNOLOGY** 4 s.h.
Advanced topics in the current systems, methods, and applications of recombinant DNA and protein biotechnology. **Three** hours lecture/discussion and three hours lab each week. Prerequisite: BIOL 483/583 or consent of instructor. Fall, annually.
- BIOL 591: BIOGEOGRAPHY** 3 s.h.
The subject matter covers aspects of the distribution of plants and animals. Main topics of concern include interpretive approaches to biogeography, paleobiogeographic evidence of past distributions, the centers of origin of various groups, mechanisms and routes of **dispersal** and colonization, and the dynamics of extinction. Prerequisites: Genetics and Environmental Biology.
- BIOL 592: ETHOLOGY** 4 s.h.
A study of the biological concepts of animal behavior. An investigation of topics such as sensory receptors, internal mechanisms, genetics, learning and habituation, social organization, and communication. **Laboratory exercises** involve techniques of **observation** and experiments in animal behavior. Two hours **lecture** and three hours lab or field work per week.
- BIOL 593: COMMUNITY AND ECOSYSTEM DYNAMICS** 4 s.h.
An in-depth approach to the structure, function, and dynamics of ecological systems at community, ecosystem, and landscape scales. Lecture and discussion will focus on current topics such as niche theory, the regulation of community structure, food webs, ecological stability, diversity, succession, and energy and material cycles. Laboratory will emphasize field-based descriptive and investigative studies of local communities and ecosystems. Three hours lecture and three hours lab weekly. Prerequisites: BIOL 202 or equivalent is required. A basic statistics course is highly desirable. Fall, even-numbered years.

BIOL 594: POPULATION BIOLOGY

4 s.h.

This course deals with the empirical, experimental, and theoretical aspects of the structure, growth, and evolution of biological populations. The course will take a holistic approach to how population genetics and population ecology interact to produce observed population structure and dynamics. Three hours lecture/discussion and three lab hours weekly. Prerequisites: BIOL 202, MATH 260, or permission of the instructor. Spring. odd-numbered years.

BIOL 600: SPECIAL PROBLEMS IN BIOLOGY

1-3 s.h.

By permission.

BIOL 700: RESEARCH AND THESIS

minimum of 6 s.h.

Master of Business Administration

College of Business Administration

Graduate Faculty

Professors: L. Ackerman, R. Balough, W. Campbell, S. Chen, J. Eicher, S. Ewedemi, L. Felicetti, W. Fulmer, B. Garland, J. Grunenwald, P. Kim, T. Oliver, J. Pesek, C. Pineno, A. Que, J. Reed, W. Ross, W. Sanders, S. Sohng, W. Stine, T. Stuhldreher, K. Traynor, M. VanLandingham, T. Vernon, T. Wilson, C. Yang, W. Yeane; **Associate Professors:** J. Eichlin, C. Farinacci, M. Haggerty, T. Johns, L. Smith, **Assistant Professor:** G. Bish

Program Objectives

The major objective is to provide a basic core of knowledge about various theories, techniques, and practices of administering business activities and problem solving. In addition, candidates for the degree have an opportunity for in-depth study in a particular area of interest. Specific objectives are to prepare candidates for:

- . positions in middle management with private and public organizations;
- teaching positions in community colleges;
- enrollment in doctoral programs in business administration.

The program is designed for candidates with undergraduate degrees in fields other than business administration as well as graduates of business degree programs. Graduate courses are offered in the evening to facilitate attendance of employed or part-time students.

Admissions Requirements

College of Graduate Studies admission requirements apply with the following additions:

- Students must submit official scores on the Graduate Management Admissions Test (GMAT).
- Applicants currently employed should include references from both professors and/or employers among the three letters of reference.

Course Requirements for Graduates

A. Foundation Courses

At least 39 credit hours of undergraduate courses or their equivalents must be completed with a grade of “C” or better to meet the undergraduate “common body of knowledge” that make up the foundation courses requisite for the M.B.A. degree. Foundation requirements may be satisfied by course work at Clarion or other approved institutions. They may also be satisfied by the “Advanced Placement-Credit By Exam” option (refer to Undergraduate Catalog). Foundation requirements must be completed within the first 15 hours of graduate work. The following are the foundation courses:

ECON 212 or 310: Microeconomics*
ECON 211 or 311: Macroeconomics*
CIS 110: Computer Information Processing
ACTG 251: Financial Accounting
ACTG 252: Managerial Accounting
ECON 221: Economic and Business Statistics I
ECON 222: Economic and Business Statistics II
BSAD 240: Legal Environment I
MGMT 320: Management Theory and Practice
MKTG 360: Principles of Marketing
FIN 370: Financial Management
MATH 232: Calculus for Business
MGMT 425: Production Management

*Entering students who are deficient in the economics area of the common body of knowledge are strongly recommended to take the intermediate sequence in lieu of principles.

B. Core Courses

The following courses (24 semester hours) are required of all M.B.A. candidates:

ACTG 552: Management Accounting
ECON 510: Advanced Managerial Economics
ECON 603: Quantitative Analysis for Business Decisions
FIN 570: Managerial Finance
MKTG 560: Marketing Decision Making
MGMT 521: Organization Structure and Behavior
MGMT 626: Production/Operations Management
BSAD 690: Administration and Business Policy

Students may petition to substitute another graduate-level course for a core course. Students who have majored in the discipline covered by the M.B.A. core course may be required to substitute another graduate-level course. The criteria are that: (a) the student has taken at least 15 credits in that field and (b) the student possesses the knowledge to be gained in the core course. Course substitution requires the recommendation of the M.B.A. director **in counsel with the department chair in question. Evidence** such as competency testing may be required, especially for the use of non-business courses.

C. Electives

In addition to the M.B.A. core, all students will complete the balance of 33 credits of graduate course work from the following courses, subject to the offering of those courses and the approval of the M.B.A. director/advisor.

ACTG 451,452,453,454,455, 461,463,490,499,554, 650,652,653
CIS 402,403,462
BSAD 601,637,699
ECON 410,423,470,490,570, 600,611,612,699
FIN 471,476,480,671,676
MGMT 420,423,483,485,621, 622,625
MKTG 460,461,465,468,562, 604,661

A maximum of three hours of approved 400-level courses, taken for graduate credit, may be used as electives. A maximum of nine graduate credit hours toward the 33 required for the M.B.A. may be **transferred** from accredited graduate programs with the approval of the M.B.A. program director and the department chair of the course for which transfer credit is sought. No graduate credit is granted for correspondence courses.

All students will be expected to complete the computer foundation course in the first semester at Clarion. Students with this foundation, but from schools other than Clarion, will be expected to attend a workshop during the first semester that introduces them to the Clarion computing facilities. Fundamental computer literacy will be assumed in graduate course work.

Performance Requirements

Students who earn more than six hours of graduate credit at Clarion with a grade of "C" or earn any credits with grades below "C" and/or fall below a 3.00/4.00 graduate overall quality-point average (QPA) are automatically placed on probation. Students whose QPA in the foundation courses falls below a 3.00/4.00 are also placed on probation. Students placed on probation must achieve satisfactory academic standing within one semester of registration or be removed from the program. All prerequisite (undergraduate) courses for a given course must be completed prior to taking that course.

MGMT 521 and ECON 603 must be taken before completing 12 hours of graduate course work, and BSAD 690 must be taken during the last semester of graduate course work. ECON 603 and ECON 510 are prerequisites for MGMT 626. The maximum time for completion of the degree program is six calendar years from the date of first enrollment.

Specialized Options

Students pursuing the M.B.A. degree may enroll in the PROFESSIONAL ACCOUNTANCY COURSE OF STUDY. Clarion University undergraduate students may also apply for this course of study, and upon completion will have received both the Bachelor of Science in Business Administration and the Master of Business Administration degrees. Only those students whose career aspirations require the highest discipline in accounting expertise are advised to apply for this course of study. The sequence of 164 total semester hours of course work, including 36 s.h. of graduate course work, is designed to prepare students for entry into the practice of professional accountancy as prescribed by the American Institute of Certified Public Accountants. Entrance into the Professional Accountancy course of study will normally occur upon admission to the M.B.A. Program or, for undergraduates, during the student's junior year upon formal approval of the Department of Accountancy chair. Entrance into this program for undergraduate students does not ensure admission into the M.B.A. program upon completion of the bachelor's degree. Interested students should contact the Department of Accountancy chair for details and options.

The College of Business Administration, in conjunction with the College of Arts and Sciences, offers a LIBERAL ARTS PRE-PROFESSIONAL MBA OPTION. Undergraduate foundation course requirements in business administration maybe taken concurrently with a liberal arts major, giving students many of the courses prerequisite to the M.B.A. Program prior to graduation. Undergraduates interested in this program should contact their liberal arts advisor for details and requirements.

Students wishing to pursue the PROFESSIONAL ACCOUNTANCY or the LIBERAL ARTS PRE-PROFESSIONAL options must follow the normal M.B.A. admission procedures. Admission to one of these options does not guarantee admission to, nor completion of, the M.B.A. degree.

Placement

Graduate students are encouraged to use the services of the University Career Services Office. Graduates often obtain positions with banks, manufacturing concerns, accounting firms, other business and industrial organizations, hospitals, and government agencies.

Graduate Assistantships

Graduate assistantships are available to qualified M.B.A. students. Awarded competitively, they cover some or all basic tuition expenses and provide a stipend. They also may furnish additional opportunity for close work with graduate faculty on a variety of research projects. Applications for assistantships are available in the M.B.A. Office.

Advisement

All **graduate students are assigned an advisor** upon admission. Students must obtain the signature of their advisor when registering for courses, changing schedules, on any special requests for course substitutions, independent study, individualized instruction, internship, or special problems courses.

Physical Facilities

The College of Business Administration is housed in Dana S. Still Hall. This modern facility contains its own microcomputer lab with about 30 personal computers and eight VAX terminals providing access to the university's DEC VAX systems and Internet, as well as a local network for PC applications. Graduate student offices in Still are also PC equipped with access to the mainframe computers.

There is a Reading Center for business students in Still Hall, and the university library is situated only one block away.

Accounting Courses

ACTG 451 : ACCOUNTING PROBLEMS 3 s.h.

A problem-oriented study of topics most often tested on the CPA exam. Included are inventory methods, long-term contracts, partnerships, leases, consignments, installment sales, receiverships, fiduciary accounting, and government accounting. Preparations for the practice portion CPA exam are emphasized. Prerequisite: ACTG 355. Each semester.

ACTG 452: ADVANCED COST ACCOUNTING 3 s.h.

A study of advanced concepts of cost accounting as a means of providing useful quantitative information for decision making. Topics include inventory valuation, cost allocations, joint-product and by-product costs, process costing, accounting systems, profit center costs, and segment performance measuring. Prerequisites: ACTG 352. Each semester.

ACTG 453: PROBLEMS IN FEDERAL TAXATION ACCOUNTING 3 s.h.

Federal income tax concepts and compliance problems of partnerships, corporations, estates, and trusts. Also a brief consideration of the concepts of social security, estate, and gift taxation. Prerequisites: ACTG 353. Each semester.

ACTG 454: COMPARATIVE ACCOUNTING SYSTEMS 3 s.h.

The major objective of the course is to help the student to develop a holistic approach to the concepts and practices for the examination and exploration of accounting systems. Specialized accounting systems will be discussed in detail dependent upon the interest and desires of students. Prerequisites: A-G251, 252,350,351, CIS 223 and 301. Each semester.

ACTG 455: NOT FOR PROFIT ENTITIES 3 s.h.

A study of the principles and practices of budgeting and accounting for activities of entities that are operated for purposes other than making profits. prerequisite: ACTG 351. Each semester.

ACTG 461: INTERNATIONAL ACCOUNTING 3 s.h.

The theory, practice, procedures, and issues of accounting in representative foreign countries, including important differences between domestic and international accounting. The international issues of currency translation, inflation, financial reporting, standards including auditing, and taxation will be considered. Prerequisites: ACTG 351 or consent of the instructor. Each semester.

ACTG 443: TAX PLANNING 3 s.h.

A survey course to acquaint the student with tax planning techniques which can be used to accomplish an individual's financial goals. An understanding of financial position, cash flow and income, gift and estate tax matters enables the student to suggest actions that fit the individual's financial priorities. Prerequisite: ACTG 353. Once annually.

ACTG 490: CURRENT ACCOUNTING PRONOUNCEMENTS AND PRACTICE 3 s.h.

A research study of current Financial Accounting Standards Board statements of standards, interpretations, concepts, exposure drafts, and discussion memorandums. The internship experience and completed term paper will be discussed and integrated with the pronouncements. Prerequisite: COOP 420: Accounting internship. Spring Semester.

ACTG 499 SPECIAL TOPICS IN ACCOUNTING 3 s.h.

Various current topics affecting accounting practice and theory will be presented. Different topics will be covered from year to year as subjects of importance are identified. Prerequisite: ACTG 351 or consent of the instructor. On demand.

ACTG 552: MANAGEMENT ACCOUNTING 3 s.h.
 A graduate course for non-accounting majors which deals with the application of concepts and tools of accounting analysis necessary for planning, control, and decision-making functions of **national** and multinational organizations. Topics include financial statement analysis and interpretation, budgeting, standards, and forecasting. Prerequisites: ACTG 25 I and ACTG 252.

ACTG 554: ADVANCED AUDITING 3 s.h.
 An advanced study of current topics in auditing. The course is intended to develop more complex issues than those encountered in an introductory auditing course. Topics include current audit influences, special problems with audit reports, SEC practice, computer auditing, and related topics. Prerequisite: ACTG 354 (or its equivalent).

ACTG 650: THEORY OF ACCOUNTS 3 s.h.
 A study of past and contemporary accounting theories. The course is concerned with the historical development of accounting and its evolution to present times. Present-day accounting concepts are critically examined from the standpoint of how well they serve the needs of those who use the products of accounting. Prerequisite: ACTG 35 I or its equivalent or permission of the instructor.

ACTG 652: ADVANCED COST AND MANAGERIAL ACCOUNTING 3 s.h.
 A study of complex problems in cost accounting. Use of cost accounting as a tool for managerial control is emphasized. Prerequisite: ACTG 352 or its equivalent or permission of the instructor.

ACTG 653: FEDERAL TAX RESEARCH AND PRACTICE 3 s.h.
 A study of federal tax law emphasizing the underlying philosophy of the law. Research procedures and techniques in the handling of complicated problems in tax practice and tax planning will be set forth. Prerequisite: ACTG 453 or its equivalent or permission of the instructor.

Business Administration Courses

BSAD 601: INFORMATION SYSTEMS ANALYSIS 3 s.h.
 A study of various types of information systems, with the **primary** focus being on computer-based systems for business organizations. Emphasis is on the **development**, management, and appraisal of information systems.

BSAD 637: MULTINATIONAL BUSINESS SEMINAR 3-6 s.h.
 This course incorporates an established program involving a consortium of American universities called the "International Business Seminar." The program involves a variety of trips to different nations for meetings with top level executives of various organizations. The program is supplemented with a series of meetings with the instructors both prior to and after **returning from** the trips. Individual assignments are made, and a text which includes topical materials is provided. The assignments are of a graduate level calibre, and **are** expected to produce presentable and/or publishable papers. Participation in seminars is expected to be at the graduate level.
 Should the student take this course for six credits, additional research will be required such that the student would be able to **demonstrate** graduate-level competency in one select area of international business. The **area** chosen will be mutually acceptable to both the instructor and the student, and the instructor will guide the student's research efforts. Prerequisite: MGMT 320 and MGMT 521.

BSAD 690: ADMINISTRATION AND BUSINESS POLICY 3 s.h.
 Organizational goal achievement through the interaction of administrative processes is analyzed with a **concentration** on technology and **structure** in a variety of environments. A case study **approach** which **incorporates** comparisons and contrasts between businesses of various nations. Taken last M.B.A. semester and **after all foundation** courses.

BSAD 699: SPECIAL PROBLEMS 1-3 s.h.
 (1-3 s.h. per enrollment; maximum of 6 s.h.)
 A thorough study of a business topic selected by the student from his or her area of major interest. It may take the form of research, readings, practical on-site applications, or a combination of these. Findings must be presented in a written paper which the student may be required to defend orally before a committee of graduate faculty **and/or** graduate students. Prerequisites: One or more graduate courses in the area from which the special project is selected, and consent of the student's advisor.

Economics Courses

ECON 410: MANAGERIAL ECONOMICS 3 s.h.
 Use of economic analysis in the formulation of business policies. Decision theory and criteria for decision making by the firm output and "Scale" decisions; linear programming; profits, production functions, and cost functions; competitive equilibrium (industry and firm); demand theory pricing policies, capital budgeting, and investment; uncertainty; inventory management. Prerequisites: **ECON 222, 310, and ACTG 252**. On demand. Note: Cannot be taken for credit after the completion of ECON 510.

ECON 423: STATISTICAL TOOLS FOR QUANTITATIVE ANALYSIS 3 s.h.
 Application of the statistical methods of probability, sampling, estimation, analysis of variance, regression, and **correlation** in the arms of economics and business. Prerequisites: ECON 222. Spring, biennially. Note: Cannot be taken for credit after the completion of ECON 603.

ECON 470: BUSINESS CYCLES AND FORECASTING 3 s.h.
Theories of business fluctuations; applications of modern income theory to business cycles; examination of business cycle indicators and forecasting techniques. Prerequisite: ECON 21 I and ECON 222. Spring, annually. Note: Cannot be taken for credit after the completion of ECON 570.

ECON 490: HISTORY OF ECONOMIC THOUGHT 3 s.h.
Development of economic ideas from ancient times to the present. Emphasis upon the period from Adam Smith onward. Considers the economic and political environment in which ideas emerged as well as the leading economists advancing or defending the ideas. Prerequisite: ECON 21 I and 212 and senior standing. Spring, annually.

ECON 510: ADVANCED MANAGERIAL ECONOMICS 3 s.h.
This course will focus on the development and practical application of theoretical and quantitative techniques to business decision-making, including international applications. Optimization techniques draw on the student's knowledge of economics, mathematics, and statistics through modeling and the use of computer statistical packages. Prerequisite: Macroeconomics foundation course, ECON 222, MATH 232.

ECON 570: ECONOMIC AND BUSINESS FORECASTING 3 s.h.
An advanced study of forecasting techniques and business conditions analysis. Topics include: economic indicator analysis, classical time series components, econometric forecasting techniques, exponential smoothing models, and ARIMA models. Emphasis is placed on model development and evaluation using prewritten computer forecasting routines. prerequisites: ECON 222 and macroeconomics foundation course.

ECON 600: INDEPENDENT STUDY 3 s.h.
An opportunity for the graduate student to investigate in depth a facet of economics not covered by course offerings. The topic of study and course requirements must be approved by the Department of Economics chair, and the work must be supervised by a faculty member. Prerequisites: ECON 603, ECON 510 or ECON 611, and other requirements as deemed appropriate by the faculty supervisor.

ECON 603: QUANTITATIVE ANALYSIS FOR BUSINESS DECISIONS 3 s.h.
Quantitative techniques and models which can be used for solving many of the problems that arise in business, including simple and multiple regression analysis, experimental design analysis of variance, nonparametric tests, time series, decision theory, and inventory models. Opportunity is provided for students to become familiar with the use of several computer statistical software packages. Applications include domestic and international situations. Prerequisites: ECON 222, MATH 232, CIS 110.

ECON611 : ADVANCED MICROECONOMIC ANALYSIS FOR BUSINESS DECISIONS 3 s.h.
An advanced study of the logical and mathematical development of macroeconomic theories and the application of economic models to business problems. Major areas of study include demand theory, market models, welfare economics, and general equilibrium analysis. Prerequisite: Microeconomics foundation course.

ECON 612: ADVANCED MACROECONOMIC ANALYSIS 3 s.h.
An advanced study and analytical development of macroeconomic theory. Major areas include national income accounts, aggregate income determination models, monetary aggregates, and macro dynamics. Prerequisite: Macroeconomics foundation course.

ECON 699: SPECIAL TOPICS 3 s.h.
An opportunity for students to investigate specific topics or current issues on the graduate level. Prerequisites depend on the subject to be covered.

Finance Courses

FIN 471 : FINANCIAL PROBLEMS 3 s.h.
A consideration by the case method of the financial problems of business firms. Prerequisite: FIN 370. Fall, annually.

FIN 476: PORTFOLIO THEORY AND MANAGEMENT 3 s.h.
Examination of modern portfolio theory and its application to investment strategies; study of options and futures markets; investigation of market efficiency. Prerequisite: FIN 376. Spring, annually.

FIN 480: MULTINATIONAL FINANCIAL MANAGEMENT 3 s.h.
The theory and practice of financial management in multinational firms; focuses on important differences between domestic and international financial decision making. Prerequisite: FIN 370. Once annually.

FIN 570: MANAGERIAL FINANCE 3 s.h.
A study of financial management approaches to evaluating complex alternatives for using available resources in both a domestic and a multinational context. prerequisites: ACTG 252, FIN 370.

FIN 671 : FINANCIAL THEORY AND PRACTICE 3 s.h.
 A case-study approach to the theory and practice of corporate financial issues which must be addressed by a financial manager. Emphasis will be placed on capital budgeting decisions under varying circumstances and **theoretical** corporate financial concerns. Prerequisite: FIN 570.

FIN 676: INVESTMENT MANAGEMENT 3 s.h.
 A study of the structure and management of investment portfolios. Various types of investments are examined in terms of their risk elements and the purposes they serve.

Management Courses

MGMT 420: OPERATIONS RESEARCH 3 s.h.
 Scientific methods which provide **managers** with a quantitative basis for making **decisions**. Emphasis is placed on both the deterministic and stochastic methods, including the transportation method, linear programming, dynamic programming, PERT, **inventory control** queuing theory, and Markov analysis. Prerequisite: ECON 222. Fall, annually.

MGMT 423: BUSINESS AND SOCIETY 3 s.h.
 A study of concepts of, and theories **about, interrelationships** between business units and society in **general**. The concepts and theories are then employed in the analysis of complex environmental problems encountered by business managers. Prerequisite: MGMT 320.

MGMT 483: WAGE AND SALARY ADMINISTRATION 3 s.h.
 A study of the formation and administration of compensation systems as they relate to the changing nature of employee rewards and expectations. Emphasis will be given to job and performance evaluation, fringe benefits, and rewards for special groups. Prerequisite: MGMT 324. Spring, annually.

MGMT 485: INDUSTRIAL RELATIONS AND PUBLIC POLICY 3 s.h.
 An examination of industrial relations as it relates to federal, state, and local statutes and industrial policies. **Specific** topics covered include OSHA, EEOA, NLRA, LMRA, and LMRDA. Prerequisite: MGMT 324. Fall, annually.

MGMT 521: ORGANIZATION STRUCTURE AND BEHAVIOR 3 s.h.
 A study of the ways in which organizations, groups, **and/or** individuals respond to managerial philosophy and practice. Included is an analysis of the influence of various environments, mores, cultures, and societies on organizations. Emphasis is placed on the functions and processes of decision-making. Prerequisites: MGMT 320.

MGMT 621: HUMAN RESOURCES MANAGEMENT 3 s.h.
 A study of human resources management issues and practices in business organizations. Topics **covered** include the analysis and design of jobs, **staffing** the organization, training, and development of employees. and the design and administration of compensation systems. Prerequisite: MGMT 320.

MGMT 622: BUSINESS OPERATIONS IN A MULTI-NATIONAL ENVIRONMENT 3 s.h.
 A study of the nature, organization, and operation of multinational firms. Selected cases of foreign operations of multinational corporations are discussed and analyzed. Prerequisite: MGMT 320.

MGMT 625: LABOR ARBITRATION/NEGOTIATION 3 s.h.
 A synthesis of industrial relations theory and practice. The union/employer **relationship** will be explored **from** the union organization drive through the continued negotiation of collective bargaining agreements, and attendant grievance arbitration procedures. Prerequisite: MGMT 320.

MGMT 626: PRODUCTION/OPERATIONS MANAGEMENT 3 s.h.
 A synthesis of concepts and techniques which relate directly to, and enhance the management of, production systems and a life cycle approach following the production system from its inception to its termination is utilized. Prerequisites: ECON 510, ECON 603.

Marketing Courses

MKTG 460: SALES MANAGEMENT 3 s.h.
 Designed to cover all aspects **concerned** with the management of a sales force, including the **selection** and testing of salespeople, training, devising compensation plans and expense amounts, **territories**, quotas, and evaluations. Case studies and problem-solving techniques are utilized. prerequisite: MKTG 360. Each semester.

MKTG 461: MARKETING RESEARCH 3 s.h.
 The application of scientific and statistical **methods** and tools to the solution of marketing problems **are** studied. Prerequisites: ECON 222 and MKTG 360. Each semester.

MKTG 465: MARKETING PROBLEMS 3 s.h.
 A consideration by the case method **red/or** simulation gaming method of the problems facing the producer and reseller. prerequisites: MKTG 360, and senior standing. Each **semester**.

MKTG 468: CONSUMER BEHAVIOR 3 s.h.

The study of theories, models, recent research, and research techniques in consumer motivation and decision making. Prerequisites: MKTG 360 and PSY 211 or permission of the instructor. Each semester.

MKTG 560: MARKETING DECISION MAKING 3 s.h.

The analysis of marketing concepts and problems from a managerial point of view. Emphasis is placed upon planning, organizing, and controlling of marketing activities and their integration with the objectives and policies of the firm. Both domestic and multinational marketing concepts are addressed in this course. Prerequisite: MKTG 360 and ECON 222.

MKTG 562: MARKETING INSTITUTIONS 3 s.h.

A study of components of a vertical marketing system and of the methods for making them effective. Also included are means of evaluating alternative marketing systems and the development of international marketing channels. Prerequisite: MKTG 360.

MKTG 604: MARKETING RESEARCH 3 s.h.

Methods of solving marketing research problems, including library, survey, and experimental research methods; project design; data collection, analysis, and interpretation; presentation of marketing research reports for managerial user. Problems in international marketing research and research ethics are also included. Selection, design, and completion of a marketing-oriented research project and computer work are required. Prerequisite: ECON 603.

MKTG 661: MARKETING STRATEGY 3 s.h.

A study of strategies for attaining a suitable "marketing mix" for various types of entities. Marketing knowledge from previous courses and experiences will be applied to the formation of overall programs for dealing with both international and domestic marketing problems. Prerequisite: MKTG 360.

Master of Science Degree in Communication

College of Communication, Computer Information Science,
and Library Science

Department of Communication

Graduate Faculty

Professor: C. Felicetti, A. Larson; **Associate Professors:** H. Fueg, P. Marini, L. Pfaff, D. Siddiqui; **Assistant Professor:** W. Lloyd, S. Kuehn, J. Washington

Program Objectives

The graduate program in communication develops the competencies and knowledge required for graduates to perform effectively as training and development specialists in business, education, and government. The objectives are to prepare an individual to administer training programs, to facilitate performance within an organization, to design training programs based on **specific** needs, to conduct such programs, and to serve as a consultant to management and others in the identification and solution to training problems.

While students with any undergraduate degree are welcome in the program, it should be of particular interest to those with undergraduate degrees in communication, business, or education. Depending upon the undergraduate degree and the proper selection of electives, careers in other areas of communication are available.

Students interested in a career in higher education might consider the possibility of doctoral work following completion of the master's degree program.

Admission Requirements

College of Graduate Studies admission requirements apply with the following additions:

- Admission to the program is limited to the Fall Semester only.
- All applicants must submit a statement of purpose for pursuing the M.S. in the Department of Communication.
- Admission on a provisional basis may be granted if the applicant's QPA is between 2.00 and 2.75 on a 4.00 scale and a raw score of 45 or above is achieved on the Miller Analogies Test or a combined score of 1,000 is obtained on the Graduate Record Examination. Degree status may be obtained upon completion of 12 semester hours with a minimum of 3.0 average.
- Individuals with disabilities are encouraged to meet with the department chair prior to admission to the program.
- Non-native applicants must submit TOEFL scores. TOEFL scores of 600 or above are required for admission to the degree program.

Degree Requirements

To fulfill the degree requirements for graduation, the student must complete 36 semester hours, including required courses with a QPA of 3.00 or better on a 4.00 scale. There is also a media writing competency for which COMM 17 I: Writing for Media, may be required if sufficient background is not obtained through previous course work or experience as demonstrated through portfolio or testing. This decision will be made in consultation with your advisor.

Transfer Credits

A maximum of nine semester hours of graduate course work may be transferred toward the degree. These hours must come from an accredited institution and must have a grade of “B” or better.

Requirements for Graduation

The following courses are required of all students graduating with a Master of Science degree in communication.

COMM	545:	Theory and Application of Production Planning	3 s.h.
COMM	556:	Training Program Planning and Design	3 s.h.
COMM	559:	Management of the Communication Process.	3 s.h.
COMM	560:	Audio and Television Production	3 s.h.
COMM	565:	Photography and Graphics Production.	3 s.h.
COMM	580:	Advanced Applied Design	3 s.h.
COMM	620:	Training and Development Research	3 s.h.
COMM	657:	Advanced Applied Production	3 s.h.
		Media Writing Competency	0 s.h.

In addition to the above listed courses, each student must satisfactorily complete an original research effect. Either of the following courses will satisfy this requirement.

COMM	656:	Research in Communication.	3 s.h.
COMM	700:	Thesis	6 s.h.

To complete the program, a student may select courses within the Department of Communication or from related disciplines. All elective courses should be approved by the student’s advisor.

Electives

Electives may be taken from any curriculum in the graduate or undergraduate catalog if approved by their advisor. Students are encouraged to go outside the Department of Communication for courses if their career goals and interests will be benefited.

No more than six hours of 400-level courses taken for graduate credit may count toward the master’s degree.

Placement

Placement of past graduates has been excellent in teaching; business, industry, and government training and development programs; employee/corporate communication programs; media sales and production; and doctoral and specialist programs.

Advisement

Based on career goals of the student, an advisor is assigned from the graduate faculty of the department.

Advisement is at the convenience of the student and may occur at any time. Frequently the advisor will recommend that the student talk with another member of the faculty who may be more closely associated with a specific problem or interest of the student.

In all cases, the responsibility of meeting the stated requirements of the master's degree lies with the student.

Graduate Assistantships

Graduate assistants are employed in the Department of Communication in such areas as television **management**, radio management, television direction, photography production, and journalism. These assistantships usually require 10 hours of work per week, for which the student's tuition is waived and a small bi-weekly stipend is paid. (A number of assistantships are available to outstanding international students, consisting of a lo-hour work assignment with a waiver of tuition.) Assistantships run from September to May; no student may be employed in more than one assistantship. ***Awards are made as vacancies exist, and are based on the applicant's professional qualifications as shown in transcripts, resumé, and portfolio of work samples. A personal interview is desirable.***

Applicants for graduate assistantships must complete the regular admission procedure, then file a letter of application with the chair of the Department of Communication. Applications should be received no later than March 15; appointments are usually made by May 15 of each year.

Internships

The Department of Communication has maintained a cooperative arrangement with public schools, businesses, and governmental agencies for over a decade. Students may intern with such organizations in training and development of other areas. The internship is designed to provide on-the-job experience for the student to make the transition between classroom assignments and actual application of professional training. Consequently, the course should be reserved until the latter part of an individual's program.

Physical Facilities

The Department of Communication is housed in Becker Hall and has outstanding physical facilities. In addition to modem classrooms, there are:

- . Modem full-color television production studio, control room, and editing facilities
- . Computer controlled multi-image studio
- . Photographic darkrooms
- . Audio production studios
- Research area
- . Graphics workshop
- . Desktop publishing
- . Interactive video technology
- . 1,000-watt FM radio broadcast station

Also available to students in Becker Hall is the Computer Lab, consisting of modem main frame, mini- and microcomputer stations.

Course Sequence

Due to the highly integrated and prescriptive nature of the program, it is imperative that students discuss the course sequencing with their advisor. Students who get out of sequence could take three or four years to complete the degree requirements. The program can be completed in three semesters. However, students are encouraged to complete their requirements in four semesters and take advantage of strengthening their skills through involvement in co-curricular activities.

Communication Courses

- COMM 400: MEDIA ADVERTISING** 3 s.h.
Introduces the student to media strategies, creative development and budgeting of advertising plans for national and major-market media. The course includes a review of basic concepts in advertising.
- COMM 405: PRESENTATION GRAPHICS** 3 s.h.
Design and production of graphic materials for the presentation of information in training sessions, sales and stockholder meetings, and other small and large group situations. Must be taken concurrently with SCT 214: Business and Professional Speaking.
- COMM 411: FOUNDATIONS OF BROADCASTING** 3 s.h.
An overview of the broadcasting industry, including history, technical aspects, station and network organization, sales, ratings, programming, and social influences. A foundation course for radio-TV career preparation, related fields of communication, and the development of knowledgeable consumers of broadcast media
- COMM 415: LOCAL ADVERTISING** 3 s.h.
A professional course in planning, scheduling, producing, and buying and selling advertising at the local level, with specific attention to the small business client.
- COMM 428: MASS MEDIA ANALYSIS** 3 s.h.
Develops advanced skills in programming, comparing, and analyzing media content for broadcast and print media professionals. Emphasis is placed on applying research skills to analyze audience needs and evaluating message effectiveness applicable in a wide variety of mass communication programming campaigns. Prerequisite: COMM 352.
- COMM 431: PUBLIC RELATIONS PRINCIPLES AND PRACTICE** 3 s.h.
This course is designed to provide fundamental instruction in public relations practices, including program planning and evaluation, working with the media, writing for public relations, and coordinating special events and functions. The structure and process of public relations in business, institutions, and American society will be explored through readings and discussion.
- COMM 441: ADVANCED MEDIA WRITING** 3 s.h.
Extensive work in research, writing, and marketing of written products for magazines, newspapers, and other publications. The course work also requires the selection and acquisition of appropriate photographs and graphics to complement the articles. Prerequisites: COMM 171 and 251.
- COMM 442: BROADCAST NEWS AND CONTINUITY WRITING** 3 s.h.
Provides students with advanced instruction and experience in writing news, commercials, public service announcements, and promotional copy for the broadcast media. Prerequisites: COMM 100, 152, and 171.
- COMM 443: PROMOTIONAL WRITING** 3 s.h.
Provides students with advanced instruction and experience in public relations and advertising writing. Prerequisites: COMM 100, 152, and 171.
- COMM 452: COMMUNICATION LAW** 3 s.h.
Introduces the student to various laws such as those of libel, privacy, copyright, access, and FTC and FCC rules and regulations governing the fields of communication.
- COMM 460: TELEVISION DIRECTING** 3 s.h.
Develops the skills needed to direct a variety of television studio productions, including news, interview, demonstration, and dramatic programs. Emphasis is on both technical and aesthetic directing skills. Prerequisites: COMM 351 or other television production experience and permission of the instructor. Four contact hours.
- COMM 488: MEDIA PROGRAM DESIGN FOR ORGANIZATIONS** 3 s.h.
Develops skills in devising communication strategies to design and develop an organization's media programs for training purposes. Skill areas include drafting communication objectives, developing plans for using communication media for training, and evaluating communication media used for effectiveness. Emphasis is placed on applying these skills to produce communication media for training programs. Prerequisite: COMM 352 or permission of the instructor.

- COMM 489: GLOBAL MASS COMMUNICATION** 3 s.h.
This course is intended to enable the student to effectively interact with the new culturally diverse audience and workforce in the American business and industry. The contents will consist of the latest innovatively designed resources on cultural diversity, global mass communication competencies, and positive attitudes. Also included will be imaginative conceptualization techniques of designing mass media messages suited to the new realities of cultural diversity.
- COMM 499: SPECIAL TOPICS IN COMMUNICATION** 1-3 s.h.
Focuses on a single, broad contemporary topic of current interest in communication and related fields. Course content varies from semester to semester. Topics to be considered will be announced in advance. May be taken three times for credit
- COMM 500: MASS COMMUNICATION THEORY AND APPLICATION** 3 s.h.
This course provides a foundation in social and behavioral theory of mass communication including, but not limited to, information theory, behaviorism, balance theory, two-step flow theory, uses and gratifications theory, and structural functionalism. Emphasis is placed on applying theoretical models to the analysis of problems of media professionals in order to gain insight into possible solutions. Fall, annually.
- COMM 545: THEORY AND APPLICATION OF PRODUCTION PLANNING**** 3 s.h.
Develops an understanding of the basic principles of communication models and the production process and relates them to the production of various media for educational and/or commercial purposes. Included are audience analyses, communication theory, development of content outlines, treatments and storyboards, and other techniques leading to the writing of a script.
- COMM 551: PUBLIC RELATIONS MESSAGE DESIGN** 3 s.h.
Provides advanced instruction in persuasion techniques in the design of public relations. Successful case studies are analyzed in terms of persuasion techniques used. Prerequisites: COMM 431 or permission of instructor. Spring, annually.
- COMM 556: TRAINING AND DEVELOPMENT PLANNING AND DESIGN**** 3 s.h.
Investigates various theories of learning and instructional strategies used in training in corporate organizations. The participant will identify a method appropriate to his or her content area, and plan and design an instructional system suited to adult learners in an in-service training environment.
- COMM 559: MANAGEMENT OF THE COMMUNICATION PROCESS**** 3 s.h.
Defines and applies the general principles of management-planning, organizing, staffing, directing, and controlling to the design and administration of communication programs. Relates behavioral variables to understanding and motivating employees.
- COMM 560: AUDIO AND TELEVISION PRODUCTION**** 3 s.h.
Develops basic skills in audio, ENG, and television production. A variety of projects in both media concentrates on proper equipment operation and recording and editing techniques.
- COMM 564: SCRIPTWRITING** 3 s.h.
Develops techniques and skills in writing scripts for a wide range of radio, television, motion picture, and slide-sound presentations. Emphasis is on creative writing within the structure of the intended medium.
- COMM 565: PHOTOGRAPHY AND GRAPHICS PRODUCTION**** 3 s.h.
Provides an integrated introduction into graphic and photographic production techniques. Layout, design, and composition techniques will be developed.
- COMM 580: ADVANCED APPLIED DESIGN**** 3 s.h.
Applies the processes learned in COMM 545 and COMM 556. Students will apply concept skills and strategies designing training or instructional units for a client. Prerequisite: COMM 545, 556, 560, 565.
- COMM 591: INDEPENDENT STUDY** 1-2 s.h.
Allows the imaginative student to structure an independent research project in the area of communication with a minimum of faculty supervision. A proposal specifying objectives, methods, and evaluation techniques must be submitted and approved by the student's advisor prior to enrolling in the course. 1 or 2 credit hours.
- COMM 620: TRAINING AND DEVELOPMENT RESEARCH**** 3 s.h.
Develops those research skills necessary for the evaluation and communication of training needs and outcomes. Specifically, skills in questioning, performance observation, research design, data reduction, and reporting. Prerequisites: COMM 545, 556.
- COMM 656: RESEARCH IN COMMUNICATION**** 3 s.h.
Independent investigation of a problem in a specific communication area. The project must be presented in written form and accepted by the research advisor. Prerequisite: COMM 620.

**Required courses.

COMM 657: ADVANCED APPLIED PRODUCTION 3 s.h.**
 Incorporates production and design skills from previous courses. Students produce training materials for projects designed in COMM 580. Prerequisites: COMM 560,565,580.

COMM 663: ADVANCED PHOTOGRAPHY 2 s.h.
 Requires students to prepare photographic materials to satisfy specific problems of instruction, television, or reproduction. Exploratory techniques can be pursued with the instructor's consent. Prerequisite: COMM 565. On demand.

COMM 691: SEMINAR IN COMMUNICATION 2 s.h.
 Focuses on the various aspects of human resource development. Guest lecturers will be utilized and innovative experiments or procedures reviewed. Prerequisites: COMM 580,620.

COMM 699: COMMUNICATION INTERNSHIP I-3 s.h.
 Provides practical experience in the supervision in and operations of some aspect of a communication program. A proposal specifying objectives, methods, and evaluation techniques must be submitted and approved by the student's advisor and the cooperating agency prior to enrolling in the course.

COMM 700: THESIS 6 s.h.
 Requires each student to develop a project or thesis in some area of communication.

Master of Education Degrees in Department of Education

College of Education and Human Services

Graduate Faculty

Professors: J. Smith, K. Smith, D. Tate; **Associate Professors:** L. Brown, S. McKee, M. McLaughlin, N. Sayre, S. Stalker, J. Walker; **Assistant Professors:** E. Caropreso, A. Creany, R. Couch, R. DeLuca, G. Grejda B. Grugel;
Instructor: J. McCullough

M.Ed. in Elementary Education

Program Objectives

The master’s degree program in elementary education is designed to develop competencies and concepts in leadership, curriculum development, and models of teaching. These are then applied to education programs in at least two of the following areas: science, social studies, mathematics, language **arts/reading**, and curriculum.

Admission Requirements

Clarion University’s general admission requirements apply, with the following supplemental requirements:

The applicant should have elementary education certification. If the applicant does not meet this requirement, the graduate faculty of the department shall determine existing deficiencies and how they must be met. Certification requirements must be met prior to any graduate work.

Admission to provisional status may be granted at the discretion of the graduate faculty if the applicant’s QPA is less than 2.75/4.00. Regular status may be granted upon completion of **12** semester hours of graduate study with a minimum of 3.00/4.00 average.

Degree Requirements

Required Core.			12 s.h.
ED	520:	Introduction to Research	3 s.h.
	521 :	Instructional Leadership Skills	3 s.h.
EB	522:	Analysis of Teaching.	3 s.h.
ED	523:	Curriculum Development and Evaluation.	3 s.h.
Specialized Professional Education			12 s.h.

Two or more of the following areas must be included: language arts, reading, mathematics. science, social studies, curriculum

Course selection is to be made from the following:

ED	403:	Field Experience and Methods in Environmental Education	3 s.h.
ED	517:	Educational Computer Applications	3 s.h.
ED	533:	Recent Developments in Elementary Social Studies.	3 s.h.
ED	537:	Strategies and Problems of Teaching Elementary School Mathematics.	3 s.h.
ED	561:	Teaching Reading in the Elementary School.	3 s.h.
ED	562:	Teaching Reading in the Content Areas	3 s.h.
ED	546:	Reading and Language Arts in Early Childhood	3 s.h.
ED	541:	Recent Trends in Language Arts	3 s.h.
ED	542:	Seminar in Children's Literature.	3 s.h.
ED	617:	Advanced Educational Technology.	3 s.h.
SCED	502:	Investigative Techniques and Process Approach to Modern Science	3 s.h.
SCED	505:	Investigative Techniques in the Life Sciences.	3 s.h.
SCED	576:	Science, Technology, and Society.	3 s.h.

Electives 9 s.h.

To be selected from appropriate 400- or 500-level courses as approved by the advisor. A maximum of six credits of 400-level courses approved for graduate credit may be counted toward the degree.

Thesis credits may be substituted as electives.

Written Comprehensive Exam

TOTAL 33 s.h.

Graduation Requirements

Students must complete 33 credit hours of required and advisor approved elective courses with a cumulative grade-point average of 3.00/4.00. Additionally, students are required to complete a written comprehensive exam representing two of the following areas: science, mathematics, social studies, language arts/reading, or curriculum.

M.Ed. in Reading

Program Objectives

The master's degree program in reading education is designed to develop competencies and concepts in leadership, curriculum development, and models of teaching. These are then applied to planning, implementing, and evaluating developmental and remedial reading programs for kindergarten through grade 12.

Admission Requirements for Reading or Reading Specialist

Clarion University's general admission requirements apply, with the following supplemental requirements:

The applicant must have educational certification and have successfully completed a course in reading/language arts and children's literature.

Admission to provisional status may be granted at the discretion of the graduate faculty if the applicant's QPA is less than 2.75/4.00. Regular status may be granted upon completion of 12 semester hours of graduate study with a minimum of 3.00/4.00 average.

Degree Requirements

Required Core. 12 s.h.

ED	520:	Introduction to Research	3 s.h.
ED	521:	Instructional Leadership Skills	3 s.h.
ED	522:	Analysis of Teaching.	3 s.h.
ED	523:	Curriculum Development and Evaluation.	3 s.h.

Reading Specialization		15 credits
ED 561 :	Teaching Reading in the Elementary School	3 s.h.
ED 562:	Teaching Reading in the Content Areas	3 s.h.
ED 569:	Reading Evaluation.	3 s.h.
ED 570:	Practicum I: Analysis	3 s.h.
ED 571:	Practicum II: Correction.	3 s.h.
ED 576:	Advanced Seminar in Reading	3 s.h.
Electives		6 s.h.
To be selected from appropriate 400- or 500-level courses as approved by the advisor. A maximum of six credits of 400-level courses approved for graduate credit may be counted toward the degree.		
Thesis credits may be substituted as electives.		
Reading Specialist Test (NTE)		
Written Comprehensive Exam		
		TOTAL 36 s.h.

Graduation Requirements

Students must complete 36 credit hours of required and advisor approved elective courses with a cumulative grade-point average of 3.00/4.00.

Reading Specialist Certification

Satisfactory completion of the M. Ed. in reading meets the requirements for reading specialist certification. Students desiring reading specialist certification without the degree must complete the following sequence of courses:

Total		18 credits
ED 561 :	Teaching Reading in the Elementary School.	3 s.h.
ED 562:	Teaching Reading in the Content Areas	3 s.h.
ED 569:	Reading Evaluation.	3 s.h.
ED 570:	Practicum I: Analysis	3 s.h.
ED 571:	Practicum II: Correction.	3 s.h.
ED 576:	Advanced Seminar in Reading	3 s.h.

Placement

Typically, persons enrolling in the graduate program are already involved in professional careers that are being enhanced by the graduate studies. For those persons who are without career placement, the faculty and the university Career Services can provide assistance in seeking appropriate employment. Students should register with Career Service before graduation.

Graduate Assistantships

A limited number of graduate assistantships are granted for 20 hours of departmental service per week in exchange for a waiver of tuition and a stipend. Applications are available in the Department of Education office and should be submitted to the department chair as soon as the student has been admitted to the graduate program.

Advisement

Upon acceptance into the graduate program, students will be assigned a department advisor who is qualified to assist the student in his or her specific career goals. The responsibility for meeting all stated requirements for the master’s degree, however, is with the student.

Education Courses

- ECH 401: CREATIVE RESPONSE TO CONFLICT** 3 s.h.
A study of the current research in the development of a classroom environment which fosters cooperation, communication, affirmation, and problem-solving for children as well as for teachers, staff, instructional teams, parents, support personnel, and other adults. Emphasis on human capabilities for resolving conflicts at various life stages and situations. Examination of a range of discipline models as their implementation relates to the classroom environment. (This course is designed to be taken in conjunction with student teaching in the undergraduate program, or as an elective in the master's program.) Prerequisite: ED 121. Each semester.
- ECH 420: INCIDENTAL LEARNING** 3 s.h.
The course examines incidental learning gained by young children through their interactions with the people and products of their society's major institutions. It asks such questions as these: How do children learn as incidental by-products of these interactions; how can teachers, for example, plan encounters (with people, materials, and environments) so that the encounters contribute to children's learning goals rather than subvert them. Prerequisite: ED 121. Each semester.
- ED 403: FIELD EXPERIENCE AND METHODS IN ENVIRONMENTAL EDUCATION** 3 s.h.
This course focuses on methods used to teach environmental knowledge, concepts, and concerns, including the history and research in environmental education. The relationship of all curriculum areas to environmental education is examined and practiced. The course may be taken for graduate credit with the approval of the Education Department chair and the instructor. Offered for two weeks at a time between the end of the Spring Semester and the beginning of regular summer school only. McKeever Center in Sandy Lake, PA, will be utilized for presentation of this course.
- ED 414: VOLUNTEERS FOR LITERACY** 3 s.h.
This course enables student volunteers to teach in literacy programs aimed at adult and secondary school learners in different settings. Basic methods for instruction in vocabulary, comprehension, study skills, and writing are integrated with the aim of fostering an appreciation for reading.
- ED 418: EXCEPTIONALITIES IN THE REGULAR CLASSROOM** 3 s.h.
This course is designed to prepare students to deal with the nature and needs of the exceptional person in a regular classroom. Contemporary methods of identification, services for the exceptional individual, and legal aspects of the least restrictive environment are examined. Each semester.
- ED 517: EDUCATIONAL COMPUTER APPLICATIONS** 3 s.h.
This course is designed to provide in-service educators (K-12) who have had little or no computer experience with the knowledge, skills, and attitudes necessary to use microcomputers as instructional tools in their classrooms. While acquiring computer skills, students will explore, use, and demonstrate competence in each of the following areas: word processing, databases, spreadsheets, graphics, multimedia, instructional design, telecommunications, and major issues associated with the use of technology in education. This course will provide in-service teachers with the knowledge base to make appropriate decisions regarding the use of technology in their respective classrooms. Not available to students who have taken ED 217 since summer 1994. On demand.
- ED 520: INTRODUCTION TO RESEARCH** 3 s.h.
This seminar course covers the selection, investigation, and writing of a research topic. Students are introduced to the planning of research projects, major methods of obtaining data descriptive statistics, statistical inferences, methods of analysis and critical evaluation of published research, and the preparation of written reports. Proposed research problems and procedures are prepared for discussion and critical analysis.
- ED 521: INSTRUCTIONAL LEADERSHIP SKILLS** 3 s.h.
This course involves a survey of various theories, models, and styles of leadership, followed by the application of leadership skills in teacher-pupil and teacher-colleague relationships.
- ED 522: ANALYSIS OF TEACHING** 3 s.h.
This course presents an analysis of various teaching models and instructional designs. Videotaped lessons and clinical/field experiences applying course competencies will be critiqued by faculty and peers.
- ED 523: CURRICULUM DEVELOPMENT AND EVALUATION** 3 s.h.
This course will focus on the processes of developing and evaluating school curriculum K-12. Practical application experiences with curriculum models and management systems will be included.
- ED 526: SOCIOLOGY OF EDUCATION** 3 s.h.
This course is an analysis of the public school as an institution in modern societies and its operation in complex social structures. The course draws upon the science of sociology and other social fields to explain the operation of the school as one of the social systems which operate to influence the development of people in becoming efficient and cooperative members of society.
- ED 533: RECENT DEVELOPMENTS IN ELEMENTARY SOCIAL STUDIES** 3 s.h.
Students explore recent trends in promoting learning in the social studies as well as study current problems involved. Social forces at work today and their effect on curriculum development are considered.

- ED 534: WORKSHOP IN EDUCATION 3 s.h.**
The workshop provides opportunities for in-service teachers to encounter new ideas, knowledge, and methods in meeting problems in today's schools. Prerequisite: Teaching experience in the elementary or secondary schools.
- ED 537: STRATEGIES AND PROBLEMS OF TEACHING ELEMENTARY SCHOOL MATHEMATICS 3 s.h.**
This course deals with recent trends and methods of teaching mathematical concepts and skills appropriate to the elementary grade level. Particular attention is given to diagnostic procedures and to a "hands-on" laboratory approach. Classes are conducted in a well-equipped elementary mathematics laboratory. Recent research which applies to the teaching and learning of mathematical skills and concepts is considered.
- ED 538: GUIDANCE OF ELEMENTARY SCHOOL CHILDREN 3 s.h.**
This course addresses guidance problems arising in the elementary school and principles and techniques applicable to their solution, and the role of the classroom teacher in providing services to pupils and parents are studied.
- ED 541: RECENT TRENDS IN LANGUAGE ARTS 3 s.h.**
This course presents a study of trends, problems, and recent research findings as they relate to the improvement of instructional practices in areas of the language arts other than reading.
- ED 542: SEMINAR IN CHILDREN'S LITERATURE 3 s.h.**
This seminar is an intensive study of various genres of children's literature, with emphasis upon correlating books that appeal to the interests of boys and girls into study units. A study of storytelling techniques and other literature sharing methods are included. Prerequisite: ELED 331 or LS 358.
- ED 546: READING AND LANGUAGE ARTS IN EARLY CHILDHOOD 3 s.h.**
Study and observation of the child's early reading behavior during early childhood and observation of other aspects of language arts; exercises for listening experiences and developing writing skills; assessment of some of the causes of difficulties in learning to read and to use language effectively.
- ED 561: TEACHING READING IN THE ELEMENTARY SCHOOL 3 s.h.**
Students will define and investigate reading as related to the individual learner. Study is made of the current research into sequential and systematic skill development and the application of multidimensional techniques, methods, and materials in the teaching of reading.
- ED 562: TEACHING READING IN THE CONTENT AREAS 3 s.h.**
Planning and implementation of reading instruction across the curriculum in K-12 program. Assessment of needs, materials, and methods for content area teaching.
- ED 567: SECONDARY, COLLEGE, AND ADULT READING INSTRUCTION 3 s.h.**
Survey of the reading programs and principles at the secondary and post-secondary levels; study of developmental characteristics, identification and assessment of learners' needs; examination of materials and strategies for various instructional settings and populations. Prerequisite: ED 561 or ED 562 or consent of instructor.
- ED 569: READING EVALUATION 3 s.h.**
Develops sensitivity in evaluation through analysis of testing devices; utility of tests (purpose-outcomes), characteristics of effective test administration, analytical-interpretation aimed toward synthetic integration to test results. Introduction of case method. Prerequisite: ED 561 or ED 562.
- ED 570: PRACTICUM 1: ANALYSIS 3 s.h.**
The investigation of an individual's background to determine possible causal factors for underachievement in reading through (1) the selection and administration of appropriate diagnostic instruments, and (2) a sensitive interpretation of the cumulative results. Prerequisite: ED 569 and permission of the instructor.
- ED 571: PRACTICUM II: CORRECTION 3 s.h.**
The emphasis in this course is the development of competency in correcting reading problems. The work includes (1) learning the techniques and methods of corrective instruction, (2) developing expertise in using materials related to the immediate needs of individuals, and (3) preparing a clinical case study which suggests to public schools and other agencies the post-clinic procedures to use in a student's academic progress. Prerequisite: ED 570 and permission of the instructor.
- ED 574: READING PROGRAM ORGANIZATION, ADMINISTRATION, AND SUPERVISION 3 s.h.**
The organization, administration, and supervision of reading programs from kindergarten through high school. Particular emphasis is given to the functions of a reading specialist and development of a curriculum guide for reading, organizational patterns in reading programs, and procedures for instituting and operating in-service reading education programs. Prerequisite: Administrative experience or two reading courses.
- ED 576: ADVANCED SEMINAR IN READING 3 s.h.**
The study and evaluation of research and current reports on reading education issues. Prerequisite: ED 570 and ED 571.
- ED 599: SPECIAL TOPICS IN EDUCATION I-3 s.h.**
Examines current topics and issues in education. Topics, which will be announced in advance, will focus on the needs and interests of in-service educators.

ED 600: RESEARCH 3-6 s.h.

ED 617: ADVANCED EDUCATIONAL TECHNOLOGY 3 s.h.

This course is an advanced course for graduate students who have a background in computers or who have taken ED 217 or ED 517 at Clarion University. The focus of this course is the development of knowledge and skills in the following topics: hardware/software maintenance; instructional design; educational electronic networking; sophisticated applications of integrated software; and educational applications of multimedia, including interactive video CD-ROM, sound, text, and graphics. This course will focus on preparing teachers to make appropriate decisions regarding the use of technology in their classrooms/schools. Admission by permission of instructor. On demand.

ED 700: THESIS 3-6 s.h.

Master of Arts in English

College of Arts and Sciences

Graduate Faculty

Professors: T. Caesar, L. Dennis, D. Fink K. Graham, E. Grejda D. **Sheraw**, R. Shumaker, D. Wilson; **Associate Professors:** L. Green, J. Huber, R. Leary, H. Newman, G. Xu; **Assistant Professors:** J. Bodziock, C. Ferry, H. Luthin, E. MacDaniel, P. Terman, K. Smith

Program Objectives

The Master of Arts program in English provides students with a broad background in many areas of English studies and the opportunity to examine areas of particular interest in more depth. The required courses ensure that students will experience several modes of thinking and be engaged in significant encounters with literature, critical theory, composition theory and practices, and linguistics. Elective courses allow the students to pursue some of their own interests, while the seminar papers the students write in preparation for their comprehensive exam enable students to engage in independent research on topics of their own choosing. Throughout the process, students are able to draw on the guidance and the expertise of the graduate faculty to assist them in course work and in independent research.

This program is suitable for those who wish to prepare for Ph.D. programs, for those who seek the M.A. as a terminal degree, and for teachers who require work beyond the bachelor's degree for the purpose of permanent certification or other job requirements.

Admission Requirements

College of Graduate Studies admission requirements apply with the following addition:

- Applicants must submit their Graduate Record Exam (GRE) general test scores.

Requirements for Graduation

To successfully complete the M.A. program in English, the student must:

- complete 31 credit hours, at least 25 of which must be earned from 500-level courses. Sixteen of the 31 credit hours constitute required course work, while 15 elective credits allow for greater flexibility in appealing to the goals and interests of the student.

Distribution of Required Courses

ENG	501:	Introduction to Graduate Studies in English	.1	s.h.
ENG	509:	Seminar in Literary Theory	.3	s.h.
ENG	510:	Seminar in English Literature.	.3	s.h.
ENG	511:	Seminar in American Literature.	.3	s.h.
ENG	520:	Seminar in Writing: Theory and Research	.3	s.h.
ENG	530:	Seminar in Linguistics	.3	s.h.

Elective Courses

Students may take as electives any of the 500-level courses offered in the department and up to two 400-level courses chosen from among the following:

ENG	401:	Chaucer
ENG	412:	Shakespeare: Comedies and Histories
ENG	413:	Shakespeare: Tragedies and Romances
ENG	457:	Introduction to Linguistics
ENG	458:	History of the English Language
ENG	459:	Language Acquisition Across Cultures
ENG	482:	Composition: Theory and Practice

- Complete three seminar papers on topics of the student's choosing. While these papers are usually, but not always, based on papers written in courses, the student is expected to research and examine the issues involved more fully. Each of these papers is written under the direction of a different faculty member who must approve the paper before the student is allowed to take the comprehensive exam. Since these papers will represent the culmination of the student's work in the M.S. program, it is expected that they approach or attain the standards of professional papers. A creative written work or portfolio of shorter creative pieces may be submitted as one of these papers.
- Successfully complete the oral comprehensive examination. The examination is based upon the **seminar papers** and their **critical** contexts. The examiners will consist of the three faculty members to whom the seminar papers were submitted. The student is responsible for and may be questioned on the paper and the research involved in the writing of the paper.

Graduate Assistantships

Graduate assistants are given a variety of assignments and experiences useful for personal as well as professional development. Assistants gain valuable one-to-one tutorial experience in working at The Write Place, Clarion University's writing center. Assistants gain valuable computer experience as well as more tutorial opportunities in working at Clarion University's Word Processing Lab.

Assistants are also eligible to take part in our mentoring program, which affords students the opportunity to work directly with a composition instructor assisting in small group activity and teaching classes under the supervision of the instructor.

Applicants applying for a graduate assistantship in the English Department must include an additional letter to the department expressing their interest in an assistantship and outlining their qualifications. Applicants are also advised to request that at least one of the people who writes a **letter of** recommendation speak to the applicant's ability to tutor writing in a college setting.

English Courses

ENG 401:	CHAUCER	3 s.h.
Studies in Middle English of Chaucer's early poems, <i>Troilus and Criseyde</i> , and the <i>Canterbury Tales</i> . Fall, even-numbered years.		
ENG 412:	SHAKESPEARE: COMEDIES AND HISTORIES	3 s.h.
Provides study and discussion of problems of style, characterization, and motivation in Shakespeare's experimental and maturing comedies, chronicle and Roman plays, and tragedies. Plays to be selected from the first two periods of Shakespeare's creative productions. Fall, annually.		
ENG 413:	SHAKESPEARE: TRAGEDIES AND ROMANCES	3 s.h.
Provides study and discussion of problems of style, characterization, and motivation in Shakespeare's mature comedies, Roman plays, tragedies, and romances. Plays to be selected from the last two periods of Shakespeare's creative production. Spring, annually.		

- ENG 457: INTRODUCTION TO LINGUISTICS** 3 s.h.
Presents key concepts and basic analytical procedures common to many contemporary linguistic theories. Areas covered in detail include phonetics and phonology, morphology, and syntax. Attention is paid to the integration of these sub-systems in the overall design of a generative grammar. Prerequisite: ENG 262. Fall, annually.
- ENG 458: HISTORY OF THE ENGLISH LANGUAGE** 3 s.h.
Provides a study of the history of the language, including its origins and changes in structure, usage, pronunciation, spelling, vocabulary, and meaning. Intensive readings in Old and Middle English. Spring, even-numbered years.
- ENG 459: LANGUAGE ACQUISITION ACROSS CULTURES** 3 s.h.
Introduces current research in first and second language acquisition with an emphasis on the preparation of classroom teachers and other professionals to work with **children/adults** coming from homes in which languages other than English are spoken. Prerequisite: ENG 262 recommended but not required.
- ENG 482: COMPOSITION: THEORY AND PRACTICE** 3 s.h.
Provides a systematic study of **theory**, and practice in the teaching of composition, conducted through workshop methods. The course requires extensive writing and a major written project. Prerequisites: secondary education majors in English must have completed ENG 111, 200, or 301 and have taken or be taking their methods course; others by permission of the instructor. Fall, annually.
- ENG 501: INTRODUCTION TO ENGLISH STUDIES** 1 s.h.
An introduction to the strategies of graduate and professional discourse in English studies. The course **also** includes an introduction to bibliographic and library **resources** in the field. One hour weekly, in the first semester of graduate work, by **arrangement** with the director of graduate studies.
- ENG 509: SEMINAR IN LITERARY THEORY** 3 s.h.
A seminar on general and/or selected theoretical issues implicit in the reading of literary texts. Depending upon the instructor, the course may cover broad matters of interpretation (authorial intention, the reader's share, intertextuality), focus on more specific theories of reading (reader-response, Phenomenology, post **structuralism**), or consider the conceptual foundations of certain literary structures (**narrative**, genre, tropes).
- ENG 510: SEMINAR IN ENGLISH LITERATURE** 3 s.h.
This course provides students with critical strategies to apply to specific periods, figures, or problems in English literature. This course may be taken more than once if the course content is different.
- ENG 511: SEMINAR IN AMERICAN LITERATURE** 3 s.h.
This course provides students with critical strategies to apply to specific periods, figures, or problems in American literature. This course may be taken more than once if the course content is different.
- ENG 512: SEMINAR IN LITERARY STUDIES** 3 s.h.
This seminar encompasses topics that combine English, American, and other literatures in a critical discourse. Topics may include ethnic, non-canonical, and comparative literature. Studies in the novel, **drama**, and the satire may be subjects of this seminar. This course may be taken more than once if the course content is different.
- ENG 515: SEMINAR IN FILM** 3 s.h.
Film language views movies as a discourse medium, using a variety of formal structures: montage, mise-en-scene, and narrative and non-narrative patterns. These grammatical and rhetorical elements will be studied as they structure representative movie texts. Specific theories of film will **also** be reviewed.
- ENG 520: SEMINAR IN WRITING: THEORY AND RESEARCH** 3 s.h.
Seminar in Writing explores important movements in rhetorical theory and recent trends in research as conceptually applied to writing, education, and related fields. Students study major theories about the nature of writing and scientific inquiry into it.
- ENG 521: SEMINAR IN COMPOSITION STUDIES** 3 s.h.
Seminar in Composition Studies, which builds on the classroom practices presented in ENG 520, examines recent issues and innovations in writing with emphasis on the specialties of writing. Topics may include: the composing process, computers in composition, evaluation, writing across the curriculum, or critical thinking and writing.
- ENG 522: PRACTICUM IN COLLEGE TEACHING** 3 s.h.
This **course** introduces prospective composition instructors to the principles and practices of teaching at the college or university levels and provides a **forum** for discussing those ideas. Students will observe composition classes, draft syllabi, and develop, sequence, and test writing assignments. Emphasis is **placed** on diagnosing writing weaknesses, responding to writing, and evaluating it.
- ENG 523: INTERNSHIP IN WRITING** 3 s.h.
Interns receive tutorial, promotional, educational, organizational, or technical writing experience in university or other professional settings. This course provides for writing and editing tasks appropriate to the unit or organization. Some administrative and research work may be involved. (No more than 6 credits may be taken from ENG 523 and ENG 522 combined.)

ENG 530: SEMINAR IN LINGUISTICS 3 s.h.
 A study of the philosophical basis of present day generative-transformational theory and its relationship to language acquisition and semantics.

ENG 531: SEMINAR IN HISTORY OF THE ENGLISH LANGUAGE 3 s.h.
 Advanced study in historical linguistics. The development of the English language is reviewed toward supporting study and analysis of original historical texts in the English language. Students may elect a general approach or focus on a specific historical period.

ENG 534: WORKSHOPS IN ENGLISH 1-3 s.h.

ENG 540: INDEPENDENT STUDY 1-3 s.h.

Master of Science in Library Science

College of Communication, Computer Information Science,
and Library Science

Department of Library Science

Graduate Faculty

Professors: A. Garnaluddin, R. Karp, B. Vavrek; **Associate Professors:** J. Head, M. Jetter; **Assistant Professors:** W. Buchanan, J. Maccaferri; **Instructor:** A. Miller

Program Objectives

The graduate program in library science provides professional study encompassing the principles and techniques common to all types of libraries and information centers with the opportunity for advanced work in areas of special interest. The curriculum reflects today's applications of information science and library technology with society.

The master's program at Clarion University was initiated in 1967 and has the distinction of being the first graduate library science program offered within the State System of Higher Education. The program is accredited by the American Library Association.

Admission Requirements

Eligibility

College of Graduate Studies admission requirements apply with the following additions:

- Applicants for the Master of Science in Library Science degree must have a baccalaureate degree from a regionally accredited institution with a grade-point average of at least a 3.00 on a 4.00 scale.
- An acceptable score on the Miller Analogies Test or the Aptitude Section of the Graduate Record Examination may be considered in the event that the 3.00 requirement has not been met. At least 65 hours should be in liberal arts. Applicants without this background may be advised to take liberal arts courses on the graduate level. These courses may be counted toward the M.S.L.S. degree at the discretion of the advisor and the dean.
- Students are encouraged to begin their graduate program in the summer or Fall Semester.
- *International students are required to achieve a minimum score of 550 on the TOEFL.*

Procedure

Students should begin their graduate program in the summer or Fall Semester. Students wishing to begin their studies in the Spring Semester must obtain special permission from the library science graduate faculty.

Transfer of Credits/Waiver of Courses

A maximum of six graduate semester hours may be transferred and/or waived in any of the following ways:

- . Acceptable graduate credits in library science completed at Clarion University as a non-degree student or at another institution with an ALA accredited program may be **transferred** and applied toward the master's degree. The student is responsible for filing an official graduate transcript of any work presented for transfer credit with the director of the Department of Library Science.
- . Graduate credit in related disciplines may be transferred upon prior approval by advisor and director.
- . Students who have had library experience duplicating the subject matter covered in the required courses may be permitted to take a qualifying examination to determine whether he or she might waive the course(s) and substitute elective courses. Qualifying examinations may be waived at the director's discretion.

Degree Requirements

The degree of Master of Science in Library Science is conferred upon the candidate who has met the following requirements:

- . The completion of 36 hours of approved graduate study, including these required courses: LS 500, 501, 502, 550, 553, and 561 and six elective courses.
- The maintenance of a cumulative average of B or higher. A student who receives a grade of less than a B in two courses is disqualified as a candidate in the degree program unless special permission to continue is obtained from the dean of the College of Communication, Computer Information Science, and Library Science.
- . The completion of all degree requirements within a six-year period. Course work over six years old is not eligible for completion.

The Master of Science in Library Science Degree with Pennsylvania School Library Media Certification

A student wishing to meet Pennsylvania School Library Media Certification, K- 12, must hold a valid teaching certificate; complete 36 semester hours of an approved curriculum in library science; and complete six semester hours of internship in a school library media center.

Required courses for the Master of Science in Library Science degree with Pennsylvania school library media certification include: LS 500,501,502,550,553, 555/577, 459g, 490g, 561,583, 567/568157 1, and 565.

Graduate Assistantships and Scholarships

The Department of Library Science has available a number of assistantships and scholarships. For more information concerning assistantships, refer to the general information section of this catalog, and for information concerning a library science scholarship, contact the Department of Library Science. Applications for either may be obtained from the Department of Library Science.

Additional information on financial aid maybe obtained from the booklet, *Financial Aid Assistance for Library Education*, published by ALA.

Advisement

A form for selection of an advisor is provided for each student at the time of acceptance into the program. The student should select an advisor having expertise and experience in the student's area of interest. The student receives guidance and counsel prior to registration and at any other time he or she may desire.

Internship

The internship enables a student to anticipate the librarian's professional role and to gain dated experience. The major purpose of this course is to familiarize the student with practical problems in the field by providing laboratory experience in the professional atmosphere of a cooperating library or information center.

Each student's internship is an individual experience. The student proposes a set of objectives that he or she plans to achieve through the internship. These objectives, stated behaviorally, are discussed by the student, the faculty member responsible for the internship program, and the cooperating librarian to whom the student has been assigned. Once these objectives are finalized, the student is evaluated on the degree to which the objectives have been achieved and the process leading to the realization of the objectives. There is a periodic review of each student's objectives.

Certificate of Advanced Studies

The Certificate of Advanced Studies program is designed to provide the post-M.S.L.S. student an opportunity to expand and update professional skills and competencies through a structured pattern of continuing education. Study may be either full- or part-time. On a full-time basis, the certificate can be completed in two semesters. Requirements include a written statement of personal/professional goals, completion of a program of 24 graduate credits within a four-year period, and maintenance of a 3.00 (B) quality-point average.

Documentation required for admission includes the goals statement, an official transcript from the school which granted the master's degree in library science, completed recommendation forms and university application, and the \$25 application fee. Further information and requirements are available from the Department of Library Science.

Resources and Facilities

The Department of Library Science is located in the same **building** as Carlson Library. The department's suite of offices, classrooms, and laboratories is designed to accommodate a variety of activities for students and faculty within the immediate area. The Carlson Library complex includes an Instructional Materials Center and a collection of juvenile books and curriculum materials for library science study in addition to the usual reference, periodical, and circulating collections.

Library science classrooms are equipped with the appropriate audiovisual equipment, terminals, media and computer equipment. Available for instructor and student use within the library science complex are various types of audiovisual equipment, on-line terminals, a cataloging laboratory with OCLC terminals, and microcomputers.

Center for the Study of Rural Librarianship

The Department of Library Science is dedicated to addressing the information needs of the constituencies of all types of libraries, large and small. The Center for the Study of Rural Librarianship was organized in recognition of this need. "Rural" is defined by the center as a population of 25,000 or fewer. The center has developed out of a particular concern for library services apart from areas influenced by metropolitan library systems, i.e., the small library in the rural context. Public, school, academic, and special or corporate libraries are all within the interests of the center. Further, library systems or networks which include the small library are included in the center's work.

The activities of the center are varied. They include hosting of national conferences and regional workshops, e.g., 'Public School Library Cooperation,' sponsored by a grant from the H.W. Wilson Foundation. **Research** on rural library problems, a primary concern of the center, is an ongoing pursuit. At present, an investigation is being conducted to determine the information needs of individuals served by rural libraries in Pennsylvania and other states.

The center supports a publication program which includes a biennial journal, *Rural Libraries*, the only one that is currently being published in the area of rural librarianship.

Beta Phi Mu International Library Science Honor Society

Beta Phi Mu was founded in August 1948 at the University of Illinois by a group of leading librarians and library educators. The motto of the society is "Aliis Inserviendo Consumor," which reflects the dedication that librarians must possess toward service to others if books are to become instruments of liberal education.

Beta Phi Mu approved a chapter at Clarion in August 1978. The chapter, Beta **Sigma**, was installed and the first members were initiated in spring 1980. Membership in this international society is granted to a graduate of a library school program accredited by the American Library Association who has earned a 3.75 scholastic average on a 4.00 scale and has been recommended by the library school faculty. The faculty recommendation attests to the candidate's professional competence and promise. At present, the local chapter is permitted to grant membership to only 25 percent of the graduating class each year. At present, there are over 13,000 graduates of accredited library schools in the United States, Canada, and the United Kingdom who have been initiated into the society.

Career Outlook

Prospects for the future can be good for well-prepared new graduates guided by creative faculty advisors. Employment opportunities vary according to the type of library, educational qualifications, and the areas of specialization of the individual preparing to enter the profession. The librarian who is flexible with respect to geographic area and willing to meet the challenge of serving special groups will have especially good opportunities for employment.

Placement Service

Clarion University of Pennsylvania and the Department of Library Science assist both students and alumni in obtaining positions in libraries and related agencies by acting as a clearinghouse for current job information, by posting vacancy announcements, and by sending references upon request to prospective employers. Official academic transcripts, however, must be requested by the student from the university registrar.

The Office of Career Services provides assistance to all graduates by maintaining a file of vacancy notices received from public schools, government agencies, business, and industry. Placement credentials are prepared and distributed, upon request to prospective employers to support the candidacy of registrants.

Library Science Courses

- LS 432: COLLOQUIUM** 0 s.h.
Lectures, discussions, multi-media presentations given by guest speakers, faculty, and others. Reinforces concepts presented in course studies and provides the student with insight into the trends and issues of the profession.
- LS 459g: MEDIA, METHODS, AND THE CURRICULUM** 3 s.h.
Planning for the effective use of school library media services in cooperation with the instructional staff. Examination of school library media philosophies and educational objectives. Development of a library media program. Examines the librarian's role in designing curriculum, in developing teaching-learning strategies, and in working with teachers, students and administrators. Prerequisites: LS 555 or 577, 583,490, and 565.
- LS 490g: LIBRARY MATERIALS AND SERVICES FOR EXCEPTIONAL STUDENTS** 3 s.h.
An opportunity for library science students to explore the unique characteristics and instructional needs of exceptional students who use the school library in order to develop collections of materials and to design programs of services to accommodate those needs. The role of bibliotherapeutic techniques will be investigated to determine their validity for the exceptional student.
- LS 500: INFORMATION SOURCES AND SERVICES** 3 s.h.
Philosophy and techniques of information services in libraries, with the sources, tools, and technology essential to the reference process. Specific reference problems and research studies, the reference interview, and search strategies are considered. Recommended as an elective for non-library science students in other graduate programs.
- LS 501: DEVELOPING LIBRARY COLLECTIONS** 3 s.h.
Acquiring familiarity with basic bibliographical tools, current reviewing media, and acquisitions procedures. Establishment of policies and criteria for the selection and evaluation of book and non-book materials.
- LS 502: CATALOGING AND CLASSIFICATION** 3 s.h.
Principles of the organization of book and non-book materials. Descriptive cataloging and determination of main entry through the use of the ACC rules. The structure and application of the Dewey Decimal Classification, the Library of Congress Classification, and standard subject authority lists. The use of printed cards and on-line cataloging (OCLC). The study of tiling roles and the structure of library catalogs.
- LS 540: MULTICULTURAL LIBRARY SERVICES AND SOURCES** 3 s.h.
An opportunity for students to explore, understand, and develop library resources and services for multicultural, diverse, and disabled populations. Library resources and services are examined particularly as they relate to ethnicity, race, gender, gender preference, and disability. No prerequisites.
- LS 550: INTRODUCTION TO RESEARCH IN LIBRARY SCIENCE** 3 s.h.
Study of the scientific methods of planning, conducting, and reporting investigation and research in library science, including specific problems in library service. Critical analysis of research in professional literature. Designed to develop skill in interpreting research results.
- LS 551: STORYTELLING** 3 s.h.
Study of the heritage and art of traditional storytelling, the literary sources for contemporary storytelling, and the techniques for preparing and presenting story programs. Consideration will be given to multi-media storytelling, including puppetry. Students will present stories in class and in the community. Prerequisite: LS 577 (or equivalent). Open to M. Ed. candidates by permission from the instructor.
- LS 552: ADVANCED CATALOGING AND CLASSIFICATION** 3 s.h.
Comparison of classification schemes. Handling special problems in the cataloging of resources. Emphasis on Library of Congress Classification and subject headings. Opportunities to use the OCLC terminal. Prerequisite: LS 502.
- LS 553: MANAGEMENT OF LIBRARIES** 3 s.h.
Problems of organization, budget, personnel management. Architectural design, with emphasis on the relationship of physical structure to library function. Study of standards for evaluating library services.
- LS 555: HISTORY OF CHILDREN'S LITERATURE** 3 s.h.
Survey of the history and development of children's literature from the Anglo-Saxon period in England through the nineteenth century. Open to M. Ed. degree candidates by permission from the instructor.
- LS 556: BIBLIOGRAPHY OF THE SCIENCES** 3 s.h.
Survey of the literature of science, introducing modern concepts and representative works in the major fields of the pure and applied sciences. Includes special reference and audiovisual materials and periodicals. Prerequisite: LS 500.

- LS 557: BIBLIOGRAPHY OF THE SOCIAL SCIENCES 3 s.h.**
Survey of the literature in major areas of the social sciences, including special reference books, pertinent government documents, periodicals, and audiovisual materials. Fields: anthropology, business, education, economics, geography, history, political science, psychology, sociology. Prerequisite: LS 500.
- LS 558: BIBLIOGRAPHY OF THE HUMANITIES 3 s.h.**
Survey of the literature in major divisions of the humanities, including bibliographical and reference materials, audiovisual media, periodicals, standard sources, and current materials. Fields: art, literature, music, philosophy, religion. prerequisite: LS 500.
- LS 559: BIBLIOGRAPHIC INSTRUCTION 3 s.h.**
Study of the development research, and theory of bibliographic instruction, including pedagogical techniques, instructional design, teaching effectiveness, marketing strategies, and the impact and utilization of technology. Includes the modeling of effective teaching techniques with the objective of designing and implementing bibliographic instruction units to meet the needs of specific patron groups in a variety of library settings. Prerequisite: LS 500.
- LS 561: INFORMATION STORAGE AND RETRIEVAL 3 s.h.**
Introduces the history and concepts of library and information science. Covers the study of information, bibliometrics, and the development and characteristics of information systems used by librarians. Includes different methods of indexing and different search capabilities in both manual and automated information systems. The course includes an introduction to the fundamentals underlying library-related, computer-based information systems.
- LS 562: GOVERNMENT DOCUMENTS 3 s.h.**
Study and evaluation of selected federal, state, and municipal documents, foreign government publications, and the United Nations. The nature of documents, their reference and research value; the techniques of acquisition, organization, and bibliographic control; on-line commercial and government data bases. Prerequisites: LS 500, 502.
- LS 565: NONBOOK RESOURCES 3 s.h.**
Selection, acquisition, organization, storage, and maintenance of nonbook materials of all formats in libraries and system-wide centers. Sample materials are previewed, evaluated, and used for programming and instruction.
- LS 567: THE LIBRARY AND SOCIETY 3 s.h.**
Study of the historical development of the library, function of the modern library in society; current trends in librarianship, information sciences, library literature, and implications for future service.
- LS 568: HISTORY OF BOOKS AND PRINTING 3 s.h.**
Study of the evolution of the printed book through a survey of the origin of recorded communication; history of writing materials; study of manuscript production, typography, type design, illustration, bookbinding, book production, and copyright from the earliest times to the present.
- LS 569: TECHNICAL SERVICES 3 s.h.**
Introduction to the historical development and current trends of technical services; management and systems involved in the operation/automation of a technical services department (acquisitions, serials control, charging systems, cataloging, and classification). Prerequisites: LS 501, 502.
- LS 570/770: INTERNSHIP IN LIBRARIANSHIP 3-6 s.h.**
Provides a laboratory experience in the professional atmosphere of a cooperating library or information center. Evaluation is based on observation, participation, and responsibility for assigned activities. Supervision, seminar meetings, and an evaluative report are required. By permission of the instructor. LS 770 is a *required course for Pennsylvania certification in the area of library media*.
- LS 571: INTERNATIONAL LIBRARIANSHIP 3 s.h.**
Study of libraries and librarianship in selected countries, with emphasis on library education as related to culture, technological advances, and global politics. Considers the role of professional organizations and the impact of worldwide library education.
- LS 573: LIBRARY AUTOMATION 3 s.h.**
Survey of library automation; the application of computers to library technical and administrative processes. The state of the art; case studies of automation projects; systems analysis; design of library automation projects.
- LS 574: DATABASE SEARCHING 3 s.h.**
General introduction to interactive database searching, including database producers, search system vendors, management of search services, search strategy, boolean searching, structure and indexing of computer stored files. The course includes historical and background information. Greatest emphasis is on becoming a proficient searcher.
- LS 575: INFORMATION SYSTEMS 3 s.h.**
Seminar approach is used to allow students to examine topics of interest in the information systems field, culminating in the preparation of a term project such as a literature survey, the design of a computer program, or other topics appropriate to the course of studies.
- LS 576: SPECIAL TOPIC IN LIBRARIANSHIP 3 s.h.**
In-depth discussion, study, and research of a topic related to the role of the library in responding to social issues, service to special groups, or problem areas. The following represent typical offerings: (1) Bibliotherapy; (2) Microcomputers in Libraries; (3) Library Services for the Gifted; (4) Media and Minorities; (5) Oral History; (6) Connectivity: Understanding the information infrastructure. Prerequisites: LS 500, 501, 502. equivalent or permission of the instructor. A maximum of six credit hours may be applied toward graduation.

- LS 577: LIBRARIES, LITERATURE AND THE CHILD** 3 s.h.
Opportunity for **graduate students** to investigate (1) the nature of children's literature; the utilization of **children's** literature in school, public and special library settings; (3) trends in children's literature as a part of the total body of literature and as an educational force; and (4) current research in the field. Not open to students who have taken LS 358 for graduate credit.
- LS 578: THE PUBLIC LIBRARY IN RURAL AMERICA** 3 s.h.
Introduction to the public library in the United States, with special concern for the small rural library. **Particular** emphasis on the problems and limitations of such libraries and approaches for overcoming them.
- LS 580: LIBRARY MARKETING AND THE COMMUNITY** 3 s.h.
Addresses the following aspects of successful community analysis and marketing of library services: the current and potential library users; their specific **informational** needs; and how **can** the library provide adequate service.
- LS 581: SEMINAR IN PROBLEMS OF RURAL LIBRARY SERVICES** 3 s.h.
Problem **analysis** approach to providing services to rural populations by school, public, academic, and other libraries. Examines networking, technology, funding, governmental regulations, etc., as they relate to rural library services. Prerequisites: LS 550,553.
- LS 582: SERIALS** 3 s.h.
Organization and management of serial publications: includes the **format**, selection, bibliographic control (manual and mechanized), and presentation techniques; the selection of jobbers and the services they offer. Prerequisites: LS 501,502.
- LS 583: LIBRARIES, LITERATURE, AND THE ADOLESCENT** 3 s.h.
Examination of the roles of the public librarian and the school library media specialist in program development for the adolescent. Includes a study of adolescent literature and the trends affecting its development: problems and techniques used in providing reading guidance; and the characteristics of the contemporary adolescent. Not open to students who have taken LS 356 for graduate credit.
- LS 584: AUTOMATED BIBLIOGRAPHIC CONTROL** 3 s.h.
Incorporates theory and practice of automated bibliographic control as applied to acquisitions, cataloging, interlibrary loan, and **serials control**. The course includes an orientation to the major bibliographic utilities, including OCLC, and to selected CD-ROM products. Both the technical and managerial aspects of automated bibliographic control are covered. Prerequisite: LS 502.
- LS 585: MICROCOMPUTERS IN LIBRARIES** 3 s.h.
This course is concerned with the concepts and uses of microcomputer technology, including LANs and CD-ROM LANs, in all types of **libraries**. Emphasis is on hardware and **software** applications as they relate to library functions, e.g., data management and information services.
- LS 587: INDEXING AND ABSTRACTING** 3 s.h.
In-depth survey and hands-on development of documents surrogates, including **annotations**, abstracts, precis, and other forms of indexing.
- LS 588: PRESERVATION AND CONSERVATION OF LIBRARY MATERIALS** 3 s.h.
Survey of preservation and conservation activities in libraries and information centers, including disaster planning, environmental factors, treatment of brittle books, library binding, special problems of non-book materials, and basic conservation treatments. Prerequisites: LS 501 or permission of instructor.
- LS 591: BUSINESS REFERENCE SOURCES AND SERVICES** 3 s.h.
Survey of the literature and services which would be expected in a business library or department of business information. Includes an in-depth examination of major business reference tools, as well as **in-depth** examination of the special operations, organization, and management of business libraries and departments of business information.
- LS 600: INDEPENDENT STUDY/SEMINAR** I-3 s.h.
An opportunity for the advanced graduate student to investigate in depth a facet of librarianship and to prepare a scholarly paper or project to **report** his or her findings. The topic for study must be approved by a faculty committee, and the work must be supervised by a faculty member. Prerequisites: LS 500,501, 502, 550,553.
- LS 701: SUPERVISION OF THE LIBRARY MEDIA PROGRAM** 3 s.h.
Designed to develop competencies in planning, coordinating, and directing a district-wide program. Emphasis will be placed on developing administrative abilities in order to provide all types of library media services and on refining leadership qualities for the improvement of instruction. Managerial, administrative, and supervisory competencies will be developed.

Master of Education Degree in Mathematics

College of Arts and Sciences

Graduate Faculty

Professors: N. Bezak, D. Bhattacharya, B. Freed, S. Gendler, S. Singh; **Associate Professors:** R. Engle, L. Linnan, J. Reynolds, S. Ringland, G. Rock, T. Wimer; **Assistant Professors:** K. Bolinger, D. Hipfel, M. Parker, D. Schaal

Program Objectives

Recently revised to increase its compatibility with the needs of the high school teacher of the nineties, the Master of Education in mathematics is designed to permit in-service teachers of secondary mathematics to obtain permanent certification in mathematics as they further their graduate education in the discipline. Students have an opportunity to meet all the competencies recommended by the Committee on Undergraduate Programs in Mathematics (CUPM) and other certifying agencies while obtaining additional depth in the field and sharpening teaching skills. The program also provides students in related fields an opportunity to work concurrently toward teaching certification and a Master of Education degree.

Admission Requirements

Most students will enter the program with an undergraduate major in mathematics with secondary teaching certification and will have had the following courses or their equivalents:

MATH	300:	Intro. to Advanced Mathematics	.3	s.h.
MATH	321 :	Intermediate Applied Statistics 1	.3	s.h.
MATH	357:	Modern Geometry	.3	s.h.
MATH	370:	Linear Algebra	.3	s.h.
MATH	451:	Modern Algebra I.	.3	s.h.
ED	339:	Methods of Teaching and Evaluating Mathematics.	.3	s.h.

Students lacking these courses may be required to take them in addition to their degree requirements.

Degree Requirements

- To fulfill degree requirements for graduation, students must:
- . complete a minimum of 30 semester hours of course work;
 - . maintain a quality-point average of 3.00/4.00 in all courses presented for the degree; and
 - complete a satisfactory research paper or pass a comprehensive examination.

Proficiency Requirements

Proficiency in real analysis demonstrated by completing MATH 47 I: Real Analysis I (3 semester hours) or by examination. Proficiency in computer programming demonstrated by completing CIS 15 I: Introduction to Fortran or equivalent course or by experience.

REQUIRED COURSES 12 s.h.

MATH	531:	Topics in Geometry.	.3s.h.
MATH	532:	Statistics	.3s.h.
MATH	533:	Foundations of High School Mathematics	.3s.h.
ED	634:	Teaching Mathematics	.3s.h.

ELECTIVES IN EDUCATION.3-6s.h.

At least one of the following:

ED	520:	Introduction to Research	.3s.h.
ED	521:	Instructional Leadership Skills	.3s.h.
ED	522:	Analysis of Teaching.	.3s.h.
ED	523:	Curriculum Development and Evaluation.	.3 s.h.
ED	526:	Sociology of Education.	.3 s.h.
ED	537:	Strategies-Problems	.3 s.h.

RELATED ELECTIVES0-3 s.h.

One course may be chosen from a related area in consultation with the advisor. Related areas include: library science, business, communication, education.

ELECTIVES IN MATHEMATICS.9-15 s.h.

MATH	541:	Recreational Mathematics	.3 s.h.
MATH	553-554:	Functions of a Real Variable 1, II	.6 s.h.
MATH	555:	Topology	.3 s.h.
MATH	557:	Infinite Series.	.3 s.h.
MATH	559:	Complex Variables I	.3 s.h.
MATH	561-562:	Abstract Algebra 1, II	.6 s.h.
MATH	563:	Linear Algebra	.3 s.h.
MATH	569:	Mathematical Logic.	.3 s.h.
MATH	575:	Algebraic Number Theory I.	.3 s.h.
MATH	573:	Numerical Analysis 1.	.3 s.h.
MATH	580:	Seminar	.3s.h.
MATH	599:	Individual Research.	varied

Assistantships

A very limited number of assistantships may be available. These are awarded only to full-time students. All applicants for assistantships must complete the regular admission procedure in order to be considered for an appointment and then file a letter of application with the chair of the Department of Mathematics. Applications should be submitted by April 15.

Advisement

Upon admission to the M. Ed. program in mathematics, students are assigned advisors who will help them plan their programs. It is the responsibility of students, with the help of their advisors, to meet all requirements for the degree.

Facilities

Facilities include a conference room and study areas on the ground floor of Peirce Science Center. Students have access to the VAX computer directly and through on-line terminals. In addition, hands-on use of Macintosh microcomputers in our computer laboratory is encouraged.

Mathematics Courses

- MATH 530: NEW MATHEMATICS-ELEM. CLASSROOM** 3 s.h.
A seminar on recent topics in mathematics of interest to elementary school teachers.
- MATH 531: TOPICS IN GEOMETRY** 3 s.h.
Topics to be selected from: Properties of Triangles, Properties of Circles, Collinearity and Congruence, Transformational Geometry, Inversive Geometry, Projective Geometry. prerequisite: MATH 357.
- MATH 532: STATISTICS** 3 s.h.
Probability theory, combinatorial analysis, stochastic independence, binomial, Poisson and normal distributions, Bernoulli Trials, moments generating functions, Markov Chains, time dependent stochastic processes. Prerequisite: MATH 421, Mathematical Statistics 1.
- MATH 533: FOUNDATIONS OF HIGH SCHOOL MATHEMATICS** 3 s.h.
An upper level development of the basic structure of the natural numbers with indications how to present them in the high school classroom. Topics including integers, fractions, real and complex numbers are followed by computational techniques such as Newton Raphson method with computer applications in the secondary class mom. Prerequisite: MATH 452, Modern Algebra II.
- ED 634: TEACHING MATHEMATICS** 3 s.h.
Advanced topics in the teaching of mathematics for secondary teachers. Topics may include curriculum design and evaluation, pedagogical models, testing, theory of learning, computers in the classroom, and current research and trends in mathematics education.
- MATH 541: RECREATIONAL MATHEMATICS** 3 s.h.
A survey of recreational mathematics through history. Topics include arithmetic, geometric and topological recreations, paradoxes, games, and board puzzles.
- MATH 553-4: FUNCTIONS OF REAL VARIABLE 1, II** 3 s.h. ea.
Fundamental properties of continuous and differentiable functions, uniform convergence, Lebesgue measure and integration. Prerequisite: MATH 472 or its equivalent.
- MATH 555: TOPOLOGY** 3 s.h.
Topological space, connectedness, compactness, continuity, separability, countability axioms, and metric spaces. Prerequisite: MATH 471 or its equivalent.
- MATH 557: INFINITE SERIES** 3 s.h.
Convergent series of constants, power series. summability, uniform convergence, Fourier series. prerequisite: MATH 471 or its equivalent.
- MATH 559: FUNCTIONS OF A COMPLEX VARIABLE I** 3 s.h.
Analytic functions, Cauchy's integral theorems, Taylor series, analytic continuation, residue theory. Prerequisite: MATH 472 or its equivalent.
- MATH 561-2: ABSTRACT ALGEBRA 1, II** 3 s.h.
Theory of groups, rings, ideals, integral domains, and fields. Prerequisite: MATH 452 or its equivalent.
- MATH 563: LINEAR ALGEBRA** 3 s.h.
Vector spaces, matrices, linear transformations. Prerequisite: MATH 452 or its equivalent.
- MATH 569: MATHEMATICAL LOGIC** 3 s.h.
An introduction to mathematical logic.
- MATH 573: NUMERICAL ANALYSIS I** 3 s.h.
Basic properties of round off error, polynomial approximation, interpolation, numerical differentiation, numerical quadrature, functional approximation, solution of non-linear equations and simultaneous linear equations. Prerequisite: MATH 460 or its equivalent.
- MATH 575: ALGEBRAIC NUMBER THEORY I** 3 s.h.
Algebraic number fields, cyclotomic fields, algebraic integers, integral bases and discriminant, arithmetic in algebraic number fields, properties of ideals including the Fundamental Theorem of Ideal Theory. Prerequisite: MATH 452.
- MATH 580: SEMINAR** 3 s.h.
Selected topics in algebra analysis, geometry, topology. Prerequisite: One graduate course in the selected area.
- MATH 599: INDIVIDUAL RESEARCH** I-3 s.h.
Original mathematical research under the supervision of a number of the graduate faculty of the Department of Mathematics. Prerequisite: Permission of student's graduate committee.

Master of Education Degree in Science Education

College of Arts and Sciences

Department of Biology

Graduate Faculty

Professors: W. Barnes, W. Belzer, P. Dalby, A. Exton, W. McGowan, R. McPherson, K. Mechling, T. Morrow, G. Twiest, F. Vento, J. Williams, G. Wollaston, E. Zielinski; **Associate Professors:** K. Eggleton, J. Ernissee, D. Howes, J. Rhode; **Assistant Professors:** S. Harris, W. Jetkiewicz, T. Martin, S. Shulik D. Smith. C. Williams

Program Objectives

Clarion has a strong commitment to help teachers and schools improve science experiences for their students. Our courses in science education are exciting, useful, and relevant to elementary, middle, junior high, and senior high school teachers. They are taught in the same style of inquiry and investigation that we encourage teachers to use in their own classrooms. By enrolling in the science education program, teachers can learn to teach investigatively in their own classrooms, to make and use science materials and equipment, to design science **curricula**, to incorporate the broad principles of science into their own classrooms, and provide leadership in science education.

The graduate program in science education requires a minimum of 30 semester hours of approved course work for completion. Required courses have been kept to a minimum to allow maximum flexibility in tailoring course plans to individual needs and career aspirations. The program is designed to serve in-service teachers of science, as well as prepare graduates to assume positions as science supervisors or pursue doctoral programs in science education.

One track of the program serves self-contained elementary classroom teachers who wish to become competent science teachers. Several courses are available which combine science content and processes, and teachers learn how to apply them to their own classrooms.

Another track serves middle, junior high, and senior high school science teachers. They may use the program to learn about and develop new curricula and teaching methods for their own classrooms and schools. In addition, a large number of graduate science courses are available for those who wish to increase their strength in various content areas.

Other tracks exist for students seeking positions as environmental educators, students seeking science leadership positions upon completion of the master's degree, or students wishing to enter higher education after completing the graduate program here at Clarion University. Graduates of Clarion's Master of Education in science education program have entered Ph.D. programs in science education at such schools as the University of Georgia, Ohio State University, Pennsylvania State University, the University of Colorado, and others. Graduates of the Clarion program who have continued their education have been most successful and are filling teaching and research positions at colleges and universities across the country.

Admission Requirements

College of Graduate Studies admission requirements apply with the following additions:

- . The applicant should have an undergraduate major in elementary education or secondary education with certification in either of those areas. If the applicant does not meet this requirement, the graduate faculty of the department shall determine existing deficiencies and how they may be met.
- . Admission to provisional status may be granted at the discretion of the faculty if the applicant's QPA is less than 2.75/4.00. Regular status may be granted upon completion of 12 semester hours of graduate study with a minimum of 3.00/4.00 average.

Degree Requirements

To fulfill the degree requirements for graduation the student must:

- . Complete a planned program of 30 semester hours or more with a QPA of 3.00/4.00 or **better**.
- . Pass a written comprehensive examination after completing a minimum of 2 I credits.
- . Students must **complete** a planned program, including a minimum of 30 credits selected from the following two general areas:

SCIENCE EDUCATION

With approval of the candidate's advisor, students must elect a minimum of 18 hours of graduate science education courses which should include SCED 502, SCED 538, SCED 540, and SCED 556.

GENERAL ELECTIVES

With approval of the candidate's committee, students may elect 12 hours of graduate courses from the following areas:

- | | |
|---------------------|-----------------------|
| ● Science Education | ● Reading |
| . Biology | . Special Education |
| . Education | ● Communication |
| . Mathematics | . Research (O-6 s.h.) |

Placement

The M. Ed. in science education is designed primarily to serve teachers such as elementary teachers in self-contained classrooms, elementary, junior high and senior high science teachers, and science supervisors who already have positions. Some use the program to advance to new positions, such as science supervisors or computer specialists. Others use the program as a stepping stone to a higher degree. Among those who utilized the degree to seek a position, placement has been excellent.

Graduate Assistantships

Graduate assistants in science education serve in a variety of roles. They may assist in teaching undergraduate classes, **direct** undergraduate assistants in the Center for Science Education, carry out library research for center projects, and assist in in-service programs. Assistantships offer an excellent opportunity to obtain practical experience while completing most requirements for a master's degree in one calendar year. Some in-service teachers utilize a sabbatical leave for this purpose.

All applicants for graduate assistantships must complete the regular admission procedure in order to be considered for an appointment and, following admission, file an application with the chair of the Department of Biology.

Applicants for **graduate** assistantships should submit completed applications by late April for consideration the following fall.

Environmental Education Certification

Clarion University offers a program leading to certification in environmental education. Students in the program learn through courses which are taught using discovery, investigation, and hands-on experiences carried out primarily in the outdoors. The program focuses on the major concepts of ecology and those concepts of the social sciences which apply to the environment. Students also become well versed in the major environmental curricula which are available.

The program is designed to certify elementary and secondary teachers in environmental education. Individuals completing the program are certified to teach environmental education to students from K- 12.

Advisement

Prior to beginning course work all applicants are interviewed by a member of the science education graduate faculty of the Department of Biology. The chair of the Science Education Graduate Committee will advise those students who have not yet been admitted and who do not have an advisor.

Cooperative Doctoral Program

Clarion University and Penn State University are **cooperating** to offer a Ph.D. or D. Ed. in curriculum and instruction at Penn State with an emphasis in science education. The program has two major components. First, it allows up to 45 credit hours of approved graduate work completed at Clarion University in the science education master's degree program, or beyond that degree, to be applied toward a 90 credit-hour minimum program leading to the doctorate in science education at Penn State. Secondly, research may be conducted at Clarion University.

Four faculty members at Clarion University hold adjunct graduate faculty status at Penn State, which enables them to serve on students' doctoral committees. Those faculty are Dr. Ken R. Mechling, Dr. Kathleen Smith, Dr. Gilbert L. Twiest, and Dr. Edward Zielinski.

Persons desiring more information about the Cooperative Doctoral Program in Science Education should consult with any of the faculty noted above or write to Dr. Gilbert Twiest, General Graduate Advisor for Science Education, Biology Department, Clarion University, Clarion, PA 16214-1232, or Dr. Lois Campbell, 165 Chambers Building, Penn State University, University Park, PA 16802.

Physical Facilities

The science education component of the Department of Biology is housed within the department in Peirce Science Center. The William D. Chamberlain Center for Science Education is in Room 220P and functions as a science education leadership and curriculum center. It contains samples of most modern science curricula, including complete sets of texts and materials for the elementary, middle, junior high school, and senior high school levels and other curriculum materials. The Clarion University Center for Science Education is a resource center for modern K-12 science curricula. The center also functions as a

leadership center and a site for conferences and meetings of educators interested in science education.

Peirce Science Center contains laboratories in biology, chemistry, physics, and earth science. A complete planetarium with a 100-seat capacity is attached. The building also contains an animal-aquarium room, a free-standing greenhouse, and an environmental chamber room.

The science education program also makes extensive use of McKeever Environmental Learning Center at Sandy Lake, Pennsylvania, and University of Pittsburgh's Pymatuning Laboratory at Lineville, Pennsylvania. McKeever is described in the section on facilities in the front of the catalog and the Pymatuning Laboratory is described in the section on facilities under the Biology Program.

Science Education Courses

SCED 400: SPECIAL TOPICS IN SCIENCE EDUCATION 1-4 s.h.
This course deals with topics of special interest to persons interested in science education or pursuing teacher certification. Admission by permission of instructor. On demand.

SCED 456: ELECTRONICS 4 s.h.
The course is intended for the science teacher who has had little or no previous course work in physics or mathematics. The subjects covered include the fundamental laws of electricity and magnetism, alternating current theory, and the theory and practical application of such devices as ammeters, voltmeters, oscilloscopes, vacuum tubes, transistors, power supplies, amplifiers, and oscillators. Examples of some of these devices will be built in the laboratory, and general procedures for troubleshooting faculty equipment will be illustrated. Summer only, on demand.

SCED 460: SCIENCE CURRICULUM IN THE MIDDLE AND JUNIOR HIGH SCHOOL 3 s.h.
A course designed to acquaint students with modern science instruction strategies and curricula for the junior high/middle school levels. Recent developments in curricular objectives, the unique physiological and psychological qualities of middle level students, science content teaching strategies, and laboratories are stressed. Each fall.

SCED 463: ASTRONOMY: OBSERVATION AND FIELD STUDIES 3 s.h.
This is a course in the experimental tools and methods useful in astronomy. It is not an encyclopedic survey of astronomy, but concentrates on mastery of important techniques and concepts by a "do-it-yourself process. It complements courses in descriptive astronomy (ES 200 and 201 and SCED 550) rather than duplicating them, serving much the same purpose as a laboratory in astronomy. The student will build simple telescopes, spectroscopes, and other astronomical instruments.

SCED 466: FIELD PHOTOGRAPHY 3 s.h.
This course is designed to teach the student how to use a modern camera and accessories to photograph subjects in the field. Techniques of close-up, telephoto, and wide-angle photography as well as film development, lighting, use of filters and composition will be included. In addition, the student will have a chance to learn and practice techniques for photographing such subjects as small animals, birds, flowers, large animals, and other subjects. Camera and film to be provided by students. Summer; on demand.

SCED 471: PROGRAM FOR IMPROVING ELEMENTARY SCIENCE (PIES) 3 s.h.
PIE-S is designed to promote effective science teaching and instructional leadership in science in the elementary school. In-service teachers, through hands-on investigations in the life, physical, and earth sciences, will acquire knowledge of science, increase their skills in using science process skills, and develop positive attitudes toward science. A similar course, SCED 471: Program for Improving Elementary Science, is offered for undergraduate, senior, elementary majors. On demand. Permission of instructor required.

SCED 485: PLANETARIUM OPERATION AND MANAGEMENT 3 s.h.
An introduction to the techniques of operation and maintenance of planetarium projectors. Opportunities are provided for writing and presenting programs at various levels of instruction. The use of auxiliary projectors, the production of audiovisual materials, multi-media displays, and live versus programmed presentations are emphasized. Prerequisite: ES 200 and 201 or consent of instructor. On demand.

SCED 500: SEMINAR 1-3 s.h.
Current topics in science education. On demand.

SCED 501: SEMINAR IN SCIENCE MISCONCEPTIONS 3 s.h.
A survey of current literature in the area of science misconceptions. Each student will research a topic and develop interviews and surveys to determine the misconceptions in the area. Fall, odd-numbered years.

- SCED 502: INVESTIGATIVE TECHNIQUES AND PROCESS APPROACH TO MODERN SCIENCE CURRICULA 3 s.h.**
 A course designed to enable elementary, middle, and junior high school teachers to use investigative techniques and the process approach in their own classrooms. Investigative techniques will focus on developing skills in science processes such as observing, classifying, formulating hypotheses, collecting and analyzing data, and designing experiments. Experiences with modern elementary and junior high school science curricula are also included. Two hours lecture, two hours lab. Every year in fall.
- SCED 503: SPECIAL TOPICS OF SCIENCE EDUCATION I-4 s.h.**
 Studies of topical material under the guidance of the instructor. Maximum credit allowable toward graduation: 9 credits. Prerequisites: Permission of the instructor and the student's graduate committee On demand.
- SCED 505: INVESTIGATION IN THE LIFE SCIENCES 3 s.h.**
 A survey of organisms which can be cultured and used in classrooms for investigations. Emphasis will be placed on typical investigations which may be used as models for utilization in the classroom. Students are expected to try out investigations found in current science curricula. Fall of even-numbered years.
- SCED 530: FIELD BIOLOGY 3 s.h.**
 This field course is designed to acquaint the elementary, middle, and secondary teachers with the biological environment outside of the classroom as it pertains to plants and animals, their collection, identification, preservation, and ecology. Activities that are applicable to the public school will be provided. Summers, on demand.
- SCED 531: FIELD BOTANY 3 s.h.**
 This course is designed to give the elementary, middle, and secondary teachers an understanding of the basic aspects of plant science. Emphasis will be placed upon taxonomy, morphology, and life processes of the flowering and nonflowering plants as they relate to work done in elementary and secondary schools. Two hours lecture and two hours lab. Summers, on demand.
- SCED 532: FIELD ORNITHOLOGY 3 s.h.**
 This is primarily a course on the identification and natural history of birds of this area. The primary teaching methods will be illustrated lectures, identification practice via color slides, and field trips. Prerequisite: Basic Biology. Summers, on demand.
- SCED 534: FIELD ZOOLOGY 3 s.h.**
 This field course is designed to acquaint the elementary, middle, and secondary teachers with the biological environment outside the classroom as it pertains to animals, their collection, preservation, identification, and ecology. Activities that are applicable to K-12 schools will be provided. Summers, on demand.
- SCED 535: FIELD ECOLOGY 3 s.h.**
 The course familiarizes the elementary, middle, and secondary teachers with the relationships between plants and animals and their environment. Field work will be emphasized. Frequent field trips are made to areas of particular ecological interest in Northwestern Pennsylvania. Five hours field work, laboratory work and lecture. on demand.
- SCED 536: CHEMISTRY 3 s.h.**
 This lecture-laboratory course is designed to give the elementary, middle, and secondary teachers an understanding of basic chemistry. The chemistry of common experience in the public school is explored and the manipulation of chemical apparatus is given special attention. Two hours laboratory. On demand.
- SCED 537: PHYSICS 3 s.h.**
 This lecture-laboratory course is designed to give the elementary, middle, and secondary teachers an understanding of basic physics. Areas of concentration are the metric system, properties of matter, mechanics, atomic energy, heat, sound, light, magnetism, and electricity. Particular attention will be provided for the application of these areas to public school sciences. Two hours lecture and two hours laboratory. On demand.
- SCED 538: SCIENCE CURRICULUM 3 s.h.**
 This course is designed to come late in the program when the student will have an adequate background for discussions centered around the various approaches to the teaching of science in the elementary, middle, and secondary schools. A study of the principles of curriculum construction, including curriculum origins, goals, objectives, scope and sequence, and evaluation. Each year in spring.
- SCED 539: RESOURCES AND MATERIALS 3 s.h.**
 The course gives the teacher experience with the literature, equipment, and materials in teaching science in the school. Physical and human resources from national, state, and local communities will be explored. Students will be given ample opportunity to develop and try out teacher-made resources. On demand.
- SCED 540: SUPERVISION OF SCIENCE TEACHING 3 s.h.**
 A course designed to prepare science educators (elementary, middle, junior high, and senior high school teachers) for leadership and supervisory roles in the improvement of science curricula and instruction. Spring of even numbered years.
- SCED 541: SCIENCE SPECIALIST INTERNSHIP IN TEACHING AND SUPERVISION I-4 s.h.**
 This course is designed to give practical experiences in working with teachers and children as a specialist in science teaching, supervising, and assisting in curriculum work. On demand.

SCED 550: ASTRONOMY

3 s.h.

This course deals with the planets and their satellites, including the earth and moon, with comets and meteors, with the sun, the stars and clusters of stars, with the interstellar gas and dust, with the Milky Way, and other galaxies that lie beyond the Milky Way. The fundamental concepts of cosmology and the basic principles of light are also included in the course. Three hours lecture and/or laboratory. On demand.

SCED 551: GEOLOGY

3 s.h.

A study of rocks, minerals, and geologic formation as they are related to elementary and secondary school science. Past history of the earth as well as present day geologic phenomena are discussed. Fields trips to areas of geologic interest are taken. Two hours lecture and two hours field or laboratory work. On demand.

SCED 552: GEOMORPHOLOGY

3 s.h.

A study of the interaction between humankind and the physical environment as it is related to elementary and secondary school science. On demand.

SCED 553: METEOROLOGY

3 s.h.

The fundamentals of weather and weather instruments, maps, records, as well as other activities applicable to elementary and secondary school science are stressed. Three hours lecture and/or laboratory. On demand.

SCED 554: RECENT ADVANCES IN SCIENCES

3 s.h.

The course acquaints the student with significant developments in the field of science that have taken place in the last two decades. This course assumes a background of information in the fundamentals of the biological and physical sciences. Three hours lecture. On demand.

SCED 555: HISTORY OF SCIENCE

3 s.h.

A study of the history of science with accent on the way in which broad scientific principles have developed and those who played a part. On demand.

SCED 556: ANALYSIS OF RESEARCH IN SCIENCE EDUCATION

3 s.h.

This course covers topics necessary to analyze, critique, and develop research. Participants will be involved with the study of methodology of research as well as participating in activities in which they critique existing research and develop a research plan. Topics such as developing problems, literature reviews, critical evaluation of research sampling and measurement, design and methodology, and data processing and reporting will be included. Each spring.

SCED 560: SCIENCE CURRICULUM IN THE MIDDLE AND JUNIOR HIGH SCHOOL

3 s.h.

A course designed to acquaint students with modern science instructional strategies and curricula for the junior high/middle school levels. Recent developments in curricular objectives, the unique physiological and psychological qualities of middle level students, science content, teaching strategies, and laboratories are stressed. Each fall.

SCED 561: MODERN ASTRONOMY

1 s.h.

This short course covers recent developments in astronomy which are not normally covered in a traditional astronomy course. Topics include stellar, evolution, pulsars, neutron stars, black holes, quasars, and supernovae. Summers, on demand.

SCED 562: TOPICS IN COSMOLOGY

1 s.h.

This short course deals in a non-mathematical manner with questions related to the universe as a whole—its beginning, geometry, present state and future development. Topics include the origin of the elements, expansion of the universe, geometry of the universe and observational evidence. Summers, on demand.

SCED 563: DEMONSTRATIONS AND PROJECTS IN ASTRONOMY

3 s.h.

Emphasis in this course will be on the selection and preparation of demonstrations and projects in astronomy for teachers of elementary and secondary schools. Summers, on demand.

SCED 566: ADVANCED FIELD PHOTOGRAPHY

3 s.h.

This course is designed to teach in-service teachers how to use the advanced aspects of modern SLR 35mm camera and accessories to photograph science subjects in the field. Advanced techniques of close-up, telephoto, and macro-photography, as well as use of advanced depth of field, lighting, and composition will be included. Students will also learn advanced techniques of photographing flora and fauna, geological, astronomical, meteorological, and ecological subjects. Camera and film to be provided by students. Prerequisites: SCED 466 or permission of instructor. Summer, on demand.

SCED 567: SLIDE PROGRAM DEVELOPMENT

3 s.h.

This course is normally taken concurrently with SCED 466: Field Photography or SCED 566: Advanced Field Photography. It is designed to be taken by in-service teachers and will teach them how to put together short, single-concept slide programs to be used in their elementary or secondary science classrooms. The Karplus and Generative Models of teaching concepts will be stressed for use with the program. Prerequisites: SCED 466 or SCED 566 or must be taken concurrently, or permission of instructor. Summer, on demand.

SCED 570: LOCAL SCHOOL CURRICULUM DEVELOPMENT IN SCIENCE

3 s.h.

This course is designed to assist individual or groups of teachers with sufficient science background to develop, improve, or implement science curricula for the elementary and secondary schools. It will be concerned with the production of curricular materials for actual use and evaluation. Permission of instructor. Each semester.

- SCED 571: PROGRAM FOR IMPROVING ELEMENTARY SCIENCE (PIES) 3 s.h.**
 PIES is designed to promote effective science teaching and instructional leadership in science in the elementary school. [n-service teachers, through hands-on investigations in the life, physical, and earth sciences, will acquire knowledge of science, increase their skills in using science process skills, and develop positive attitudes toward science. A similar course, SCED 47 I: Program for Improving Elementary Science, is offered for undergraduate, senior, elementary majors. On demand. Permission of instructor required.
- SCED 572: PROGRAM FOR ENHANCING EDUCATIONAL LEADERSHIP IN SCIENCE (PEELS) 1 s.h.**
 PEELS is designed to involve elementary administrator/teacher teams in exemplary science experiences. Teams are instructed in science process skills, effective science teaching strategies, development of science program goals, and the application of science education research to elementary school science programs. Each team will design and implement an action plan which focuses on specific actions for the improvement of science in their own schools. On demand. Permission of instructor required.
- SCED 573: CREATIVE INTEGRATION OF SCIENCE IN ELEMENTARY EDUCATION (CISEE) 3 s.h.**
 The CISEE course is designed to help in-service elementary teachers learn how to integrate science content and science process skills with other subject areas, including reading and language arts, math, social studies, physical education, art, music, and microcomputer education. A strong emphasis is placed on the use of hands-on investigations; teachers are required to design and implement lessons for their own students which demonstrate the integration of science and other elementary curriculum areas. On demand. Permission of instructor required.
- SCED 574: SCIENCE AND SOFTWARE FOR ELEMENTARY TEACHERS 2 s.h.**
 This course is designed to help elementary teachers identify, select, and integrate science courseware appropriate for implementation into existing elementary school science curricula. Participants will use exemplary science courseware to introduce, enhance, and reinforce related hands-on science activities. The culminating project for this course is the presentation of action research findings related to the relationships between microcomputers and hands-on elementary school science. On demand. Permission of instructor required.
- SCED 575: CAREER ORIENTATION IN SCIENCE AND TECHNOLOGY (COST) 3 s.h.**
 COST is designed to involve middle/junior high teachers in utilizing the skills of community resource people to demonstrate the need for science in many careers-including those not traditionally associated with science. The format of the course follows the COMETS (Career Orientated Modules to Explore Topics in Science) model. Teachers learn where to find science resource people and how to work with the resource person to present lessons in the classroom. Teachers will be responsible for implementing lessons with a resource person during the course. On demand. Permission of instructor required.
- SCED 576: SCIENCE, TECHNOLOGY AND SOCIETY: TOPICS FOR TEACHERS 3 s.h.**
 STS is an interdisciplinary course covering topics in biology, earth science, chemistry, and physics. Participants will be involved in studies and hands-on activities such as evaluating science computer software, testing water for chemical and biological agents, and studying high altitude infra-red photography. Ethical issues and scientific principles concerning computers, energy, nuclear waste, biotechnology, and others, will be investigated and discussed. Participants will develop curriculum activities for implementation in secondary science. On demand. Permission of instructor required.
- SCED 577: MICROCOMPUTER SCIENCE LABORATORY INTERFACE 1 s.h.**
 This course is designed to instruct elementary and/or secondary science teachers in basic interfacing and interfacing applications for their own classrooms. Course participants construct interfacing materials, set up related science investigations, and analyze data collected from the constructed probes. Course participants also explore possible uses for interfacing equipment in the science curriculum. On demand. Permission of instructor required.
- SCED 578: INFORMATION TECHNOLOGY EDUCATION FOR THE COMMONWEALTH ITEC I 3 s.h.**
 ITEC I is designed to provide teachers with computer literacy, programming skills, and experiences with exemplary courseware and software. The course is designed specifically for computer novices. Teachers will learn to operate and program microcomputers while developing skills needed for teaching their students to use microcomputers for classroom applications. The course also prepares teachers to evaluate courseware and software appropriate for use in their school curriculum. On demand. Permission of instructor required.
- SCED 579: INFORMATION TECHNOLOGY EDUCATION FOR THE COMMONWEALTH (ITEC II) 3 s.h.**
 Provides K-12 educators with intermediate level competencies to effectively integrate microcomputer courseware, hardware, and related microprocessor technology into the teaching and learning process. Instructional theory for the design and evaluation of solutions to problems of learning, and using computer technology as a tool, will also be emphasized in the course. Students will complete a computer-generated portfolio of related lesson plans, handouts, transparencies, etc. On demand. Permission of instructor required.
- SCED 585: PLANETARIUM OPERATION AND MANAGEMENT 3 s.h.**
 An introduction to the techniques of operation and maintenance of planetarium projectors. Opportunities are provided for writing and presenting programs at various levels of instruction. The use of auxiliary projectors, the production of audiovisual materials, multimedia displays and live versus programmed presentations are emphasized. Prerequisite: ES 200 and 201 or consent of instructor. On demand.

SCED 600: RESEARCH PROJECT IN SCIENCE EDUCATION 1-3 s.h.
With the approval of his or her advisor a student may research a selected topics related to the teaching of elementary and/or secondary science. Permission of instructor. Each semester.

SCED 740: SUPERVISION OF SCIENCE TEACHING 3 s.h.
A course designed to prepare science educators (elementary, middle, junior high, and senior high school teachers) for leadership and supervisory roles in the improvement of science curricula and instruction. On demand. Permission of instructor required.

SCED 741: SCIENCE SPECIALIST INTERNSHIP IN TEACHING AND SUPERVISION 3-6 s.h.
This course is designed to give practical experiences in working with teachers and children as a specialist in elementary science, teaching, supervising, and assisting in curriculum work. For science supervision certification. On demand. Permission of instructor required.

Master of Science Degree in Special Education

College of Education and Human Services

Department of Special Education and Rehabilitative Sciences

Graduate Faculty

Professors: B. Huwar; **Associate Professors:** T. Dunkle, R. Feroz, L. Gurecka, J. Krouse; **Assistant Professors:** L. Davis, P. Gent, R. Ssbousky

Program Objectives

The mission of the Master of Science program within the Department of Special Education and Rehabilitative Sciences is to provide opportunities:

- to update, broaden, and refine the skills and knowledge base of the veteran professional in designing, implementing, and evaluating instruction and services for individuals with disabilities;
- to extend knowledge and skills in research, administration, leadership, and the organization of service delivery;
- to analyze technically complex and current issues within the field; and
- to prepare for more advanced studies and careers in special education and rehabilitative sciences.

SPECIAL EDUCATION CONCENTRATION

The special education area of concentration is designed primarily for students whose career interests are in special education services and programs within educational agencies and institutions of higher education. Within the special education concentration area various options are offered. Students who presently hold a Pennsylvania special education teaching certificate take a core of 27 required graduate credits and in addition pursue 6 credits individually selected by the student in consultation with their advisor.

Students who presently hold a bachelor's degree from an accredited program may pursue the master's degree while completing additional course work leading to Pennsylvania certification in the area of special education. The specific course work for certification will be individually determined by the student's advisor after a review of the student's past course work and experience.

The graduate program in special education is accredited by the National Council for the Accreditation of Teacher Education (NCATE) and the Pennsylvania Department of Education (PDE).

REHABILITATIVE SCIENCES CONCENTRATION

The rehabilitation sciences area of concentration is designed for students whose career interests are in the area of community-based social, vocational, recreational, and personal management rehabilitation services in the areas of developmental disabilities, gerontology, and substance abuse. Within this concentration, students will take a core of 18 required

graduate credits, and in addition, pursue an additional 15 credits individually selected by students in consultation with their advisors.

Admission Requirements

Clarion University’s general admission requirements apply with the following supplemental requirement:

- Admission with provisional status may be granted at the discretion of the graduate faculty if the applicant’s QPA is less than the required 2.75 out of 4.00. The student must provide evidence of ability to successfully undertake the program (e.g., particularly strong recommendations from another professional in a related field; a clear trend of improved QPA over time; a written explanation of the circumstances which lead to the less than satisfactory QPA).

Students admitted provisionally must achieve full status within three semesters following the student’s provisional admittance by completing not less than nine graduate credits from courses within the appropriate checksheet with a QPA of not less than 3.00 out of 4.00. Students who fail to achieve full status will be dropped from the program in which they are enrolled.

Degree Requirements

In addition to the general requirements of the Graduate College of Clarion University, students shall meet the following requirements:

- . Students must complete a planned program of study approved by their advisors within one of the areas of concentration including a minimum of 33 credits.
- Students contemplating more advanced studies after completing the master’s degree or contemplating careers which involve research may elect with the approval of their advisor a thesis project [SPED 590]. Students electing SPED 590 and completing the thesis requirements are exempted from the SPED 599 requirement.

The purpose of electives is to provide flexibility within the program so that students can further develop their knowledge, skills, and expertise in individual areas of career interest and to enhance their career options. The choice of electives is, therefore, not limited to SPED or REHB courses. With the *prior approval* of the student’s advisor, the student may choose elective courses from other departments or institutions of higher education. Note: In accordance with Clarion University residency requirements, no more than a maximum of 30% of the total graduate credits may be transferred from other institutions.

Special Education Concentration

REQUIRED CORE—27 credits

ED	520:	Introduction to Research	.3	s.h.
ED	521:	Instructional Leadership Skills	.3	s.h.
ED	522:	Analysis of Teaching	.3	s.h.
ED	523:	Curriculum Development and Evaluation.	.3	s.h.
SPED	500:	Contemporary issues in Special Education	.3	s.h.
SPED	505:	Concepts of Intelligence	.3	s.h.
SPED	520:	Role Development with Parents	.3	s.h.
SPED	535:	Advanced Methods for Individuals with Severe Disabilities	.3	s.h.
or				
SPED	536:	Advanced Methods for Individuals with Mild/Moderate Disabilities	.3	s.h.
SPED	599:	Field Based Investigation.	.3	s.h.

ELECTIVES-6credits

SPED	530:	Learning Disabilities	.3 s.h.
SPED	540:	Behavior Disorders	.3 s.h.
SPED	590:	Special projects.	3 or 6 s.h.
SPED	415:	Instructional Development and Strategies for Individuals with Mild/Moderate Disabilities	.3-6 s.h.
SPED	420:	Instructional Development and Strategies for Individuals with Severe/Profound Disabilities	.3-6 s.h.
SPED	425:	Behavior Management in Special Education Settings.	.3 s.h.
REHB	405:	Substance Abuse	.3 s.h.
REHB	410:	Prevention and Treatment of Substance Abuse	.3 s.h.
REHB	510:	Group Process in Rehabilitation	.3 s.h.
REHB	545:	Rehabilitation: Philosophy and principles	.3 s.h.
REHB	565:	Seminar on Rehabilitative Service Delivery Systems	.3 s.h.
REHB	580:	Special Education and Rehabilitative Sciences	.3 s.h.

A maximum of six credits from the 400 level courses listed above can be taken for graduate credit with special permission.

Rehabilitative Sciences Concentration

REQUIRED CORE—18 credits

ED	520:	Introduction to Research	.3 s.h.
REHB	545:	Rehabilitation: Philosophy and Principles	.3 s.h.
REHB	565:	Seminar on Rehabilitative Service Delivery Systems	.3 s.h.
REHB	575:	Administering Rehabilitation Delivery Systems	.3 s.h.
REHB	580:	Special Education and Rehabilitative Sciences	.3 s.h.
REHB	599:	Field Based Investigation	.3 s.h.

ELECTIVES- 15 credits

REHB	405:	Substance Abuse	.3 s.h.
REHB	410:	Prevention and Treatment of Substance Abuse	.3 s.h.
REHB	510:	Group Process in Rehabilitation	.3 s.h.
REHB	537:	Lifestyle and Career Development	.3 s.h.
SPED	500:	Contemporary Issues in Special Education	.3 s.h.
SPED	505:	Concepts of Intelligence	.3 s.h.
SPED	520:	Role Development with Parents	.3 s.h.
SPED	530:	Learning Disabilities	.3 s.h.
SPED	535:	Advanced Methods for Individuals with Severe Disabilities	.3 s.h.
SPED	536:	Advanced Methods for individuals with Mild/Moderate Disabilities	.3 s.h.
SPED	540:	Behavior Disorders	.3 s.h.
SPED	590:	Special Projects.	3 or 6 s.h.

A maximum of six credits from the 400 level courses listed above can be taken for graduate credit with special permission.

Graduate Assistantships

The Department of Special Education and Rehabilitative Sciences regularly awards a number of graduate assistantships both quarter time (10 hours per week) and halftime (20 hours per week). Assistantships in special education and rehabilitative sciences serve a variety of purposes. Graduate assistants (GAs) assist the professors in developing course materials and resources; evaluating the skills of undergraduates; carrying out literature searches; supervising and assisting undergraduates in the computer lab; **and** delivering services to the participants in the Adult Development Program. Graduate assistantships not only provide unique experiences within the field, but also are an opportunity for the student to pursue advanced training with financial support.

Applicants for a graduate assistantship must have completed all program application requirements and have been admitted in full standing to the program. A separate GA

application must then be submitted to the Department of Special Education and Rehabilitative Sciences. All applications for GAs should be submitted by the beginning of May to ensure consideration for the following academic year.

Note: Graduate students who are completing a student teaching requirement as a part of state certification requirements or other internship or apprenticeship may not hold a graduate assistantship during the semester of their student teaching.

Certification Requirements

For students already holding Pennsylvania Instructional Level I certification in special education or its equivalent and the requisite years of creditable teaching experience, successful completion of the master's program can lead to Pennsylvania Instructional Level 11 certification. Note: It is the responsibility of the student holding a special education certificate from another state to assure that the certificate is equivalent to the Pennsylvania Instructional Level I certificate. Your advisor can assist you in this determination.

For students not already certified in special education but holding a bachelor's degree from an accredited program and wishing to become certified in special education while continuing their graduate studies, an individual course of study leading to both certification and the graduate degree is developed by the student's advisor with consideration for the student's background of education and experience in conjunction with state and program requirements.

Physical Facilities

The Department of Special Education and Rehabilitative Sciences is housed in a two-story wing of Stevens Hall on the Clarion Campus. In addition to the modern classrooms, an array of instructional support technology is available. On-campus resources include the Adult Development Program and The Child Development Center.

In addition to the numerous computer labs across the campus, there is a computer lab in Stevens Hall and another in the Department of Special Education and Rehabilitative Sciences. In the lab, students have access to a variety of instructional and management software along with Apple and MAC hardware and adaptive communication devices for computer and stand-alone devices. Students have access to mainframe computer support through the campus DEC VAC 780 and 785 systems, and through the department, students also have access to computer networks such as SpecialNet and PENN* LINK.

The department maintains ongoing cooperative relations with numerous school districts, Intermediate Units, and rehabilitation programs in the region, all of which are available to assist in providing a wide array of field opportunities.

Release of Data from M.S. Thesis—Publication Policy

In accordance with professional ethics, any information from master's research should be published or otherwise released only in conjunction with the student's advisor. Publications resulting from research done at Clarion University shall give appropriate credit to persons involved in the research, to Clarion University, and to any granting agencies which supported the research.

Special Education Courses

A maximum of six credits from the courses below can be taken for graduate credit with special permission.

SPED 415:	INSTRUCTIONAL DEVELOPMENT AND STRATEGIES FOR INDIVIDUALS WITH MILD/MODERATE DISABILITIES	3 s.h.
Participants engage in the process of individualizing instruction for individuals with mild/moderate disabilities, including: designing basic instructional sequences using behavioral objectives; matching media, learner, and goal characteristics; identifying appropriate instructional strategies; and, evaluating the effectiveness of instruction. Multicultural education is addressed. Prerequisites: SPED 320; ELED 323 and 324 [Rehabilitative science majors exempted]. Each semester.		

- SPED 420: INSTRUCTIONAL DEVELOPMENT AND STRATEGIES FOR INDIVIDUALS WITH SEVERE/PROFOUND DISABILITIES** 3 s.h.
Participants engage in the process of individualizing instruction for individuals with severe/profound disabilities, including designing basic instructional sequences using behavioral objectives; matching media learner, and goal characteristics; identifying appropriate instructional strategies; and evaluating the effectiveness of instruction. Prerequisites: SPED 320; ELED 323 and 324 (rehabilitative science majors exempted). Each semester.
- SPED 425: BEHAVIOR MANAGEMENT IN SPECIAL EDUCATION SETTINGS** 3 s.h.
Participants acquire knowledge and skills related to contemporary Curricular innovations in educational programs for individuals with disabilities with emphasis on sociocultural implications of changing curricular practices and the new instructional media and technology. Prerequisites: SPED 320 (rehabilitative science majors exempted). Each semester.
- SPED 500: CONTEMPORARY ISSUES IN SPECIAL EDUCATION** 3 s.h.
Participants engage in problem-centered analyses and investigations, and in determination of responses relative to the contemporary issues confronting special education.
- SPED 505: CONCEPTS OF INTELLIGENCE** 3 s.h.
Participants engage in an extensive study of the nature of cognition, traditional and contemporary, with emphasis on the development of a paradigm having relevance to the educational process.
- SPED 520: ROLE DEVELOPMENT WITH PARENTS** 3 s.h.
Participants acquire knowledge and skills in working with and involving parents to maximize developmental and learning opportunities for their children with disabilities, and in responding to the unique challenges confronting families of children with disabilities.
- SPED 530: LEARNING DISABILITIES** 3 s.h.
Participants acquire knowledge and skills for designing diagnostic/prescriptive programs in perceptual-motor, cognitive, linguistic, academic, social, and career domains for individuals with specific learning disabilities.
- SPED 535: ADVANCED METHODS FOR INDIVIDUALS WITH SEVERE HANDICAPS** 3 s.h.
Participants acquire knowledge and skills related to the design, implementation, and evaluation of instructional interventions for individuals with severe/profound disabilities.
- SPED 536: ADVANCED METHODS FOR INDIVIDUALS WITH MILD/MODERATE HANDICAPS** 3 s.h.
Participants acquire knowledge and skills related to the design, implementation, and evaluation of instructional interventions for individuals with mild/moderate disabilities.
- SPED 540: BEHAVIOR DISORDERS** 3 s.h.
Participants engage in the study of maladaptive behavior in individuals with emphasis on current definitions, classification systems, major etiological perspectives, and contemporary interventions.
- SPED 590: SPECIAL PROJECTS** 3 or 6 s.h.
Participants engage in either scholarly or applied research related to the education of children and youth with disabilities under the supervision of a faculty member. For those participants electing the thesis option, SPED 590 shall be taken in two semesters of three credits each. During the first semester the participant is required to submit an approved proposal. During the second semester the participant implements the research and completes the project.
- SPED 599: FIELD-BASED INVESTIGATION** 3 s.h.
This course represents the culminating experience in the master's program in special education and requires participants to systematically integrate and apply knowledge and skills developed throughout the program. Under faculty supervision, participants identify an educationally significant problem, conduct literature reviews, formulate and test hypotheses, and report results in a forum open to special education faculty and graduate students. Prerequisites: ED 520 and SPED 535 or 536. Each semester.

Rehabilitative Sciences Courses

A maximum of six credits from the courses below can be taken for graduate credit with special permission.

- REHB 405: SUBSTANCE ABUSE** 3 s.h.
Participants engage in the study of the physiological and psychological implications of drug or alcohol abuse, over-medication, and drug dependence with emphasis on the processes of intervention, advocacy, treatment, and prevention. Fall semester.
- REHB 410: PREVENTION AND TREATMENT STRATEGIES IN SUBSTANCE ABUSE** 3 s.h.
Participants engage in the study of societal pressures, attempts to prevent substance abuse, and treatment strategies along with comparative analysis of efficacy. Prerequisite: REHB 405. Spring semester.

- REHB 510: GROUP PROCESS IN REHABILITATION** 3 s.h.
Participants engage in the study of group development dynamics, theory, leadership styles, participant roles, techniques, and evaluation of effectiveness as applied to rehabilitative services contexts.
- REHB 537: LIFESTYLE AND CAREER DEVELOPMENT** 3 s.h.
Participants engage in the analysis of economic, social, and psychological factors which define the context of educational, vocational, and personal decision-making; decision-making related to vocational development; the role of information in facilitating decision-making; and the varieties of information, resources, and types of access available.
- REHB 545: REHABILITATION: PHILOSOPHY AND PRINCIPLES** 3 s.h.
Participants engage in the analysis of the values, assumptions, and the principles underlying theories of rehabilitation and their relation to the goals and objectives of rehabilitation programs.
- REHB 565: SEMINAR ON REHABILITATIVE SERVICE DELIVERY SYSTEMS** 3 s.h.
Participants explore the continuum of human services delivery systems, with special focus on aging, mental retardation, and substance abuse. History and student professional experiences are considered in addition to current information and trends to identify problems and opportunities for making systems more responsive to consumer needs.
- REHB 575: ADMINISTERING REHABILITATION DELIVERY SYSTEMS** 3 s.h.
Participants engage in the study of the business and personnel aspects of functioning in and managing human service delivery systems, including organization, operations, and management relative to legal, economic, and personnel standards and practice.
- REHB 580: INTERVENTION STRATEGIES IN REHABILITATIVE SCIENCES** 3 s.h.
Participants review and practice a variety of common clinical intervention techniques used by professionals in mental retardation, gerontological, and substance abuse treatment. These include creative and expressive techniques (e.g., art, music, drama, recreation, horticulture), behavioral interventions (e.g., relaxation, systematic desensitization, contracts), and didactic group and individual work.
- REHB 599: FIELD-BASED INVESTIGATION** 3 s.h.
This course represents the culminating experience in the master's program in rehabilitative sciences and requires participants to systematically integrate and apply knowledge and skills developed throughout the program. Under faculty supervision, participants identify an educationally significant problem, conduct literature reviews, formulate and test hypotheses, and report results in a forum open to special education faculty and graduate students. Prerequisite: ED 520. Each semester.

Master of Science Degree in Speech Pathology and Audiology

College of Education and Human Services

Graduate Faculty

Professors: D. Dininny, D. Hetrick, C. McAleer; **Associate Professor:** J. Bauman-Waengler; **Assistant Professors:** J. Jarecki-Liu, K. Linnan, H. Savage; **Instructors:** J. Janes, M. McCarthy

The SPA Department offers graduate programs leading to a Master of Science degree in speech pathology or audiology. The graduate programs are accredited by the Educational Standards Board of the American Speech-Language-Hearing Association.

Program Objectives

The academic goals of the program are:

- To provide a quality education to a small number of master's degree students. The department has a commitment to maintain a faculty-to-student ratio not to exceed 6:1; maintain a faculty with extensive backgrounds who are actively involved in research and scholarship, but dedicated to teaching; and maintain up-to-date materials and equipment for teaching, clinical activities, and research.
- To ensure adequate student knowledge in the normal physical, biological, and psychological aspects of speech, language, and hearing.
- To introduce the student to the closely related professional areas of medicine, teaching of the deaf, psychology, and dentistry.
- To facilitate an interdisciplinary view of disorders of human communication.
- To develop self-study skills necessary to keep abreast of new scientific information.
- To offer a degree program suitable for both the student who plans for the master's degree and the student who plans to pursue doctoral study.
- To prepare students to work in diverse occupational settings including but not limited to hospitals, rehabilitation centers, otolaryngology practices, private practices, public schools, etc.
- To prepare students to carry out research projects in the areas of speech, language, and audiology.

The clinical education goals of the program are:

- **To prepare** students to function as independent clinicians. These levels of function will exceed or be commensurate with clinical certification guidelines suggested by the American Speech-Language-Hearing Association, guidelines for Pennsylvania state licensure in speech pathology and audiology, and standards implemented by the Pennsylvania Department of Education.

- . To improve clinical competencies in the assessment and management of individuals having communication disorders.
- To prepare the student to realize the changing role of the speech-language pathologist and audiologist in our society.
- To prepare **speech-language** pathologists and audiologists to fill diverse roles in their discipline(s).
- . To foster attitudes conducive to high quality, ethical professional practice.
- To prepare the student to complete diagnostic evaluations testing both children and adults.
- . To prepare the student to implement appropriate diagnostic procedures and to draw conclusions and make recommendations based on the results of the diagnostic session.
- . To prepare the student to counsel clients regarding the results of the diagnostic evaluation. Students will be able to relay information concerning the results of the testing as well as inform the client of recommendations for further testing, referral, etc.
- To prepare the student to design and implement a program of rehabilitation for both children and adults. This will include writing lesson plans where short-term and long-term objectives are appropriately formulated.
- To prepare the graduate student to maintain accurate and appropriate records and demonstrate a knowledge that these records are confidential. They will also demonstrate a knowledge that they are accountable for the services that they provide.
- To prepare the student to demonstrate an understanding of professional, clinical, and basic research and to show that they can apply the results of such research to the clinical setting.

Admission Requirements

College of Graduate Studies admission requirements apply with the following additions:

- . A baccalaureate degree.
- . An applicant should have achieved a 2.75 quality-point average (on a four-point scale) for the baccalaureate degree. Applicants with less than a 2.75 quality-point average for the baccalaureate degree must submit a Graduate Record Exam (GRE) score with their application. They may be admitted to a provisional status pending satisfactory completion of six semester hours of graduate study.
- . Fifteen semester hours of credit in courses related to normal development and the sciences related to the use of speech, hearing, and language; three credits in speech pathology; three credits in language disorders; six credits in audiology, including three credits in aural rehabilitation; three credits in clinical practice or clinical observation; three credits in statistics; six credits in **behavioral/social** sciences; three credits in biological/physical sciences; and three credits in mathematics. Students may makeup undergraduate deficiencies.
- . Applicants who fail to satisfy the foregoing requirements may be admitted conditionally. In such cases, the terms of the conditional admission will be specified for the individual applicant.

Degree Requirements

General Regulations and Procedures

Transfer of Credit. The minimum course credit requirement for the master's degree is 33 semester hours. Of this, at least 24 semester hours must be earned at Clarion University of Pennsylvania. A maximum of 30 percent of the total credits **necessary** for completion of the master's degree may be accepted from another accredited graduate school. The student is responsible for filing an official transcript of any work presented for transfer credit.

Advisement. Upon acceptance into the program, students will be assigned to a departmental advisor. A program of study will be planned by the student and his or her advisor and will be subject to the approval of the department committee on graduate studies during the first semester of study. This plan will be filed and maintained in the student's academic file. Students must meet with their academic advisor every semester to pre-register for courses.

Grades. An average grade of "B" (3.00/4.00) is required.

Graduate Courses. Graduate courses are numbered in the 500's. Some courses open to undergraduates (400 numbers) may be taken for graduate credit by permission of the student's advisor. A maximum of six credits at the 400 level may be taken for graduate credit and applied toward a graduate degree.

Specific Requirements

- . The student **must** fulfill all general requirements for the degree and complete a minimum of 33 semester hours of credit for the degree.
- . The graduate student majoring in speech-language pathology will complete a minimum of 30 credits in speech-language pathology courses, including SPA 505, SPA 520, SPA 540, SPA 589, and three credits in SPA 535, Audiology Seminar I.
- . The graduate student majoring in audiology will complete a minimum of 30 credits in audiology, including SPA 535 (six credits), SPA 539, SPA 540, SPA 589, and three credits in speech-language pathology. Students may elect to take one course outside the major providing their major and minor area requirements will have been met. A complete listing of graduate courses in speech pathology and in audiology is carried in the course description section which follows.

Options Thesis, research, and academic programs are available. The decision as to whether a given student shall follow one program or the other rests with the department, as it considers the recommendations of the advisor and the request of the student. The student will complete an approved program under one of the following options:

Thesis Option:	Thirty-six semester hours, including six credits in SPA 590. After the completion of a satisfactory thesis, the candidate will be asked to make an oral defense of this thesis before a faculty committee.
Research Option:	Thirty-three semester hours, including three credits in SPA 590. This option does not require a thesis, but does require a research paper or project.
Academic:	Thirty-six semester hours, including an additional six credits in the major.

- clinical proficiency must be demonstrated.
- **Two externships** in a clinic and/or public school are necessary to satisfactorily complete the clinic clock hours required for the degree. Students must have a cumulative quality-point average of 3.00 and must be making satisfactory progress toward the degree to be permitted to enroll in the **externship** program.
- . Academic and clinical practicum requirements for the Certificate of Clinical Competency in Speech-Language Pathology or Audiology of the American Speech-Language-Hearing Association must be fulfilled.
- . Students who wish to obtain a Pennsylvania Teaching Certificate for Speech Correction must obtain a master's degree in SPA, must complete an **externship** in the public schools, and must complete SPA 554: Organization and Administration of Speech and Hearing Programs. In addition, the student must pass the following tests: NTE Core Battery tests, and Specialty Area Test—Teaching Speech to Students with Language Impairments. Applications for these tests can be obtained at the Office of Field Services.

Placement

Graduates of the program are assisted by the faculty and the university's Career Services in finding professional positions in public and private schools, colleges and universities, hospitals, research centers, health departments, clinical service centers, industry, or private practice. Graduates of the program have historically enjoyed excellent professional placement.

Graduate Assistantships

A number of graduate assistantships and other forms of financial aid are available. Persons wishing to be considered for financial assistance should so indicate at the time of application.

Externship

Six- and 12-credit **externships** are available in a wide variety of environments to augment the classroom experiences and broaden clinical experiences.

Physical Facilities

The academic component of the department is housed in the ground floor of Davis Hall. Facilities include classrooms, a speech science/anatomy and physiology lab, a hearing science lab, a microcomputer lab, a library which includes a large variety of videotape resources, a student study area with individual carrels, and departmental and faculty offices.

An independent Speech and Hearing Clinic is located on the ground floor of the Keeling Health Center and includes individual and group clinic rooms, a conference and seminar room, audiological suites, a clinical instrumentation laboratory, a student study area, a reception area, videotaping facilities, and a 10-station closed circuit television system.

Speech Pathology and Audiology Courses

SPA 422: **CLINICAL EXTERNSHIP** 6;12 s.h.
Supervised observation of and participation in school and/or clinic environments. Prerequisite: SPA 540.

SPA 458: **LANGUAGE DISORDERS IN CHILDREN** 3 s.h.
This course is designed to provide students with an understanding of language disorders in children, etiological factors associated with them, diagnostic and evaluative techniques, and therapeutic methodologies. Prerequisite: SPA 457. Spring, annually.

SPA 464: AUDIOLOGY 3 s.h.
A continuation of SPA 460: Hearing Problems. Prerequisite: SPA 460.

SPA 472: SEMINAR IN SPEECH SCIENCE 3 s.h.
This course begins with a review of the speech mechanism as a servosystem and the acoustics of speech. This part of the course focuses attention on the notion that the speech mechanism is a chain of events physiologically, acoustically, and perceptually. Each link in this chain of events is studied, including pertinent research. The phonology of speech is also investigated.

SPA 500: APHASIA 3 s.h.
This course is a comprehensive study of the neuroanatomical implications related to acquired aphasia (dysphasia) in adulthood, although study of the symptoms and treatment of both sensory states and motor disturbances in aphasia is made. The current literature is reviewed and facilities are investigated. Opportunities are provided for the student to participate in individual and group therapy, and for visits to centers where these types of problems are diagnosed and treated. Guidance and counseling are provided to design an independent study in this area.

SPA 505: ARTICULATION 3 s.h.
Articulation is viewed as part of oral language and is studied in relation to other developing functions. Phonological development and disorders as well as traditional and sensory motor viewpoints are explored. The assessment of phonological and articulator behaviors is stressed. Differential diagnosis is emphasized. The major therapies are examined with their rationales for treatment.

SPA 510: SEMINAR IN NEUROPATHOLOGY 3 s.h.
This course is a comprehensive study of pathologies of the central nervous system. Methods for identifying and treating speech, language, and communication problems associated with progressive and non-progressive neurological disorders are explored. Neuropathologies studied include the dementias, syndromes associated with right hemisphere lesions, and deficits subsequent to closed head injury. A unit on normal swallow and dysphagia is included in the course. Opportunity will be provided for independent investigation and clinical participation.

SPA 515: OROFACIAL ANOMALIES 3 s.h.
This course is a comprehensive study of the embryological, anatomical, and communicative aspects of the person with velopharyngeal incompetence. The current research findings in therapy and rehabilitation are reviewed. State facilities are investigated. Opportunities for observation of cleft palate/VPI subjects and a cleft palate team are provided. Guidance and counseling are provided to design an independent study in this area.

SPA 520: LANGUAGE DISORDERS 3 s.h.
Models of the language function with their justifications are identified and critically analyzed. A review of normal language development is included to provide comparison with deviations. Differential diagnoses of language disorders such as those associated with deafness, emotional problems, mental retardation, and aphasia are studied. Diagnostic procedures utilized with children having language delay are examined. The major therapies for language disorders in children are investigated.

SPA 525: Stuttering 3 s.h.
This course emphasizes investigation of the major theories and therapies of stuttering. Theories of etiology and of development of stuttering are included. The development of an undemanding of stuttering behavior and similar speech behavior is included. Management strategies and therapies are also investigated.

SPA 530: VOICE 3 s.h.
This course includes the anatomical, physiological, and acoustical bases of voice. Various philosophies regarding the range of normal voice function are explored and deviations, including pathology, are examined. Current practices of diagnosis and treatment and the research related to this area are investigated.

SPA 532: PHYSIOLOGY AND PATHOLOGY OF THE AUDITORY SYSTEM 3;6 s.h.
In this seminar the first three semester hours will deal with normal and abnormal functioning of the auditory system. A critical study of selected research in the following areas will be made: ear pathologies, transformer action and distortion properties of the middle ear, methods of stimulating the cochlear, and neurophysiology of the auditory system. The second three semester hours will deal with the electrophysiological monitoring of the auditory system with emphasis on the clinical application of electronystagmography and evoked response audiometry.

SPA 533: INSTRUMENTATION AND PSYCHOACOUSTICS 3 s.h.
This seminar deals with instruments used in the audiological clinic and selected research related to psychoacoustics.

SPA 534: OTOLARYNGOLOGY 1 s.h.
This course is an introduction to the profession of otolaryngology. The course is taught by a board certified physician and offered once a year.

SPA 535: AUDIOLOGY SEMINAR 3;6 s.h.
This course is divided into two three-credit seminars. The first seminar reviews anatomy and physiology of the ear and ear pathologies. Basic audiometric test procedures for clinical audiology will be studied. The second seminar deals with special audiometric testing, including site of lesion testing, an introduction to evoked potential testing and electronystagmography, and industrial audiology.

- SPA 536: DEVELOPMENTAL AUDIOLOGY 3 s.h.**
Audiological problems of the pediatric and geriatric population.
- SPA 538: INDUSTRIAL AUDIOLOGY 3 s.h.**
This course covers the various noise parameters, instrumentation for noise measurement, and measurement techniques. Effects of noise on man and industrial hearing conservation procedures will be included.
- SPA 539: HEARING AIDS 3 s.h.**
Techniques for determining the selection and fitting of hearing aids for children and adults.
- SPA 540: CLINICAL PRACTICE 3;6 s.h.**
This course entails practice, under supervision, in applying theory to the assessment and management of individuals from preschool through adulthood having significant disorders of speech, hearing, or language. The clinical experience is relatively independent in the assessment, organizing, and carrying out of effective plans of therapy. The student should demonstrate an interdisciplinary approach and be able to generalize on the area of the disorder treated, as well as deal appropriately with the specific clients treated.
- SPA 550: MOTOR SPEECH DISORDERS 3 s.h.**
This course explores the causes, nature, and dynamics of both developmental and acquired forms of the motor speech disorders of apraxia and dysarthria. The specific nature of speech disturbances associated with lesions of the motor system and current diagnostic protocols and management strategies associated with each identified.
- SPA 554: ORGANIZATION AND ADMINISTRATION OF SPEECH AND HEARING PROGRAM 3 s.h.**
The organization and administration of clinical programs in a variety of environments are studied.
- SPA 589: INTRODUCTION TO GRADUATE STUDY 3 s.h.**
This course reviews the history and structure of the professions of speech-language pathology and audiology and their relationship to related disciplines. The design of research and professional writing style employed in the *Journal of Speech and Hearing Research* is emphasized.
- SPA 590: RESEARCH 3;6 s.h.**
The student may complete a study in speech or language pathology and audiology or dated areas under the supervision of a staff member. The student may select the thesis option in which six credits are required. The student may select the research option in which the or six credits culminate in a written report presented to the faculty advisor. Types of investigations which might be completed are original studies, comprehensive literature reviews, replication of studies, or completion of a portion of a larger study. Students must fill out independent study forms with their research advisor before registering for SPA 590.
- SPA 598: SPECIAL TOPICS 1-6 s.h.**
Topics in various areas of speech pathology and audiology. The format used will be selected by the professor as most suitable to the study. The course may be offered on request of students, subject to the availability of staff. Enrollment by consent of the instructor. On demand.
- SPA 599: INDEPENDENT STUDIES IN SPEECH PATHOLOGY AND AUDIOLOGY 1-3 s.h.**
This course is designed to provide students with an opportunity to explore an area of special need or interest in speech pathology and audiology in depth under the supervision of a member of the department. Students must develop a proposed study plan and secure the approval of the proposed director and department chair prior to registration. Repeatable for a maximum of 6 s.h.

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David Tomeo, M.A.	Director of University Centers
Mary Walter, M. Ed.	Director of Orientation Program and Assistant to Dean of Student Life Services
Harold Wassink, M.A.	Coordinator of Student Activities
Ragan Watson, M.M.A.	Assistant Director of Financial Aid
Laura Zirkle, M.A.	Resident Director

Graduate Faculty

Year in parentheses indicates year of appointment to faculty

LEONARD ACKERMAN, (198 I), Ed. D., Professor, Administrative Science
Rutgers, The State University, B. A.; George Washington University, Ed.D.

- ROBERT BALOUGH, (198 1), Ph. D., Director, MBA Program, Professor, Economics
Northern Illinois University, B. A., M. A., Ph.D.
- WILLIAM S. BARNES, (1984), Ph. D., Associate Professor, Biology
Marietta College, B. A.; University of Massachusetts, Amherst, Ph.D.
- JACQUELINE BAUMAN-WAENGLER, (199 1), Ph. D., Associate Professor, Speech Pathology and
Audiology
Colorado State University, B. S.; University of Colorado, M.A., Ph.D.
- WILLIAM R. BELZER, (1982), Ph. D., Professor, Biology
Franklin and Marshall College, B. A.; University of Pennsylvania, Ph.D.
- C. LARRY BERING, (1 988), Ph. D., Associate Professor, Chemistry
University of Houston, B. S.; Purdue University, Ph.D.
- NICHOLAS J. BEZAK, (1988), Ph. D., Professor, Mathematics
The College of Steubenville, B. A.; Carnegie-Mellon University, M. S.; University of Pittsburgh,
Ph.D.
- DIPENDRA BHATTACHARYA, (1986), Ed. D., Professor, Mathematics
Banaras Hindu University, B. S., M. S.; Queens University, Canada, B.Ed.; State University of New
York at Stony Brook, M. S.; State University of New York at Buffalo, Ed.D.
- GERALD C. BISH, (1976) J. D., Assistant Professor, Finance
University of Pittsburgh, B. A.; Suffolk University Law School, J.D.
- JOSEPH BODZIOCK, (199 1), Ph. D., Assistant Professor, English
St. Joseph's College, B. A.; University of New Hampshire, M. A.; University of Minnesota Ph.D.
- KAREN D. BOLINGER, (1994), Ph. D., Assistant Professor, Mathematics
Ohio State University, B. S.Ed., Ph.D.
- LISBETH J. BROWN, (1973), D.Ed., Associate Professor, Education
Mercyhurst College, B. A.; Edinboro State College, M.Ed.; Indiana University of Pennsylvania
D. Ed.
- WILLIAM E. BUCHANAN, (1993), Ed. D., Assistant Professor, Library Science
The University of North Carolina, A. A.; Georgia State University, B. A.; The University of
Southern Mississippi, M. L. S., M. S.; Greensboro, Ed.D.
- TERRY P. CAESAR, (1988), Ph. D., Professor, English
University of Redlands, B. A.; University of Washington, Ph.D.
- WILLIAM D. CAMPBELL, (1 974), Ph. D., Professor, Accountancy
Gannon College, B. S.; University of Pittsburgh, M. B. A., Ph.D.; Commonwealth of Pennsylvania,
CPA.
- EDWARD CAROPRESO, (199 1), Ph. D., Assistant Professor, Education
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- SHIMIN CHEN, (1992), Ph. D., Professor, Accountancy
Shanghai University, B. A., M. A.; University of Georgia, Ph.D.
- RICHARD COUCH, (1990), Ed. D., Assistant Professor, Education
Emporium State University, B. S. E.; Virginia Polytechnic Institute and State University, M. S.,
Ed.D.
- ANNE CREAMY, (1991), D.Ed., Assistant Professor, Education
St. Mary's College, B.A.; Indiana University of Pennsylvania, M.Ed., D. Ed.
- PETER L. DALBY, (1976), Ph. D., Professor, Biology
Genesee County Community College, Associate in Science; Michigan State University,
B. S., M. S., Ph.D.
- MARY LYNNE DAVIS, (1988), Ph. D., Assistant Professor, Special Education
Youngstown State, A. B.; Winthrop College, M. S.; University of Pittsburgh, Ph.D.
- RICHARD S. DELUCA, (1993), Ph. D., Assistant Professor, Education, and Director, Center for
Educational Leadership
St. Vincent College, B. A.; Duquesne University, M.Ed.; University of Pittsburgh, Ph.D.

- LARRY R. DENNIS, (1979), Ph. D., Professor, Chair, English
Harpur College, B. A.; University of Washington, M.A.; Pennsylvania State University, Ph.D.
- DONALD H. DININNY, (1 %5), Ph. D., Professor, Speech Pathology
Clarion University, B. S.; Pennsylvania State University, M.Ed.; Ohio University, Ph.D.
- TERRI L. DUNKLE, (197 I), M. A., Associate Professor, Special Education
Clarion University, B. S.; University of New Mexico, M.A.
- KATE H. EGGLETON, (1986), Ph. D., Associate Professor, Biology
Iowa State University, B. S.,M.S.; University of Massachusetts, Amherst, Ph.D.
- JEFFREY EICHER, (1983), J. D., Professor, Chair, Finance
Clarion University, B. S.; University of Pittsburgh, J. D.; State of Pennsylvania, CPA.
- JOHN G. EICHLIN, (1979), J. D., Associate Professor, Finance
Hiram College, B. A.; University of Akron School of Law, J.D.
- ROGER A. ENGLE, (1%7), M. S., Associate Professor, Mathematics
Slippery Rock University, B. S.; University of Alaska, M.S.
- JOHN J. ERNISSEE, (1983), Ph. D., Associate Professor, Geography and Earth Science
SUNY Oneonta, B. A.; University of South Carolina, M. S., Ph.D.
- SOGA EWEDEMI, (1988), Ph. D., Professor, Finance
Georgia State University, B. B. A., M.B.A.; University of Pennsylvania, M. A., Ph.D.
- ALBERT R. EXTON, (1969), **Ph. D., Professor**, Physics
Carnegie-Mellon University, B. S.; University of Pittsburgh, Ph.D.
- CARL S. FARINACCI, (1 983), J. D., CPA, Associate Professor, Accountancy
University of Akron, B. S. C. E.,J.D.; Kent State University, M. B.A.; Case Western Reserve University, M.Acc.
- CARMEN S. FELICETTI, (1970), **Ed. D., Professor, Communication, Chair**
California University, B. S.; Indiana University, M. S., Ed.D.
- LINDA FELICETTI, (197 I), Ph. D., Professor, Marketing
Western College, B. A.; Indiana University, M. B.A.; University of Pittsburgh, Ph.D.
- RAYMOND FERROZ, (1990), Ph. D., Associate Professor, Special Education
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