The School of Allied Health Professions
Student Bulletin is available on-line at:
http://www.unmc.edu/alliedhealth/
Under Current Student Resources, follow the Student Bulletin link.
I hereby certify that to the best of my knowledge the attached is true and correct in both content and policy including standard of progress.

Janet McLaughlin
Office Manager
Certifying Official
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## Academic Calendar

### 2007-2008

**Fall Semester 2007**
- Orientation-Registration: August 23-24
- Classes begin: September 3
- Vacation: November 22-24
- Classes end: May 2
- Exam schedule set by program

**Spring Semester 2008**
- Classes begin: January 2
- Classes begin: January 7
- Vacation: January 21
- Vacation (Spring Break): March 16-23
- Classes end: May 2
- Exam schedule set by program
Governance of the University of Nebraska

University of Nebraska
Board of Regents
Charles S. Wilson, M.D., District 1, Lincoln
Howard Hawks, District 2, Omaha
Chuck Hassebrook, District 3, Lyons
Bob Whitehouse District 4, Papillion
Jim McClurg, Ph.D., District 5, Lincoln
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Bob Phares, District 7, North Platte
Randolph Ferlic, M.D., District 8, Omaha

Student Regents
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David Solheim, UNL
Jonathan Henning, UNMC
Alex Williams, UNO

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Linda Pratt, Ph.D., Executive Vice President and Provost
David E. Lechner, Vice President for Business and Finance
John C. Owens, Ph.D., Vice President and Vice Chancellor, IANR
Richard R. Wood, J.D., Vice President and General Counsel
Pete Kotsiopulos, BSBA, Vice President for University Affairs
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Harold M. Maurer, M.D., Chancellor of UNMC
Doug Kristensen, J.D., Chancellor of UNK
Harvey S. Perlman, J.D., Chancellor of UNL

University of Nebraska Medical Center
Administration
Harold M. Maurer, M.D., Chancellor
Thomas H. Rosenquist, Ph.D., Vice Chancellor for Research
Rubens Pamies, M.D., Vice Chancellor for Academic Affairs
Donald S. Leuenberger, M.A., Vice Chancellor for Business and Finance
David A. Crouse, Ph.D., Associate Vice Chancellor for Academic Affairs
John W. McClain, Ph.D., Associate Vice Chancellor for External Affairs
Robert D. Bartee, M.A., Vice Chancellor for External Affairs
John W. Reinhardt, D.D.S., Ph.D., Dean, College of Dentistry
John L. Gollan, M.D., Ph.D., Dean, College of Medicine
Connie Mitchell, MA, RT(R)(CT), Program Director
Tammy Jones, MPA, RT(R), Clinical Education Coordinator
Charles A. Enke, M.D., Medical Advisor

Clinical Laboratory Sciences Division
Clinical Laboratory Science Education
Linda Fell, M.S., MT (ASCP), Program Director
James Wisecarver, M.D., Ph.D., Medical Director

Cytotechnology
Amber Donnelly, MPH, SCT (ASCP), Program Director
Stan Radio, M.D., Medical Director

Clinical Perfusion Science Education
David W. Holt, MA, CCT, Program Director
John H. Tinker, M.D., Medical Director

Medical Nutrition Education
Glenda R. Woscyna, MS, RD, LMNT, Program Director

Physical Therapy Education
Patricia A. Hageman, Ph.D., PT, Program Director
Gib Willett, Ph.D., PT, O.C.S., CSCS, Associate Director for Internal Affairs
Joe Norman, Ph.D., PT, C.C.S., FAACVPR, Associate Director for External Affairs

Physician Assistant Education
James E. Somers, PA, Ph.D., Program Director
Gerald F. Moore, M.D., Medical Director

Radiation Science Technology Education Division
James B. Temme, MPA, RT(R) QM, Associate Director
Craig Walker, M.D., Medical Director, RSTE

Diagnostic Medical Sonography
Kim Michael, MA, RT(R), RDMS, RVT, Program Director
Jill O’Neal, BSRT(R), RDMS, Clinical Education Coordinator
Joseph C. Anderson, M.D., Medical Advisor

Nuclear Medicine Technology
Marcia Hess Smith, BS, CNMT, Program Director
Stephanie Stevens, BS, CNMT, RT(N) Clinical Education Coordinator
Jordan Hankins, M.D., Medical Advisor

Radiation Therapy Education
Lisa Bartenhagen, MS, RT(R)(T), Program Director
Jana Koth, BS, RT(R)(T), Clinical Education Coordinator
Charles A. Enke, M.D., Medical Advisor

Radiography
Connie Mitchell, MA, RT(R)(CT), Program Director
Tammy Jones, MPA, RT(R), Clinical Education Coordinator
Timothy E. Moore, M.D., Medical Advisor
Adam Stevens, BS, RT(R)(CT)(MR), Program Coordinator, CT/MRI
Jean Saigh, MD, Medical Advisor

Distance Education – SAHP
Jan Tompkins, MPH, MT (ASCP) Distance Education Director
This bulletin provides information about the educational programs offered through the University of Nebraska Medical Center (UNMC) School of Allied Health Professions (SAHP). The UNMC faculty, the administration, and the University of Nebraska Board of Regents have authorized statements presented in this bulletin as indicating current requirements, practice and procedures for application for admission to the School and the Medical Center; admission requirements for residents and non-residents; course offerings, content and description; general and professional requirements for graduation; tuition and fees; and costs for education.

Acceptance of registration by the University of Nebraska and admission to any educational program of the University does not constitute a contract or warrant that the University will continue indefinitely to offer the program in which a student is enrolled. The University expressly reserves the right to change, phase out, or discontinue any program.

The listing of courses contained in any University bulletin, catalog, or schedule is by way of announcement only and shall not be regarded as an offer of contract. The University expressly reserves the right to (1) add or delete courses from its offerings, (2) change time or locations of courses or programs, (3) change academic calendars without notice, (4) cancel any course for insufficient registrations, or (5) revise or change rules, charges, fees, schedules, courses, requirements for degree and any other policy or regulation affecting students, including, but not limited to, evaluation standards, whenever the same is considered to be in the best interests of the University.

**Equal Educational Opportunities**

The University of Nebraska Medical Center is committed to being an institution in which employees can realize their maximum potential in the workplace and students can engage fully in the learning process. Diversity in a representative faculty, student, and staff population is a hallmark of a premier academic and dynamic institution.

The University of Nebraska Medical Center declares and affirms a policy of equal educational and employment opportunities, affirmative action in employment, and nondiscrimination in providing its services to the public. Therefore, the University of Nebraska Medical Center shall not discriminate against anyone based on race, age, color, disability, religion, sex, national or ethnic origin, marital status, Vietnam-era veteran status, or special disabled Veteran status. Sexual harassment in any form, including hostile environment and quid pro quo, shall not be condoned. Prompt and appropriate action shall be taken against any individual found to be in violation of this policy. Prompt and appropriate corrective action shall also be taken in instances of irresponsible, false accusation of sexual harassment.

The University of Nebraska Medical Center reaffirms that all women and men – administrators, faculty, staff, and students – are to be treated fairly and equally with dignity and respect. Any form of discrimination, including sexual harassment, is prohibited. This policy is enforced by federal law and by the University of Nebraska Board of Regents policies. The UNMC Affirmative Action Officer, Jane E. Harris, Division Director of Human Resources – Employee Relations, monitors the University of Nebraska Medical Center’s affirmative action and non-discrimination policies.

A work and academic environment free of discrimination is the responsibility of every member of the campus community. The UNMC Affirmative Action Officer, Carmen Sirizzotti, Division Director of Human Resources – Employee Relations is responsible for hearing complaints, concerns, reports of problems, and for providing assistance in such matters as the nondiscrimination or sexual harassment policies and the UNMC grievance process. University officials (i.e., Vice Chancellor, Dean, Director, Department Chair, Ombuds Team Member) are also responsible for assisting faculty, staff and students in receiving appropriate responses to complaints or issues. Faculty, staff and students are responsible for bringing forward complaints, concerns, problems or issues regarding discrimination or sexual harassment to either the UNMC Affirmative Action Officer, Carmen Sirizzotti, Division Director of Human Resources – Employee Relations or to a University official. Faculty may also report complaints of discrimination or sexual harassment directly to the Faculty Senate Grievance Committee, to Kurtis Cornish, PhD, (Committee Chair) at 402/559-4372, or at 984574 Nebraska Medical Center, Omaha, NE 68198-4574.

The word “ombudsman” originated in Sweden and means “representative of the people.” The University of Nebraska Medical Center has established a diverse team of ombudspersons to help students, residents, faculty, and staff resolve problems and to promote fair and equitable treatment for all members of the UNMC community. David Carver, Ph.D. is the designated ombudsperson for students and residents. Rather than taking sides in a dispute, the ombudsperson assists the parties in gathering accurate information and seeking non-adversarial solutions. Confidentiality is maintained regarding all student complaints or concerns. Dr. Carver can be reached in the Student Life Center room 3015, or at (402) 559-4291.

The University reserves the right to take appropriate action against prohibited discrimination affecting the work or academic environment in the absence of a complaint from an individual.

In addition to individual college bulletins, the following offers pertinent information for students:

"UNMC Student Handbook" -- a reference guide to student life at the Medical Center is now available on-line at: [http://net.unmc.edu/care/docs/handbook.pdf](http://net.unmc.edu/care/docs/handbook.pdf)

Information on scholarships and financial aid can be found on: [http://www.unmc.edu/5/students/studentservices/financialaid/index.htm](http://www.unmc.edu/5/students/studentservices/financialaid/index.htm)

For additional information, please contact:
School of Allied Health Professions
University of Nebraska Medical Center
985150 Nebraska Medical Center
Omaha, Nebraska 68198-5150
(402) 559-7428
All statements within this bulletin are announcements of present policy only and are subject to change at any time without prior notice. They are not to be regarded as offers to contract.

**History**

The Legislative Act of February 15, 1869, provided for the formation of the University of Nebraska, and included provision for a college of medicine. In 1883, the University of Nebraska College of Medicine was established at Lincoln. It continued in operation until the 1887 session of the Legislature withdrew its appropriation, necessitating discontinuance of the college on May 19, 1887. The Omaha Medical College, incorporated at Omaha in 1881, became a part of the University of Nebraska in 1902. The merger resulted in the first two years of the four year medical curriculum being given in Lincoln and the last two years in Omaha. Since 1913 the entire curriculum has been offered in Omaha. The College of Medicine is a component of the University of Nebraska Medical Center, one of the four major campuses of the University of Nebraska System.

At its October 1972 meeting, the Board of Regents of the University established the School of Allied Health Professions as a formal entity of the College of Medicine on the Medical Center Campus.

The University of Nebraska Medical Center has been engaged in the education of allied health personnel for five decades. Programs of a continuing and growing nature have been established and maintained in diagnostic, therapeutic and technological fields. Every estimate of the health care needs of the people of the United States recognizes the contributions of the allied health professions and brings forth the reminder that new and sometimes innovative allied health professional fields will be identified in the near future.

The education of allied health personnel at the University of Nebraska began in the early 1930s with a class in Medical Technology (now Clinical Laboratory Science) and a class in Radiologic Technology. Both programs have awarded Bachelor of Science degrees since 1948. In addition a certificate program in Radiologic Technology was offered until 1972 when it was replaced by an associate degree option.

Stimulated by a growing demand for a wide variety of health professions, the SAHP has established additional educational programs to meet these needs. These programs include: The Bachelor of Science degree program in Physical Therapy Education (1970) which was replaced by the Master of Physical Therapy program in August 1989, which was then replaced by a Doctorate of Physical Therapy in 2001; the Physician Assistant baccalaureate degree program (1973), later replaced in 1993 by the Master of Physician Assistant Studies; the Nuclear Medicine Technology associate degree program (1972) and the baccalaureate degree program (1975), and the Radiation Therapy Technology certificate program (1973).

In addition to these formal degree programs, a post-baccalaureate generalist dietetic internship program was initiated in 1976 to provide experiences in clinical, administrative, community and consulting dietetics.

At its March 1988 meeting, the Board of Regents of the University approved a new program which incorporates the training of radiographers, nuclear medicine technologists, radiation therapy technologists, and diagnostic medical sonographers into one Bachelor of Science degree in Radiation Science Technology Education.

Approval was obtained at the October 1989 meeting of the Board of Regents to establish a Clinical Perfusion Education Program within the SAHP. This new program admitted its first students in August 1990 and awarded a post-baccalaureate certificate upon completion of the 21-month training program. In May of 1999, the Clinical Perfusion Program was changed to offering a Masters of Perfusion Science degree. The latest program, Cytotechnology, was approved and accepted its first class for the fall semester 1994. A post baccalaureate certificate is awarded at completion of the Cytotechnology Program.

**Educational Mission**

The educational mission of UNMC is to improve the health of Nebraskans through learner-centered, outcomes-focused educational programs that provide graduates with a strong general education background, professional knowledge, technical competencies, and lifelong learning skills. Each program’s curriculum provides course content as well as mentoring and evaluation of students to assure the development and practice of critical thinking, problem-solving, ethical decision-making, cultural competency, professional behavior, teamwork, leadership, and oral and written communication skills. The curriculum builds on the general education backgrounds acquired by students through required college prerequisite courses.

All student applicants, including the SAHP baccalaureate degree programs, have met general education prerequisites in colleges before matriculation. Nonetheless, SAHP courses stress such matters as oral presentation, creative writing, biomedical ethics, professional behavior and attitudes, awareness of trends in health care, responsibility to society, and an attitude toward and capacity for lifelong learning. Slowly, a campus environment of art, music and humanities is being fostered because UNMC realizes that health care professionals must broaden their focus to be full members of society.

**Purpose**

The purpose of the School of Allied Health Professions is:

1. to provide the educational programs needed to prepare allied health professionals to serve as members of the health care delivery system;
2. to provide selected continuing education programs for practicing allied health professions;
3. to provide opportunities for the faculty to further the body of knowledge within their disciplines through research and creative activity;
4. to provide consultant services and leadership to groups and organizations concerned with the delivery of health care;
5. to provide services as appropriate to patients and to the public so that the health of the populace may be improved and maintained.

Goals
The goals of the School of Allied Health Professions are:
1. to provide and supervise high quality academic programs and practical learning experiences for qualified students wishing to enter one of the selected allied health professions;
2. to provide students with a model education system that is based upon scientific and technological excellence and a concern for total patient care;
3. to provide the State of Nebraska, the region and the nation with graduated allied health professionals who will function as part of the health care delivery system;
4. to provide the continuing education programs to fulfill the needs of allied health professions in the State of Nebraska, the region and the nation;
5. to develop and provide selected post-graduate programs for allied health professionals who wish to increase their proficiency as teachers, researchers and administrators in the health care delivery system;
6. to periodically provide for the review of existing programs through critical self-analysis; maintain and improve present cooperative programs; and encourage research and the development of new and innovative programs that will improve the delivery of health care;
7. to provide an environment that will meet the needs and goals of individual students and will stimulate the faculty to engage in creative activity and to continue their own education;
8. to provide assistance in health manpower planning on a state-wide and regional basis and to cooperate with other health care agencies to improve the quality of health care;
9. to provide, within the educational framework, service to the community and state in health care delivery.

Educational Programs
The following educational programs are offered by the School of Allied Health Professions:

- **Clinical Laboratory Science Education**
  - Bachelor of Science in Clinical Laboratory Science
- **Clinical Perfusion Science Education**
  - Master of Perfusion Science
- **Cytotechnology Education**
  - Post-Baccalaureate Certificate
- **Medical Nutrition Education**
  - Post-Baccalaureate Certificate
- **Physical Therapy Education**
  - Doctor of Physical Therapy
- **Physician Assistant Education**
  - Master of Physician Assistant Studies
- **Radiation Science Technology Education:**
  - Diagnostic Medical Sonography
  - Nuclear Medicine Technology
  - Radiation Therapy Technology
  - Radiography
  - Bachelor of Science in Radiation Science Technology

UNMC enjoys full accreditation of all its colleges, programs, and sites by The Higher Learning Commission and is a member of The North Central Association of Colleges and Schools:
30 North LaSalle Street, Suite 2400,
Chicago, IL  60602-2504
Telephone 800-621-7440 or www.ncahighlearningcommission.org

In addition to the Higher Learning Commission, all SAHP academic programs are accredited by nationally recognized programmatic accreditations.

Distance Education Programs
The SAHP is committed to contributing to the knowledge base of allied health professionals, integrating education with clinical service to meet the health care needs of citizens of the State of Nebraska, and increasing access to allied health education programs, learning, and continuing education opportunities through distance education.

The SAHP has established distance learning programs with partner health care institutions, primary health care providers, and other higher education institutions. These collaborative partnerships provide the opportunity for students to complete cytotechnology, clinical laboratory science, radiography, and radiation therapy education programs at various clinical affiliate sites across the state of Nebraska and surrounding states. The SAHP employs several distance teaching and learning methods to deliver courses to off-campus students including; the online course management system Blackboard®, video and teleconferencing, and on-site clinical instruction and preceptorships. More allied health distance education program expansion is planned over the next several years.

The SAHP also offers options for degree completion to allied health professionals seeking to continue their education. Undergraduate and graduate distance education options are available to qualified health care professionals who wish to continue working and remain in their community while obtaining a higher degree from UNMC.

To find out more about distance education options and programs at the School of Allied Health Professions, check out our website at: [http://www.unmc.edu/alliedhealth/de.htm](http://www.unmc.edu/alliedhealth/de.htm).
Admission Information

Admission requirements, dates for applying and application procedures vary for the programs and are summarized in the sections of this bulletin which describe each profession and curriculum. The potential applicant should become acquainted with this information prior to completing on-line application forms; the forms available for on-line submission or downloading can be found at: [http://www.unmc.edu/5/students/studentservices/application.htm](http://www.unmc.edu/5/students/studentservices/application.htm).

Various credits earned in other institutions or by alternative educational procedures will be evaluated for acceptance for transfer to the School of Allied Health Professions.

Usually college credit earned from an accredited college is acceptable to the University of Nebraska. Grades from other than a University of Nebraska Campus must be at least "C" if the course is to be accepted for transfer credit. The University reserves the right to evaluate all hours submitted on an application for transfer.

Applicants who are not enrolled in the University of Nebraska when applying for admission are required to provide official copies of high school and college transcripts. The applicants should request that schools forward their transcripts directly to the Director of Academic Records, University of Nebraska Medical Center. Application fees must be enclosed when mailing the completed application form(s). For information about fees refer to "Fees and Expenses" on pages 9 and 10.

Students enrolled in either the University of Nebraska-Lincoln or the University of Nebraska at Omaha will use the application form plus an application for "CHANGE OF CAMPUS" which is available with directions from any University of Nebraska Registrar's Office. Students using this procedure receive consideration for selection from an applicant pool including all other applicants.

Enrollment in each program is limited and pre-determined. Evaluation of the qualifications of each applicant and the final selections for admission are made by the faculty of each program.

Transferability, Applicability and Recording of Advanced Standing Credit

The University of Nebraska Board of Regents on January 11, 1975, established policy resulting in these statements:

"The University of Nebraska Medical Center Registrar will maintain a record of names and credit hours of courses taken at other institutions of higher learning in Nebraska, and upon the student's request, provide unofficial copies of such records only as authorized by the Family Educational Rights and Privacy Act of 1974."

"Grades received in courses presented for advanced standing credit will not appear on the permanent record sheet."

As a result of the Regents' action, hours presented for transfer by applicants will be recorded by the University and be made a part of the student's permanent University record.

Students' opportunities to apply pre-professional hours earned in other institutions to the entrance and the degree requirements of UNMC educational programs are directly affected by the relationships of medicine, nursing, pharmacy, dentistry and the programs of the allied health professions to their respective professional accreditation agencies and associations. Such organizations require that pre-professional hours be completed in accredited institutions. Accordingly, the record of advanced standing credit hours prepared for use by the deans and faculties of UNMC units carries this reminder to the newly admitted student:

"The above hours are accepted for transfer to the University. Their application to your degree requirement depends upon the regulations and restrictions of your college."

Following preparation of the record of advanced standing credits listed as "transferred," the dean and faculty of the UNMC educational program review the record and make decisions regarding applicability of each course to requirements for pre-professional education and for graduation from the professional college.

The permanent record of each student prepared from the advanced credit worksheet will include the name of the student, colleges attended, number of semesters (or quarters and summer sessions at each), inclusive years, degrees and dates received, name and location of high school, and name of the UNMC professional college or division the student is entering. Courses of college level in academic areas having applicability or relationship to UNMC educational programs which are graded "C" or better by an institution of higher education in the United States having regional accreditation may, by decision of the dean and faculty, be applied to meet admission requirements for pre-professional education or to meet course requirements for graduation. In addition, courses of college level with a grade of "C or better" from non-accredited institutions which have been given to the "A rating" in the AACRAO Report of Credit Given may be applied to degree requirements after completion of satisfactory work in residence. College level hours earned in community colleges with grades of "C" or better in an academic area appropriate to or related to UNMC programs may be applied up to a maximum of 66 semester hours.

Courses and hours recorded which will not apply to admission or degree requirements include:

1. Hours graded "D or lower" from any other institution whether accredited or non-accredited. Hours graded "D" from other campuses of the University (University of Nebraska at Omaha, University of Nebraska-Kearney, and University of Nebraska-Lincoln) are an exception.
2. Courses graded "inc." (incomplete) or "w" (withdrawal) and audit courses will not be recorded.
3. Courses completed, but for which credit was not given, will not be recognized.
4. Remedial courses will not be recognized even though credit may have been given, since these are considered to be pre-college level.
Courses and hours recorded which will apply include:

1. Courses from universities and colleges in other countries will be accepted only by an evaluation by a specialist with experience and training in evaluation of foreign transcripts.

2. Courses from applied science areas of community colleges (not designated as academic and for transfer) may be applied toward admission or degree requirements if validated by appropriate advanced standing examinations.

3. Hours earned in extension division (correspondence or off-campus) courses may be accepted and applied toward degree requirements in the same manner as indicated previously for other courses from regionally accredited institutions.

4. A maximum of six hours will be accepted for freshman level composition.

5. A maximum of 12 hours in religion will be accepted.

6. An applicant for admission by transfer from another professional college or school will, if admitted as a transfer with advanced standing, receive credit for professional course hours by decision of the dean and faculty. The last year of study (30 semester hours) must be completed at UNMC.

7. Hours earned and presented for transfer through departmental examinations for advanced standing credit, the College Level Examinations Program (CLEP subject examinations and CLEP general examinations), National League for nursing achievement examinations, DANTES college independent study courses, DANTES "end of course" examinations, and the American Council of Education's "Guide to the Evaluation of Educational Experiences in the Armed Services" will be reviewed to see if they were awarded in compliance with standards established by UNMC and available on request from the Medical Center Academic Records Office. Similarly, applicants may present records of such examinations or procedures to the Medical Center Academic Records Office for possible award of credit by the UNMC college or school.

Service for Veterans

All men and women planning to attend the University of Nebraska who are eligible for educational assistance and vocational rehabilitation administered by the Veterans Administration should inquire at the Office of the Academic Records, Room 2037 Student Life Center, has full information as well as application forms for residency.

ACADEMIC INFORMATION

Registration and Admission to Classes

Registration is accomplished on the date specified for the program in which the student is to be enrolled. Admission to classes is dependent upon official registration. Unless excused by the Associate Dean of the School of Allied Health Professions, late registrants are assessed a fee of $10.00.

Auditing Courses

A course may be audited with special permission of the instructor and the dean of the college or school in which the course is offered. The student must be academically qualified and there must be adequate space and facilities for the student. There is no credit for an audited course. Application forms for auditing courses may be secured from the Academic Records Office, Room 2037 Student Life Center. The permission to audit form must be completed by the sixth day of the current term. Students may not change from registration for credit to audit after the 8th week of the current term. The fee for auditing a course is one-half the current resident credit hour fee.

Absence or Withdrawal

A leave of absence for a limited time may be granted by the program director. This is merely a justification for absence and not an excuse from any course requirements. If a student in good standing finds it necessary to withdraw from the University before the close of a current term, the Associate Dean may grant that permission. If the student is not a minor, withdrawal is granted at the student's request; if a minor, withdrawal is granted at the request of the parents or guardian.

Drops, Adds and Withdrawals

Students may drop or add courses before the published deadlines using appropriate forms from the Office of Academic Records. Generally speaking, students must add courses in the first week of classes, but may drop courses during the first eight weeks of the semester.

Students may withdraw from courses with the approval of the Dean in the event of serious illness or other circumstances that make completion of the course impossible.

Students withdrawing from the University are required to start their withdrawal process in the Office of Academic Records. The withdrawal form must be completed with appropriate signatures and returned to Academic Records to ensure appropriate entries for the permanent record.
Grading System
The grading system employed by the programs within the School of Allied Health Professions for courses in which objective evaluation procedures such as examinations are employed is:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
<th>Quality Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>97.00-100.00</td>
<td>4.0</td>
</tr>
<tr>
<td>A</td>
<td>93.00-96.99</td>
<td>4.0</td>
</tr>
<tr>
<td>A-</td>
<td>90.00-92.99</td>
<td>3.67</td>
</tr>
<tr>
<td>B+</td>
<td>87.00-89.99</td>
<td>3.33</td>
</tr>
<tr>
<td>B</td>
<td>83.00-86.99</td>
<td>3.0</td>
</tr>
<tr>
<td>B-</td>
<td>80.00-82.99</td>
<td>2.67</td>
</tr>
<tr>
<td>C+</td>
<td>77.00-79.99</td>
<td>2.33</td>
</tr>
<tr>
<td>C</td>
<td>73.00-76.99</td>
<td>2.0</td>
</tr>
<tr>
<td>C-</td>
<td>70.00-72.99</td>
<td>1.67</td>
</tr>
<tr>
<td>D+</td>
<td>62.00-69.99</td>
<td>1.33</td>
</tr>
<tr>
<td>D</td>
<td>63.00-66.99</td>
<td>1.0</td>
</tr>
<tr>
<td>D-</td>
<td>60.00-62.99</td>
<td>0.67</td>
</tr>
<tr>
<td>F</td>
<td>Below 60</td>
<td>0.0</td>
</tr>
</tbody>
</table>

WP -- Withdrew Passing; WF -- Withdrew Failing; I - Incomplete; NR -- No Report; WX -- Administrative Withdrawal, W -- Withdrawal (good standing).

The Honors (H), Pass (P), Fail (F) grading system may be used for some courses when deemed appropriate by the instructor.

Class Standing and Promotion
The grade earned in each course is determined by the course instructor. Appropriate methods of evaluation may include written, oral and/or practical examinations, personal observation of performance, and appraisal of the quality of work performed for all required projects and assignments.

Any course for which all requirements have not been fulfilled by a student may be reported by the instructor as "Incomplete". The instructor thereby indicates that the student's progress in the course is satisfactory, and that the student has been allowed additional time to complete a course in which a passing grade is possible. When the student does not complete the course in the allowed additional time, a failing grade is reported for the course.

The faculty of each program reserves the right to recommend that a student withdraw if health, scholastic standing, clinical or laboratory performance, or other factors make it impractical and inadvisable for the student to continue in the program.

UNMC Code of Conduct
University of Nebraska Medical Center faculty, administrators, staff, and students comprise an academic health science community. Within this community professionalism is displayed through interpersonal and discipline-specific skills. Professionalism involves developing and demonstrating skills while displaying mutual trust, respect, responsibility and educational accountability. Professionalism thrives in an environment that emphasizes supportiveness, high quality patient care, and ethical conduct.

Those in formal leadership roles should model the highest standards of professional conduct.

Professionalism embodies legitimate expectations among all members of the academic health science community. For example, the student or employee can expect the teacher or supervisor to provide instruction, guidance, and leadership. Leadership involves helping others to achieve their highest levels of performance, discerning those who need individual assistance, and then facilitating improvement. Similarly, the teacher or supervisor can expect the student or employee to make the necessary investment of energy and intellect to acquire the knowledge, understanding, and skills concomitant with being a competent professional. The development of relationships characterized by professionalism is the duty of all faculty, administrators, staff, and students. All members of the community can and should expect others to prepare appropriately for the accomplishment of tasks and the fulfillment of responsibilities.

Professionalism is fostered by a supportive climate. All faculty, administrators, staff, and students should strive to create an environment characterized by:

- avoidance of and no tolerance for sexual harassment, demeaning or derogatory remarks, threats, intimidations;
- no verbal or physical abuse;
- acceptance and understanding of individual and cultural differences in race, religion, ethnicity, age, gender;
- no discrimination based on sexual orientation or disabilities;
- openness in communication;
- truthful and positive feedback;
- constructive, corrective feedback in a private setting whenever possible;
- assignment of duties and tasks that promote professional development;
- performance of duties and assignments in an exemplary manner;
- an emphasis on solving problems and modifying systems, not blaming people.

Professionalism must be shown in all faculty-student relationships. Learning occurs best in an environment of integrity and mutual respect. As it is expected that students will learn to conduct themselves according to accepted professional standards, faculty must model appropriate professional behaviors in their interactions with students. In an academic health science community, professionalism must also be shown at all times to patients and their families. Mutual trust, respect, responsibility, and accountability should typify the patient-provider relationship. The patient-provider relationship should also model the characteristics of the supportive climate outlined above. Professionalism must be shown in all relationships.

Compliance Policy
The University of Nebraska Medical Center is committed to complying with mandatory state and federal regulations.
This compliance impacts students as well as employees and volunteers. In many instances it will be necessary for students who are doing rotations with other institutions to also meet their specific compliance requirements. These compliance mandates include (but are not limited to) applicable mandates of the Administrative Simplification Provisions for grant accounting, Title II of the Health Insurance Portability and Accountability Act of 1996 ("HIPAA"), Bloodborne Pathogen (OSHA), Safety (JCAHO), Biosafety, Privacy, Confidentiality and Information Security (Policy 6045), Institutional Review Board (IRB) and Student Payment. Each one of the mandates is covered by a specific policy and procedure outlining the reasons and the methods for achieving compliance.

It is the responsibility of the student to ensure they meet their applicable certification in accordance with relevant mandates. In those cases where training is necessary it is the individual's responsibility to obtain the appropriate training and participate in the testing which will certify their compliance. The training is accessible on the student website https://net.unmc.edu/care or through Blackboard.

All students must be in compliance by the deadline. Noncompliance will result in being barred from attending any clinicals, labs or classes. Re-admittance will be granted when compliance has been met.

Students Rights and Responsibilities

The Bylaws of the Board of Regents protects the rights of each member of the University community. Each individual has the right to be treated with respect and dignity, and each has the right to learn. With these rights comes the responsibility of each individual to maintain an atmosphere in which others may exercise their human rights and their right to learn. Chapter V of the Bylaws fully delineates the rights and responsibilities of students.

Access to Student Records

In accordance with Federal law as established in 1974 by the Family Educational Rights and Privacy Act, the University of Nebraska Medical Center maintains the confidentiality of student records and allows students to inspect and review information in their educational records at the Medical Center. The UNMC policy statement concerning student records may be found in the current UNMC Student Handbook or in the Office of Student Services.

In 1975 the Board of Regents established a policy which requires the Registrar of each campus to "maintain a record of names and credit hours of courses taken at other institutions of higher learning in Nebraska and, upon the student's request, provide unofficial copies of such records only as authorized by the Family Educational Rights and Privacy Act of 1974.

General Procedures for Appeals of Academic Evaluations

In accordance with Section 5.3 of the Bylaws of the Board of Regents, the University of Nebraska Medical Center has established a grade appeal procedure which students should follow if they feel their academic progress has been evaluated unfairly. A summary of this procedure may be found in the UNMC Student Handbook. The process is outlined in the School of Allied Health Professions UNMC Policies for Students.

Before initiating a formal appeal, students should first attempt to resolve the matter with the instructor involved through an informal discussion. If a satisfactory agreement cannot be made, students should appeal orally, or in writing to the Director of the program which granted admission to the course. If the problem cannot be resolved on the program level, then a formal appeal should be made in writing to the Chairman of the Student Appeals Committee. All of these procedures should be followed as quickly as possible since the committee chairman must receive the appeal no later than two weeks after the reporting or posting of the grade.

General Procedures for Student Discipline Actions

In accordance with Section 5.4 of the Bylaws of the Board of Regents and in order to insure the protection of students' rights, the University of Nebraska Medical Center has established general procedures which must be followed if any disciplinary action is proposed against students. Students will be informed in writing by the Associate Dean's Office of the specific charges, the supporting evidence and the proposed disciplinary action. The Office of the Associate Dean will also inform students of their right to appeal. The UNMC "Procedural Rules Relating to Student Discipline" may be found in the UNMC Student Handbook and in SAHP Policies for Students.

Academic Integrity and Professional Conduct

The University of Nebraska Medical Center has established a policy on academic integrity and professional conduct. This policy may be found in the UNMC Student Handbook. The University of Nebraska Medical Center has also developed a Code of Conduct for all UNMC faculty, staff, and students. This Code of Conduct is found in the SAHP Policies for Students.

Requirements for Graduation

The certificate or degree in any division is granted only under the following conditions:

1. The certificate or degree candidate must have proven his competence in the health professions of his academic major.
2. He must have passed all required courses in which he has been registered, unless a waiver is approved by the program director.
3. He must have discharged all indebtedness to the University of Nebraska.

All students must complete an application for degree in the Student Records Office (2037 Student Life Center).
Degrees and Honors

Degrees are conferred by the Board of Regents upon recommendation by the academic faculty of the College of Medicine, following the recommendation of the faculty of each program, and of the Associate Dean of the School of Allied Health Professions.

The student must have a minimum cumulative grade point average of 3.5 for those credit hours specified by his or her professional program to be eligible for consideration for graduation with honors.

Awards of degrees with honors will be based on grade point average. Additional criteria may be considered. Three categories of honors will be awarded: highest distinction, high distinction, and distinction.

No more than twenty percent of each graduating class will be eligible for graduation with honors. Within this 20%, the following percentages of students may receive the indicated designations for honors:
- 2% Highest Distinction
- 8% High Distinction
- 10% Distinction

Commencement

All candidates completing degree requirements at the conclusion of a semester are required to participate in Commencement Exercises unless officially excused by the Associate Dean of the School. Formal commencement exercises are scheduled in May and December. Those graduating at the end of the summer session will receive their diplomas when all degree requirements are fulfilled; they also have the elective privilege of participating in either the May or December commencement exercise.

Tuition and Fees

Tuition and fees charges are subject to change without notice. The current tuition and fee rates are available from Student Services. The following information is offered as a guideline, not as a firm commitment.

In the 2007-2008 academic year, tuition for students in the Medical Nutrition, Clinical Laboratory Science, Nuclear Medicine, Radiation Therapy, Radiography, and Diagnostic Medical Sonography is $169.50 per semester hour for residents and $503.50 for non-residents. Tuition for students in the Physician Assistant, Clinical Perfusion and Cytotechnology programs is $224.00 per semester hour for residents and $604.00 for non-residents. Tuition for students in the Physical Therapy (PT) program is $3,572.00 per semester for residents and $8,813.00 for non-residents. The summer semester (for first and second year PTs) is $2,012.00 for residents and $4,972.00 for non-residents.

Fee Refunds

A student who withdraws from the University during any term for which he is registered is entitled to claim a refund of the portion of his fees. The University's current refund policy is as follows:
- First week ...................................................... 100%
- Second week .................................................. 75%
- Third week ..................................................... 50%
- Fourth week .................................................. 25%
- Fifth week ..................................................... None

Miscellaneous Fees

Application Fees: Resident................................. $45.00
- Non-resident .............................................. 45.00
- Pre-Enrollment Deposit ............................. 50.00
- Except PA and PT ..................................... 100.00
  (applied toward tuition)
- Late Registration Fee ................................. 10.00
- Late Payment of Tuition ............................ 20.00
- Add/Drop Course (Each Form) .................. 10.00
- Transcript of Grades (First Copy) .......... 5.00
- Student I.D. Card (replacement) ............. 10.00
- Bad Check Charge ................................. 20.00

Certain educational programs may charge additional fees not listed in this bulletin. Students are advised to contact the respective program.

Student Health Services

The University of Nebraska Medical Center provides a student health service plan to its students. Details of this program may be found in the UNMC Student Handbook.

Financial Aid

The University of Nebraska Medical Center has financial aid programs to assist students with unmet financial need. The programs operate on the premise that students and parents have a responsibility to meet as much of the educational and related costs as possible. The Medical Center is prepared to supplement family contributions from its aid sources and to assist students in obtaining assistance from outside sources. The University of Nebraska Medical Center Office of Financial Aid administers the financial aid programs.

All financial aid programs administered by UNMC require annual application. Applicants need not apply for a specific scholarship or award as applicants are evaluated in terms of their eligibility for all forms of assistance. Applications for aid in which "financial need" is a consideration require students and parents to complete a financial statement. UNMC requires a Financial Aid Form (FAF).

In addition, the School of Allied Health Professions has established scholarships in the name of recipients of the "Outstanding Service Awards to the Allied Health Professions." A $500 scholarship is granted annually in the name of the recipient of the award to an allied health student on the basis of scholarship and/or financial need.

For more information on financial aid see the following website:
http://www.unmc.edu/5/students/studentservices/financialaid/index.htm
GENERAL INFORMATION

Academic Units

The University of Nebraska Medical Center provides educational programs in the major health professions through various academic units. The College of Medicine program leads to the doctor of medicine degree, and the college offers residency programs in most major medical specialties. The College of Nursing offers a curriculum leading to the doctor of pharmacy degree and advanced professional education through residency programs. The College of Dentistry, located in Lincoln, has educational programs in dentistry and its specialties and in dental hygiene. The Graduate College of the University of Nebraska offers programs on each campus; at UNMC programs lead to master's and Ph.D. degrees in several basic and medical sciences. Programs of the School of Allied Health Professions are described fully in this bulletin.

Clinical Facilities

The Nebraska Medical Center is the partnership of the former Clarkson Hospital, the first hospital in Nebraska, and the former University Hospital, the primary teaching facility for the University of Nebraska Medical Center. The combined hospital is a 685-bed facility and serves approximately 25 percent of the Omaha-area market. The Nebraska Medical Center operates clinics and health care centers serving Omaha, Plattsmouth, Gretna and Auburn in Nebraska; and Council Bluffs and Shenandoah in Iowa. In addition, The Nebraska Medical Center physicians operate more than 306 outpatient clinics in 100 communities in five states. The Nebraska Medical Center provides access to tertiary and primary care including world-class specialized treatment such as solid organ transplantation, burn care, wound care, geriatrics, bone marrow (stem cell) transplantation and other cancer treatments.

Library Facilities

The Leon S. McGoogan Library of Medicine of the University of Nebraska Medical Center is one of the country's major health sciences resource libraries. Located on the 6th through 8th floors of Wittson Hall, it houses a physical collection of over 80,000 books and 800 current print journals. Over 3,600 audio visual materials are also available in the Learning Resource Center. Comfortable reading and studying spaces are available, in addition to the casual atmosphere of the library's Linder Lounge, which has some of the library's 100 laptop connections.

Today's library moves beyond its physical walls by enhancing this collection with ever expanding electronic capabilities. Numerous databases can be searched for articles, evidence based medicine, drug information, practice guidelines, and more. In addition to its print journal collection, the library has full text access to over 3,100 journals and a suite of electronic books in STAT!Ref. These resources are available on campus and almost all are accessible off campus with a Lotus Notes account via the library's website http://www.unmc.edu/library.

Librarians are available to assist in learning and effectively navigating these resources. The Reference and Education departments provide instruction in a variety of formats, as well as a search service. Services to distance students are provided, with efforts coordinated by the Distance Education Librarian. Students can also obtain materials through the circulation, interlibrary loan, and photocopy departments.

In addition to its regular functions, the library maintains a rare book collection in the history of medicine and houses the Orr Collection of the American College of Surgeons. It also collects special materials on the history of medicine in Nebraska, including information on UNMC graduates and activities of the faculty.

Continuing Education

Continuing education is offered to practicing health professionals through a variety of approaches. Approximately fifty on-campus courses are offered each year. The Center for Continuing Education on the Medical Center campus is uniquely designed to facilitate adult learning. Audiovisual equipment including closed-circuit color television in a variety of settings is available.

In addition to the on-campus courses, continuing education is brought to health professionals throughout Nebraska and surrounding states through closed-circuit television courses and the Internet.

Office of Student Equity and Multicultural Affairs

The goal of the Office of Student Equity and Multicultural Affairs (OSEMA) is to advance the University of Nebraska Medical Center’s equal education opportunity commitment of increasing the number of minority and disadvantaged persons entering, and successfully completing, the health career educational pathway. In so doing, it seeks to promote access and quality health care to medically underserved populations in the State of Nebraska.

Specifically, the office provides academic, personal and career development support programs and activities to enhance the performance of enrolled students and thus promote retention. The following services are available through the Office of Student Equity and Multicultural Affairs:

- New student orientation
- Student Organization Support
- Academic Success Program – Tutorial Services
- Social events
- Campus wide cultural awareness programming

In addition, the office provides a wide range of support services aimed at identifying, motivating and preparing college and pre-college level students to pursue careers in the health sciences. The NU PATHS Programs are cooperative programs between the University of Nebraska at Lincoln (UNL), the University of Nebraska at Kearney (UNK), the University of Nebraska at Omaha (UNO), and the University
of Nebraska Medical Center (UNMC). The objective is to recruit academically talented students who demonstrate, through life experiences and personal motivation, a desire to serve the underserved upon graduation from health professions programs. These students will be recruited to UNL and UNK for enrollment in programs that will prepare them for entry into, and completion of, health care professional programs at UNMC.

For more information on the Office of Student Equity and Multicultural Affairs at UNMC please contact:

Mary McNamee  
University of Nebraska Medical Center  
984275 Nebraska Medical Center  
Omaha, NE 68198-4275  
mmcnamee@unmc.edu

Student Counseling Center  
Counseling is available to students at the University of Nebraska Medical Center Campus through the Student Counseling Center. Services are available on either a walk-in or appointment basis. All services are free of charge and strictly confidential. Services can be provided on an individual, couple or group basis. Students can contact the center by calling 559-7276.

Housing and Other Expenses  
The Medical Center has limited on-campus housing for students, and the Student Services Office maintains listings of rooms, apartments, duplexes and houses reported available. For more information contact Rental Property at 559-5201 or: http://www.unmc.edu/5/students/studentservices/housing.htm. Students are responsible for books, instruments and additional student fees which are program dependent. Students furnish their own uniforms where required. Meals, at students' expense, are available at the Medical Center Cafeteria and at adjacent hospitals and private establishments.

STUDENT AND ALUMNI ORGANIZATIONS  
Medical Center Student Senate  
The Medical Center Student Senate (MCSS) exists for the purpose of influencing policy and promoting the interests of all students attending the University of Nebraska Medical Center. As the official representative of the student body of the Medical Center, the Senate consists of senators from each educational unit of the Medical Center. The senators are elected by their fellow students in nursing, allied health professions, medicine, pharmacy and the graduate college. The president of MCSS also serves as a non-voting member of the Board of Regents.

The MCSS Office is located in the Student Life Center, Room 3015. Meetings are held on a monthly basis and all students and the public are invited to attend.

Loran Schmit Physician Assistant Student Society  
The Loran Schmit Student Society was organized in the Fall of 1974 by students of the University of Nebraska College of Medicine Physician Assistant Program. It is a constituent chapter of the Student Academy of the American Academy of Physician Assistants (AAPA). The Society was founded and affiliated with the Nebraska Academy of Physician Assistants (NAPA) to introduce students to activities that promote professional role, professional service, and professional development and to provide opportunities for student participation in state and national academy events.

Nebraska Student Physical Therapy Association  
Students of the University of Nebraska- American Physical Therapy Association (SUN-APTA) was founded in 1971 by the first class of the Bachelor of Science degree program in Physical Therapy of the University of Nebraska College of Medicine. The organization assists students in identifying their roles as future physical therapists. To this end the organization orients new students in the program, promotes liaison with alumni, plans educational programs and participates with faculty in curriculum planning and revision; it establishes and maintains channels of communication within its membership with faculty and clinical affiliations, with professional organizations and with the community. The members conduct the career information programs in physical therapy in high schools, colleges and universities in the community and for guest groups of the Medical Center.

Most students in the physical therapy program are members of the American Physical Therapy Association. They participate in activities of the Association at the district, state and national levels.

Student Association for Rural Health  
The Student Association for Rural Health (SARH) was formed at the University of Nebraska Medical Center in 1996 through the efforts of students interested in practicing in small communities and UNMC Family Practice Faculty. The organization is interdisciplinary across campus and is headed by a list of officers elected annually. Several faculty and staff serve as advisors to the association. The Association has developed a slide presentation about UNMC and opportunities in rural health which the students travel to communities throughout Nebraska to present.

A second major activity SARH has instituted is the Annual Rural Health Career Day. Each year communities within a three hour drive of Omaha are invited to attend a day of tours and learning about the health professions education at UNMC from our students and faculty.

Members of SARH meet quarterly and have educational programs by faculty at UNMC, and across the U.S. that present information in preparation for beginning their rural careers. For more information about SARH or to contact their current officers call the Rural Health Education Network office at (402) 559-8946 or e-mail at rjokela@unmc.edu.
**Students Alliance for Global Health**

SAGH promotes local awareness of cultural and linguistic health issues, provides more sensitive health services within Nebraska, educates and informs students from all UNMC graduate programs about global health issues, and promotes and facilitates placement of students on international rotations and exchanges.

**Student Senate**

The Medical Center Student Senate governs the organization and regulation of student activities of the College of Medicine, College of Nursing, College of Pharmacy, School of Allied Health Professions, and UNMC students in the Graduate College. It serves as a liaison group between students in the various disciplines and works toward the common goals of students at UNMC. Students in each college or school elect representatives to serve on the Medical Center Student Senate. The President of the Student Senate serves as a representative on the University of Nebraska Board of Regents.
Clinical Laboratory Science

Professors Wise carver, MD (Medical Director), Associate Professors Fell (Program Director), Larson; Assistant Professors Alter, Arnold, Honeycutt (Assistant Program Director), Latshaw, Tompkins; Clinical Assistant Professors Cornish, MD, Reyes, MD, Richards; Clinical Instructors Filbey, Jurgensmeier, Keller, Otten, Sykora, Trudell, Waters.

The Clinical Laboratory Science curriculum represents the senior (fourth) year in a Baccalaureate Program. The program is 11.5 months in length and provides a patient-centered educational opportunity for clinical laboratory science students. This education includes a broad-based background in a variety of settings including hematology, clinical chemistry, microbiology, immunohematology, immunology, toxicology, endocrinology, biotechnology and research.

The Clinical Laboratory Scientist
Clinical laboratory scientists, also known as medical technologists, are integral members of the health care team. They make a valuable contribution to patient care by performing, correlating and developing clinical laboratory procedures. The technologists analyze samples of blood, tissue and body fluids using the latest technology and a variety of analytical techniques.

Career Opportunities
Clinical laboratory scientists may work as generalists or as specialists in one of several sections of a clinical laboratory such as chemistry, transfusion medicine, hematology, immunology or microbiology. They find employment in hospitals, clinics, doctors’ offices, research facilities, industry, public health institutions, forensic or pharmaceutical laboratories and animal clinics. Many are employed as research technologists, supervisors, managers or educators.

As vital members of the health care team, they enjoy assisting clinicians in the care, diagnosis and treatment of patients. They have opportunities for advancement, with supervisory skills and with technical expertise in such areas as advanced immunology, cell marker technology, transplantation, forensics, toxicology, cancer research, and cytogenetics. There is an acute need for qualified medical laboratory professionals to meet the needs of the new technologies in clinical laboratory science, biotechnology and research. The demand is increasing for clinical laboratory scientists with excellent technical, management and communication skills that can provide the leadership required to meet the changing needs of the health care system.

Organization
The Clinical Laboratory Science Program in the School of Allied Health Professions offers a program leading to a Bachelor of Science in Clinical Laboratory Science and eligibility for national certification. UNMC includes two independently accredited clinical laboratory science programs (accredited by the National Accrediting Agency for Clinical Laboratory Sciences) located at Nebraska Methodist Hospital and the University of Nebraska Medical Center, affiliated with The Nebraska Medical Center, as well as eight clinical sites across Nebraska and in Wyoming and South Dakota. A Combined Faculty Committee, made up of representatives from each program, is responsible for the administration of the unit.

Through the affiliated clinical sites, students have the option of obtaining their education near their home communities.

Admission Requirements
High School
The admissions committee recommends a strong college preparatory program which includes English, mathematics, biology, chemistry and physics.

College or University
Admission to the senior year of the clinical laboratory science program requires the applicant to successfully complete a minimum of 86 semester hours (129 quarter hours) at an accredited college or university.

Required College Courses:
BIOLOGICAL SCIENCES 16 sem hrs
Must include Microbiology (lab preferred), Genetics and Immunology
CHEMISTRY (with lab) 16 sem hrs
Must include 1 year of General and 1 semester of Organic I and 1 semester of Organic II or Biochemistry
ENGLISH COMPOSITION 6 sem hrs
MATHEMATICS (College Algebra or higher) 3 sem hrs
SPEECH/PUBLIC SPEAKING 3 sem hrs
STATISTICS 3 sem hrs

SUGGESTED SEQUENCE OF COURSES

Freshman Year
First Semester
General Chemistry I ............................................ 4
Principles of Biology .......................................... 4-5
Mathematics – College Algebra ......................... 3
English Comp I ................................................... 3
Second Semester
General Chemistry II ....................................... 4
English Comp II ............................................... 3
Microbiology ..................................................... 4
Electives (Intro to Health Careers) ..................... 3

Sophomore Year
First Semester
Organic Chemistry I .......................................... 4
Physiology ......................................................... 4
Speech .............................................................. 3
The committee selects the best-qualified applicants to fill the available positions in the Clinical Laboratory Science Program. If candidates are equally qualified, the committee gives preference to University of Nebraska students and to residents of Nebraska. Discrimination is prohibited on the basis of race, color, sex, national origin, age, disability, marital status, religion or veteran status. Qualified applicants not selected for initial assignment are placed on a list of alternates, who are considered for any position that becomes available. It is the responsibility of the student to provide updated information regarding their application file. Students who reapply for admission in a subsequent year are required to complete new application forms for the new application cycle.

**Senior Year in Clinical Laboratory Science**

Students transfer to the University of Nebraska Medical Center in Omaha for the 11.5-month clinical program in clinical laboratory science. Each applicant accepted into the Clinical Laboratory Science Program is assigned to one of the affiliated sites. Graduates of the program are awarded a B.S. degree in clinical laboratory science and are eligible to take national certification examinations.

**Curriculum**

The curriculum includes theory, practical application and technical performance experiences gained through lectures, case studies, independent study, and supervised laboratory experiences. The patient-oriented learning environment includes all areas of a full-service, accredited clinical pathology laboratory.

Required courses, totaling 39 semester hours of credit, are covered in a 40-hour per week schedule throughout the 11.5 month program. All required courses must be completed with a minimum passing grade of 70% (C) to meet requirements for graduation from the program.

**Course Descriptions**

**CLS 412 Clinical Laboratory Science Theory, Application and Correlation (5 sem hrs) SPRING**

This course includes the application, evaluation and correlation of laboratory procedures used in the diagnosis and treatment of common disease states. Opportunities for building critical thinking, oral communication, professional behavior and teamwork skills are provided in small group clinical case discussions.

**CLS 414 Clinical Chemistry I (4 sem hrs) FALL**

This course includes the introduction to the theory, practical application, technical performance and evaluation of clinical chemistry laboratory procedures. Correlation of clinical laboratory data with the diagnosis and treatment of carbohydrate, renal, liver, lipid, protein, pancreatic and endocrine disorders is emphasized. The educational process includes mentoring and evaluation of students to assure development and practice of appropriate professional behavior, ethical decision making, leadership, teamwork,
critical thinking and effective oral and written communications.

**CLS 415 Clinical Chemistry II (3 sem hrs) SPRING**
This course incorporates advanced theory, practical application, technical performance and evaluation of clinical chemistry laboratory procedures. Correlation of clinical laboratory data with the diagnosis and treatment of carbohydrate, renal, liver, lipid, protein, pancreatic and endocrine disorders is emphasized. The educational process includes mentoring and evaluation of students to assure development and practice of appropriate professional behavior, ethical decision making, leadership, teamwork, critical thinking and effective oral and written communications.

**CLS 416 Clinical Hematology I (4 sem hrs) FALL**
This course includes the introduction to the theory, practical application, technical performance and evaluation of hematological and coagulation procedures. There is an emphasis on the correlation of clinical laboratory data with the diagnosis and treatment of anemia, leukemia, and bleeding/clotting disorders. The educational process includes mentoring and evaluation of students to assure development and practice of appropriate professional behavior, ethical decision making, leadership, teamwork, critical thinking and effective oral and written communications.

**CLS 417 Clinical Hematology II (3 sem hrs) SPRING**
This course incorporates advanced theory, practical application, technical performance and evaluation of hematological and coagulation procedures. There is an emphasis on the correlation of clinical laboratory data with the diagnosis and treatment of anemia, leukemia, and bleeding/clotting disorders. The educational process includes mentoring and evaluation of students to assure development and practice of appropriate professional behavior, ethical decision making, leadership, teamwork, critical thinking and effective oral and written communications.

**CLS 418 Clinical Microbiology I (4 sem hrs) FALL**
This course includes the introduction of the theory, practical application, technical performance and evaluation of procedures for isolation, identification and susceptibility testing of infectious disease organisms in humans. This course includes bacteriology, mycology, parasitology, virology and serology, and emphasizes the correlation of clinical laboratory data with the patient’s diagnosis and treatment. The educational process includes mentoring and evaluation of students to assure development and practice of appropriate professional behavior, ethical decision making, leadership, teamwork, critical thinking and effective oral and written communications.

**CLS 419 Clinical Microbiology II (3 sem hrs) SPRING**
This course incorporates advanced theory, practical application, technical performance and evaluation of procedures for isolation, identification and susceptibility testing of infectious disease organisms in humans. This course includes bacteriology, mycology, parasitology, virology and serology, and emphasizes the correlation of clinical laboratory data with the patient’s diagnosis and treatment. The educational process includes mentoring and evaluation of students to assure development and practice of appropriate professional behavior, ethical decision making, leadership, teamwork, critical thinking and effective oral and written communications.

**CLS 420 Clinical Immunology & Molecular Diagnostics (1 sem hr) FALL**
This course includes the theory, practical application, and evaluation of immunological components, principles and methodologies used in the assessment of immunologically related disorders, including hypersensitivity reactions, autoimmune, immunoproliferative and immunodeficiency disorders, tumors, and transplantations. Theory and application of molecular diagnostic tools, such as polymerase chain reaction (PCR), nucleic acid probes and fluorescent in situ hybridization (FISH) techniques are also addressed. Critical thinking skills are developed in the critical analysis of published written articles with resultant written report.

**CLS 421 Clinical Immunohematology I (3 sem hr) FALL**
This course includes the introduction of the theory, practical application, technical performance and evaluation of blood bank procedures required for transfusion of blood and blood components and for handling and storage of blood and blood components. The educational process includes mentoring and evaluation of students to assure development and practice of appropriate professional behavior, ethical decision making, leadership, teamwork, critical thinking and effective oral and written communications.

**CLS 422 Clinical Immunohematology II (2 sem hrs) SPRING**
This course incorporates advanced theory, practical application, technical performance and evaluation of blood bank procedures required for transfusion of blood and blood components and for handling and storage of blood and blood components. The educational process includes mentoring and evaluation of students to assure development and practice of appropriate professional behavior, ethical decision making, leadership, teamwork, critical thinking and effective oral and written communications.

**CLS 423 Phlebotomy (1 sem hr) SPRING**
This course includes the theory, practical application, technical performance and evaluation of procedures used in collecting, handling and processing blood specimens. The educational process includes mentoring and evaluation of students to assure development and practice of appropriate professional behavior, ethical decision making, teamwork, cultural competency, and effective oral and written communications.
CLS 426 Urine and Body Fluid Analysis (1 sem hr)
SPRING
This course includes the theory, practical application, technical performance and evaluation of procedures used in the analysis of urine and other body fluids, including cerebrospinal, synovial, serous and amniotic fluids. The educational process includes mentoring and evaluation of students to assure development and practice of appropriate professional behavior, ethical decision making, teamwork, and effective oral communication skills.

CLS 430 Clinical Laboratory Management I (2 sem hr)
FALL
This course includes the theory, practical application, technical performance and evaluation of laboratory management principles and associated models. Lectures and assignments focus on effective written and oral communications, critical evaluation of research studies, compliance and regulatory issues, educational methodology, human resource and financial management, laboratory operations, cultural competency, professionalism and ethical decision making. Opportunities to build problem-solving, teamwork and management skills are provided.

CLS 431 Clinical Laboratory Management II (3 sem hr)
SPRING
This course incorporates advanced theory, practical application, technical performance and evaluation of laboratory management principles and associated models. Lectures and assignments focus on effective written and oral communications, critical evaluation of research studies, compliance and regulatory issues, educational methodology, human resource and financial management, laboratory operations, cultural competency, professionalism and ethical decision making. Opportunities to build problem-solving, teamwork and management skills are provided.

For further information about the Clinical Laboratory Science program, please contact:
Clinical Laboratory Science Program
University of Nebraska Medical Center
987549 Nebraska Medical Center
Omaha, NE 68198-7549
Telephone: 402-559-7810
Fax: 402-559-9044
E-mail: lmdonner@unmc.edu
Internet: www.unmc.edu/alliedhealth/medtech
Clinical Perfusion Science

Program Director and Associate Professor Holt; Medical Director and Professor Tinker; Professors Chapin, Hurlbert, Loefland; Associate Professors Borkon, Duncan; Assistant Professors Ask, Deptula, Gorton, Greenfield, Hoffman, Hughes, Kohtz, Merrigan, Muehlebach, Nutter, Pielihler, Tucker, Waters, Whittaker, Witherspoon, Wright; Instructors Belz, Bianchi, Bikakis, Bradley, Buckley, Fornero, Fulton, Glogowski, Gris, Hoxmeier, Hunt, Johnson, Moreno, Muhle, Stover, Sydzyik, Valleley, Vasquez, White, Woods. Clinical Assistant Instructors Hart, McCahon, Russell, Russell.

This educational program establishes the University of Nebraska Medical Center as the Nebraska facility, which provides opportunities to those individuals wishing to pursue a career in cardiovascular perfusion. Program graduates will help meet the need for health professionals to participate in services that require extracorporeal circulation in Nebraska and throughout the region.

The Perfusionist
A perfusionist is a skilled person, qualified by academic and clinical education, who operates extracorporeal circulation equipment during any medical situation where it is necessary to support, or temporarily replace, the patient's circulatory or respiratory function. The perfusionist is trained in physiologic and biochemical principles related to extracorporeal circulation. The perfusionist is knowledgeable concerning a variety of complex medical equipment used to perform extracorporeal circulation, and is responsible for consulting with physicians to manage patients in various clinical situations.

The perfusionist is educated to conduct extracorporeal circulation and to ensure the safe management of physiologic function by monitoring and controlling hemodynamic and mechanical parameters. Furthermore, the perfusionist is educated in the administration of prescription blood products and medications. The perfusionist is knowledgeable and competent in the use of a variety of techniques such as extracorporeal flow, hypothermia, hemodilution, and blood conservation. Perfusion procedures involve specialized instrumentation and/or advanced life support techniques, and may include a variety of related functions.

Career Opportunities
Increases in technologies of cardiovascular medicine, such as the use of ventricular assist devices, the total artificial heart, and coronary angiography and angioplasty, have further increased the demand for perfusionists. Perfusionists work in hospital settings and most are employed either by hospitals, individual surgeons, surgical groups, or private health care corporations. Experienced perfusionists may find career opportunities working for companies who manufacture perfusion supplies and equipment. These individuals may be employed in research and development, or in some cases, may be employed in marketing or sales. A typical work week consists of a 40-hour schedule with additional on-call coverage for emergencies. Perfusionists may be called to work evenings and weekends. Perfusionists enjoy excellent starting yearly salaries that range from $60,000 to $80,000. In most cases additional compensation in the range of 10 to 25 percent of base salary may be earned for "on-call time" and shift differentials.

Organization
The Clinical Perfusion Science Education Program is established within the Division of Clinical Perfusion Education within the School of Allied Health Professions (SAHP), College of Medicine, University of Nebraska Medical Center (UNMC). The program is fully accredited by the Committee on Accreditation of Allied Health Education Programs. The Program also belongs to the Perfusion Program Directors Council. A Master of Perfusion Science is awarded following completion of approximately 74 credit hours based on national education requirements of accreditation.

Facilities for Instruction
The facilities of the UNMC campus are used for the teaching of the didactic course work and for a portion of the clinical courses. Both classroom and laboratory facilities are utilized for instruction. There are nine institutions that have established affiliation agreements with the program, and students are assigned to three or more of these hospitals for completion of their clinical course work.

Requirements for Admission
College or University
By the intended date of enrollment applicants will have successfully completed their undergraduate college course work at an accredited college or university. Most successful applicants possess a grade point average of 3.0 or better on a 4.0 scale. Grades below C are not accepted for transfer to the UNMC.

Prior to the start of the perfusion program, successful applicants must possess a bachelor's degree from an accredited college or university, and must have satisfactorily completed the minimum hours specified in the following subject areas:

Basic Mandatory College Courses
Biology
  General Biology .................................................6 hours
  Anatomy and Physiology ....................................6 hours
English
  English composition, writing, etc. .....................6 hours
Chemistry
  General Chemistry ..........................................6 hours
Mathematics
  Algebra, Pre-Calculus or Calculus ....................3 hours
  Physics
  General Physics .............................................3 hours
Social Education
General Sociology, Psychology or Philosophy. 6 hours

Suggested Courses
Microbiology (including Lab)......................... 3 hours
Organic Chemistry ....................................... 3 hours
Biochemistry ............................................. 3 hours
Calculus ................................................... 3 hours

Application Procedure
Applications
Applicants are encouraged to apply online at http://net.unmc.edu/apply. Official transcripts of college work must be submitted. Applications and transcripts must be returned by January 1 of the year wishing to enter training.

Upon review of the applications, those applicants considered most competitive will be invited for a personal interview. Interviews are scheduled for early March, and applicants will be notified of the decision concerning the status of their applications during the first week of April.

Examination
Applicants are required to present scores from the Basic Portion (verbal and quantitative) of the Graduate Record Examination (GRE). The student is responsible for requesting their scores from the agency. Specify that copies of results should be forwarded under College Code 6896 to the Office of Academic Records, Attention: Clinical Perfusion Education Program, University of Nebraska Medical Center, 984230 Nebraska Medical Center, Omaha, Nebraska 68198-4230.

Selection Factors
An applicant is considered without regard to age, sex, race, color, national origin, religion, political beliefs, or disability. Motivational factors, life experience, patient care experience, maturity, personality as assessed in personal interviews, and recommendations are important factors in the selection process. An applicant's academic record is important as an indicator of ability to succeed in an intensive and rigorous program.

Applicants who have not been accepted for admission may be placed on an alternate list. In the event a seat in the educational program becomes available, alternates will be contacted and offered admission. However, being placed on an alternate list does not guarantee that the individual will be accepted in the future class. Alternate candidates must reactivate their application for admission consideration.

Starting Date
Students who are accepted in the program are enrolled in August of the year in which their application was made.

Program length is 21 months with successful students graduating in May, two years post-entry into the program.

Fees, Expenses, Financial Aid
The total cost of tuition for the 21-month program is approximately $16,500 for Nebraska residents and $44,500 for non-residents. This is subject to change (without notice) by the Board of Regents. Expenses for textbooks, laboratory classes, and associated educational materials will be approximately $750 per year. Additional costs will include room and board and travel expenses associated with off-campus clinical rotations or meetings.

Plan of Instruction
The program length is 21 months. The first two semesters (Phase I) consist of didactic course work with an introduction to perfusion science. The remaining 11 months (Phase II and III) consist of clinical rotations, a research project and elective courses. During clinical rotations, each case performed is graded on a point system.

At the end of the second and third Phases, major examinations are administered to each student. These must be passed (70% or greater) before a student will either proceed to the next Phase or graduate from the Program.

Outside employment is discouraged. While every effort will be made to assist a student if a difficulty should arise due to classes or health, the student must complete the previous classes or rotations before advancing to the next semester.

Prior to admission a disclosure statement must be completed and submitted regarding any medical licensure revocation, drug, alcohol and/or controlled substance abuse, or related issues.

Curriculum

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<thead>
<tr>
<th>Fall Semester (First Semester)</th>
<th>Credit</th>
<th>Course #</th>
<th>Course Title</th>
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<td>CLPR 502 Intro to Perfusion Technology</td>
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<td>CLPR 505 Perfusion Concepts I</td>
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<td>CLPR 703 Perfusion Seminar II</td>
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<td>PSM 610 Healthcare Ethics</td>
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<td>SAHP 531 Management in Health Care</td>
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Summer Session (Third Semester)
CLPR 501 Applied Electronics & Biomedical Monitoring.......................... 3
CLPR 701 In Vitro/In Vivo Lab Procedures ......................... 2
CLPR 708 Journal Review............................................. 1
CLPR 710 Thesis Dev II................................................1
CLPR 715 Clinical Rotation Perfusion I ................. 5
CLPR 718 Clinical Rotation Perfusion II ................. 5
TOTAL 17

Fall Semester (Fourth Semester)
CLPR 711 Thesis Development III......................... 1
CLPR 720 Clinical Rotation Pediatric Perfusion I .... 5
CLPR 722 Perfusion Seminar III ...................... 1
CLPR 730 Clinical Rotation Perfusion III .......... 5
TOTAL 12

Spring Semester (Fifth Semester)
CLPR 712 Thesis Development IV ..................... 1
CLPR 723 Perfusion Seminar IV ..................... 1
CLPR 725 Clinical Rotation Pediatric Perfusion II .... 5
CLPR 735 Clinical Rotation Perfusion IV ........... 5
TOTAL 12
TOTAL CURRICULUM HOURS..... 78

*Due to the rotation schedule some students may not take CLPR 720 or CLPR 725 in the designated semester. These students will instead taken an additional rotation of CLPR 730, or CLPR 735. Therefore, the grade for either of these two courses will reflect the additional rotation through the adult clinical affiliate hospital.

Standards of Progress

Academic Standing

The course instructor and/or coordinator determine the performance of a student in any course by examinations, personal observation, and other methods of evaluation. A student will not be permitted to advance to clinical rotations until he/she has successfully completed all of the courses listed for the previous semester at a minimum "C" level, unless specific approval is granted by the Program Director.

Students in the third, fourth, and fifth semesters must pass all of the clinical rotations with a minimum grade of "C" before being recommended for graduation. Upon completion of each clinical rotation, students will be evaluated by several concurrent methods: 1) students will be required to take a written examination derived from the objectives of each Phase of education and obtain a grade of greater than 70%; 2) written evaluations will be obtained from each clinical instructor; 3) the objectives and skill levels of the rotation will be reviewed with each student; 4) students will be required to document each clinical perfusion case; and 5) any other requirements stated in the Perfusion Student Handbook. A failed clinical rotation places the student on academic review and may halt further progress in the program.

The faculty reserves the right to recommend the withdrawal or dismissal of a student whose health, scholastic standing, clinical performance or unsatisfactory professional growth makes it inadvisable for him/her to continue in the program.

Graduation requirements include successful completion of the following:

1. Pass, with a greater than 70% grade, a comprehensive written objective test which focuses on problems encountered in the practice of clinical perfusion.
2. Complete thorough and comprehensive evaluations of different patients who are to undergo clinical perfusion. The student must be able to differentiate between abnormal and normal variations and to design a pump circuit that would meet the physiological needs of the patient undergoing surgery. Demonstrate through appropriate consultation with the faculty member that a suitable circuit has been selected and that the patient can be safely supported on cardiopulmonary bypass.
3. Meet all standards as established by the clinical competency committee.

Course Descriptions

CLPR 501. Applied Electronics and Biomedical Monitoring (3 cr)

This course provides the entry level Clinical Perfusion student the fundamentals in monitoring technology for the complex cardiopulmonary patient and others. Instruction includes substantial course work that will include the non-invasive and invasive assessment of biopotentials, pressure assessment, thermal change, and flow assessment. Emphasis is placed on the fundamental concepts of cardiac surgical procedures, through observation and instruction from faculty of a variety of services who work collaboratively with perfusion.

CLPR 502. Introduction to Perfusion Technology (2 cr)

Introduction to Perfusion Technology is an introductory level class for first year perfusion students. Students are introduced to the role of the cardiovascular perfusionist as a professional health care provider. The class covers theory of extracorporeal circulation with a major focus on the principles of siphon drainage, pressure/flow relationships within closed systems, and patient management during cardiopulmonary bypass. The student is introduced to assessment skills, extracorporeal hardware and disposables, pharmacology, bypass calculations, bypass initiation and termination techniques, and the perfusion medical record. The main focus of the course is in the practical application of perfusion technology.

CLPR 505. Perfusion Concepts I (4 cr)

This class provides the entry-level student with the fundamental concepts of extracorporeal circulation. Instruction includes substantial course work on blood propelling devices, filtration, and gas exchange in natural and artificial devices, principles of acid-base analysis, hypothermia, circulatory arrest, and hemodilution. Additional course topics include blood conservation methods, ultrafiltration, mechanical assist device and special bypass
situations. Monitoring of the cardiac patient during extracorporeal circulation will be discussed with specific emphasis on blood gas analysis, temperature, hemodynamics, fluid and electrolyte balance, and coagulation.

CLPR 506. Applied Clinical Practices (2 cr)
This course covers the fundamentals of daily responsibilities of the cardiovascular perfusionist, including the logistics of departmental organization, operating room and hospital organizational structure, and material management services. In addition, students will apply the concepts learned in CLPR and 502 and 505 in the clinical environment. Students will receive instruction on surgical techniques for various cardiac, orthopedic, vascular and transplantation procedures. Various invasive and non-invasive monitoring practices will be reviewed. Monitoring of the surgical patient during extracorporeal circulation will be discussed with specific emphasis on electrophysiology and hemodynamics. Emphasis is placed on the fundamental concepts of cardiac surgical procedures, through observation and instruction from faculty of a variety of services supported by cardiovascular perfusion.

CLPR 512. Perfusion Techniques (2 cr)
Perfusion Techniques is an intermediate level class for first year perfusion students. Students have demonstrated beginning level competencies in the basic principles of extracorporeal circulation, and will now study how these principles can be applied to extended patient care situations. The class covers advanced assessment skills, extracorporeal hardware and circuitry, advanced management techniques in extracorporeal circulation, perfusion emergencies and disasters, perfusion protocols, and the detailed perfusion care plan. The main focus of this course is in the practical application of perfusion technology.

CLPR 515. Perfusion Concepts II (4 cr)
This course is a continuation of Perfusion Concepts I where basic principles and theories of extracorporeal circulation were examined. The cardiovascular Perfusionist must have a solid understanding of cardiac anatomy, physiology, pathology, and diagnosis, to effectively evaluate the patient's condition and develop strategies in extracorporeal technology to meet specific needs of the patient. In this second semester, students will be introduced to advanced theories and practices in cardiovascular and hepatic medicine, both through didactic and clinical instruction. Experts representing diverse specialties of patient care will serve as invited lecturers and will provide a basic understanding of their services in facilitating patient care management.

Perfusion Concepts II is offered to second semester Clinical Perfusion Education Students. Emphasis will be placed on cardiac physiology and biochemistry of cardiac function, pathophysiology of cardiopulmonary bypass, techniques of pediatric perfusion, cardiological diagnostic techniques, anesthetic treatment of the cardiac patient, and cardiographic and thoracic surgery. This course is designed to overlap with other concurrent CLPR classes (520, and 512).

CLPR 520. Thesis Development (1 cr)
This course is designed to accent the concepts learned in Research Methods in Allied Health (SAHP 518) course. Independent research is required whereby students will identify an area of research that they find interesting, and select a topic on a current perfusion problem. They will be required to apply methods of the scientific method in designing a research protocol to examine the problem, which will be implemented in future courses.

CLPR 701. In Vitro/In Vivo Laboratory Procedures (2 cr)
This course is an introduction to perfusion techniques and principles in a laboratory setting. Students are exposed to 'hands on' demonstrations and applications of all devices and products currently used in cardiopulmonary bypass and cardiovascular surgery. Exercises are designed and carried out by students that involve both wet laboratories (In Vitro) and laboratory animals (In Vivo). Students are required to complete this class prior to entering their clinical rotations.

CLPR 702, 703, 722, and 723. Perfusion Seminars (1 cr each)
Seminar is a detailed study of the techniques of perfusion, perfusion equipment, and clinical applications. Specific emphasis on clinical pathophysiology of cardiopulmonary bypass will be reviewed in case discussion format. Guest lecturers will present on various topics including infection control, blood borne pathogens, medical ethics, and risk management. First and second year students will interact together with on-line students from the degree–completion option.

CLPR 705. Pediatric Perfusion (3 cr)
Concepts and techniques of pediatric perfusion will be reviewed. Extracorporeal circulation during repair of congenital heart defects in neonate, infant and pediatric patients will be examined. Embryological and developmental changes associated with maturation will be reviewed, and cardiological diagnostic techniques will be explored. Both common and complex cardiac defects will be identified.

CLPR 708. Journal Review (1 cr)
In order to provide the student with critical reading skills necessary to evaluate the legitimacy of published research data, and expose the student to current elements of perfusion technology, journal articles investigating selected topics are critically reviewed on several levels utilizing multiple critique methodologies. To further develop critical thinking skills, the students will review current journals for a specific topic and then present selected articles in critical review and teach classmates about the selected topic. During such presentations the student presenting is to serve as a moderator in a group discussion regarding the article specifically and the subject at hand in general.
CLPR 710, 711 and 712. Thesis Development I, II, III and IV (1 cr each)

These courses are continuations of Thesis Development, CLPR 520. Here the students will be required to implement, perform, and conduct the research project designed in CLPR 520. Appropriate data and statistical analysis will be performed. The students will be required to submit a final paper in the Journal of Extra-Corporeal Technology format at the conclusion of the last semester. In addition, there will be a formal presentation made to faculty and invited guests held during the final week of classes in the last semester of study.

CLPR 715 and 718. Clinical Rotation Perfusion I and II (5 cr each)

Previously learned principles and techniques of perfusion are applied to clinical settings at UNMC and affiliate hospitals. Students will function as primary perfusionist on a variety of clinical cases including heart and liver transplantation procedures, cardiac and thoracic procedures, and ventricular assist procedures. The students are on call to report for emergency procedures as they arise.

CLPR 720 and 725. Clinical Rotation Pediatric Perfusion I and II (5 cr each)

Clinical rotations are scheduled for 1 month periods at Children’s Memorial Hospital in Omaha, NE. Students will perform, under the direct supervision of a certified clinical perfusionist, extracorporeal circulation on neonatal and pediatric patients. The case mixture of congenital heart defects is both diverse and extensive. Students will be required to perform no less than 15 extracorporeal circulation procedures on neonatal and pediatric patients undergoing cardiac surgery.

CLPR 730 and 735. Clinical Rotation Perfusion III and IV (5 cr each)

Previously learned principles and techniques of perfusion are applied to the clinical setting. Students travel to several of the clinical affiliate sites for continued instruction. Students are on call to report for emergency procedures as they arise. During the three clinical rotations, CLPR 715, 730, and 735 the students must perform 150 clinical cases; in 125 of these they must be the primary perfusionist responsible for all aspects of perfusion care including implementing and terminating cardiopulmonary bypass, and following the patient’s progress while in the hospital.

CLPR 765. Special Studies in Advanced Clinical Perfusion I (3 cr) (MDCP)

Special Studies in Advanced Clinical Perfusion I is a course within the Clinical Perfusion Education (CPE) curriculum whereby the Masters Degree Clinical Perfusion (MDCP) students initiate a comprehensive special project on an agreed upon aspect of extracorporeal circulation (ECC). Students will build upon previous developments in both their clinical perfusion education as well as clinical experience. The course is intended for those students who have matriculated through a clinical perfusion education program in transition from a Baccalaureate to Master’s degree. CLPR 765 will serve as one of the bridges to completion to achieve the Master’s of Science in Clinical Perfusion for those select few. Upon completion of this course, each student will have produced deliverables indicating progress worthy of the research arm of the Master’s cognate for clinical perfusion science.

CLPR 766. Special Studies in Advanced Clinical Perfusion II (3 cr) (MDCP)

Special Studies in Advanced Clinical Perfusion II is a course within the Clinical Perfusion Education (CPE) curriculum whereby the Masters Degree Clinical Perfusion (MDCP) students complete a comprehensive special project on the agreed upon aspect of extracorporeal circulation (ECC). Students will build upon previous developments in both their clinical perfusion education as well as clinical experience. The course is intended for those students who have matriculated through a clinical perfusion education program in transition from a Baccalaureate to Master’s degree. CLPR 766 will serve as one of the bridges to completion to achieve the Master’s of Science in Clinical Perfusion for those selected. Upon completion of this course, each student will have completed the deliverables and defended the agreed investigation worthy of the research arm of the Master’s cognate for clinical perfusion science.

CLPR 775. Survey in Advanced Extracorporeal Science I (2 cr) (MDCP)

Survey in Advanced Extracorporeal Science I is a course within the Clinical Perfusion Science curriculum offered via the Continuing Education Department whereby the Masters Degree Clinical Perfusion (MDCP) students participate in a comprehensive review of the complex issues of extracorporeal circulation. Students will explore the extracorporeal circulation (ECC) controversies, searching for pathways of evidence-based solutions. The MDCP student is expected to have developed a complete foundation of extracorporeal understanding and experience upon entry, but CLPR 766 will explore the complexities in the variation of the science with a goal of seeking solutions. The course is intended for those students who have matriculated through a clinical perfusion education program in transition from a Baccalaureate to Master’s degree. Upon completion of this course, each student will have explored the unique idiosyncrasies of the science with a reinforcement of the solutions from colleagues and literature.

CLPR 790. Independent Studies in Clinical Perfusion I (1-6 cr)

Independent Studies in Clinical Perfusion I is unique course within the Clinical Perfusion Science curriculum offered to CPE students. The students participate in the course as a self-designed curriculum and evaluation process. The course is intended to satisfy outstanding extracorporeal science, clinical, research or management requirements unique
to the individual student needs. The independent study course is offered under the guidance of staff and faculty. By class participation, presentations, clinical experience, etc. the students satisfy their self-defined evaluation process pre-approved by the CPE Program Director.

**PAMM 690. Pathology, Biology of Disease (5 cr)**
This course is a presentation of normal and abnormal development, structure and growth of human cells, tissues and organs. PAMM 690 is taught by faculty members in the College of Medicine. Histological criteria of the different organ systems will be presented. Emphasis will be made on the cardiovascular pulmonary and renal organ systems.

**PHAR 507. Pharmacology (5 cr)**
This course is designed to examine the fundamentals of pharmacology. PHAR 507 is taught by faculty members in the Colleges of Pharmacy and Medicine. Areas explored include drug mechanisms of action, side effects, and contraindications of various pharmacological agents. Drugs that effect the cardiovascular, renal, pulmonary and central nervous system as well as antimicrobial therapy will be emphasized in this course.

**PSM 610. Health Care Ethics (2 cr)**
The purpose of this course is to introduce Allied Health Professionals to the ethical issues which they are likely to encounter throughout their practice. The course will help to develop students’ critical thinking skills, written communication skills, and reading comprehension. The course introduces students to tools that will be helpful to them in approaching ethical dilemmas throughout the course of their career.

**SAHP 518. Research Methodologies in Allied Health (2 cr)**
This course is designed to provide the fundamental concepts of research methods in the allied health professions. The topics include literature reviews, statistical analysis, analytical reading and writing, research and proposal design, protection of human/animal subjects, limitation and justification of the research question, and also quality assurance and method selection. This course will assist the student in preparation for his/her research project.

**SAHP 530. Scanning the Health Care Environment (1 cr)**
The purpose of this course is to acquaint the student with the complex issues surrounding the economics of health care and health care delivery. Health care is changing rapidly, moving from the inpatient setting to the outpatient or home setting, from fee-for-service to managed care, from specialist to generalist, from health care as a noble profession to health care as a business. Allied health professionals are affected by such changes in both their personal and professional lives. This course is designed to assist students in gaining an understanding of why change is occurring, recognizing trends in their particular environment and identifying strategies to affect the changes to ensure that the patient is served. 

**SAHP 531. Management in Health Care (2 cr)**
This course introduces allied health students and practitioners to the concept of organizational theory and behavior in health care. The topics to be covered include the principles of motivation, team building, leadership, management, organizational culture and individual responses to organizational cultures. In addition, some basic methods for planning and implementing organizational change will be discussed. The second half of the course will focus on applications of management principles to the health care setting in the areas of financial management, risk management, and the process of hiring, coaching, evaluating and dismissing employees. The basic concepts of continuous quality improvement and the application of several quality tools will be employed in the development of a quality improvement project proposal and the preparation of a resume for an entry-level professional allied health position in the student’s discipline.
Cytotechnology

**Associate Professor** Radio (Medical Director); **Assistant Professor** Donnelly (Program Director).

The Cytotechnology Program is twelve months in length, granting a post-baccalaureate certificate to the student upon completion. Students are eligible to obtain certification from the American Society of Clinical Pathologists Board of Registry.

The Cytotechnologist

Cytology is defined as the study of cells. Working with a microscope, cytotechnologists study specimens from all body sites. Using subtle clues in the cells themselves, cytotechnologists can solve the mystery of disease by diagnosing cancer, precancerous lesions, benign tumors, infectious organisms and inflammatory processes. Cytotechnologists help save lives by discovering diseases early when treatment is most effective. A career as a cytotechnologist can be both challenging and rewarding.

Career Opportunities

Cytotechnologists are employed at the staff level in hospitals and private laboratories, university medical centers and government facilities. With experience, positions are available at the supervisory, educational and administrative levels. The job responsibilities of cytotechnologists are expanding and research opportunities are increasing with the advancement of new tumor identification techniques.

Organization

The Division of Cytotechnology in the School of Allied Health Professions offers a program leading to a post-baccalaureate certificate and eligibility for national certification. Instruction is provided at The Nebraska Medical Center Clarkson Tower. The program is accredited by the Cytotechnology Programs Review Committee (CPRC) which is part of the Commission on Accreditation of Allied Health Education Programs (CAAHEP).

Admission Requirements

Admission to the Cytotechnology Program requires the applicant to possess a bachelor's degree and be well rounded in the biological sciences, chemistry and mathematics. Biological science courses should equal or exceed 20 semester hours (30 quarter hours) which may include laboratory sessions. Such courses should emphasize body structure, development, tissue organization and function. These courses may include but are not limited to general biology, bacteriology, parasitology, cell biology, physiology, anatomy, zoology, histology, embryology, genetics and immunology. Chemistry courses should equal or exceed 8 semester hours (12 quarter hours) including laboratory sessions. At least 3 semester hours (4 quarter hours) of mathematics round out the desirable components of academic preparation for the technical curriculum.

Other Requirements

Candidates for admission are required to submit a completed application form, complete transcripts of all college work and three letters of recommendation. A personal interview will be scheduled. Preference will be given to students possessing a GPA higher than 2.8, and computer and previous health care experience.

Plan of Instruction

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>SAHP 418</td>
<td>Research Methodologies in Allied Health</td>
<td>2</td>
</tr>
<tr>
<td>PAMM 690</td>
<td>Biology of Disease</td>
<td>5</td>
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<tr>
<td>CYTO 701</td>
<td>Intro to Cytology, Cytopreparation</td>
<td>1</td>
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<tr>
<td>CYTO 702</td>
<td>Cytology/Female Genital Tract</td>
<td>4</td>
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<tr>
<td>CYTO 703</td>
<td>Cytology/Respiratory Tract</td>
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<tr>
<td>CYTO 704</td>
<td>Cytology/Urinary Tract</td>
<td>1</td>
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<tr>
<td>CYTO 705</td>
<td>Cytology/Blood Fluids</td>
<td>1</td>
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<tr>
<td>CYTO 710</td>
<td>Cytology/Gastrointestinal Tract</td>
<td>1</td>
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<tr>
<td>CYTO 711</td>
<td>Fine Needle Aspiration Cytology</td>
<td>3</td>
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<tr>
<td>CYTO 712</td>
<td>Immunocytochemistry</td>
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<tr>
<td>CYTO 713</td>
<td>Cytology Laboratory Management</td>
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<tr>
<td>CYTO 714</td>
<td>Cytotechnology Clinical Practicum</td>
<td>10</td>
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<tr>
<td>TOTAL CURRICULUM HOURS</td>
<td></td>
<td>32</td>
</tr>
</tbody>
</table>

Course Descriptions

**CYTO 701. Introduction to Cytology, Cytopreparation (1 cr)**

The goals of cytotechnology and the science of cytology. The principles of microscopy and cytopreparation.

**CYTO 702. Cytology of the Female Genital Tract (4 cr)**

Basic cell structure, cellular biology and the mechanism of pathologic change in "Pap smears." Diagnosis of normal from abnormal cells and grading of the severity of the abnormality present. Identification of infectious agents and non-neoplastic conditions of the female genital tract.

**CYTO 703. Cytology of the Respiratory Tract (2 cr)**

Study of respiratory epithelial and inflammatory cells from sputum, bronchial washing, bronchial brushing, bronchoalveolar lavage and fine needle aspiration specimens of the lung. Identification of normal, infectious, non-neoplastic non-infectious and malignant conditions of the lung.

**CYTO 704. Cytology of the Urinary Tract (1 cr)**

The cytology of benign conditions, inflammatory disorders, infections, malignancies and therapeutic effects as seen in the urinary tract. An overview of the cytology of combined kidney/pancreas transplantation with identification of graft rejection in this patient population by the study of recipient's urine.
CYTO 705. Cytology of Body Fluids and Cerebro-spinal Fluid (1 cr)
The cytologic evaluation of cerebrospinal fluid and pleural, peritoneal, pericardial and pelvic washing fluids. Identification of normal cells, infectious diseases, benign conditions, primary malignancies and metastatic malignancies.

CYTO 710. Cytology of the Gastrointestinal Tract (1 cr)
The scrapings, brushings and washings from the oral cavity, esophagus, stomach, duodenum, colon and rectum are evaluated for their cytologic appearance. Identification of normal cells, noncellular material, infections, benign conditions and malignancies of the gastrointestinal tract.

CYTO 711. Fine Needle Aspiration Cytology (3 cr)
Fine Needle Aspiration (FNA) is a method of collection for obtaining a cellular specimen. Interpretation of FNA samples obtained from the breast, thyroid, salivary gland, prostate, lymph nodes, soft tissue, bone, mediastinum, liver, pancreas, kidney, adrenal gland, ovary, testes, orbit and brain. Assist physicians in obtaining FNAs in the outpatient clinic setting.

CYTO 712. Immunocytochemistry (1 cr)
Immunocytochemistry is a staining technique used to demonstrate cellular antigens. The principle of the staining process as well as its utility and appropriateness is presented.

CYTO 713. Cytology Laboratory Management (1 cr)
Study of the activities required for the management of a cytopathology laboratory, including the compliance with federal and accrediting agency regulations. Topics include quality control, quality assurance, proficiency testing, procedure manuals, statistics, workload and accreditation. Other topics discussed are personnel issues, financial management, inventory and basic principles of clinical investigation.

CYTO 714. Cytology Clinical Practicum (10 cr)
Actual experience in a cytology laboratory and other selected pathology laboratory sections. Slide screening, preparing specimens and a research project will be completed during this course.

PAMM 690. Biology of Disease (5 cr)
Basic pathology including general pathology, common diseases of organ systems and selected topics in clinical pathology.

SAHP 418. Research Methodologies in Allied Health (2 cr)
This course is designed to provide the fundamental concepts of research methods in Allied Health Professions. The topics to be covered will include literature review, statistical analysis, analytical reading and writing, research and proposal design, protection of human/animal subjects, limitation and justification of the research question and also quality assurance and method selection.
Medical Nutrition Education

Assistant Professor Woscyna (Director); Volunteer Instructors Beaver-Keim, Bishop, Ferguson, Fox, Hanson, Heimann, Iverson, McElligott, McLaughlin, Mordeson, Polich, Robertson, Skrabal, Stirek, Thayer, Walter, Weseman.

The program is divided into three sections: Nutrition Therapy, Community Nutrition, and Management (including Foodservice Systems). The program area of emphasis is Nutrition Therapy.

The Medical Nutrition Therapist/Registered Dietitian

Medical Nutrition Therapists, also referred to as Registered Dietitians, are food and nutrition experts who work in a wide variety of employment settings. They understand the science of nutrition and are skilled in the art of teaching and counseling. Their educational background includes a baccalaureate degree in nutrition/dietetics and supervised practice experience (dietetic internship or coordinated program in dietetics) followed by successful completion of a national examination administered by the Commission on Dietetic Registration (CDR). The UNMC Dietetic Internship Program, administered through the Medical Nutrition Education Division, meets the educational requirements for supervised practice.

Career Opportunities

Medical Nutrition Therapists/Registered Dietitians who provide patient care must be licensed in most States – in Nebraska they are Licensed Medical Nutrition Therapists. These professionals generally work in hospitals or other health care facilities, such as outpatient clinics. They are key members of the health care team and perform such services as:

- Assessing and monitoring nutritional status of patients;
- Developing care plans to complement the patient’s overall plan of medical care;
- Counseling patients and their families to help them achieve nutrition care goals relating to hypertension, obesity, diabetes, diverticular disease, renal disease, organ failure, eating disorders and other chronic diseases;
- Working with the physician to manage enteral or parenteral nutrition support for patients who are not able to meet their nutritional needs with oral diet, such as burn, trauma, and gastrointestinal system impairment.

Registered dietitians have many other career opportunities, including:
- Sports nutrition and corporate wellness programs – client education about food and fitness…
- Food and nutrition related businesses and industries – communications, consumer affairs, product development, sales…
- Private practice – consulting with restaurants, distributors, athletes, nursing homes…
- Community nutrition – teaching the public, program development for target audiences, counseling in health clinics on topics related to pregnancy, infant feeding, geriatric care…
- Teaching and research – conducting research in laboratories or clinical settings, teaching medical students and allied health students …
- Writing – newsletters, newspaper columns, magazine columns for the public…

Employment of registered dietitians is expected to grow because of increased emphasis on disease prevention, a growing and aging population, and public interest in nutrition. Salaries are competitive with those of other allied health professions.

Program Description

The Medical Nutrition Program offers an 11-month post-baccalaureate dietetic internship program with a competency based curriculum. The program emphasizes nutrition therapy competencies and includes clinical rotations in general medicine and specialty service areas such as cardiology, diabetes, oncology, pediatric specialties, organ transplantation, renal disease, rehabilitation, and critical care medicine. Rotations also include community nutrition, and management of nutrition and foodservice systems. These experiences are provided in Omaha and in other Nebraska settings under the guidance of experienced registered dietitians.

Students in the UNMC Dietetic Internship Program complete 15-18 semester credit hours of coursework in conjunction with the supervised practice experience. Most of the courses are interdisciplinary, covering a variety of topics in healthcare management, research, and ethics. Some of the courses are specific to the dietetic internship program, covering specific nutrition therapy, foodservice systems management and community service topics.

Program Accreditation

The UNMC Dietetic Internship Program is currently granted accreditation by the Commission on Accreditation for Dietetics Education (CADE) of the American Dietetic Association, 120 South Riverside Plaza, Suite 2000, Chicago, IL 60606-6995, (312) 899-0440 ext. 5400, www.eatright.org.

The Council on Higher Education Accreditation (CHEA), a nongovernmental higher education organization, and the federal government, through the United States Department of Education (USDE), recognize the quality and effectiveness of CADE as the accrediting body for dietetics education programs.
Program Calendar
The 11-month program starts in mid-August of each year and extends through late June of the following year. Students must complete the computer match application process by mid-February to be considered for the August class.

Requirements for Admission
The UNMC Dietetic Internship Program accepts a maximum of six (6) students each academic year. Appointments are competitive and all student selections are made through the nationwide computer match process. Nebraska residency is considered but not required.

Applicants must have completed a minimum of a baccalaureate degree at a US regionally accredited university or college and a Didactic Program in Dietetics accredited by the Commission on Accreditation for Dietetics Education (CADE) of the American Dietetic Association (ADA). An overall Grade Point Average (GPA) equal to/greater than 2.75 on a 4.0 scale must be demonstrated to be considered (an overall GPA of 3.0 or greater is recommended).

Curriculum
The UNMC Dietetic Internship Program curriculum is competency based, meeting all generalist program competencies and providing an emphasis in nutrition therapy. The program is approximately 75% supervised practice and 25% coursework. Supervised practice rotations are generally 1-3 weeks in length. Students also complete 6-9 semester credit hours of coursework in the fall and spring semester (15-18 semester hours total). Students are evaluated on the basis of core competencies that reflect the breadth of dietetics practice.

During the dietetic internship program, students work with a faculty of approximately twenty (20) registered dietitians at UNMC and The Nebraska Medical Center who provide much of the supervised practice experience and nutrition therapy coursework. The academic medical center environment offers students the advantage of interaction with many health care professionals and students in a variety of professions including medicine, pharmacy, nursing, and the nine other allied health care programs. Dietetic interns also have access to the regionally accredited medical library on campus.

Community nutrition, rural health and consulting rotations are provided through affiliations with registered dietitians and organizations in Omaha and across Nebraska. Affiliating institutions and organizations in Omaha include: Dairy Council of Nebraska; Douglas County Hospital; Women, Infant and Children (WIC) program; schools, and other community outreach programs. Facilities for guided work experience with consulting dietitians working outside the metropolitan area may include primary care hospitals, clinics, long-term geriatric care centers, elderly feeding programs, day care centers, technical community college programs, and Native American diabetes care/community nutrition programs in urban and rural Nebraska. Facility selections and work experience criteria are designed to offer maximum breadth and depth of educational experience for dietetic interns.

COURSE DESCRIPTIONS

PSM 610. Health Care Ethics (2 cr)
This course will introduce Allied Health students to the ethical issues they are likely to encounter while working in health care. Topics covered include informed consent, confidentiality, paternalism, respect for autonomy, end of life care, etc. This course is web-based, with students meeting in person monthly for small group discussions led by departmental faculty. All lectures, assignments, and case discussions will proceed online. Students may take a basic 1-credit hour version of the course, a more detailed 2-hour version, or the more advanced 3-hour version.

SAHP 518. Research Methodologies in Allied Health (2 cr)
This course is designed to provide the fundamental concepts of research methods in allied health professions. The topics include literature review, statistical analysis, analytical reading and writing, research and proposal design, protection of human/animal subjects, limitation and justification of the research question and also quality assurance and method selection. Students will design a research proposal on presented information.

SAHP 520. Applied Research Methodologies (1 cr)
This is an independent study course focusing on implementation and evaluation of the research proposal developed in SAHP 518. Students will implement, evaluate, and present their findings at the SAHP Research and Education forum in April-May.

The purpose of this course is to provide knowledge and skill development in integrating research into clinical practice. In conducting their own unique research, or in expanding a component of an existing research initiative, students will understand and adhere to principles of ethics and confidentiality appropriate to the research and clinical setting.

SAHP 530. Scanning the Health Care Environment (1 cr)
This course provides the health professions student with knowledge concerning the complex issues surrounding the economics of health care and health care delivery. Health care is changing rapidly and allied health professionals are affected by such changes in both their personal and professional lives. This course is designed to assist students in gaining an understanding of why change is occurring and identifying strategies to affect the changes to ensure that the patient is served. The topics to be covered include the economics of health care, the history of health care in the 20th century, federal involvement in health care, principles of insurance, elements of a health care plan, medicare, medicaid, restructuring, health care reform and responding to the challenge of the uninsured.

SAHP 531. Management in Health Care (1 cr)
The purpose of this course is to introduce the student to the concept of organizational theory and behavior. As future health care professionals, the student will work in an
organization and will be either a manager or a managee. An understanding of the actions and attitudes that people exhibit in an organization will help the student be a more valuable contributor to the organization and more successful in his/her future career. The topics to be covered include the principles of motivation, team building, leadership, management, organizational culture and individual responses to organizational changes. Since change is a constant in today's organizations, the student will learn basic methods for planning and implementing organizational change.

SAHP 532. Health Care Management Applications (1 cr)
The purpose of this course is to introduce the student to several management applications. The student will learn the basic concepts of continuous quality improvement, the application of quality tools, financial management, as well as the process for hiring, coaching, evaluating and dismissing employees. The student is expected to complete a simple quality improvement project and to prepare her/his own resume for an entrance level professional position (discipline specific).

SAHP 533. Health Care Management Project (1 cr)
This is an independent study course focusing on a management topic in a prescribed course of study. Includes literature review and individual or team-focused work relating to management functions and performance improvement. Student’s work will be supervised and evaluated by department faculty members.

SAHP 640. Clinical Experience (3-6 cr)
This course is designed to provide guided experience in addressing specified clinical competencies on the UNMC campus or at another designated location under the supervision of one or more qualified allied health care professional(s). Students will rotate through experiences in inpatient and ambulatory care. The course will include student directed activities, assigned readings and self-directed learning modules, and supervised practice experience.

Lectures and group discussion, providing didactic support for the clinical experience, will be conducted by the Adjunct Instructors and Preceptors.

To successfully complete the UNMC Dietetic Internship Program, students must successfully complete all scheduled activities, and all other SAHP, PMS, NUTR coursework associated with the program.
Class discussion and associated experiences, will address diagnosis based nutrition care, cultural competence, written and oral communication, and professionalism in the clinical setting.

NUTR 956. Advanced Community Nutrition (3 cr)
This course is designed to provide a conceptual framework for the community nutrition services. Students participate during the supervised practice component of the UNMC dietetic internship program. It is taught through the UNL College of Education and Human Sciences, Department of Nutrition and Health Sciences.

For further information about the UNMC Dietetic Internship Program, please contact:
Division of Medical Nutrition Education
School of Allied Health Professions
University of Nebraska Medical Center
981200 Nebraska Medical Center
 Omaha, Nebraska 68198-1200
Phone: (402) 559-7365
Fax: (402) 559-6010
gwoscyna@nebraskamed.com
www.unmc.edu/alliedhealth/mne
Physician Assistant Education

Professor Moore (Medical Director); Associate Professors Somers (Program Director), and Edwards; Assistant Professors Brown, Christiansen, Grothe, Kennedy, Shearer and VanderMeulen.

GENERAL INFORMATION

Background
This educational program was founded in 1973 with the idea of making available to the physicians of Nebraska a new type of assistant who would, by education and training, be capable of carrying out many functions traditionally performed by physicians. It represents a commitment on the part of the University of Nebraska Medical Center to make a significant contribution to the health of the State by educating persons who, in partnership with physicians, can extend the delivery of medical care.

Administration
The Physician Assistant Program is part of the University of Nebraska Medical Center (UNMC), a comprehensive academic health sciences center located in Omaha, Nebraska. The Program is administered as the Division of Physician Assistant Education within the School of Allied Health Professions in the UNMC College of Medicine. While the Program has its own administrative policies for PA students, as a Division within the School of Allied Health Professions and the College of Medicine, PA students are governed by the same general regulations and share in the same privileges that apply to all students on the UNMC campus. PA students derive many benefits from being a part of a major academic health science center including access to UNMC’s Regional Medical Library, instruction from College of Medicine faculty, opportunities to learn from a broad range of clinical and research oriented activities, and the opportunity for interaction with students from many different health care professions.

Mission
The mission of the Physician Assistant Program at the University of Nebraska Medical Center is to educate a diverse student population as entry-level practitioners of primary care medicine, working with physician supervision, in order to provide the citizens of Nebraska, particularly those in rural and underserved areas, with quality medical care.

Accreditation
The Physician Assistant Program is fully accredited by the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA) and approved by the Nebraska Department of Education. Graduates of the Program are eligible to sit for the national certification examination administered by the National Commission on the Certification of Physician Assistants (NCCPA). Graduates are required to pass this examination in order to practice in Nebraska and most other states.

Additionally, UNMC enjoys full accreditation (of all it’s colleges, programs, and sites) by the Higher Learning Commission and is a member of the North Central Association of Colleges and Schools, 30 North LaSalle Street, Suite 2400, Chicago, IL 60602-2504, telephone 800-621-7440.

Facilities for Instruction
The University of Nebraska Medical Center (UNMC) is a major urban academic health center with facilities for health care education in multiple disciplines and comprehensive patient care at all levels. In recent years, this medical center has become a major health resource for Nebraska and surrounding areas. A member of the University of Nebraska system, UNMC is home to Colleges of Medicine, Nursing, Pharmacy, and Dentistry, a School of Allied Health Professions and a Graduate College with programs in the medical sciences. UNMC has access to a teaching hospital, a comprehensive cancer center, and a rehabilitation institute. More than 3,000 students are enrolled in programs at UNMC.

Students who enroll at UNMC find that the campus is a small community in itself. There is a large faculty, whose members are outstanding in their specialties and are readily accessible to students. PA students learn with other health professional students, fostering a better understanding of the “team approach” to taking care of patients. Clinical experiences are available to PA students in the hospital and the outpatient clinics on campus, as well as in affiliated institutions in Omaha and the region. An extensive network of private physicians throughout Nebraska also provides excellent individualized clinical experiences for PA students.

Degree Offered
Upon successful completion of the physician assistant professional program at UNMC, students receive an entry-level Master of Physician Assistant Studies (MPAS) degree.

DESCRIPTION OF THE PROFESSION
A physician assistant (PA) is a health professional licensed by the state or credentialed by a federal employer to practice medicine as delegated by and with the supervision of a physician. Upon graduation from an accredited program, PAs are eligible to take the national certifying examination administered by the National Commission on Certification of Physician Assistants (NCCPA). Only those passing the examination can use the title “Physician Assistant-Certified” (PA-C). PAs keep up with medical advances through continuing medical education courses (CME). In order to maintain national certification, PAs must complete 100 hours of CME every two years and take a recertification exam every six years.

A hallmark of physician assistant practice is that PAs provide a broad range of medical and surgical services as part of the health care team. They are skilled in the delivery of hands-on care and are capable of administering many functions traditionally performed by physicians. PAs work under the supervision of a licensed physician, providing a broad range of medical services and focusing on patient care education.
of a team with their supervising physician. As part of the physician/PA team, PAs diagnose and treat illness and injuries and can exercise a degree of autonomy in their decisions. Physician assistants perform physical examinations, order and interpret diagnostic tests, prescribe medications and provide patient education and preventive health care counseling. They also perform therapeutic procedures such as suturing lacerations and applying casts. A particular PA’s responsibilities vary with training, experience, state law, and what is delegated by the supervising physician. PAs are recognized throughout the nation as quality health care providers.

PAs are employed in virtually all types of health care settings - hospitals, clinics, private physician offices, schools, and HMO’s. PAs can be found in communities of all sizes, from the smallest rural town to major metropolitan areas, and in virtually every medical and surgical specialty. Although the majority of PAs work in primary care medicine — family medicine, internal medicine, pediatrics, and obstetrics and gynecology — many also work in specialty medicine, such as cardiothoracic surgery and orthopedics. PAs may also work in the areas of medical education, health administration and research.

Additional information about the profession may be obtained from the American Academy of Physician Assistants.

American Academy of Physician Assistants
950 North Washington Street
Alexandria, VA 22314
Phone: 703/836-2272 Web: www.aapa.org

ADMISSIONS INFORMATION

High School
A strong college preparatory program that includes three units of English, two units in mathematics (one each of algebra and geometry), and one unit each of biology, chemistry, and physics is recommended.

College
Applicants to the Program must have completed a bachelor’s degree at an accredited college or university before entering. The undergraduate program of study must include 50 hours of required course work in specific disciplines as shown below. All 50 hours of required course work must be satisfactorily completed by June 1 of the year of intended enrollment. Required course work graded Pass/Fail or credit obtained by CLEP Examination or Advanced Placement (AP) will not be accepted for any of the 50 hours.

Required Courses

Biological Sciences – (minimum of sixteen semester hours)
- Biology – 4 sem hrs
- Human Anatomy – 4 sem hrs
- Human Physiology – 4 sem hrs
  Note: Anat. & Phys. may also be taken in an 8 sem hr combined course
- Microbiology – 4 sem hrs
- Immunology is strongly recommended

Chemistry – (minimum of sixteen semester hours)
- General or Inorganic Chemistry with lab – 8 sem hrs (one year sequence)
- Organic Chemistry with lab – 4 sem hrs (one year sequence recommended)
- Biochemistry (lab recommended) – 4 sem hrs

Psychology – (minimum of nine semester hours)
- General Psychology – 3 sem hrs
- Abnormal Psychology – 3 sem hrs
- Life Span/Developmental Psychology (or other psychology elective) – 3 sem hrs

Mathematics - (minimum of three semester hours)
- Statistics – 3 sem hrs
- Algebra is strongly recommended

English - (minimum of six semester hours)
- English Composition – 3 sem hrs
- Additional Writing or English Composition – 3 sem hrs

Courses in chemistry, biology, mathematics, and psychology beyond the required minimums are encouraged. A minimum cumulative grade point average of 2.8 (A=4.0) is required. Grades below "C" are not accepted in transfer to the University of Nebraska (e.g. C-, D, D+, D-, F). College level hours earned from community colleges with grades of "C" or better, in academic areas appropriate to the PA Program, may be applied up to a maximum of 66 semester hours.

Graduate Record Examination (GRE)
All applicants are required to submit scores on the General Test of the Graduate Record Examination (verbal, quantitative and analytical writing). Scores must be submitted to the program by the application deadline of November 1 preceding the intended date of Fall admission. Candidates failing to submit GRE scores will not be considered for admission.

Applicants requesting scores from the Educational Testing Service (ETS) should specify that copies of their scores be sent to the University of Nebraska Medical Center (Code 6896), Allied Health Department (Code 0601), or by selecting the University of Nebraska Medical Center after taking the computer-based test.

Information and applications for the GRE may be obtained from:
Educational Testing Service
P.O. Box 6000
Princeton NJ 08541-6000
Web: www.gre.org

Graduates of Foreign Institutions and Non-U.S. Citizen Applicants
In addition to the admission requirements described above, foreign applicants and graduates of institutions outside of the United States are required to submit the following:
1. Applicants not having English as their native or first language must submit official scores on the Test of English as a Foreign Language (TOEFL). The minimum acceptance score on the TOEFL examination is 600 written or 250 computer-based or 100 Internet-based. (Note: The TOEFL Examination is administered by the Educational Testing Service, P.O. Box 6155, Princeton, NJ 08541-6155, USA. Request that scores be sent to CASPA.)

2. If official transcripts or mark sheets of college work are in a language other than English, a certified English translation must be submitted.
   a. Transcripts should clearly indicate hours of instruction and grades received on all course work.
   b. If transcripts do not show the degrees earned and the dates on which they were conferred, official degree statements must also be provided in English translation.

For applicants who are, or previously have been, enrolled in a United States institution of higher education, the letters of recommendation should come from faculty members of that institution and should mention the applicant’s English proficiency.

Preference Factors
The requirements for admission described in the previous section are minimum requirements for admission. Because admission to the Program is highly competitive, the Program has designated a number of “Preference Factors” for applicants. In considering applicants for admission to the Program, the Admissions Committee will give preference for admission to applicants possessing the following:

* An overall grade point average (GPA) of 3.00 or higher (on a 4.00 scale).
* A science (biology and chemistry) grade point average of 3.00 or higher (on a 4.00 scale).
* Competitive Graduate Record Examination (GRE) scores (50th percentile and above).
* Strong motivation to become a physician assistant based on a thorough understanding of the PA profession.
* Strong motivation to practice in a medically underserved area.
* Prior work or volunteer experience demonstrating direct patient care.
* Significant extracurricular, professional, or service organization involvement and activity.
* Ability to communicate effectively in the personal written statement in the application and in the interview.
* Personal qualities relating to maturity and professionalism as demonstrated in the interview and letters of recommendation.

Applicant Interviews
An interview with the Admissions Committee is required for admission. However, only the most qualified applicants will be invited for an interview based on the Admission Committee’s assessment of the application materials and the number of Preference Factors that apply. Competitive applicants who have or will have met all requirements and will complete all required course work by June 1 of the year of intended enrollment will be invited for an interview. Each applicant who is invited for an interview will be required to fill out the University of Nebraska Medical Center Disclosure Statement (limited background check).

Admission to the PA Program continues to be highly competitive. Only one class of approximately 40 applicants is selected each year for admission. The most qualified applicants are selected for admission to the Program. Selection of applicants will be based on the Admission Committee’s assessment of the application materials, the interview with the Committee, and the number of Preference Factors that apply. Applicants not selected for admission in a given year may reapply in subsequent years.

References
Three references are required and should include persons who are acquainted with the applicant’s actual abilities, talents, personality and academic performance. References from college teachers who can comment on academic potential from first hand knowledge, physicians, PAs and other health professionals who have worked with the applicant, or know the applicant well, are preferred. (Applicants are discouraged from asking physicians and PAs whom they have “shadowed” a few times for a reference if that is the only acquaintance they have had with the health professional.)

Understanding the Profession
Applicants are expected to have a thorough understanding of the PA profession. Applicants should research the profession to learn how PAs work within the health care system, and understand the PA’s role on the health care team. Applicants should get acquainted with and, if at all possible, follow (“shadow”) one or more practicing physician assistants on the job in order to thoroughly understand the functions the PA performs in the clinical setting (especially family medicine PAs).

Health Care Experience
Although health care experience is not required for admission, it is a Preference Factor. Applicants are therefore strongly urged to obtain direct patient care experience in hospitals, nursing homes or other health care settings.

Advanced Standing
The UNMC Physician Assistant Program does not grant advanced standing to any applicant admitted to the Program. No Program courses will be waived, and no advanced credit for any previous course work will be given even though it may be similar or identical to course work in the Program.
All courses are designated as “required” and must be taken by every student.

Technical Standards

The University of Nebraska Medical Center Physician Assistant Program is dedicated to the education of students who strive to become competent and caring providers of primary health care services under the supervision of a licensed physician. The student must be able to achieve certain technical standards of knowledge and skill in order to successfully complete the Program. The technical standards stated in this document apply to satisfactory performance in all academic and clinical course work, as well as fulfillment of “non-academic” essential functions of the curriculum involving physical, cognitive, and behavior factors that are essential to a professional clinical practitioner.

The University of Nebraska Medical Center shall provide reasonable accommodations to students with disabilities otherwise qualified to complete the essential functions of the curriculum. However, such essential functions must be completed by the student in a reasonably independent fashion. The safety and welfare of a patient shall never be put in jeopardy as a result of an effort to reasonably accommodate a disability.

More specifically, a student in the Physician Assistant Program must have adequate abilities and skills in the following five areas: 1) Observation; 2) Communication; 3) Sensory and Motor Function; 4) Conceptual, Integrative and Quantitative Ability; and, 5) Behavioral and Social Attributes.

1. Observation: The student must be able to observe demonstrations and conduct experiments in the basic sciences, including but not limited to chemical, biological, anatomic and physiologic sciences, microbiologic cultures, and microscopic studies of microorganisms. A student must be able to observe a patient accurately at a distance and close at hand. Observation necessitates the functional use of the sense of vision and other sensory modalities. A student must be able to integrate all information visually and through the other senses.

2. Communication: A student must be able to communicate effectively, sensitively, and rapidly in English with patients and members of the health care team. A student must be able to elicit information from patients, perceive nonverbal communications, and describe changes in mood, activity and posture. Communication includes not only speech, but writing, reading, interpreting graphs and computer literacy.

3. Sensory and Motor Function: The student must have sufficient sensory and motor function to elicit information from patients by palpation, auscultation, percussion, and other diagnostic maneuvers. The student will be required to coordinate both gross and fine muscular movements, equilibrium, and functional use of the senses of hearing, touch and vision.

More specifically, the student must be able to exercise such fine motor skills as to adequately perform laboratory tests, including but not limited to, wet mount, urinalysis and gram stain. The student must exercise such level of dexterity, sensation and visual acuity as to accurately complete such processes as administering intravenous medication, making fine measurements of angles and size, measuring blood pressure, respiration and pulse, performing physical examinations, and performing therapeutic procedures such as suturing and casting.

The student must be able to hear sufficiently to accurately differentiate percussive notes and auscultatory findings, including but not limited to, heart, lung, and abdominal sounds, as well as discern normal findings using instruments such as tuning forks, stethoscopes, sphygmomanometers, and Doppler devices.

A student must be able to transport himself or herself in a manner which provides timely response in both general and emergency care situations. Moving patients and engaging in some procedures such as CPR will require a necessary level of strength.

4. Intellectual, Conceptual, Integrative and Quantitative Abilities: A student must have the intellect necessary to quickly analyze and resolve problems. These intellectual abilities include numerical recognition, measurement, calculations, reasoning, analysis judgment and synthesis. The student must be able to identify significant findings from the patient’s history, the physical examination and laboratory data, provide a reasoned explanation for likely diagnoses, and choose appropriate medications and therapy.

The ability to incorporate new information from many sources in formulating diagnoses and plans is essential. Good judgment in patient assessment, diagnostic and therapeutic planning is primary. When appropriate, students must be able to identify and communicate the limits of their knowledge to others.

5. Behavioral and Social Attributes: A student must possess the emotional health required for full use of his or her intellectual abilities, the exercise of good judgment and the prompt completion of all responsibilities attendant to the diagnosis and care of patients. The development of mature, sensitive effective and professional relationships with patients and members of the health care team is essential. Students must be able to tolerate physically taxing workloads and to function effectively under stress. They must be able to adapt to changing environments, to display flexibility and learn to function in the face of uncertainties inherent in the clinical problems of many patients. Compassion, integrity, interpersonal skills, interest and motivation are all personal qualities that are desired in a health professional and assessed during the admissions and education processes.

Admission Process

Step 1 Submission of completed application materials to CASPA by November 1 of the year before intended enrollment. These materials include:

   a. The CASPA Application for Admission.
b. Three (3) Letters of Recommendation submitted on CASPA recommendation forms.
c. Official copies of transcripts from all colleges or universities attended using the CASPA Transcript Request Form.

Step 2 Submission of the Graduate Record Examination scores for the General Test to UNMC PA Program under College Code 6896, Allied Health Department Code 0601 by November 1 or select the University of Nebraska Medical Center if on computer.

Step 3 Verification of complete applications by CASPA. Incomplete applications and those not meeting all requirements will not be considered for further evaluation.

Step 4 Application Addendums sent to those individuals chosen for further consideration.

Step 5 Evaluation of CASPA applications and UNMC Physician Assistant Application Addendums by the Admissions Committee and selection of applicants for the on-campus interview.

Step 6 On-campus interview and completion of required assessment(s).

Step 7 Final selection process by the Admissions Committee.

Step 8 Admission decision letters sent to all applicants.

The UNMC Program incorporates these steps in a “rolling” selections process. That is, applicants will be selected by the Admissions Committee on a continuing basis and offered a place in the class for the upcoming Fall semester, which starts in August. The selection process will occur throughout the months of January, February and March until the class is filled. By the end of March all applicants will have been notified of the status of their application.

Admissions Review Session
An Admission Review Session is held annually for prospective applicants to describe the admissions process, give an overview of the Program, and answer questions about the Program. Additionally, if an applicant plans to reapply, it may be helpful to attend. The Admission Review Session is held on the UNMC campus in August. A specific date for this session will be posted on the PA Program website (www.unmc.edu/alliedhealth/pa), or may be obtained by calling 402/559-2232.

APPLICATION PROCEDURE
The University of Nebraska Medical Center Physician Assistant Program, along with the majority of other physician assistant programs, participates in a centralized application service called the Central Application Service for Physician Assistants (CASPA). The service collates materials, computes grade point averages and transmits standardized information to the applicant and the physician assistant programs the applicant designates. CASPA takes no part in the evaluation, selection or rejection of applicants. Applications, recommendation forms, and Transcript Request Forms may be obtained from the CASPA web site at www.caspaonline.org starting around May 1.

In addition to the CASPA application, official transcripts from each college or university attended, and three letters of recommendation are required and must be sent to the CASPA office. Results of the Graduate Record Examination (GRE) General Test (verbal, quantitative and analytical) must be sent to the PA Program under College Code 6896, Allied Health Department Code 0601 or by selecting the University of Nebraska Medical Center after taking the computer-based test.

You are strongly encouraged to apply early. The sooner you submit your application to CASPA, the sooner they can start the verification process. The primary CASPA application must be submitted no later than November 1 the year before intended enrollment. For cost information, please go to the CASPA website stated above. Those asked to submit an Application Addendum must do so within two weeks of receipt.

All application materials and GRE scores must be received by November 1 of the year before intended enrollment. Additionally, all required course work for admission must be completed by June 1 of the year of intended enrollment.

CASPA
P.O. Box 9108
Watertown, MA 02471
Phone: 617/612-2080 or 617/926-3571
e-mail: caspainfo@caspaonline.org
web site: www.caspaonline.org

Application Addendum
After review of the CASPA application, the UNMC Physician Assistant Program will send an Application Addendum requesting additional information not provided on the CASPA application. Application Addendums will be sent by the Program to qualifying applicants. Application Addendums must be returned within two weeks of receipt.

Once an applicant is accepted for admission, a $100 non-refundable acceptance fee is required to reserve a place in the next entering class.

FINANCIAL INFORMATION
Tuition and Related Expenses
Tuition and fee charges are subject to change, as determined by the University of Nebraska Board of Regents. Questions regarding residency status should be directed to the Office of Academic Records, University of Nebraska Medical Center, 984230 Nebraska Medical Center, Omaha, NE 68198-4230, telephone 402/559-6468 or 800/626-8431, ext 9-6468. Approved tuition and fees charges for the 2007-08 academic year are as follows:
Students should also be aware of additional expenses for travel, lodging and meals during the clinical clerkships throughout Phase II of the Program. The amount of these expenses will vary depending on individual schedules.

* Resident tuition: $224.00 per semester hour
** Nonresident tuition: $604.00 per semester hour
*** Add these costs if you need Hospitalization Insurance and/or the Hepatitis B Vaccine.

### Financial Aid

The University of Nebraska Medical Center has financial aid programs to assist students with unmet financial need. The programs operate on the premise that students and parents have a responsibility to meet as much of the educational and related costs as possible. The Office of Financial Aid is prepared to supplement family contributions from its aid sources when students qualify for financial aid. Additionally, the Office of Financial Aid counselors are prepared to assist students in obtaining financial aid from outside sources. It is very important for prospective students to make sure all financial planning arrangements are complete prior to entering the Program.

Inquiries about financial assistance should be directed to the Office of Financial Aid, University of Nebraska Medical Center, 984265 Nebraska Medical Center, Omaha, NE 68198-4265. Telephone 402/559-4199. 
Website: [www.unmc.edu/student/studentservices](http://www.unmc.edu/student/studentservices).

### Tuition Refund Policy

Tuition refunds are computed using the effective date on the withdrawal form required to be completed by any student withdrawing from any academic program. Students who withdraw are not relieved from the payment of any balance due. Refunds will be applied first to unpaid balances. Any remaining balance or obligation to any University service must be paid. Failure to do so may prevent future registration. Refunds are not made for fees.

Refunds are calculated from the official beginning of the semester as stated in the Physician Assistant Program academic calendar.

Students who receive financial aid and withdraw during the refund period may have to repay all or a portion of their financial aid received. A financial aid recipient should contact the Office of Financial Aid prior to withdrawal.

### Refund Schedule

<table>
<thead>
<tr>
<th>Time of Withdrawal</th>
<th>% Refund</th>
<th>% Chargeable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before 1st day of semester</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>1st Week of classes</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>2nd Week of classes</td>
<td>75%</td>
<td>25%</td>
</tr>
<tr>
<td>3rd Week of classes</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>4th Week of classes</td>
<td>25%</td>
<td>75%</td>
</tr>
<tr>
<td>5th Week of classes</td>
<td>0%</td>
<td>100%</td>
</tr>
</tbody>
</table>

### Placement Assistance

Information on employment opportunities, locally and nationally, is maintained by the Program. This information is updated continuously and is provided as a service to all students and graduates.

### Professional Liability Coverage

All students enrolled in the program are insured for professional liability under a policy approved by the Board of Regents of the University of Nebraska.

### PROGRAM POLICIES

#### Academic Requirements for Graduation

1. In order to graduate from the PA Program, every student must satisfactorily complete all required course work and all graded and non-graded course work, clerkships (required and elective), assignments and projects designated by the Program as “required,” and receive an overall “satisfactory” rating on professionalism throughout the student’s enrollment in the Program. “Satisfactory completion” shall mean completing all non-graded assignments and projects with an instructor’s “Pass,” completing each course and clerkship with a minimum grade of C- and maintaining a cumulative GPA of 2.00 throughout the student’s entire enrollment in the Program. A grade of C- represents quality points of 1.67 and is only acceptable as a satisfactory grade when the cumulative GPA is 2.00 or above.

2. All courses in the PA Program are designated as “required” and must be taken by every student. No Program courses will be waived, no advanced standing in the Program will be granted, and no advanced credit for any previous course work will be given even though it
may be similar or identical to course work in the Program. Students must successfully complete and pass all requirements (graded and nongraded) of Phase I of the Program to pass to Phase II. Any exception to this requirement must be approved in writing by the Program Director.

3. All clerkships designated as “required” must be taken by every student unless excused in writing by the Program Director.

4. As a requirement for graduation, all students must undergo a summary evaluation of their medical knowledge and clinical skills. This summary evaluation will consist of written and performance examinations, and will occur prior to each student’s completion of the Program. In order to graduate from the Program, every student must pass the summary evaluation with acceptable scores, which will be determined by the faculty. Students will be notified in advance of the particulars of the examination in a timely manner.

5. All written and performance assignments for all PHAS classes will be required to be performed or turned in before a class will be considered “successfully completed” by a student. Assignments turned in or performances completed past the designated due date will be penalized according to the criteria established in the course syllabus, or by the instructor unless other specific arrangements have been made with the instructor. A student who has not completed and turned in all assignments or completed all performances by the end of the course, unless other arrangements have been made with the instructor, will receive a grade of F (failure) for the course.

6. Failure in a course or a clerkship will necessitate an extension of the usual time required for a student’s completion of the Program and will require the assignment of a new completion date and a new graduation date.

Overall Evaluation of Student Performance
The faculty of the University of Nebraska Physician Assistant Program is charged with the responsibility for educating students as well as determining the capacity of every student for professional competency and responsibility. At regular times throughout the length of the Program, the faculty must evaluate this capacity for each student and recommend whether or not the student should continue in the program. Therefore, the faculty reserves the right and has the responsibility to recommend the academic or disciplinary suspension or dismissal, or voluntary withdrawal of a student when unsatisfactory academic progress, academic dishonesty, unsatisfactory clinical performance, unsatisfactory professional growth, impaired mental or physical health, unsatisfactory personal conduct, failure to comply with published Program requirements or other factors deemed necessary for professional competency make it impractical or inadvisable for the student to continue in the program.

If at any time during his/her course of study a student is in the position of being recommended for academic or disciplinary suspension or dismissal, or voluntary withdrawal, for any reason, the student shall be notified in writing as to the cause for such action by the Program Director.

Grading
All courses and clerkships will be letter graded according to the following scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Quality Points</th>
<th>Grade</th>
<th>Quality Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>4.00</td>
<td>C+</td>
<td>2.33</td>
</tr>
<tr>
<td>A</td>
<td>4.00</td>
<td>C</td>
<td>2.00</td>
</tr>
<tr>
<td>A-</td>
<td>3.67</td>
<td>C-</td>
<td>1.67</td>
</tr>
<tr>
<td>B+</td>
<td>3.33</td>
<td>D+</td>
<td>1.33</td>
</tr>
<tr>
<td>B</td>
<td>3.00</td>
<td>D</td>
<td>1.00</td>
</tr>
<tr>
<td>B-</td>
<td>2.67</td>
<td>D-</td>
<td>.67</td>
</tr>
<tr>
<td>F</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Grading
All courses and clerkships will be letter graded according to the following scale:

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<tr>
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<td>C</td>
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<td>A-</td>
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<td>C-</td>
<td>1.67</td>
</tr>
<tr>
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<td>D+</td>
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<tr>
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<td>D</td>
<td>1.00</td>
</tr>
<tr>
<td>B-</td>
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<td>D-</td>
<td>.67</td>
</tr>
<tr>
<td>F</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Procedures have been developed in accordance with the Bylaws of the Board of Regents to handle student appeals of academic evaluation. A copy of these procedures is given to each student at the time of matriculation.

Standards of Academic Progress
Every student must meet all four of the following standards of academic progress each semester and/or enrollment period in order to be designated as making satisfactory academic progress in the Program and to be considered “in good standing” in the Program.

Standard I
All courses and clerkships will be evaluated by letter grade. For all courses and clerkships every student must maintain a cumulative grade point average (GPA) of 2.00 (on a 4.00 scale) throughout the student’s entire enrollment in the Program.

Standard II
All courses and clerkships will be evaluated by a letter grade. Every student must attain a letter grade of not less than C- in each course or clerkship taken. Any grade below C- (i.e., D+, D, D- and F) will be considered unsatisfactory and designated as a failure in the course or clerkship.

Standard III
Every student must maintain a “Satisfactory” rating in all categories of the Professionalism Evaluation on a continuing basis throughout the student’s enrollment in the Program.

Standard IV
Every student must achieve a “Pass” or “Satisfactory” evaluation on all non-letter graded assignments and projects designated as “required.”
The Standards of Academic Progress are further defined in the Articles of Agreement prepared by the Program and given to each student at the time of matriculation.

Academic Probation
Failure of any student to maintain all four Standards of Academic Progress throughout all semesters and/or enrollment periods during the student’s enrollment in the Program will result in the student being automatically placed on Academic Probation. A student will be allowed only one Academic Probation during his or her course of study throughout his or her entire enrollment in the Program. Any occasion for a second Academic Probation (e.g., obtaining another D+, D, D- or F or dropping below a cumulative 2.00 GPA after the first Academic Probation) will result in termination of enrollment via voluntary withdrawal or academic dismissal. This policy is in conformity with the School of Allied Health Professions Policy (SAHP) for Academic Probation and may be found in the Policies for Students in the Allied Health Professions. Consequences that apply with reference to each of the four Standards of Academic Progress are further defined in the Articles of Agreement.

Attendance at Classes and Clinical Clerkships
Students are required to attend all classes, complete all assignments, and be present for all assigned clinical times. If it is necessary for a student to miss class or clinic, notification of absence is required to be excused. The instructor or supervisor must also be notified, in advance if possible. Additional details are contained in Articles of Agreement.

Withdrawal Policy
Students may withdraw from courses with the approval of the Associate Dean of the School of Allied Health Professions in the event of serious illness or other circumstances that make completion of courses impossible.

If a student in good standing finds it necessary to withdraw from the University before the close of a current term, the Associate Dean may grant that permission. If the student is not a minor, withdrawal is granted at the student’s request; if a minor, withdrawal is granted at the request of a parent or guardian.

Compliance with University Policies
Students are expected to comply with all University of Nebraska policies, including those relating to the health and safety of patients and others.

Background Checks
Healthcare facilities where students complete their clinical experiences require background checks in order to meet accreditation and/or state law requirements. Therefore we are requiring all students to complete a Background Check. PreCheck is the vendor that the University of Nebraska Medical Center utilizes. A $50.00 fee will be assessed to your first semester tuition statement. Instructions on completing the background check will be given upon admission to the Program.

Counseling/Tutoring
Students are encouraged to meet with their assigned faculty advisor regarding professional, academic and personal matters which affect their performance in the program. In addition, there is a Student Counseling Center where students may obtain confidential, free, personal counseling services.

Employment
Physician Assistant students are advised that part-time employment is not feasible because of heavy academic demands.

Health Information
Students enrolled in academic programs at the Medical Center must provide a medical history and evidence of certain vaccinations or immunities. All medical history forms shall be filed in the Student Health Administrative Offices. Student shall be expected to provide physician certification of the following:
1. A previous vaccination for rubella or evidence of an immune titer.
2. Tetanus inoculation within the last ten years.
3. Rubeola (measles) – All students must have a second immunization (in compliance with March 1990 National Communicable Disease Control Center recommendation) unless born prior to 1957.
4. Vaccinations for mumps and polio or documentation on the medical history form that the student had the disease previously.
5. Varicella (chicken pox) – documentation required for year of disease, date of immune titer or immunization.

Medical History Forms are sent to all incoming UNMC students. Forms must be completed, signed and immunizations verified by a health care professional prior to enrollment. Students will not be allowed to enroll unless documentation has been provided for their required immunizations. All forms will be kept in the Student Health Administrative Office for a period of 10 years.

Students are strongly encouraged to receive the Hepatitis B vaccine either before enrollment or while enrolled in Phase I of the Program. Students will be required to sign a waiver if they elect not to be vaccinated for Hepatitis B.

All full-time students are required to have inpatient health insurance through a student health insurance program contracted by UNMC unless evidence of comparable coverage is provided.

PLAN OF INSTRUCTION
General Course Description
The Program requires 28 continuous months (7 semesters) of instruction divided into two phases.

Phase I, the Didactic Phase, consists of 13 months of basic medical sciences, pre-clinical sciences and professional studies course work. The basic medical and pre-clinical science courses introduce students to the fundamentals of scientific and clinical medicine. The professional studies
courses are designed to provide understanding about the health care system, medical ethics, and medical research concepts.

Phase II, the Clinical Education phase, consists of 10 months of Required clerkships and 5 months of Elective clerkships. The required clerkships are in specific areas of clinical medicine, designed to provide a broad foundation for primary care clinical practice. Elective clerkships may be selected from specialty or primary care areas.

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PHASE I</strong></td>
<td></td>
</tr>
<tr>
<td>FALL SEMESTER</td>
<td></td>
</tr>
<tr>
<td>PHAS 620</td>
<td>Introduction to the PA Profession</td>
</tr>
<tr>
<td>CIP 606</td>
<td>Physiology</td>
</tr>
<tr>
<td>PAMM 690</td>
<td>Biology of Disease</td>
</tr>
<tr>
<td>GCBA 571</td>
<td>Structures of the Human Body</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>21</strong></td>
</tr>
<tr>
<td>SPRING SEMESTER</td>
<td></td>
</tr>
<tr>
<td>CLS 500</td>
<td>Application &amp; Interpretation of Clinical Laboratory Data</td>
</tr>
<tr>
<td>PHAR 507</td>
<td>Pharmacology</td>
</tr>
<tr>
<td>PAMM 511</td>
<td>Medical Microbiology</td>
</tr>
<tr>
<td>PHAS 630</td>
<td>Clinical Skills I</td>
</tr>
<tr>
<td>PHAS 632</td>
<td>Communication in Medicine I</td>
</tr>
<tr>
<td>PHAS 650</td>
<td>Adult and Pediatric Medicine I</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>21</strong></td>
</tr>
<tr>
<td>SUMMER SEMESTER</td>
<td></td>
</tr>
<tr>
<td>PHAS 635</td>
<td>Clinical Skills II</td>
</tr>
<tr>
<td>PHAS 637</td>
<td>Communication in Medicine II</td>
</tr>
<tr>
<td>PHAS 645</td>
<td>Behavioral Medicine</td>
</tr>
<tr>
<td>PHAS 655</td>
<td>Adult &amp; Pediatric Medicine II</td>
</tr>
<tr>
<td>PHAS 660</td>
<td>Medical Ethics</td>
</tr>
<tr>
<td>PHAS 665</td>
<td>Systems in Health Care &amp; Management</td>
</tr>
<tr>
<td>PHAS 670</td>
<td>Research Applications in Medicine</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>21</strong></td>
</tr>
<tr>
<td><strong>PHASE II</strong></td>
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<tr>
<td>FALL SEMESTER</td>
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<tr>
<td>PHAS 700</td>
<td>Clinical Education/Clerkships (by arrangement)</td>
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<td>SPRING SEMESTER</td>
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<tr>
<td>PHAS 700</td>
<td>Clinical Education/Clerkships (by arrangement)</td>
</tr>
<tr>
<td>SUMMER SEMESTER</td>
<td></td>
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<tr>
<td>PHAS 700</td>
<td>Clinical Education/Clerkships (by arrangement)</td>
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<tr>
<td>FALL SEMESTER</td>
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</tr>
<tr>
<td>PHAS 700</td>
<td>Clinical Education/Clerkships (by arrangement)</td>
</tr>
</tbody>
</table>

**Required Clerkships**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Description</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHAS 702</td>
<td>Psychiatry Clerkship</td>
<td>4</td>
</tr>
<tr>
<td>PHAS 703</td>
<td>Internal Medicine Clerkship</td>
<td>4</td>
</tr>
<tr>
<td>PHAS 704</td>
<td>Pediatric Clerkship</td>
<td>4</td>
</tr>
<tr>
<td>PHAS 705</td>
<td>Obstetric/Gynecology Clerkship</td>
<td>4</td>
</tr>
<tr>
<td>PHAS 706</td>
<td>Surgery Clerkship</td>
<td>4</td>
</tr>
<tr>
<td>PHAS 707</td>
<td>Family Medicine Clerkship</td>
<td>12</td>
</tr>
<tr>
<td>PHAS 708</td>
<td>Emergency Medicine Clerkship</td>
<td>4</td>
</tr>
</tbody>
</table>

**Elective Clerkships**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Description</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHAS 721</td>
<td>Cardiology Elective</td>
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<tr>
<td>PHAS 722</td>
<td>Endocrinology Elective</td>
<td>4</td>
</tr>
<tr>
<td>PHAS 724</td>
<td>Infectious Disease Elective</td>
<td>4</td>
</tr>
<tr>
<td>PHAS 726</td>
<td>Oncology/Hematology Elective</td>
<td>4</td>
</tr>
<tr>
<td>PHAS 727</td>
<td>Pulmonary Medicine Elective</td>
<td>4</td>
</tr>
<tr>
<td>PHAS 729</td>
<td>Cardiovascular Surgery Elective</td>
<td>4</td>
</tr>
<tr>
<td>PHAS 731</td>
<td>Neurosurgery Elective</td>
<td>4</td>
</tr>
<tr>
<td>PHAS 732</td>
<td>Orthopedic Surgery Elective</td>
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(This is not an inclusive list of electives. Other specialty areas are available to accommodate student needs.)

Clerkships are scheduled after mutual collaboration and agreement between the student and the clinical coordinator. Assignments to clerkship sites are made after careful consideration of the individual student’s educational needs, site availability and the Program’s goal for clinical education. These sites are located throughout the state of Nebraska and are known collectively as the Nebraska Clinical Network. All required clerkships and most electives clerkships will be assigned within the Nebraska Clinical Network.

**PHASE I**

**Fall Semester**

**PHAS 620. Introduction to the Physician Assistant Profession** (1 cr)

This course is designed to introduce students to the physician assistant profession through the use of lectures, selected readings, examinations and written assignments. Students will gain an understanding of the role of the PA on the health care team and the responsibilities of being a health care professional. Attention will be focused on professionalism. Information will be presented about the history of the profession, professional organizations, competency-based PA education, practicing patterns, credentialing & certification. Additional topics will include health care economics and future directions of the PA profession.

**CIP 606. Physiology** (6 cr)

Students will be introduced to fundamental principles of physiology. The course covers cell physiology, neurophysiology, the physiology of the musculoskeletal system, cardiovascular physiology, renal physiology, respiratory physiology, gastrointestinal physiology, endocrinology and reproductive physiology.
**PHAR 507. Pharmacology** (5 cr)
This course involves the study of the underlying biochemical, cellular, and physiological changes occurring in human disease with an emphasis on those most commonly encountered. The integration of laboratory medicine with general pathology serves to prepare the students for their clinical medicine course.

**GCBA 571. Structures of the Human Body** (9 cr)
This one semester course features a study of the structure and development of the human body to include the upper extremity and back, head, neck, thorax, pelvis, perineum, and lower extremity. Structural features are studied by gross dissection, demonstration, cross section, radiographs, and CT scans correlated to the appropriate living anatomy. Systemic embryology lectures provide an understanding of the development of definitive anatomical structures. Emphasis is placed on the structure: function correlation and the relationship of anatomic configuration to diagnosis of clinical problems. The format of the course includes lectures, laboratories, demonstrations, small group discussions and many varieties of audiovisual aids. Student evaluation is accomplished through laboratory and written examinations.

**Spring Semester**

**CLS 500. Laboratory Techniques & Clinical Applications** (2 cr)
The purpose of the course is to give PA Students an overview of commonly utilized laboratory tests in medicine. Basic laboratory techniques, the proper utilization of the laboratory in the clinical setting and the rationale for ordering selected procedures will be emphasized.

**PHAR 507. Pharmacology** (5 cr)
The primary goal of this course is to provide physician assistant and clinical perfusion students with basic pharmacologic information and to impart an understanding of the actions of drugs in humans so that they can apply this knowledge to the judicious use of drugs in practice as a physician assistant. Pharmacokinetics, and pharmacodynamic aspects of various classes of drugs will be emphasized.

To achieve these goals, the following broad topics are covered:

1. General principles of pharmacokinetics (effects of the body on the drug), pharmacodynamics (effects of the drug on the body), drug-drug interactions, definition of common terms used in pharmacology, and identification of sources of pharmacological information.
2. Systems pharmacology: drug actions on various biochemical pathways and physiological systems and functions of the body, including the central and autonomic nervous systems, the cardiovascular, renal, endocrine, and gastrointestinal systems, and metabolic functions.
3. Chemotherapy: major emphasis on drugs for antituberculosis use, with lesser coverage of certain antineoplastic, antiparasitic, and antiviral agents.
4. Toxicology: definition, important principles, modern requirements for toxicology testing, mechanism of action of selective toxicants, and methods for treating.

**PAMM 690. Biology of Disease** (5 cr)
This course involves the study of the underlying biochemical, cellular, and physiological changes occurring in human disease with an emphasis on those most commonly encountered. The integration of laboratory medicine with general pathology serves to prepare the students for their clinical medicine course.

**PHAS 632. Communication in Medicine I** (1 cr)
This course is designed to provide students the skills necessary to become proficient in communication — including verbal communication, non-verbal communication, and medical writing skills. Communication is recognized as a core component in the practice of medicine. Communication bridges the gap between evidence-based medicine and the patient. Research has shown that good communication between provider and patient results in improved patient outcomes by more accurate diagnosis, increased patient adherence, increased provider job satisfaction, and decreased malpractice claims.

To effectively build communication skills, the course will address the basic fundamentals and integrate these skills into the clinical curriculum. This method will allow the student to reiterate the learned skills and take them to higher complexity levels throughout the educational program.

**PHAS 630. Clinical Skills I** (2 cr)
This course is designed to provide instruction and practice in the fundamental clinical skills necessary for patient care, with a primary focus on performance of a complete physical examination. This subject is taught weekly by group lecture, and additional lab with one clinical instructor and two students. Students also participate a few hours a month in clinical activities with practicing PAs and learn to identify relevant subjective and objective clinical information, later analyzing and integrating this information in a well-written SOAP note of the encounter. In addition the students develop diagnostic and therapeutic skills as they participate in problem based learning (PBL), utilizing simulated clinical cases. Finally the students independently complete the Basic Life Support certification process during this semester.

**PAMM 511. Medical Microbiology** (2 cr)
This is a laboratory course where students will learn the techniques used to recover pathogenic microorganisms from specimens for the clinical diagnosis of infection. Emphasis will be placed on helping the student become familiar with the general groups of pathogens that infect patients, and on the interpretation of pathology reports as they are generated in the laboratory.

**PHAS 630. Clinical Skills I** (2 cr)
This course is designed to provide instruction and practice in the fundamental clinical skills necessary for patient care, with a primary focus on performance of a complete physical examination. This subject is taught weekly by group lecture, and additional lab with one clinical instructor and two students. Students also participate a few hours a month in clinical activities with practicing PAs and learn to identify relevant subjective and objective clinical information, later analyzing and integrating this information in a well-written SOAP note of the encounter. In addition the students develop diagnostic and therapeutic skills as they participate in problem based learning (PBL), utilizing simulated clinical cases. Finally the students independently complete the Basic Life Support certification process during this semester.
PHAS 650. Adult & Pediatric Medicine I (8 cr)

The Med / Peds I course is designed to prepare pre-clinical students for their clinical clerkships in Phase II of the PA Program and lay the foundation for the life-long process of self-directed education in medicine. The course will consist of lectures, discussions, assigned readings, and examinations during the Spring Semester. Selected topics from the following areas of medicine will be covered in this course: Pediatrics, Dermatology, Infectious Disease, Ophthalmology, Otorhinolaryngology, Immunology, Pulmonary medicine and Cardiology (including ECG interpretation).

Many important topics will be covered by lecture. Most of these will be presented by guest lecturers who are clinicians with expertise in the area of study. It is impossible, however, to cover all essential topics adequately in a lecture format. Assigned readings are important adjuncts to supplement the lecture material, and will also cover other topics not presented in lecture. This process of self-directed learning will be vitally important during your clinical rotations, in preparation for the National Board Examination, and in developing good reading and study habits for life-long learning.

Summer Semester

PHAS 635. Clinical Skills II (2 cr)

Clinical Skills II is a continuation of Clinical Skills I. Students finish instruction on completing the comprehensive history and physical examination skills. Many of the more technical aspects of patient care are taught in this course including suturing, casting, splinting, IV/injection techniques, gowning, gloving, and a general orientation to the operating room. Students are also given an introduction to many common procedures. Students complete BLS, ACLS certification and PALS. Students are given opportunities to carry out case presentations in small groups in preparation for the clinical phase of their education.

PHAS 637. Communication in Medicine II (1 cr)

This course is designed to allow students to build on the medical communication skills that were presented in Communication in Medicine I. Students will continue to improve their competency in the areas of verbal communication, non-verbal communication, and medical writing skills. Patient education and counseling skills will be presented. Communication is a core component in the practice of medicine and it is critical that medical providers become proficient at this task. This course will challenge the student to integrate the skills learned in CIM I and take them to higher complexity levels. There will be significant emphasis placed on communication necessary for interdisciplinary care. The skills learned in this course will be integrated into the clinical curriculum, thereby allowing the student to become more familiar with medical communication.

PHAS 645. Behavioral Medicine (4 cr)

The course in Behavioral Medical will present an introduction to the neurobiological, psychobiological, emotional, social, and cultural influences on health and illness in the practice of primary care medicine. Personality, sexual, emotional, and behavioral development across the lifespan including end of life issues will be reviewed. Normative and maladaptive responses to developmental tasks and life stressors in relation to physical and emotional health will be emphasized. Principles of violence, identification and prevention will be examined. Instruction and practice in basic counseling skills for patient health care management and implementation of healthier lifestyle practices will be an important focus throughout the course.

PHAS 655. Adult & Pediatric Medicine II (11 cr)

The Adult and Pediatric Medicine course is designed to prepare pre-clinical students for their clinical clerkships in Phase II of the PA Program and lay the foundation for the life-long process of self education in medicine. The course will consist of lectures, discussions, assigned readings, and examinations during the Summer Semester. The course will familiarize the student with the etiology, pathology, clinical course and manifestations, diagnosis, treatment, patient education, epidemiology and preventive aspects related to selected diseases and disorders which are commonly encountered in primary care practice. Selected topics from the following areas of medicine and surgery will be covered in this course: Psychiatry, Substance Abuse, Neurology, Endocrinology, Urology, Nephrology, Orthopedics, Rheumatology, Complementary Medicine, Hematology, Oncology, Radiology, Infectious Diseases, GI, Nutrition, General Surgery, Obstetrics and Gynecology.

PHAS 660. Medical Ethics (1 cr)

The purpose of this course is to provide PA students with an introduction to the main theoretical concepts and practices in the field of medical ethics. Students will learn a process of ethical decision making in the context of clinical practice. The concept of professional ethics particularly as applied to professional-patient relationships will be emphasized, as well as the ethical goals of professional practice.

PHAS 665. Systems in Health Care and Management (1 cr)

The course Systems in Health Care and Management is to provide PA students with an overview of the history and structure of the major types of health care systems currently operating in the United States along with socioeconomic issues associated with these systems. Instruction will also be provided in clinical management practices and procedures including coding systems for diagnosis and reimbursement, quality assurance and risk management, and legal issues that impact medical practice.

PHAS 670. Research Applications in Medicine (1 cr)

The course in research applications in medicine has three purposes: 1) to provide PA students with the skills to search, interpret, and critically evaluate the medical literature and its application to patient care in order to maintain a current and
operational knowledge of new medical findings; 2) to provide an introduction to evidence-based medicine (EBM) that stresses the examination of evidence from clinical research as a basis for clinical decision making and; 3) to provide the student with the skills to complete a research and scientific writing experience that demonstrates the student’s ability to identify a clinical problem in a defined area of medicine, search, interpret and evaluate the medical literature in that defined area, and present the results in a written scientific paper demonstrating organization, clarity, logical reasoning and appropriate selection and application of the medical literature search.

INDEPENDENT STUDY
PHAS 699. Independent Study (1 to 8 cr)
For the physician assistant student who has need of special or additional study. Independent study is designed to provide options for study around the interests and needs of the individual student in one of two areas. Research Study or Advanced Clinical Study. Under the Research Study option, a student, with the direction of a program faculty member, may investigate a problem in a selected area of medicine with the intent of publishing or presenting the results in a public forum. Under the Advanced Clinical Study option, a student may pursue advanced study in a selected area of clinical medicine under the direction of a program faculty member. Prerequisite: Permission of program faculty advisor or Program Director.

PHASE II
Required Clerkships
PHAS 702. Psychiatry Clerkship (4 cr)
A four-week clinical experience in outpatient and inpatient psychiatry, geared to the anticipated role of a physician assistant. Students have the opportunity to initiate patient evaluation, learn to do psychiatric interviews, assess mental status, develop a working formulation and tentative medical management plan, make referral to a physician or community agency, and learn follow-up management with the treating physician or agency.

PHAS 703. Internal Medicine Clerkship (4 cr)
A four-week rotation during which the indications, limitations, and methods of performing the necessary diagnostic procedures and therapeutic measures used in the treatment of general medicine disorders are reviewed. Patient problems and conditions as experienced in the outpatient clinic, the emergency room and the hospital ward are covered in this course. Through the collection and acquisition of historical, physical, and laboratory data, the student develops an understanding of patient evaluation and treatment under preceptor supervision.

PHAS 704. Pediatric Clerkship (4 cr)
A four-week didactic and clinical experience in which the student will have many learning opportunities in the nursery and outpatient clinic. The student will learn to manage various acute and chronic childhood illnesses and learn to evaluate normal variations of growth and development by participating in the outpatient clinic.

PHAS 705. Obstetric/Gynecology Clerkship (4 cr)
A four-week clinical experience studying a broad spectrum of obstetric and gynecological problems. During this clerkship, the management of pregnancy, labor, and delivery including antenatal, natal, and postnatal complications is taught. The student is responsible for taking obstetrical histories, performing obstetrical physical examinations, and following patients through labor, delivery, and the early postpartum period. The student is exposed to methods and programs relating to cancer detection, sexually transmitted diseases, and contraception. Learning to take gynecologically oriented patient histories and perform complete and accurate gynecological examinations is required.

PHAS 706. Surgery Clerkship (4 cr)
During this four-week rotation, the students are involved with surgical patients admitted to their service. They participate in the care of the patients on the wards, in the operating room, and during their postoperative follow-up. At the end of the four weeks, they are expected to understand the course of surgical illness, to be able to conduct themselves appropriately in the operating room and to have gained the skills commensurate with care of the surgical patient including intravenous access, placement of nasogastric tubes, etc.

PHAS 707. Family Medicine Clerkship (12 cr)
A twelve-week clinical experience under the supervision of a community-based primary care physician designed to acquaint the student with those aspects of the practice of medicine unique to the community setting. The student works with the physician in the hospital, the office, and all other areas where the physician works. In the hospital the student makes rounds with the physician and assists him in fulfilling his inpatient responsibilities. In the office the student learns about management procedures in a private practice and helps the physician by providing services consonant with his individual background and clinical training. Some home health care clinical training is available.

PHAS 708. Emergency Medicine Clerkship (4 cr)
Opportunities to deal with a variety of medical emergencies under the supervision of Emergency Department physicians and staff are provided. The student learns to collect and integrate information regarding the emergency patient. Management of trauma, drug overdose, cardiac life support, and common illnesses and injuries seen in an emergency care setting are emphasized.

PHAS 709. Geriatric Clerkship (4 cr)
This clerkship is designed to provide students with a geriatric-specific clinical experience. The fundamental principles of geriatric medicine will be explored by providing opportunities for exposure to the various aspects of restorative
and rehabilitative care, interdisciplinary approaches to the delivery of geriatric health services, and an examination of the primary care PA role and responsibility in the long-term care system. There is a specific focus on interactions with older adults, decision making as it effects the well being of patients, and the strengths and weaknesses of the referral system.

Elective Clerkships

PHAS 721. Cardiology Elective (4 cr)
A four-week rotation during which the indications, limitations, and methods of performing the necessary diagnostic procedures and therapeutic regimen for the evaluation of disorders of the cardiovascular systems are studied. Students conduct initial patient evaluations including the history and physical examination, and perform relevant diagnostic and therapeutic studies including the interpretation of electrocardiographic, phonocardiogram and cardiac catheterization studies. Students follow patients from admission to discharge, attend all daily rounds and conferences, assist in the provision of patient care, record progress notes, perform discharge physical examinations, and write narrative summaries under the guidance of the preceptor.

PHAS 722. Endocrinology Elective (4 cr)
A four-week elective clerkship in which the student will care for patients with diabetes and other endocrine and metabolism disorders. Particular emphasis is placed on the diagnosis and treatment of endocrine disorders which are encountered frequently in the practice of medicine, specifically diabetes mellitus and thyroid diseases. There also will be adequate opportunity for the student to acquire a working understanding of diagnostic approaches for the less common endocrine disorders (adrenal, pituitary and others).

PHAS 724. Infectious Disease Elective (4 cr)
A four-week clinical experience dealing with communicable disease in an inpatient and outpatient setting. Students will learn to assess and treat common and uncommon diseases due to microorganisms. An emphasis on the recognition of the manifestations of HIV and treatment of associated opportunistic infections is provided. Proper selection and dosing of antibiotics is a focus. The student will have the opportunities to practice patient education skills, especially with HIV patients.

PHAS 726. Oncology/Hematology Elective (4 cr)
During the oncology/hematology clerkship the Physician Assistant (PA) student will have a choice of following the general oncology team or the bone marrow transplant team. The student may also elect to split time between the two services. The PA student is expected to attain an adequate level of knowledge and adequate skills, to provide appropriate treatment or referral of conditions encountered in the general or family practice setting.

PHAS 727. Pulmonary Medicine Elective (4 cr)
A four-week elective in Pulmonary Medicine providing the student with an opportunity to receive advanced training in managing a wide variety of lung diseases. This includes the management of patients in acute and chronic respiratory failure to include the use of ventilators and the fiber optic bronchoscope. Teaching sessions are concerned with interpreting chest radiographs, management of the inpatient, and the practical aspects of Pulmonology. Participation in outpatient clinics allows the student to apply the latest concepts in the management of respiratory problems.

PHAS 729. Cardiovascular Surgery Elective (4 cr)
A four-week inpatient clinical rotation which provides the opportunity to practice cardiovascular surgical skills. The student will do intake history and physical exams, assist in surgery, follow patient progress, counsel patients for discharge. Observation and assistance with diagnostic and therapeutic procedures (i.e., echocardiogram, angiogram) are included. The student will have the opportunity to work with perfusionists, respiratory therapists, or radiologists.

PHAS 731. Neurosurgery Elective (4 cr)
A four-week elective clerkship which offers the student experience with respect to diagnosis, treatment and management with neurological surgical diseases. Students will be involved with surgical patients admitted to their service. They will participate in the care of patients on the wards, in the operating room, and during their post-operative follow-up care.

PHAS 732. Orthopedic Surgery Elective (4 cr)
A four-week elective clerkship which provides students with experience in the evaluation, management, treatment, and rehabilitation of patients with musculoskeletal sports injuries or related medical problems. Students will participate in the care of patients in the out-patient clinic, on the wards, in the operating room, and during their post-operative follow-up care.

PHAS 733. Orthopedic Sports Medicine Elective (4 cr)
A four-week elective clerkship which provides students with experience in the evaluation, management, treatment, and rehabilitation of patients with musculoskeletal sports injuries or related medical problems. Students will participate in the care of patients in the out-patient clinic, on the wards, in the operating room, and during their post-operative follow-up care.

PHAS 736. Plastic Surgery Elective (4 cr)
This is a four-week elective clerkship which provides students with experience in the evaluation, management, treatment, and rehabilitation of patients with conditions treated with plastic
and reconstructive surgery procedures. Students will learn the principles of plastic surgery and participate in the care of patients in the out-patient clinic, on the wards, in the operating room, and during their post-operative follow-up care.

**PHAS 737. Urology Elective (4 cr)**
A four-week rotation that studies urologic processes. Performing history and physical examinations on clinic and hospitalized patients is included. Participation in all clinical rounds and teaching conferences is required to develop an understanding of the therapeutic regimen, their indications, availability, reliability, and limitations in the treatment of urologic disorders. The student develops an understanding of urologic disorders and the indications for catheterizations, cystoscopy, renal function studies, intravenous pyelograms, and urine chemical evaluations. Participation in the pre- and post-operative care of the urologic patient, performing discharge physical examinations, and writing narrative summaries for assigned patients is part of the course.

**PHAS 742. Dermatology Elective (4 cr)**
A four-week rotation reviewing the spectrum of dermatologic diseases encountered primarily in the outpatient setting. Taking histories and performing physical examinations with special emphasis on problems concerning dermatologic diseases as well as carrying out potassium hydroxide preparations, skin biopsies, and tissue scrapings on prescribed patients are included in this rotation. The student becomes familiar with the diagnostic procedures and therapeutic regimen, their indications, availability, reliability, and limitations in the treatment of dermatologic diseases.

**PHAS 744. International Elective (4 cr)**
A four-week course that offers students the opportunity to participate in a health care setting in a foreign country. Students may participate in a variety of experiences at international sites. These may include clinical experiences, language study, teaching sessions of international and third world health care systems and public health topics. Most courses are coordinated through the UNMC office of International Studies.

**PHAS 748. Ophthalmology Elective (4 cr)**
A four-week experience in all areas of general ophthalmological diagnosis and therapy. Within this wide field the following areas will receive particular emphasis: 1) Ophthalmic history taking and its correlation to the general medical history. 2) Functional evaluation of the visual system. 3) Direct examination of the visual system including both applanation and indentation tonometry, the use and limitation of the slit-lamp, direct and indirect ophthalmoscopy. 4) Observation and participation in ocular surgical procedures.

**PHAS 749. Otolaryngology Elective (4 cr)**
A four-week clinical experience studying ear, nose and throat diseases. The student develops an understanding of emergency problems and how to initiate the first step in the management of such problems. A wide spectrum of patients with ear, nose and throat problems are seen in a variety of settings. Learning and performing tracheotomy care, assisting with the management of the pre- and post-operative patient, assisting in the operating room, and learning to perform specialized audiometric tests are also required.

**PHAS 754. Radiology Elective (4 cr)**
A four-week elective consisting of daily observation of film interpretation, fluoroscopic examination and special radiographic procedures including CT, MRI, ultrasound, mammography, angiography, and nuclear imaging. Students will also be exposed to specialized areas such as pediatric radiology, cardiovascular radiology, ultrasound, neuroradiology and genitourinary radiology.

**PHAS 771. Primary Care Elective (4 cr)**
A four-week clinical rotation for the student desiring a more comprehensive experience in one of the primary care sub-specialties. Areas available include pediatrics, internal medicine, family practice, correctional medicine, infectious disease and rehabilitative medicine. The student works under the supervision of a community or institutionally based physician and acquires in-depth understanding of the principles and clinical application of diagnostic, therapeutic, and management techniques pertinent to his area of interest. May be repeated.

**INTERSERVICE PHYSICIAN ASSISTANT PROGRAM - FORT SAM HOUSTON, TEXAS**

**THIS SECTION FOR ACTIVE DUTY MILITARY STUDENTS ONLY**

In 1996 the University of Nebraska entered into an agreement with the Armed Force’s newly created Interservice Physician Assistant Program (IPAP) to provide administrative and faculty support services for the primary care physician assistant program operated by the U.S. Armed Forces. Students enrolled in the IPAP receive academic credit from the University of Nebraska for course work completed as part of the IPAP.

Students in the IPAP complete twelve months of didactic course work at the Army’s Academy of Health Sciences, located at Fort Sam Houston, Texas. This is followed by 12 months of supervised clinical clerkships at military or affiliated medical facilities.

**Faculty** – The faculty of the IPAP are military or civilian personnel who qualify for volunteer faculty appointments in the Division of Physician Assistant Education, School of Allied Health Professions.

**Admission Requirements** – Students admitted to the IPAP are selected by the military selection board of their respective service. The IPAP students are then matriculated at the University of Nebraska provided they have previously earned 60 semester hours of transferrable college credit.

**Degree Requirements** – Students enrolling from 1996 through 2002 in the Interservice PA Program received a
Bachelor of Science degree from the University of Nebraska upon completion of the prescribed IPAP course work. Effective January 2003, IPAP students receive a Bachelor of Science degree upon completing Phase I of their training, and receive a Master of Physician Assistant Studies degree upon completing their PA training.

Plan of instruction – January

**Phase One**

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**Course Descriptions**

**Phase One - Interservice Physician Assistant Program (IPAP)**

**IPAP 500. Anatomy and Physiology I (7 cr)**

Students will be introduced to the fundamental structural and functional principles of the human body, including aspects of basic development, cell and tissue organization, and the nervous and musculoskeletal systems. Studies include regional anatomy of the head and neck, back, trunk, pelvis and perineum, and limbs.

**IPAP 501. Anatomy and Physiology II (7 cr)**

Students will be introduced to the fundamental anatomy and physiology of the cardiovascular, respiratory, renal, gastrointestinal, endocrine, and reproductive systems. Diving and altitude physiology will also be included.

**IPAP 502. Biochemistry (3 cr)**

This course introduces the fundamental principles of metabolism (carbohydrates, proteins, lipids, and nucleic acids) appropriate for the physician assistant. These concepts will be used to discuss the chemistry of various tissues and organs and their metabolic interactions. Basic concepts of gene expression, protein synthesis and molecular biology are also presented. Clinical applications of the biochemical principles are discussed.

**IPAP 503. Microbiology (5 cr)**

This course acquaints students with the basic concepts of microbiology and principles of microbial defense as they relate to infection and disease. The basic principles of bacteriology, mycology, parasitology, virology, and microbial genetics are covered. Host parasite relationships and pathogenic properties of medically important species of bacteria, fungi, viruses, protozoa, and helminths are presented.

**IPAP 504. Clinical Laboratory (4 cr)**

The fundamental biologic principles and concepts of cell biology, cytology, histology, immunology, immunohematology, hematology, coagulation and formation and composition of body fluids and wastes are applied to the appropriate utilization and interpretation of laboratory analyses used in diagnostic clinical medicine. Basic laboratory exercises are used to demonstrate and learn the principles presented. Pathophysiology of diseases affecting these systems is introduced in preparation for study of the clinical disorders. Instruction in OSHA standards for laboratory practice are given.

**IPAP 505. Pathology (3 cr)**

This course presents the basic pathological processes associated with the pathogenesis of disease, cellular response to stress, process of inflammation, and neoplasia. A discussion of the genetic principles of inheritance and normal embryology become the framework for understanding genetic and developmental disorders. Also includes discussion of
specific systems and their pathology such as; hemodynamic disorders, pathology of blood vessels, the heart, respiratory system, gastrointestinal tract, liver and biliary system, pancreas, endocrine system, bones and joints, skeletal muscle and nervous system.

IPAP 506. Issues in Health Care (2 cr)
The course defines the medico-legal aspects of health care to include practice issues, and patient and provider rights and responsibilities. Issues concerning the stages of grief, death, and dying are also included. This course also informs students on the primary ethical theories and the methods in which ethical decisions in health care are made. Terminology, models of biomedical ethics, providers rights and responsibilities, and steps in resolving ethical dilemmas are provided. The course also covers the basic biological, social, psychological, and counseling aspects of human sexuality.

IPAP 600. Hematology/Oncology (1 cr)
This clinical course builds upon the principles introduced earlier in the semester in the Clinical Laboratory course. The clinical manifestations of hematologic and neoplastic disorders are emphasized, as well as the current principles of diagnosis and management.

IPAP 601. Patient Evaluations (5 cr)
The student studies the methods for understanding disease and injury processes through proper techniques for eliciting a complete patient history and performing a thorough physical examination.

IPAP 602. Pharmacology (7 cr)
This course is designed to provide the principles of basic pharmacology, clinical pharmacology, and pharmacotherapeutics. Key issues include the therapeutic rationale, pharmacokinetics, and pharmacodynamics of drugs. Major areas of concentration include the peripheral nervous system, central nervous system, anti-infective drugs, cardiovascular drugs, drugs of the endocrine system, anti-inflammatory agents, and gastrointestinal agents.

IPAP 603. Radiology (2 cr)
Principles and language of modern radiologic imaging, procedures, and techniques are discussed. Included are development of a systematic approach to radiology, proper preparation of the patient, safety measures, interpretation of normal and abnormal radiological findings, the limitations of radiography, special techniques and equipment and possible adverse effects.

IPAP 604. Psychiatry (3 cr)
Introduction to modern clinical psychiatry and psychiatric interviewing techniques, includes recognition and differentiation of the various psychiatric disorders. Primary emphasis is placed on those personality, behavioral and psychiatric problems most likely to be encountered in a primary care setting and or on the battlefield.

IPAP 605. Orthopedics (4 cr)
This course concentrates on the care and treatment of the orthopedic patient. Focus is on the establishment of diagnosis and management of orthopedic conditions commonly encountered in a primary care setting. Orthopedic physical examination and casting skills are included.

IPAP 606. Cardiology/EKG (5 cr)
This course introduces the student to routine and emergent cardiovascular conditions commonly encountered in the primary care setting, with emphasis on clinical manifestations, assessment and appropriate therapeutic measures.

IPAP 607. Pulmonary Medicine (2 cr)
This course is designed to introduce the student to the fundamentals and clinical aspects of pulmonary medicine with emphasis on the clinical features of various pulmonary diseases or conditions such as asthma, COPD, pulmonary embolism, and tuberculosis, etc. and the appropriate diagnostic criteria and management of those conditions.

IPAP 608. Research Evaluation (2 cr)
This course will prepare the student to evaluate current medical literature for use in their clinical practice. Students will be introduced to epidemiology and biostatistics as well as research methodology. Epidemiology and biostatistics will include basic principles of epidemiology, history of public health, familiarization with basic statistical concepts and an overview of inferential statistics. Samples of technical writing and journal articles will be evaluated for use in clinical practice.

IPAP 609. Gastroenterology (2 cr)
This course introduces the student to the fundamentals of gastroenterology with primary focus on the history, physical exam, lab and or radiographic studies, endoscopic studies, diagnosis and treatment of those gastrointestinal disorders most commonly encountered in the primary care setting.

IPAP 611. Endocrinology (1 cr)
This course introduces the student to the common endocrinopathies encountered in disorders of the pancreas, thyroid, parathyroid, pituitary, and adrenal glands. The emphasis in this course is upon clinical manifestations, differential diagnosis, diagnostic criteria and patient management.

IPAP 612. Dental (1 cr)
Students are given an introduction to oral anatomy, oral pathological processes, and the diagnosis, treatment, and disposition of patients afflicted with oral disease or maxillofacial trauma. In addition to didactic instruction and demonstration, the students participate in a practical exercise in the administration of oral local anesthesia.
IPAP 613. Patient Assessment (2 cr)
This course is the practical application of techniques learned in Patient Evaluations. The focus of the course is to refine the techniques of patient interviewing, history taking, performing a physical examination, ordering diagnostic studies, establishing a treatment plan, and documenting the encounter in patient records in rotations through various outpatient and inpatient settings.

IPAP 614. Pediatrics (3 cr)
This course reviews the normal growth and development of the child and covers the fundamental aspects of common childhood disorders and diseases. Instruction is also provided in the areas of physical assessment of neonatal and pediatric and adolescent patients, preventive medicine during childhood, congenital disorders, common psych-ological disorders relating to pediatrics and adolescent medicine, and pediatric drug therapy.

IPAP 615. Principles of Surgery (4 cr)
This course concentrates on the care and treatment of the surgical patient. Focus is on the establishment of a diagnosis for surgical conditions with the subsequent pre- and postoperative care and management. The student will also learn to properly evaluate the effects of the principle agents of trauma seen in a military environment. Instruction and practice in suturing and starting intravenous access is included.

IPAP 616. Dermatology (2 cr)
This course focuses primarily on the clinical assessment of common dermatologic conditions found in the ambulatory care setting. It includes emphasis on dermatologic terminology, techniques and procedures.

IPAP 617. Obstetrics/Gynecology (3 cr)
This course is designed to introduce the student to the fundamental principles of obstetrics to include pregnancy, labor, and delivery, as well as introduction to normal gynecology with a focus on diagnosis and management of common gynecologic abnormalities.

IPAP 618. Emergency Medicine (5 cr)
This course covers practical aspects of assessment and management of many commonly encountered medical emergencies. Training will include initial assessment of the trauma victim, review of signs and symptoms, accompanying physical findings, and methods for diagnosis and treatment of a spectrum of emergent illnesses. Development of skills used in the clinical year include suturing, gowning, gloving, BCLS, establishing emergency airway, and performing peritoneal lavage, chest tube placement, venous cutdown, and pericardial tap.

IPAP 619. Infectious Diseases (3 cr)
This course surveys the differentiating characteristics and pathogenicity of the clinically important bacterial, fungal, viral, and parasitic pathogens. Each infectious disease is examined in terms of etiology, pathology, signs and symptoms, diagnostic testing, clinical course, complications, prognosis, and treatment.

IPAP 620. Neurology (2 cr)
This course focuses on the clinical manifestations of various neurologic disorders and emphasizes diagnostic criteria and appropriate care and or referral of those neurologic disorders most likely to be encountered in the primary care setting.

IPAP 622. Genitourinary (2 cr)
This course is designed to introduce the student to various urologic and nephrologic conditions commonly encountered in the primary care setting. Emphasis is on clinical features, diagnostic criteria, assessment, and therapeutic interventions.

IPAP 623. Military Public Health (1 cr)
Maintaining mission readiness through individual and organizational preventive measures is critical to military success. In this course, students are familiarized with the basic prevention programs and how to incorporate these into a medical treatment plan. Additionally, students are shown the process and resources that will allow them to plan for the health of a military unit during deployment. This planning contains the elements of a medical threat brief and the process for developing a unit medical threat plan, including food, water, waste, and environmental risks.

IPAP 624. PA Professional Issues (1 cr)
This course introduces PA students to the history, basic facts, practice settings, certification, legal aspects, current issues, and future directions of the PA profession.

IPAP 628. Ophthalmology (2 cr)
This course concentrates on the techniques of a complete eye examination and the most important concepts of diagnosis and management of ocular disorders. Focus in on acute and chronic visual loss, the red eye, ocular injuries, amblyopia and strabismus, neuro-ophthalmology and ocular manifestations of systemic disease. The course includes dissection laboratory of cow’s eyeballs, and a laboratory allowing practice examining a dilated eye. This course also concentrates on the assessment and treatment aspects of those ear, nose and throat conditions commonly encountered in the primary care setting. Focus is on physical examination techniques, diagnostic features of disease entities, and current treatment modalities.

IPAP 629. Gerontology (2 cr)
This course introduces the common rheumatologic conditions encountered in the primary care setting. The emphasis is on the clinical rheumatologic conditions, manifestations of systemic diseases, differential diagnosis, diagnostic criteria, and management of these conditions. Students are introduced to the basic principles of aging and its effect on the physiologic processes of the geriatric patient in
order to prepare the student to care for elderly patients. Emphasis is placed on how aging affects the occurrence, progression, and treatment of diseases that are commonly seen in geriatric medicine.

Phase Two - Interservice Physician Assistant Program (IPAP)

IPAP 700. Surgery Rotation (5 cr)
A five-week rotation during which the students are involved with all surgical patients admitted to their service. This rotation aims to develop proficiency in taking histories, performing physical examinations, formulating working diagnoses, and developing plans of management of surgical conditions. Students participate in the care of patients on the wards, in the clinic, in the operating room, and during their postoperative follow-up. At the end of the five weeks, they are expected to understand the course of surgical illness, to be able to conduct themselves appropriately in the operating room and to have gained the skills commensurate with care of the surgical patient including intravenous access, placement of nasogastric tubes, etc.

IPAP 701. Dermatology Rotation (4 cr)
A four-week rotation devoted to the dermatology clinic reviewing the spectrum of dermatologic diseases encountered primarily in the outpatient setting. This rotation aims to develop proficiency in taking histories, performing physical examinations, formulating working diagnoses, and developing plans of management of dermatologic and venereal disease problems. Special emphasis on carrying out potassium hydroxide preparations, skin biopsies, and tissue scrapings on prescribed patients are included in this rotation. The student becomes familiar with the diagnostic procedures and therapeutic regimen, their indications, availability, reliability, and limitations in the treatment of dermatologic diseases.

IPAP 702. Obstetrics/Gynecology Rotation (4 cr)
A four-week rotation in obstetric and gynecological clinics. This rotation aims to develop proficiency in taking histories, performing pelvic examination, providing obstetrical prenatal and postnatal care and management of common problems in the field of obstetrics and gynecology. While on the obstetric service, the management of pregnancy, labor, and delivery including antenatal, natal, and postnatal complications is taught. The student is responsible for taking obstetrical histories, performing obstetrical physical examinations, and following the patients through labor, deliver, and the early postpartum period. While on the gynecological service, the student is exposed to methods and programs related to cancer detection, sexually transmitted diseases, and contraception. Learning to take gynecologically oriented patient histories and performing complete and accurate gynecological examinations is required.

IPAP 703. Orthopedics Rotation (6 cr)
A six-week rotation devoted to orthopedic and podiatry services. The aim of this rotation is to develop proficiency in taking histories, performing physical examinations, formulating working diagnoses, and developing plans of management of orthopedic and podiatry patients. This rotation surveys the knowledge necessary for understanding the many problems of the orthopedic and podiatry patients. This experience includes learning specialized orthopedic and podiatry historic review and physical examination techniques, delivering emergency care to patients suffering from acute trauma, care for the pre- and postoperative orthopedics and podiatry patient, and maintaining sterile operating room techniques. An understanding of the pathophysiology and complications of bone and joint injury as well as the ability to fabricate and apply a variety of splints, traction, and casts is taught. The course includes training in the capabilities and modalities of physical and occupational therapy.

IPAP 704. Psychiatry Rotation (3 cr)
A three-week rotation devoted to psychiatry service. The aim of this rotation is to develop a working knowledge of recognition and emergency treatment of suicidal states, alcoholism, psychoses, neuroses, and other emotional and thought disorders. This clinical experience in inpatient and outpatient psychiatry is geared to the anticipated role of a physician assistant. Students have the opportunity to initiate patient evaluation, learn to do psychiatric interviews, assess mental status, develop a working diagnosis, treatment and prognosis, formulate tentative medical management plan, make referral to a physician or community agency, and learn follow-up management with the treating physician or agency.

IPAP 705. Internal Medicine Rotation (6 cr)
A six-week rotation devoted to the medical clinic. This rotation aims to develop proficiency in taking histories, performing physical examinations, formulating working diagnoses, and developing plans of management for internal medicine conditions. The indications, limitations, and methods of performing the necessary diagnostic procedures and therapeutic measures used in the treatment of general medicine disorders are reviewed. Through the collection and acquisition of historical, physical, and laboratory data, the student develops an understanding of patient evaluation and treatment under physician supervision.

IPAP 706. ENT/Allergy Rotation (4 cr)
A four-week rotation devoted to the ENT/Allergy clinics. This rotation aims to develop proficiency in taking histories, performing physical examinations, formulating working diagnoses, and developing plans of management for various ENT and allergy conditions. The student develops an understanding of emergency problems and how to initiate the first step in the management of such problems. Evaluation of the otorhinolaryngologic and allergy patient by appropriate history and physical examination, diagnostic work-up, following the course of disease processes, and evaluating the response to treatment are required. Learning and performing tracheotomy care, assisting with the management of the pre- and post-operative patient, assisting in the operating room, and learning to perform special audiometric tests are also required.
IPAP 707. Pediatrics Rotation (5 cr)
A five-week rotation devoted to the pediatric clinic. The aim of this rotation is to develop proficiency in taking histories, performing physical examinations, formulating working diagnoses, and developing plans of management of various pediatric conditions including newborn nursery care, immunizations, feeding problems, and common diseases affecting the pediatric population. The student will learn to manage various acute and chronic childhood illnesses and learn to evaluate normal variations of growth and development.

IPAP 708. Ophthalmology Rotation (2 cr)
A three-week rotation devoted to the ophthalmology clinic. The aim of this rotation is to develop proficiency in taking histories, performing physical examinations, formulating working diagnoses, and developing plans of management of various ophthalmologic conditions. The following areas will receive particular emphasis: 1) Ophthalmologic history taking and its correlation to the general medical history. 2) Functional evaluation of the visual system including determination of areas and distance, visual acuity, the size, shape and capacity of the visual field, color vision, bi-visual potential, and other testing procedures designed to detect dysfunction of any components of the visual system. 3) Direct examination of the visual system including both applanation and indentation tonometry, the use and limitations of the slit-lamp, direct and indirect ophthalmoscopy. 4) Observation and participation in ocular surgical procedures.

IPAP 709. Emergency Medicine Rotation (3 cr)
A two-week rotation (+ 160hrs) devoted to the emergency medicine department. The aim of this rotation is to develop proficiency in history taking, performing physical examinations, formulating working diagnoses, and developing plans of management for various emergency medical conditions. Opportunities to deal with a variety of medical emergencies under the supervision of Emergency Department physicians and staff are provided. The student learns to collect and integrate information regarding the emergency patient. Management of trauma, drug overdose, cardiac life support, ACLS certification, and common illnesses and injuries seen in an emergency care setting are emphasized.

IPAP 710. Family Practice/Outpatient Medicine Rotation (4 cr)
A four-week rotation devoted to the family practice and/or general outpatient clinic. The aim of this rotation is to develop proficiency in history taking, performing diagnoses, and developing plans of management for conditions commonly encountered in the family practice/general outpatient clinical setting. This clinical experience under the supervision of a community-based primary care physician is designed to acquaint the student with those aspects of the practice of medicine unique to the community setting. The student works with the physician in the hospital, in the office, and all other areas where the physician works. In the office the student learns about management procedures in a private practice and helps the physician by providing services consonant with her/her individual background and clinical training.

IPAP 711. Clinical Elective Rotation (4 cr)
Four weeks are spent in clinical areas of interest to the student or repeat areas in which the student wishes to increase their knowledge. A minimum of one week in the radiological services is recommended.

IPAP 712. Directed Study (2 cr)
This course is designed to enhance both written and verbal communication, and will span 18 of the 24 months of the program. Students will utilize skills learned in the Research Evaluation course to design and complete an Investigational Research/Review paper. This paper will be written to strict guidelines and evolve in a three-step process: proposal presentation, literature review and final paper. In addition, each student will be required to present a minimum of four cases to their colleagues and preceptors during Phase 2. These presentations will cover: a defense of their original research/review paper, a current medical topic of personal interest, a disease of current military significance, and a session on professional military development.
Physical Therapy Education

Director and Professor Hageman; Professors Karst, Stuberg; Associate Professors Fuchs, Meyer, Norman, and G. Willett; Assistant Professors Bilek, Flegle, Harbourne, Johnson, Roehrs, Volkman, S. Willett; Instructor Marlatt.

THE PROFESSION OF PHYSICAL THERAPY

Physical therapists are health care professionals who evaluate and treat people with health problems resulting from injury or disease. Physical therapists assess joint motion, muscle strength and endurance, function of heart and lungs, and performance of activities required in daily living, among other responsibilities. Treatment includes a broad range of therapeutic exercise techniques, cardiovascular endurance training, and training in activities of daily living.

THE DIVISION OF PHYSICAL THERAPY EDUCATION

Mission

The mission of the Division of Physical Therapy Education at the University of Nebraska Medical Center is to serve the state of Nebraska by:

• preparing entry-level practitioners through a broad scope education;
• providing professional service; and
• contributing to the body of health science knowledge through scholarly activity.

Organization

The Division of Physical Therapy Education is part of the University of Nebraska Medical Center (UNMC), a comprehensive academic health sciences center located in Omaha, Nebraska. The Division is administratively housed in the School of Allied Health Professions of the College of Medicine. Students and faculty alike derive many benefits from being part of a major academic health sciences center. As a part of UNMC, students have access to excellent medical library facilities, exposure to faculty with a broad range of clinical and research interests, and the opportunity for interaction with students in many different health care professions.

Degree Offered

Upon successful completion of the physical therapy professional program at UNMC, students receive an entry-level Doctor of Physical Therapy (DPT) degree. Students who enter the program without a Bachelor of Science or Bachelor of Arts degree may, upon successful completion of all courses in the first two years of the DPT program, become candidates for the degree of Bachelor of Science in Medicine.

Accreditation

The Doctor of Physical Therapy curriculum has accreditation from the Commission on Accreditation in Physical Therapy Education, and has been approved by the Nebraska Coordinating Commission for Postsecondary Education. UNMC enjoys full accreditation by the Higher Learning Commission and is a member of the North Central Association of Colleges and Schools. 30 North LaSalle Street, Suite 2400, Chicago, IL 60602-2504, telephone 800-621-7440 or www.ncahigherlearningcommission.org. Graduates are eligible to sit for the national licensure examination in order to practice in Nebraska or in other states.

Format of the Professional Education Program

Students must complete a minimum of 90 semester hours of prerequisite course work prior to admission into the professional program. The UNMC DPT professional program in physical therapy is 3 years in length, during which students complete 125 credit hours of didactic and clinical course work. A formal thesis is not required, but opportunities for participation in clinical and basic science research are available for interested students. The program includes 34 weeks of full-time clinical experience, and currently maintains clinical education agreements with approximately 180 patient care facilities located throughout the United States.

Facilities

The Division’s offices, and teaching laboratories are located in the Student Life Center on the UNMC campus, directly adjacent to the state-of-the-art fitness facilities of the UNMC Center for Healthy Living. The Division’s Clinical Movement Science Laboratory and Physical Activity Research Laboratory provide capabilities for the study of kinematic, kinetic, electromyographic, and metabolic aspects of human movement.

Faculty and Staff

Students in the professional program benefit from instruction by well-qualified faculty who bring expertise and experience in a broad range of clinical and basic sciences. The Division of Physical Therapy Education currently has a core faculty of fourteen, including six who are doctorally prepared and eight with credentials as clinical specialists. Additional instruction is provided by numerous campus faculty in clinical and basic science departments and by numerous adjunct and clinical faculty. Three full-time staff members provide administrative and secretarial support for the Division.

ADMISSION TO THE DPT PROGRAM

Residency Considerations

Qualified applicants are encouraged to apply regardless of residency, though preference is given to applicants who are current residents of Nebraska. Questions regarding residency status should be directed to the Office of Academic Records (402/559-6468).
Grade Point Requirement

All applicants are required to present a minimum overall grade point average of 3.0 on a 4.0 grading scale.

Required courses must be taken for letter grades.

Credits for courses in which grades below "C-" were received are not accepted in fulfillment of the program prerequisites. Grades below "C-", while not accepted for transfer, are still calculated as part of the grade point average for determining admittance unless the same course is retaken at the same institution and the grade is replaced according to that institution's guidelines.

Course Requirements

By July 15 preceding the intended fall semester date of enrollment, applicants must have successfully completed a minimum of 90 semester hours (135 quarter hours) of academic courses at an accredited college or university. Please note: A maximum of 66 semester hours (85 quarter hours) will be accepted in transfer from community colleges. A baccalaureate degree is not required for admission to this program, but students who will not have received a baccalaureate degree prior to matriculation must identify their major emphasis of study and satisfactorily complete three upper-level courses toward that major prior to July 15th of the intended year of enrollment.

The courses listed below are prerequisites for the professional program in physical therapy at UNMC. Candidates must satisfactorily complete the college courses below and show proof of completion by July 15 of the intended year of enrollment except as noted (*) below:

1 COURSE IN ANATOMY AND 1 COURSE IN PHYSIOLOGY

Must be lecture/lab courses in human or vertebrate anatomy and physiology.

* NOTE: may be fulfilled by completing one course in Anatomy and a second course in Physiology or by taking 2 combined courses in Anatomy/Physiology.

1 YEAR CHEMISTRY

Must be lecture/lab courses.

* NOTE: one course must be completed by December 31 prior to year of enrollment.

1 YEAR PHYSICS

Must be lecture/lab courses.

Must include mechanics, heat, light, sound and electricity. Physical Science will not fulfill this requirement.

* NOTE: one course must be completed by December 31 prior to year of enrollment.

Students who will not have received a baccalaureate degree prior to matriculation must identify their major emphasis of study and satisfactorily complete three upper-level courses toward that major prior to July 15th of the intended year of enrollment.

Applicants are strongly encouraged to take a balance of electives consistent with a liberal arts education, while pursuing depth of study as typically demonstrated by a discipline major. The preferred applicant will demonstrate an academic record that reflects a balance of course work in the humanities and the social and natural sciences.

Foreign Applicants and Foreign Transcripts

Foreign students who have not attended a college or university in the United States of America must sit for the TOEFL exam. Scores need to be submitted at the time students apply and a minimum score is required. All foreign transcripts must be evaluated and converted into English before submitting them to this program. There are a number of these services in the United States. One service available is:

Educational Credential Evaluators, Inc.
PO Box 92970
Milwaukee, WI 53202-0970 USA
Phone: 414/289-3400
FAX: 414/289-3411

Examination Requirements

All applicants are required to present scores for the Graduate Record Examinations (GRE) general test. Information about the GRE may be obtained from Educational Testing Service, PO Box 6000, Princeton, NJ 08541-6000 (www.gre.org). Specify that copies of results should be forwarded under College Code R6896.

Exposure to Physical Therapy Practice

There are no formal requirements for volunteer, observation, or employment experiences in the field of physical therapy. However, as with all career choices, a broad exposure to the field is to the applicant’s personal benefit, and as such is encouraged.

THE APPLICATION PROCESS

Admissions Tracks: There are four (4) admission tracks for the DPT program.

1. General Admissions Track. Most applicants will apply through this track, which is for applicants who have completed or are in the process of completing the prerequisites.

- Application deadline for entering in the Fall of 2008 is November 1, 2007. All materials must be received by that date.
- Unless applicants have previously attended one of the University of Nebraska campuses, they are required to pay an application fee ($45) each time they apply.
2. Rural Health Admissions Track. The Rural Health Admissions Track is an admissions track designed for people wanting to become physical therapists and who want to practice in rural Nebraska. This program consists of three years of study at UNMC. The clinical education experiences will prepare the student for future practice in rural or smaller communities. Applicants for this track must meet the established criteria published in this brochure for general admission into the Physical Therapy Education Program. While numerous factors are always a part of the selection process, a special emphasis for admission into this track will be placed on applicants who 1) are residents of Nebraska, and 2) who are committed to returning to the rural areas of Nebraska to practice. Special consideration is given to students from Nebraska communities with less than 10,000 population or counties of 25,000 population or less. Application materials for this track are included online with regular application. Up to four positions are reserved in the class each year for applicants to this track. The deadlines for application to this track are the same as the regular admissions process listed in this brochure.

- Application for admission may be made on-line at [http://net.unmc.edu/apply](http://net.unmc.edu/apply) between July 15, 2007 and November 1, 2007 completing both the general and RHAT admissions paperwork.
- Application deadline for entering in the Fall of 2008 is November 1, 2007. All materials must be received by that date.
- Unless applicants have previously attended one of the University of Nebraska campuses, they are required to pay an application fee ($45) each time they apply.

Admission Tracks #3 and #4 are for applicants in their final year of high school or high school graduates who have not yet entered college.

3. Rural Health Opportunities Program (RHOP). The Rural Health Opportunities Program is a cooperative venture between Chadron State College and the University of Nebraska Medical Center aimed at recruiting and educating students from rural Nebraska who plan to return to practice in the rural areas of the state. The program consists of three years of study at Chadron State College and three years spent in study at UNMC. Up to 4 positions within each class are reserved for RHOP students. The clinical education experiences prepare the student for practice in rural or smaller communities. Persons with a high school diploma or equivalent may apply. The **deadline for application is December 1.** Further information and applications for the RHOP program may be obtained by writing or calling the Health Professions Office, School of Science and Math, Chadron State College, Chadron, NE 69337. Phone: (308) 432-6278.

4. NU PATHS Admissions Track. Nebraska University Pre-Admissions to the Health Sciences (NU-PATHS) is a collaborative program developed between the University of Nebraska-Lincoln, University of Nebraska at Kearney, University of Nebraska at Omaha, and the University of Nebraska Medical Center.

The NU-PATHS program assists selected students in their undergraduate pre-health curricula at one of the NU undergraduate campuses and guarantees admission to the selected UNMC program upon successful and timely completion of their undergraduate pre-professional program of study.

The purpose of NU-PATHS is to recruit and educate academically talented students who demonstrate, through life experiences and personal motivation, a desire to become health care professionals who are willing to serve persons in need of health care in medically underserved communities. It is anticipated that program graduates will practice in medically underserved urban communities.

Applicants applying through the NU PATHS admissions track must demonstrate, through life experiences and personal motivation, a strong desire to work with the medically underserved members of society. It is anticipated that program graduates will practice in medically underserved urban communities. All high school applicants must have achieved a composite ACT score of at least 22 or a composite SAT score of at least 1010. All undergraduate applicants must have a cumulative GPA of at least 3.0 on a 4-point scale. Preference for admission will be given to residents of the State of Nebraska. Applications will be accepted from students who are in the senior year of high school, or are current undergraduates at UNL, UNK or UNO. Applicant must be a citizen of the U.S. or have permanent residency status.

For further information about the NU-PATHS program on each undergraduate campus, see below:

**UNL NU-PATHS Program:** Office of the Vice Chancellor for Student Affairs, 106 Canfield Administration Building, P.O. Box 880423, Lincoln, NE 68588-0423. (402) 472-3375. A more complete description of the program is also available online at [http://busfin.unl.edu/stuafs/nupaths.html](http://busfin.unl.edu/stuafs/nupaths.html)

**UNK NU-PATHS Program:** Health Professions Office, Attn: Peggy Abels, BHS 212, University of Nebraska at Kearney, Kearney, NE 68849-1139. (308)865-8620. Or e-mail abelsp@unk.edu A more complete description of the program is also available on line at [http://www.unk.edu/acad/health_prog/](http://www.unk.edu/acad/health_prog/)

**UNO NU-PATHS Program:** Wade A. Robinson, PhD, EAB 202-F, Omaha, NE 68182. Or e-mail wrobinson@mail.unomaha.edu
Selection Process
Class Size: Enrollment in the physical therapy program is typically limited to a maximum number of 40 students per year. Students from diverse racial, ethnic, cultural groups underrepresented in health care professions are encouraged to apply. Fulfillment of the basic application requirements does not guarantee admission into the professional program.

Personal Interview
A personal interview with the Admissions Committee is required to be considered for admission. Interviews will be offered to a limited number of qualified applicants before final acceptance is offered. Generally, the number of applicants selected for an interview is approximately three times the class size. The selection process for an interview is based upon overall grade point average, written skills, extracurricular activities, rationale for physical therapy as a career choice, references, and scores on the GRE general test.

Please Note: With rare exception due to medical causes, the Division does not offer deferments into the program.

Admission to the Physical Therapy Program and the privileges of the physical therapy student shall not be denied to any person because of race, color, religion, sex, national origin, handicap, special disabled veteran status, or Vietnam era veteran status. UNMC complies with the Educational Rights and Privacy Act of 1974 governing the privacy of student records.

Timetable for the General Admissions Track
July 15-November 1 Application for admission via the General Admission Track and Rural Health Admission Track may be made on line at: www.net.unmc.edu/apply.

November 1 Application deadline - The required application materials must be received by the November 1 deadline in order for you to be considered as an applicant. Should your GRE scores, college transcripts, or references fail to arrive by November 1, you will be notified.

December The Admissions Committee completes the review of all applications and ranks the applicants based on all materials received. The top ranked applicants will be invited to participate in a personal interview. By late January, all applicants will be notified as to whether they are or are not being offered a personal interview.

December - January Personal interviews for selected applicants.

Mid to Late January Admissions Committee decisions are made and all applicants are notified of the results by mail.

NOTE: Alternates will not be informed of their ranking. Alternates will be notified as soon as possible about an open position for the class. If positions do not become available for alternates during a given year, they are welcome to reapply, but selection as an alternate does not guarantee acceptance in subsequent years. The admissions process is based upon selection of the most qualified applicants from within the current year’s applicant pool. Previous applications to the program neither hinder nor assist applicants who choose to reapply in subsequent years.

July 15 Candidates who are accepted for admission with contingencies must show proof (transcripts) of successful completion of the required course work by this date. The Division reserves the right to withdraw the offer for admission if these courses are not completed by the July 15 deadline.

PROGRAM INFORMATION
Starting Date: Classes begin in the fall semester.

Tuition and Other Expenses
Tuition and fee charges are subject to change, as determined by the University of Nebraska Board of Regents. Tuition includes matriculation, registration, library and diploma fees. All questions regarding residency status should be directed to the Office of Academic Records, University of Nebraska Medical Center, 984230 Nebraska Medical Center, Omaha, NE 68198-4230 (402/559-6468). Estimated costs for tuition and fees are listed in the table below:

<table>
<thead>
<tr>
<th>Year</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
</tr>
</thead>
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<tr>
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<tr>
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<td>220.00</td>
<td>220.00</td>
<td>230.00</td>
</tr>
<tr>
<td>Estimated Book Costs</td>
<td>1000.00</td>
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<td>150.00</td>
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Additional variable costs include travel to professional meetings and clinical affiliations as well as room and board costs. Information about housing both on and off campus may be found at the following student services website: http://www.unmc.edu/student/studentservices/housing.htm.

Financial Assistance
The University of Nebraska Medical Center has financial aid programs to assist students with unmet financial need. The Medical Center is prepared to supplement family contributions
from its aid sources when students qualify for the assistance and to assist students in obtaining assistance from outside sources. Financial resources are limited. It is very important for prospective students to make sure all financial planning arrangements for tuition and living expenses are complete prior to entering the program. Information regarding classification of students for financial assistance is available through the Office of Financial Aid. Information about financial assistance is obtained by writing or calling the Office of Financial Aid, University of Nebraska Medical Center, 984265 Nebraska Medical Center, Omaha, NE 68198-4265 (402/559-4199).

**Academic and Professional Standards**

Students must receive a passing grade of “C-” or better or “Pass” in all courses and maintain an overall quality grade point average of 2.33 (on a 4.0 scale) or above. Grades of less than “C-” are considered as failing within the physical therapy program. Physical therapy education requires the student to demonstrate skills of observation, communication, sensory, intellectual-conceptual, integrative and qualitative abilities, and professionalism. As such, students must successfully meet all of the program’s performance standards by passing all laboratory practical examinations and clinical education experiences, in addition to successful completion of didactic work. The standing of a student in any course is determined by the instructor of the course by examinations, laboratory and clinical performance, class participation, written assignments, personal observation, and other methods of evaluation.

**Americans with Disabilities Act**

Students enrolled in the DPT program are expected to meet the Performance Standards set forth by the UNMC Division of Physical Therapy Education (document available on request) in order to be eligible for graduation. Sections 502 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act (1990) give students with disabilities certain rights with regard to student and staff services and the curriculum. For information on the process for requesting accommodation for disability, please contact: Services for Students with Disabilities, Counseling and Student Development Center, Student Life Center room 3013, phone (402)559-5962.

**Additional Special Requirements**

**Basic Life Support Certification**

Students enrolled in the program are required to maintain certification throughout the program.

**Attendance at School and Professional Meetings**

Student attendance is required at the program’s All-School Meetings. As a graduation requirement, attendance is required at a select number of professional meetings. Students are responsible for their own registration, housing, travel and transportation arrangements for these professional meetings, generally held outside of the Omaha-Lincoln area.

**Professional Liability Coverage**

All students enrolled within the program are covered under a comprehensive general liability and professional liability policy approved by the Board of Regents of the University of Nebraska. In addition, students may be required to purchase individual "student professional liability coverage" each year while enrolled in the program. Students will receive further information about Professional Liability Coverage after enrollment in the program.

**Placement Assistance**

Students and graduates have access to all recruitment information that is received by the Division from employers of health care professionals.

**Curriculum Overview**

The professional program is three years in length. Learning opportunities include lecture-laboratory courses, seminars, independent study opportunities, laboratory practical examinations and supervised clinical practice. The curriculum provides opportunities to develop abilities in teaching, supervision, administration, and research in physical therapy. Although a thesis is not required, opportunities exist for interested students to actively participate in research in a number of areas. The Division reserves the right to modify the curriculum as necessary to comply with accreditation standards and to reflect advancements in the health sciences.

The clinical education component of the curriculum provides students the opportunity to directly apply the physical therapy theories and techniques acquired during the classroom instruction, as well as the opportunity to acquire knowledge, skills and attitudes best learned in the clinical environment. The intent of clinical education is to provide the student with a broad exposure to physical therapy practice in a variety of settings and geographic locations. The clinical education component is under the direction of the Director of Clinical Education.

Currently, the clinical education component of the curriculum consists of 34 weeks over the course of the three
year professional program. Clinical education requirements vary with different admissions tracks, but attempts will be made to have all students participate in at least one clinical experience in a rural community. Clinical experiences are scheduled in advance and are subject to change at the discretion of the clinical education site or the office of the Director of Clinical Education.

NOTE: Travel and living expenses for clinical education should be anticipated. No student will be allowed to complete all clinical education experiences in the Omaha/Lincoln area.

Course Descriptions

Physical Therapy -- 1st Year (PT1)

GCBA 571 Structure of Human Body (9 cr; co-listed with Anatomy)

A study of the structure of the human body in sequence beginning with the back and then the upper limb, head, neck, thorax, pelvis, perineum, and lower limb. Structural features are studied by gross dissection, demonstration, cross section, radiographs and in scans, and are correlated to the appropriate living anatomy. Systemic embryology lectures will provide an understanding of the development of definitive anatomical structures. Emphasis is placed on the structure: function correlation and the relationship of anatomic configuration to diagnosis of clinical problems. The format of the course will include lectures, laboratories, demonstrations, small group discussions, problem-based learning (PBL) sessions and many varieties of audiovisual aids. Evaluation will be in the form of traditional objective, laboratory, and essay examinations as well as faculty, self and peer evaluation of performance in the PBL sessions.

NURS 325 Pathophysiologic Basis for Alterations in Health (4 cr)

This course is intended to provide a knowledge base in pathophysiology upon which to build future content and clinical practice. Didactic nursing classes and clinical experiences are designed to use this pathophysiological base in order to support the development and application of nursing interventions. Thus, the faculty in clinical courses expect that students who complete this course will be able to build on their foundation in pathophysiology and to deepen their understanding of nursing content. This course focuses on the pathophysiologic basis for alterations in health across the life span. Theories of disease causation will be explored. Acquired, immune, infections, carcinogenic and genetic alterations in health in the body systems will be presented with an emphasis on etiology, cellular and systemic pathophysiologic responses and clinical manifestations. Interdisciplinary management will be introduced.

PHYS 606 Physiology (6 cr; co-listed with Physiology)

The material presented begins with an introduction to the processes that regulate the activity of single cells. This discussion will lay the foundation for the progression of the instruction through neurophysiology and cardiovascular, renal, respiratory, endocrine and gastrointestinal physiology. Particular emphasis is on the clinical application of all physiological concepts.

PHYT 502 Foundations of Physical Therapy Practice (3 cr)

This course addresses major topic areas related to the practice of physical therapy. Five modules serve to introduce students to 1) the use and evaluation of evidence, 2) the processes involved in physical therapy clinical decision-making and the use of the Guide to Physical Therapist Practice in clinical decision making, 3) theories of health behaviors, including factors that influence patient adherence and compliance, and cultural differences in health behaviors, 4) the structure of the American healthcare system, and 5) a conceptual foundation for performing observation and manual movement facilitation skills used in physical therapy. The information presented in this course will serve as a foundation for subsequent course work, as the general themes presented in this course will recur throughout the curriculum.

PHYT 505 Musculoskeletal Physical Therapy I (8 cr)

The first portion of this course deals with examination, evaluation and intervention related to joint mobility, muscle performance, gait, locomotion, balance, and posture. This includes instruction in principles of measurement, biomechanics (including kinematics and kinetics of human motion, and muscle mechanical properties), and neural control of movement. The second portion of the course deals with functional problems arising from impairments in these areas. This includes instruction in, examination, evaluation and intervention related to self-care and home management, community and work integration and environmental barriers. Prerequisites: CBA 571 - Structure of the Human Body; PHYS 606 - Physiology.

PHYT 510 Physical Agents (3 cr)

This course covers the theory and application of physical agents (including electrical currents, heat, cold, therapeutic pool, massage, ultrasound, iontophoresis, mechanical traction, compression, electromyographic biofeedback). Clinical problems are presented in the laboratory for clinical decision-making on the appropriate, safe, correct, and cost effective application of these devices, skills, or techniques as a component of a comprehensive plan of care to reduce impairments, functional limitations, and disabilities. Prerequisites: Musculoskeletal PT I, Neuromuscular PT I.

PHYT 511 Integumentary Physical Therapy (2 cr)

This course teaches the students the basic science of inflammation and tissue healing. The student will learn how to conduct an examination of the integumentary system and evaluate the findings. Various intervention techniques used in the treatment of wounds (including arterial & venous wounds, burns, pressure ulcers) and lymphedema will be taught. Prerequisites: CBA 571 - Structure of the Human Body; PHYS 606 – Physiology; PHYT 520 - Differential Diagnosis I
PHYT 512 Neuromuscular Physical Therapy I (3 cr)

This course is designed to provide foundational knowledge about structures and processes within the neuromuscular system that influence movement. Consequences of use, disuse, age, pathology, and injury will be addressed as they relate to sensorimotor impairment, disability, and/or handicap. Neurologic examination techniques will be introduced. Prerequisites: CBA 571 Structure of Human Body, PHYS 606 Physiology.

PHYT 522 Professional Practice Expectations I (2 cr)

This survey course addresses a wide array of professional issues related to the practice of physical therapy from the perspectives of behavioral and social science (the study of human behavior in both individual and collective forms). Course topics include but are not limited to: defining professional and expert practice; identifying ethical dimensions of health care; respecting human differences including self-awareness, family-centered care, and cultural competence; developing effective skills in communication and patient education; appreciating the continuum of loss, grieving and adjustment due to chronic illness, social and physical changes and death and dying; and, responses to illness and disability that complicate care such as self-destructive behaviors.

PHYT 550 Clinical Education I (4 weeks) (4 cr)

This course is the first in a series of five clinical education courses. This course will provide the student with the first professional exposure to the clinical practice of physical therapy. This experience allows for the application of didactic information acquired through the curriculum to this point. Prerequisites: Satisfactory completion of all preceding curricular content.

PHYT 640 Critical Inquiry I (3 cr)

This is the first of two courses in critical inquiry designed to develop the students' abilities to critically analyze and interpret research. The primary focus will be on evidence-based practice, research designs, and statistical methods. Prerequisite: PHYT 502 Foundations of Physical Therapy Practice.

Physical Therapy -- 2nd Year (PT2)

PHAR 570 Pharmacology for Health Professionals (2 cr; co-listed with Pharmacology)

The primary goal of this course is to teach basic pharmacology that will allow the healthcare professional to provide patient care in the modern integrated healthcare environment. The student will be introduced to basic pharmacology with an emphasis on how drugs act in humans in ways that relate to nursing, physical therapy, and other healthcare professions. This is accomplished in part through utilization of the nursing process: assessment, intervention and evaluation. The nursing student will learn to use knowledge of pharmacology along with other information in the nursing clinical reasoning process (assessment, diagnosis, planning/outcome criteria, implementation, evaluation of outcome). The physical therapy students will learn to use knowledge in the clinical reasoning model used in physical therapy patient/client management (examination, evaluation, diagnosis [PT diagnosis], prognosis [including plan of care] and intervention).

PHYT 605 Musculoskeletal Physical Therapy II (4 cr)

This course emphasizes physical therapy examination, diagnosis, prognosis, and intervention for patients with musculoskeletal-related problems of the extremities. Lecture and laboratory experiences will be provided during this course. Prerequisite: PHYT 505 Musculoskeletal Physical Therapy I.

PHYT 606 Musculoskeletal Physical Therapy III (4 cr)

This course emphasizes physical therapy: examination, diagnosis, prognosis and interventions for patients with musculoskeletal-related problems of the axial skeleton in accordance with the Guide to Physical Therapy Practice. Information concerning physical therapy for women’s health and incontinence related problems is also included. Lecture and laboratory experiences, as well as the opportunity to practice these skills in a clinical setting under supervision, and a lab practical for selected manual interventions are provided during this course.

PHYT 610 Cardiopulmonary Physical Therapy (4 cr)

This lecture/laboratory course emphasizes application of the patient-client management model as related to common cardiovascular and pulmonary disorders. Etiology, clinical manifestations, physical therapy examination, evaluation, diagnosis, prognosis and intervention strategies for various cardiovascular and pulmonary disorders will be presented through lectures, laboratory experiences and case study formats. Prerequisite: CBA 571 Structure of the Human Body, PHYS 606 Physiology, NURS 325 Pathophysiologic Basis for Alterations in Health.

PHYT 612 Pediatric Physical Therapy (4 cr)

The goal of this course is to provide practical, clinically oriented experience in a multidisciplinary setting for the pediatric client. Course format includes lecture, lab, patient demonstration and clinical practice. Normal and abnormal development, assessment and management of the developmentally disabled pediatric client will be presented.

PHYT 614 Therapeutic Exercise Interventions for Rehabilitation and Special Patient Populations (4 cr)

This lecture-laboratory course applies basic concepts of exercise physiology and prescription to those individuals with functional limitations and impairments requiring rehabilitation, and those with selected chronic pathologies and associated impairments and functional limitations (activity limitations). This course contains topics and modules on such subjects as functional exercise prescription and progression,
exercise techniques to address impairments such as loss of flexibility, decreased muscle strength, and loss of balance and coordination. In addition, physical therapy intervention concepts, emphasizing exercise prescription, are presented for patients with diabetes, arthritis, obesity, old age, low functional capacity, cancer, and sports-related conditions. Prerequisites: Musculoskeletal Physical Therapy I.

**PHYT 616 Neuromuscular Physical Therapy II** (4 cr)

This is the second in a three course sequence that prepares the student to manage adults presenting with neuromuscular disease. The course provides the student with 1) general principles of examination and evaluation, 2) the theoretical framework for making intervention decisions, including theories of motor control and motor learning, and 3) an overview of adult patient management (examination, evaluation, diagnosis, prognosis, intervention, and outcomes) for Physical Therapy Practice Patterns 5A (Primary Prevention/Risk Reduction for Loss of Balance and Falling) through 5G (Impaired Motor Function and Sensory Integrity Associated with Acute or Chronic Polynuropathies). Prerequisites: PHYT 512 Neuromuscular Physical Therapy I.

**PHYT 617 Neuromuscular Physical Therapy III** (3 cr)

This is the third in a three course sequence that prepares the student to manage adults presenting with neuromuscular disease. The first half of the course provides the student with 1) an overview of adult patient management (examination, evaluation, diagnosis, prognosis, intervention, and outcomes) for Physical Therapy Practice Patterns 5H (Impaired Motor Function, Peripheral Nerve Integrity, and Sensory Integrity Associated with Nonprogressive Disorders of the Spinal Cord) and 5I: (Impaired Arousal, Range of Motion, and Motor Control Associated with Coma, Near Coma, or Vegetative State) and 2) the theoretical framework for making delegation decisions to PT Assistants. The last half of the course emphasizes clinical decision making utilizing case studies organized by Physical Therapy Practice Patterns, including 5A (Primary Prevention/Risk Reduction for Loss of Balance and Falling) through 5H (Impaired Motor Function, Peripheral Nerve Integrity, and Sensory Integrity Associated with Nonprogressive Disorders of the Spinal Cord). Prerequisites: PHYT 616 Neuromuscular Physical Therapy II.

**PHYT 622 Practice Management Skills in Physical Therapy** (1 cr)

This is a lecture and practical application course. The course will cover detailed information about fiscal management, organizational structure, financial performance, information management, facility planning, and outcomes assessment applicable to physical therapy practitioners working in large and small health care organizations. Prerequisite: PHYT 522 Professional Practice Expectations I.

**PHYT 624 Orthotics and Prosthetics** (3 cr)

An advanced lecture, laboratory and demonstration course in the application of anatomy and pathomechanics to bracing and positioning of the human body, to artificial limbs, the selection and use of other assistive technology, including wheelchair seating and mobility, and the rehabilitation of individuals using artificial limbs. Prerequisites: PHYT 505 & PHYT 605 Musculoskeletal Physical Therapy I and II, PHYT 614 Therapeutic Exercise for Special Populations.

**PHYT 630 Prevention and Wellness** (3 cr)

Methods for addressing the wellness needs of populations, groups and individuals across the lifespan are covered. The physical therapist's role in primary, secondary and tertiary prevention of diseases of the neuromuscular, musculoskeletal, cardiopulmonary and integumentary systems will be discussed. Specific topics include exercise testing and prescription for aerobic training, nutrition and calorie expenditure, flexibility, muscle strength and endurance, and body composition measurement for adults and children. In addition, the consultant role of the physical therapist in promoting wellness to industry, community groups and individuals will be addressed. Prerequisite: PHYS 606: Physiology.

**PHYT 650 Clinical Education II** (6 cr)

The second clinical education experience of six weeks will allow the student to apply new didactic knowledge and continue to improve the application of didactic knowledge to clinical practice. Prerequisite: All preceding curricular content, including satisfactory completion of PHYT 550 Clinical Education I.

**PHYT 740 Critical Inquiry II** (3 cr)

This is the second of two courses in critical inquiry designed to develop the students' abilities to critically analyze and interpret research. Primary emphasis in this course is on the process of evidence-based practice: developing clinical questions, searching for evidence, analyzing the evidence, and applying the evidence to practice. Prerequisite: Critical Inquiry I.

**Physical Therapy – 3rd Year (PT3)**

**PHYT 720 Differential Diagnosis I** (2 cr)

This class builds on the student's current knowledge of pathophysiology. Emphasis will be placed not only on the signs and symptoms but also the natural progression of the various pathologies and how this influences the PT plan of care. Lectures and group discussions will be utilized to facilitate clinical decision-making. Case studies will be used to assist the student in the development of physical therapy treatment programs which not only address current problems, but potential problems and the patient's general health.

**PHYT 722 Professional Practice Expectations II** (2 cr)

This is a lecture and practical application course. The course will cover detailed information about licensure, malpractice, risk management, documentation, consultation, employment issues and social responsibility. The application of these knowledge areas will be directly applied to physical
therapy practice situations. Prerequisite: PHYT 522 Professional Practice Expectations I.

PHYT 726 Instructional Development in Health Professions (2 cr)

This course provides the learner with the opportunity to develop and implement the techniques and theories of presentation of information to peers in a continuing education/in-service format. Design, needs of the target audience, implementation and evaluation of the teaching project will be addressed. Prerequisite: PHYT 522 Professional Practice Expectations I.

PHYT 727 Differential Screening for Physical Therapists (2 cr)

This course emphasizes medical screening tools as they pertain to physical therapy examination, diagnosis, prognosis and interventions. Course information will focus on how findings may influence patient prognosis as well as need for further medical examination or referral. Self-study, lecture, and group discussion are provided in this course.

PHYT 750 Clinical Education III (8 weeks) (8 cr)

The third clinical education experience of eight weeks allows the student to continue to develop more self-initiated and self-directed clinical skills under the supervision and direction of clinical faculty. This is the first of three consecutive 8 week culminating clinical experiences that enable the student to apply the knowledge and clinical skills acquired throughout the first two and one-half years of the program. At the completion of these culminating experiences the student should be able to function as an entry-level practitioner. Prerequisites: All preceding curricular content, including satisfactory completion of PHYT 550 Clinical Education I and PHYT 650 Clinical Education II.

PHYT 751 Clinical Education IV (8 weeks) (8 cr)

Clinical Education IV is designed to enable the student to apply the knowledge and clinical skills acquired throughout the first two and one-half years in the second of three consecutive 8 week culminating clinical experiences. At the completion of these culminating experiences the student should be able to function as an entry-level practitioner. Prerequisites: All preceding curricular content, including satisfactory completion of PHYT 550 Clinical Education I, and PHYT 650 Clinical Education II.

PHYT 752 Clinical Education V (8 weeks) (8 cr)

Clinical Education V is designed to enable the student to apply the knowledge and clinical skills acquired throughout the 7 ½ semesters in the final of three consecutive 8 week culminating clinical experiences. At the completion of these culminating experiences the student should be able to function as an entry-level practitioner. Prerequisites: All preceding curricular content, including satisfactory completion of PHYT 550 Clinical Education I, and PHYT 650 Clinical Education II.

SAHP 530 Scanning the Health Care Environment (1 cr)

The purpose of this course is to acquaint the student with the complex issues surrounding the economics of health care and health care delivery. Health care is changing rapidly, moving from the inpatient setting to the outpatient or home setting, from fee-for-service to managed care, from specialist to generalist, from health care as a noble profession to health care as a business. Allied health professionals are affected by such changes in both their personal and professional lives. This course is designed to assist students in gaining an understanding of why change is occurring, recognizing trends in their particular environment and identifying strategies to affect the changes to ensure that the patient is served. The topics to be covered include the history of health care in the 20th century, the economics of health care, federal involvement in health care, principles of insurance, elements of a health care plan, Medicare, Medicaid, the latest news from Washington, DC and responding to the challenge of the uninsured.

* Curriculum subject to change without notice.
Diagnostic Medical Sonography

Professor Walker (Division Director); Professor Anderson (Medical Advisor); Assistant Professor Michael (Program Director), Instructor O’Neal (Educational Coordinator); Clinical Instructors Albert, Bundy, Castagna, Cohoon, Dunn, Gemar, Hadfield, Rosenthal, Vasey, Whampler.

The educational program in Diagnostic Medical Sonography at the University of Nebraska Medical Center consists of twelve consecutive months of lectures, demonstration labs, and supervised clinical instruction and experiences designed to integrate basic science principles and communication skills with the practice of diagnostic medical sonography. A comprehensive knowledge base and clinical competencies are achieved through a plan of study, which focuses on increasing proficiency under the supervision of qualified faculty and staff in the Department of Radiology at The Nebraska Medical Center.

Organization
Diagnostic Medical Sonography is a specialty discipline in the Division of Radiation Science Technology Education within the School of Allied Health Professions (SAHP) of the College of Medicine. All courses taken in the Diagnostic Medical Sonography program apply toward a Bachelor of Science degree in Radiation Science Technology awarded by the University of Nebraska Medical Center. The program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) and graduates are eligible to write the national board exams for certification by the American Registry of Diagnostic Medical Sonographers (ARDMS).

Requirements for Admission
1. High School Diploma or Equivalent
2. Completion of the 35 hours of RSTE College Prerequisites
3. Completion of JRCERT accredited program in Radiography or JRCNMT accredited Nuclear Medicine Technology Program
4. Current ARRT or CNMT certification.
5. Submission of an application with transcripts and three references
6. Personal interview if chosen as a candidate

Enrollment is limited and not all candidates who apply are accepted.

Degree Requirements
1. Completion of RSTE College Prerequisites (35 hours) consisting of the following: English Composition (6 hours); College Algebra or higher (3 hours); Humanities or Social Science (Psychology & Sociology recommended) (6 hours); Chemistry with lab (4 hours); Biology (4 hours); Physics (4 hours); Statistics (3 hours); Medical Terminology (2 hours); Communications (3 hours). English electives may be substituted if proficiency is established by examination. Basic science courses must qualify for science majors.

NOTE: College prerequisites are subject to change. Individuals who are considering applying to the program are encouraged to consult with the program director regarding current course requirements for admission. No grade lower than "C" will transfer to UNMC for credit.

2. Completion of an accredited program in Radiography or Nuclear Medicine Technology. *A total of 60 semester hours of college credit will be granted for transfer to students who have completed an accredited Radiography or Nuclear Medicine program at another institution and are admitted with advanced standing.

3. Completion of Diagnostic Medical Sonography Pre or Co-Requisites:
   - Human Anatomy and Physiology
   - Patient Care
   - Medical Ethics/Legal Issues
   - Medical Terminology
   - General Pathophysiology
   These courses may be included in the Radiography or Nuclear Medicine Technology Program.

4. Completion of the 12-month professional program in Diagnostic Medical Sonography.

Applications
For information and an application, call or write to:

Kim Michael, MA, RT (R), RDMS, RVT
Program Director
Diagnostic Medical Sonography
984545 Nebraska Medical Center
Omaha, NE 68198-4545
office: (402) 559-1189
fax: (402) 559-4667
email: kkmichael@unmc.edu

Students who are accepted into the program are enrolled each year at the end of August.

Plan of Instruction
All courses taken in the Diagnostic Medical Sonography program apply toward a Bachelor of Science degree in Radiation Science Technology offered by the University of Nebraska Medical Center.
The program consists of twelve consecutive months of lectures, demonstration labs, and supervised clinical instruction and experiences designed to integrate basic science and communication skills with the practice of diagnostic medical sonography. A comprehensive knowledge base and clinical competencies are achieved through a plan of study, which focuses on increasing proficiency under the supervision of qualified faculty and staff in the Department of Radiology at The Nebraska Medical Center.

The curriculum of the Diagnostic Medical Sonography program complies with the Standards and Guidelines of an Accredited Educational Program for the Diagnostic Medical Sonographer.

Curriculum
Fall Semester

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*Required for advanced standing students

Spring Semester

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*Required for advanced standing students

Summer Semester

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<th>Credit</th>
<th>Hours</th>
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<td>1</td>
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<tr>
<td>RSTE 451S</td>
<td>Ultrasound Physics II</td>
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<tr>
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<td>Applied Ultrasound Technology III</td>
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<td>Obstetrical Conference III</td>
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<td>RSTE 454S</td>
<td>Diagnostic Film Review III</td>
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<td>High Resolution Sonography</td>
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Course Descriptions

RSTE 312S. Applied Ultrasound Technology I (4 cr)
This clinical course is designed to provide the DMS student with the fundamental knowledge and critical thinking skills necessary to participate in the clinical setting. The student will participate in a clinical setting to develop skills in equipment operation, scanning technique, scanning protocol and pathology recognition. Scanning assignments will be used to assess application of technical skills and knowledge. Clinical evaluation competencies will assess communication skills and professionalism in the clinic.

RSTE 314S. Diagnostic Film Review I (2 cr)
This course is designed to give the student an understanding of normal and pathologic conditions and how they are viewed by Ultrasound. Course materials will consist of teaching file cases from the Ultrasound Section in the Department of Radiology. The class will consist of two (2) weekly lecture sessions. Each Monday, a student will present a “case of the week” from the cases they have seen during the previous week’s Clinical Rotation. This brief presentation (approximately 10 minutes) will include pertinent facts on patient history, lab values, previous imaging studies, and sonographic findings. The remainder of the class session will be presented by the faculty and will consist of the students reviewing ultrasound cases with faculty guidance to make the correct differential diagnosis.

RSTE 331S. Obstetrical Conference I (1 cr)
This course is designed to give the student the opportunity and responsibility to investigate basic topics in normal obstetrical and gynecological ultrasound. The course will consist of weekly presentations by the students on an assigned topic. Two students will give presentations each week. The topics to be covered each week are listed in the course outline. The presentation should be brief (no longer than 10 minutes) and should include the following: facts about the topic, reasons why it is important in obstetrical ultrasound (this information can be found in the textbook reading), examples showing the ultrasound appearance (these may be found in the OB teaching file). The remainder of each class session will be presented by the faculty and will consist of current OB/GYN case material.

RSTE 332S. Gastrointestinal Ultrasound (3 cr)
This course is designed to provide the student with a working knowledge of gastrointestinal sonography. The student is provided with instruction in sectional anatomy, scanning techniques, physiology, and pathophysiology of the liver, gallbladder and biliary tract, pancreas, and spleen. Various instructional techniques are used to aid the student in the learning process. Each class consists of lectures and film presentations on the topics listed in the course syllabus. Scanning labs provide the student with hands-on experience in the equipment parameters and image acquisition techniques necessary to obtain appropriate sonographic images. The student is required to complete scanning technique assignments to apply classroom knowledge to film critique and interpretation. Exams are given to evaluate the student’s knowledge and progress.

RSTE 415S. Orientation to Diagnostic Medical Sonography (2 cr)
This course is designed to provide the sonography students the fundamental background and knowledge needed to begin
SAHP 418. Research Methodologies in Allied Health (2 cr)
This course is designed to provide the fundamental concepts of research methods in Allied Health Professions. The topics to be covered will include literature review, statistical analysis, analytical reading and writing, research and proposal design, protection of human/animal subjects, limitation and justification of the research question and also quality assurance and method selection.

SAHP 430. Scanning the Health Care Environment (1cr)
This course provides the health professions student with knowledge concerning the complex issues surrounding the economics of health care and health care delivery. Health care is changing rapidly and allied health professionals are affected by such changes in both their personal and professional lives. This course is designed to assist students in gaining an understanding of why change is occurring and identifying strategies to affect the changes to ensure that the patient is served. The topics to be covered include the economics of health care, the history of health care in the 20th century, federal involvement in health care, principles of insurance, elements of a health care plan, Medicare, Medicaid, restructuring, and health care reform. Students are expected to develop a healthcare plan and to write a paper on responding to the challenges of the uninsured.

RSTE 401S. Ultrasound Physics I (1 cr)
This course is designed to provide the student with basic information necessary to understand the principles of ultrasound physics as it applies to diagnostic imaging. Topics to be covered include sound parameters, interaction of sound with media, resolution, transducers, instrumentation, real-time imaging, and image storage and display. Concepts will focus on applicability in the clinical setting and preparation for the registry examination.

RSTE 402S. Applied Ultrasound Technology II (5 cr)
This clinical course is designed to provide the DMS student with a working knowledge of Diagnostic Medical Sonography. The student will participate in clinical ultrasound exams with emphasis on operating equipment, producing quality images, applying scanning techniques and protocols, identifying normal anatomy, and recognizing pathology. Scanning assignments will be used to assess application of technical skills and knowledge. Clinical evaluation competencies will assess communication skills and professionalism in the clinic.

RSTE 403S. Diagnostic Film Review II (2 cr)
This course is designed to give the student an understanding of normal and pathologic conditions and how they are viewed by Ultrasound. Course materials will consist of teaching file cases from the Ultrasound Section in the Department of Radiology. The class will consist of two (2) weekly lecture sessions. Each Monday, a student will present a “case of the week” from the cases they have seen during the previous week’s Clinical Rotation. This brief presentation (approximately 10 minutes) will include pertinent facts on patient history, lab values, previous imaging studies, and sonographic findings. The remainder of the class session will be presented by the faculty and will consist of the students reviewing ultrasound cases with faculty guidance to make the correct differential diagnosis.

RSTE 405S. Obstetrical Conference II (1 cr)
This course is designed to give the student the opportunity and responsibility to investigate common pathological changes as seen by ultrasound of the OB/GYN patient. The course will consist of weekly presentations by the students on an assigned topic. Two students will give presentations each week. The topics to be covered each week are listed in the course outline. The presentations should be brief (no longer than 10 minutes) and should include the following: facts about the topic, reasons why it is important in obstetrical ultrasound (this information can be found in the textbook reading), examples showing the ultrasound appearance (these may be found in the OB teaching file). The remainder of each class session will be presented by the faculty and will consist of current OB/GYN case material.

RSTE 407S. Advanced Obstetrical Ultrasound (2 cr)
This course is designed to give the student a working knowledge of obstetrics as it relates to ultrasound scanning. The student is instructed on fetal embryology, normal anatomy, gestational age assessment, anomalies of each organ system, uteroplacental anatomy and physiology, and maternal and fetal complications associated with pregnancy.

RSTE 408S. Gynecological Ultrasound (1 cr)
This course is designed to give the student a working knowledge of patient care preparation, normal female pelvic anatomy, reproductive physiology, gynecological pathology and scanning techniques. Clinical application of gynecological sonography will be emphasized in this course.

RSTE 409S. Genitourinary Ultrasound (1 cr)
This course is designed to give the student an understanding of anatomy, physiology and pathology of the genitourinary system. Clinical application of genitourinary Sonography will be emphasized in this course.
RSTE 419S. Professional Projects I (2 cr)
This course will allow the DMS student to conduct an in-depth investigation into the field of Diagnostic Medical Sonography. The student will research, identify and form a differential diagnosis for pathologic cases imaged by ultrasound. Written communication skills will be advanced through completion of a scientific paper and poster exhibit related to the field of sonography.

SAHP 431. Management in Health Care (2cr)
This course introduces allied health students and practitioners to the concept of organizational theory and behavior in health care. The topics to be covered include the principles of motivation, team building, leadership, management, organizational culture and individual responses to organizational cultures. In addition, some basic methods for planning and implementing organizational change will be discussed. The second half of the course will focus on applications of management principles to the health care setting in the areas of financial management, risk management, and the process of hiring, coaching, evaluating and dismissing employees. The basic concepts of continuous quality improvement and the application of several quality tools will be employed in the development of a quality improvement project proposal and the preparation of a resume for an entry-level professional allied health position in the student’s discipline.

RSTE 421S. Professional Projects II (1 cr)
This course is comprised of two components. The first component will consist of three oral case presentations, demonstrating integration of key facets of didactic and clinical education. This section fosters the student’s oral communication skills and enhances professional development and growth. The second component will consist of the student collaborating in the design and construction of a scientific poster exhibit relating to the field of ultrasound.

RSTE 451S. Ultrasound Physics II (1 cr)
This clinical course is designed to provide the student with an understanding of the fundamental principles of ultrasound physics and instrumentation. Topics to be covered include hemodynamics, Color Doppler, artifacts, quality assurance, and bioeffects. Concepts will focus on applicability in the clinical setting and preparation for the registry examination.

RSTE 452S. Applied Ultrasound Technology III (5 cr)
This clinical course is designed to provide the DMS student with a working knowledge of Diagnostic Medical Sonography. The student will participate in clinical ultrasound exams with increased emphasis placed on operating equipment, producing quality images, applying scanning techniques and protocols, recognizing ultrasound features and findings associated with various pathologies and providing differential diagnosis. Scanning assignments will be used to assess application of technical skills and knowledge. Clinical evaluation competencies will assess communication skills, professionalism, and cultural competency in the clinic.

RSTE 453S. Obstetrical Conference III (1 cr)
This course is designed to give the student the opportunity and responsibility to investigate advanced pathological changes as seen by ultrasound of the OB/GYN patient. The course will consist of weekly presentations by the students on an assigned topic. Two students will give presentations each week. The topics to be covered each week are listed in the course outline. The presentation should be brief (no longer than 10 minutes) and should include the following: facts about the topic, reasons why it is important in obstetrical ultrasound (this information can be found in the textbook reading), examples showing the ultrasound appearance (these may be found in the OB teaching file). The remainder of each class session will be presented by the faculty and will consist of current OB/GYN case material.

RSTE 454S. Diagnostic Film Review III (2 cr)
This course is designed to give the student an understanding of normal ultrasound findings and the ultrasound findings associated with various pathologies. Course materials will consist of teaching file cases from the Ultrasound Section in the Department of Radiology. A logical approach to analyzing ultrasound findings and developing meaningful differential diagnoses will be stressed. The class will consist of two (2) lectures each week. Each Monday, a student will present a “case of the week” from the cases they have seen during the previous week’s Clinical Rotation. This brief presentation (approximately 10 minutes) will include pertinent facts on patient history, lab values, previous imaging studies, and sonographic findings. The remainder of the class session will be presented by the faculty and will consist of the students reviewing ultrasound cases with faculty guidance to make the correct differential diagnosis.

RSTE 455S. High Resolution Sonography (1 cr)
This course is designed to provide the student with a working knowledge of the anatomy and pathology of the abdominal wall muscles, peritoneum, thyroid, testicles and breast.

RSTE 456S. Neurosonography (2 cr)
This course is designed to give the student a working knowledge of the embryologic development, anatomy, and physiology of the embryologic development, anatomy, and physiology of the CNS, CSF formation and circulation scheme, blood supply to the brain, scanning techniques, pathology of the neonatal brain and spine, and medical care of the neonate during scanning.
Nuclear Medicine Technology

Professors: Hankins (Medical Advisor), and Walker.
Instructors: Hess Smith (Program Director), Stevens (Clinical Educational Coordinator)

The field of medicine, which applies radionuclides in the diagnosis, treatment, and investigation of human disease is termed Nuclear Medicine. Health care delivery in this area of medicine is dependent upon the availability of the “Nuclear Medicine Team.” This “team” is composed of the physician specializing in nuclear medicine and allied health personnel in the area of Nuclear Medicine; as well as the basic scientists in the related fields of nuclear physics, radiologic health and safety, radiopharmacy and nuclear instrumentation.

Organization

The Nuclear Medicine Technology Program is established within the School of Allied Health Professions of the College of Medicine. It is one of four programs in the Division of Radiation Sciences Technology Education. The curriculum is accredited by the Committee on Allied Health Education and Accreditation, the Joint Review Committee on Educational Programs in Nuclear Medicine Technology, and approved by the State Department of Education and the Veterans Administration. Graduates are expected to become certified by national examination to practice in the United States or Canada, and to become involved in their professional organizations.

The Nuclear Medicine Technology Program is offered as a primary program for students with no radiography background, and a post-primary Advanced Program for students who have completed an accredited radiography program and have current ARRT certification.

Students who have completed this program will meet the prerequisite requirements needed to apply to the Diagnostic Medical Sonography program. Acceptance into this that program is not guaranteed. Students must follow the routine application and selection process for admission.

The program offers a Bachelor of Science in Radiation Sciences Technology.

Requirements for Admission

Candidates must be in good health, have graduated from an accredited high school, submit ACT or SAT examination scores, and have completed the college prerequisites as outlined in this bulletin. Students applying for the Advanced Nuclear Medicine Program must have current ARRT certification. Enrollment is limited and not all candidates are accepted.

Degree Requirements

1) Minimum college prerequisites: 35 semester hours prerequisites and 15 semester hours electives (electives are not required for students in the Advanced Program).

The following courses are required for all applicants:

- English Composition, 6 hours;
- College Algebra, Precalculus or Calculus, 6 hours;
- Statistics, 3 hours;
- Medical Terminology, 2 hours;
- Chemistry with Lab, 4 hours;
- Biology, or Anatomy and Physiology (Human or Vertebrate), 4 hours;
- General or College Physics, 4 hours;
- Communication, Speech, Creative or Expository Writing, 3 hours;
- Humanities or Social Sciences (Psychology, Sociology, Economics, History, Political Science, Religion, Philosophy, Anthropology, Art History), 6 hours.

2) Basic science courses must qualify for science majors.

NOTE: No grade lower than "C" will transfer to UNMC for credit.

3) Completion of the 21-month professional curriculum in nuclear medicine technology.

4) Alternately, students who have completed an accredited program in radiography and passed boards are eligible for a 12 month Advanced Program. A total of 60 semester hours of college credit can be granted for transfer from JRCERT radiography programs. Applicants must have completed the 35 hours of college prerequisites. Students will be eligible for the Bachelors in Radiation Science Technology after completion of the 12 month program in nuclear medicine.

Starting Date

Candidates who are accepted into the program are enrolled in August.

Applications

Application forms can be obtained from the website: www.unmc.edu/alliedhealth/rste. As indicated on the application form, the candidate must include an application fee, three reference forms, and official transcripts from the previously attended high school and colleges. All application materials must be received prior to the February 1 deadline preceding the date of expected enrollment. A personal interview with the admissions committee will be arranged for those candidates considered for admission.

Plan of Instruction

Following two years of college prerequisites, the program consists of 21 consecutive months of study. Students may then apply to take the certification examination of the Nuclear Medicine Technology Certification Board and/or the American Registry of Radiologic Technologists examination. The curriculum complies with the Essentials and Guidelines for an Accredited Educational Program for the Nuclear Medicine Technologists.

Nuclear Medicine Technology students are exposed to a gradual increase in clinical responsibility throughout the program. The emphasis at first is toward academic education with emphasis on principles and theory. As each student progresses, the emphasis shifts from classroom learning to clinical practical experiences.
The program combines basic science, nuclear medicine science and instrumentation, clinical nuclear medicine, patient care, nuclear pharmacy, management, research and many other vital skills in healthcare. The clinical education begins at The Nebraska Medical Center and then branches out into the community to hospitals, clinics and Cardinal Health Nuclear Pharmacy to provide a well rounded and diverse clinical education experience. Instructional contributions from a cross-section of departments at UNMC balance the educational assets of the program.

The Leon S. McGoogan Library of Medicine, a Regional Medical Library, has books and periodicals available for student research and study. In addition, a departmental library is also maintained for ready access to reference materials.

**Nuclear Medicine Technology Curriculum**

**Two-Year Program**

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<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tr>
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<td>CBA 452</td>
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<td>Human Physiology</td>
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<td>NRSG 250</td>
<td>Principles of Care of Hospitalized Patient</td>
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<td>SAHP 420</td>
<td>Computers in Health Care</td>
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<tr>
<td>RSTE 413N</td>
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<td>PHYS 253</td>
<td>Human Physiology II</td>
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<td>RSTE 308R</td>
<td>Intro to Radiation Science Technology</td>
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<tr>
<td>RSTE 310R</td>
<td>Gerontology for the Radiation Science Professional</td>
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<tr>
<td>NU 325</td>
<td>Pathophysiological Basis for Alterations in Health</td>
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<td>PHAR 470</td>
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<td>HPRO 410</td>
<td>Health Care Ethics</td>
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<td>RSTE 417N</td>
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<td>SAHP 430</td>
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<td>SAHP 418</td>
<td>Research Methodologies in Allied Health</td>
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<tr>
<td>RSTE 414R</td>
<td>Health Physics</td>
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<tr>
<td>RSTE 412N</td>
<td>Clinical Procedures &amp; Diagnosis I</td>
<td>3</td>
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<tr>
<td>RSTE 414N</td>
<td>Instrumentation I</td>
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<td>RSTE 415N</td>
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**Spring Semester**

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<tr>
<td>RSTE 305R</td>
<td>Special Projects</td>
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<td>RSTE 438N</td>
<td>Advanced Radiation Biology</td>
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<td>RSTE 422N</td>
<td>Clinical Procedures &amp; Diagnosis II</td>
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<tr>
<td>RSTE 423N</td>
<td>Instrumentation II</td>
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<td>RSTE 418N</td>
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Upon completion of the two-year professional component of the program, the student may apply to the Radiation Therapy Technology, CT/MRI, or Diagnostic Medical Sonography programs for an additional certification.

**One Year Program**

Students completing other allied health professional programs such as radiography or clinical laboratory science may complete the program in one year. A total of 60 semester hours of college credit will be granted to those students who have successfully completed another accredited radiography program and apply with advanced standing for the one-year program. These program transcripts will be examined for content qualifying for transfer. A typical one-year program may be as follows:

**Nuclear Medicine Technology Curriculum**

**One Year NMT Curriculum for Radiologic Technologists**

<table>
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<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tr>
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<tr>
<td>SAHP 430</td>
<td>Scanning the Health Care Environment</td>
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<tr>
<td>SAHP 418</td>
<td>Research Methodologies in Allied Health</td>
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<tr>
<td>RSTE 414R</td>
<td>Health Physics</td>
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<tr>
<td>RSTE 412N</td>
<td>Clinical Procedures &amp; Diagnosis I</td>
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<tr>
<td>RSTE 414N</td>
<td>Instrumentation I</td>
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<td>RSTE 415N</td>
<td>Radiopharmacy</td>
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<td>RSTE 421N</td>
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<td><strong>Electives:</strong></td>
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<td>RSTE 410R</td>
<td>CT/MRI Sectional Anatomy &amp; Path</td>
<td>2</td>
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<td><strong>Spring Semester</strong></td>
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<tr>
<td>SAHP 431</td>
<td>Management in Health Care</td>
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<td>RSTE 305R</td>
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<td>RSTE 423N</td>
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<td>RSTE 418N</td>
<td>Radiopharmacy II</td>
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<td>RSTE 424N</td>
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TOTAL = 75
**Summer Semester**

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**TOTAL = 44 - 46**

Advanced Standing Students may also be required to take the following:

- PHAR 270 Pharmacology 2 cr
- SAHP 420 Computers in Health Care (1cr. hr. min) 2 cr
- NRSG 325 Pathophysiological Basis for Alterations in Health 4 cr
- PSM 410 Health Care Ethics 2 cr

**Course Descriptions**

**RSTE 412N Clinical Procedures and Diagnosis I (3 cr)**

The clinical application of nuclear medicine techniques is the ultimate purpose of the educational program. This course will integrate the technological aspects of diagnosis by nuclear medicine with the diseases and pathophysiology being investigated. Current uses of radiopharmaceuticals for organ visualization and function with evaluation of results for diagnostic value. Emphasis placed on *in vivo* procedures.

**RSTE 414R. Health Physics (1 cr)**

Introduction to practices and techniques used in personnel monitoring, area monitoring, radiation surveys, storage operations, and radioactive waste disposal is presented. Applications of federal and other regulations and additional health physics activities for radiation sciences are emphasized.

**RSTE 413N. Introduction to Nuclear Medicine Technology (2 cr)**

An introduction to the broad spectrum of nuclear medicine procedures, instrumentation, regulatory issues, radiation safety and the hospital environment is presented to prepare the student for his/her role as a member of the allied health team.

**RSTE 414N. Instrumentation I (2 cr)**

This course consists of two clock hours of lecture per week with three hours of laboratory or demonstration per week. The course structure consists of physical principles of the atom, principles of radiation biology, health physics, and radiation detection instrumentation.

**RSTE 415N. Radiopharmacy I (1 cr)**

Special consideration is given to the theory and practice of compounding radiopharmaceuticals. Practical experience is gained during the clinical rotation at the nuclear pharmacy.

**RSTE 417N Nuclear Medicine Technology (2 cr)**

This course is a review and further study of RSTE 413N course topics and is designed to give students a basic understanding of imaging procedures in nuclear medicine technology, clinical applications as performed at The Nebraska Medical Center nuclear medicine department and a basic knowledge of nuclear medicine procedures as performed in other healthcare institutions' nuclear medicine departments. This course familiarizes students with standard protocol procedures and instrumentation methods, allows students to practice patient instruction, and to identify visualized anatomical structures on images.

**RSTE 418N Radiopharmacy II (1 cr)**

This course will be a continuation of material from NMT 415 Radiopharmacy I. Theory from this course will apply to the clinical rotation at the nuclear pharmacy. This course is required curriculum for nuclear medicine technologist education and course content will be included on national board examinations.

**RSTE 421N. Applied NMT I (4-12 cr)**

This instruction deals with individual patients in the clinical atmosphere to familiarize the student with the field of nuclear medicine and it’s ever growing demand in the diagnosis, treatment and management of sick patients.

**RSTE 422N Clinical Procedures and Diagnosis II (3 cr)**

Students apply techniques learned in earlier course work to more technically sophisticated procedures. In addition, *in vitro* procedures and therapeutic procedures are introduced as important aspects of all nuclear medicine laboratories. Continued study of applications of radiopharmaceuticals for diagnostic use.

**RSTE 423N Instrumentation II (2 cr)**

This course is a continuation into the study of nuclear medicine instrumentation and the physics that apply to operating and maintaining nuclear medicine equipment. Students will apply basic concepts identified in Instrumentation I to other types of radiation detectors used in the nuclear medicine laboratory. Computer acquisition and manipulation, statistical applications, and equipment quality control are the main points of emphasis.

**RSTE 424N. Applied NMT II (4-12 cr)**

This course sequentially builds upon the knowledge gained in the previous applied course. The student, under supervision, begins to progressively develop the skills required of a nuclear medicine technologist. Emphasis is given to the "whys" and "wherefores" behind the tests or studies being performed in order to form a solid background for later work.

**RSTE 425N Applied NMT III (4-12)**

This course is designed to give students understanding of imaging procedures in nuclear medicine technology as performed at The Nebraska Medical Center and other affiliated clinical sites. The student will be able to apply a basic knowledge of nuclear medicine during their clinical rotations. To prepare the students to create optimal diagnostic
images, this course familiarizes students with standard protocol procedures and instrumentation methods, allows students to practice patient instruction and interaction, and identify visualized anatomical structures on images. At this level, the student has mastered the procedures and is able to perform studies with very little supervision.

RSTE 438N. Advanced Radiation Biology (2 cr)
This course utilizes a qualitative and quantitative approach to study the effects of ionizing and non-ionizing radiation upon life systems with special emphasis upon the human population.

RSTE 444N. Student Teaching in Nuclear Medicine Technology (1 cr)
The practical application of teaching skills will be used by the student to instruct other radiation science technologists.

RSTE 308R. Intro to Radiation Science Technology (2 cr)
This course will provide an introduction and overview of diagnostic medical sonography, nuclear medicine technology, radiation therapy technology and radiography in a combined lecture, demonstration and clinical observation format.

RSTE 310R. Gerontology for the Radiation Science Professional (1 cr)
This course addresses the geriatric population, which is the fastest growing segment of our society today. The social, physiological, economical and environmental influences on the health status of the elderly will be addressed. Adapting procedural standards of the radiation science professional will be examined. The course will prepare the student for interaction with the geriatric population.

RSTE 402R. Basic Radiation Physics (3 cr)
Production characteristics and control of radiation as applicable to the Radiation Sciences are presented.

RSTE 464N Independent Study (1-2 cr)
Course Description:
This course is for the RSTE student who has need of special or additional study. Independent study is designed to provide options for study around the interests and needs of the individual student. The focus of study is chosen under the direction of a program faculty member.

CBA 452. Human Anatomy (5 cr)
Lectures, class recitations, demonstrations, and laboratory work dealing with the structure of the human body are presented. Preserved specimens and fresh animal specimens are used for study.

PHYS 252. Human Physiology (2 cr)
PHYS 253. Human Physiology (2 cr)
Studies of the physiologic functions of the human body are presented in these courses.

NRSG 250. Principles of Care of the Hospitalized Patient (1 cr)
This course introduces the basic concepts of patient care. Topics include ethical considerations, body mechanics, patient observation and physical examination, vital signs determinations, emergencies and their management, medical-surgical asepsis, management of the patient who receives oxygen, intravenous or nasogastric tube therapies, or has a urinary drainage system, and altering the patient's environment to prevent or control the spread of infection.

SAHP 418. Research Methodologies in Allied Health (2 cr)
This course is designed to provide the fundamental concepts of research methods in allied health professions. The topics to be covered will include literature review, statistical analysis, analytical reading and writing, research and proposal design, protection of human/animal subjects, limitation and justification of the research question, and also quality assurance and method selection. Students will design a research proposal on presented information.

SAHP 420. Computers in Health Care (2 cr)
The general goal of the course is to acquaint students with the existing and potential uses of computers in the health care field overall and in the field they are majoring in particular. Basic information and skills related to computers will be delivered through modules that review major computer applications and usage areas in medicine.

SAHP 430. Scanning the Health Care Environment (1 cr)
This course provides the health professions student with knowledge concerning the complex issues surrounding the economics of health care and health care delivery. Health care is changing rapidly and allied health professionals are affected by such changes in both their personal and professional lives. This course is designed to assist students in gaining an understanding of why change is occurring and identifying strategies to affect the changes to ensure that the patient is served. The topics to be covered include the economics of health care, the history of health care in the 20th century, federal involvement in health care, principles of insurance, elements of a health care plan, Medicare, Medicaid, restructuring, and health care reform. Students are expected to develop a healthcare plan and to write a paper on responding to the challenges of the uninsured.

SAHP 431. Management in Health Care (2 cr)
This course introduces allied health students and practitioners to the concept of organizational theory and behavior in health care. The topics to be covered include the principles of motivation, team building, leadership, management, organizational culture and individual responses to organizational cultures. In addition, some basic methods for planning and implementing organizational change will be discussed. The second half of the course will focus on applications of management principles to the health care setting in the areas of financial management, risk
management, and the process of hiring, coaching, evaluating and dismissing employees. The basic concepts of continuous quality improvement and the application of several quality tools will be employed in the development of a quality improvement project proposal and the preparation of a resume for an entry-level professional allied health position in the student’s discipline.

**NU 325. Pathophysiological Basis for Alterations in Health** (4 cr)

This course will focus on the pathophysiologic basis for alterations in health across the lifespan. Theories of disease causation will be explored. Acquired, immune, infectious, carcinogenic and genetic alterations in health into the body systems will be presented with an emphasis on etiology, cellular and systemic pathophysiologic responses and clinical manifestations. Interdisciplinary management will be introduced.

**PHAR 470. Pharmacology and Drug Therapy** (2 cr)

The primary goal of this course is to provide basic pharmacologic information that will impact an understanding of the action of drugs in the human organism, so that the student can apply this knowledge prior to, during, and after the judicious administration of drugs in the practice of nursing. Familiarity with the general pharmacologic actions of common classes of drugs will enable the nurse to be better able to evaluate expected therapeutic responses in patients, as well as to evaluate for possible adverse effects. The student will be introduced to basic pharmacology with an emphasis on how drugs interact in humans in ways that relate to nursing. This is accomplished through the utilization of the nursing process: assessment, intervention, and evaluation.

**HPRO 410. Health care ethics** (2 cr)

The purpose of this course is to introduce Allied Health Professionals to the ethical issues, which they are likely to encounter throughout their practice. The course will help to develop students’ critical thinking skills, written communication skills, and reading comprehension. The course introduces students to tools that will be helpful to them in approaching ethical dilemmas throughout the course of their career.
Radiation Therapy

Professor Enke (Medical Advisor); Associate Professor Temme; Assistant Professor Bartenhagen (Program Director), Instructor Koth.

The skilled Radiation Therapist is an essential member of the cancer treatment team. Radiation Therapists operate highly specialized and sophisticated equipment, which generate the type of radiation needed for the individual cancer patient. Radiation Therapists also play key roles in treatment planning, dosimetry, quality assurance, related patient care and education activities.

Organization

The Radiation Therapy Education Program at the University of Nebraska Medical Center is a 12-month component of the multi-credentialed Division of Radiation Science Technology Education. It is designed to instruct qualified students in the theory and techniques involved in the use of radiation for cancer treatment. Clinical experience is obtained at The Nebraska Medical Center, Alegent Immanuel Medical Center, Alegent Bergan Mercy Medical Center, Methodist Hospital, St. Elizabeth Regional Medical Center, and Creighton Medical Center. The students enrolled in the distance education option complete their clinical education at Regional West Medical Center in Scottsbluff, Nebraska. Students completing the program are eligible to write the American Registry of Radiologic Technologists examination for certification. The radiation therapy program curriculum follows the recommendations of the American Society of Radiologic Technologists and all courses apply toward the Bachelor of Science degree in Radiation Science Technology offered by UNMC. The Joint Review Committee on Education in Radiologic Technology (JRCERT) accredits the program.

Requirements for Admission

1. High School Diploma or equivalent
2. Completion of 35 semester hours of college prerequisites
3. Completion of JRCERT accredited Radiography program and ARRT certification in the profession
4. Submission of UNMC application with all grade transcripts and three references
5. Personal interview for selected applicants
6. Submission of disclosure statement / background check

Degree Requirements

1) Minimum college prerequisites (35 semester hours) consist of the following: English Composition, 6 hours; Algebra or higher level math course, 3 hours; Statistics, 3 hours; Communications, 3 hours; Medical Terminology, 2 hours; Humanities or Social Sciences (Psychology & Sociology are recommended), 6 hours; Chemistry with lab, 4 hours; Human Anatomy & Physiology, 4 hours; Physics, 4 hours. English electives may be substituted if proficiency is established by examination.

NOTE: College prerequisites are subject to change.

Applicants should contact the program for verification of current course requirements for admission. No grade lower than "C-" will transfer to UNMC for credit.

2) Completion of JRCERT accredited program in Radiography and current ARRT certification in the profession. A maximum total of 60 semester hours will be granted for transfer to students admitted with advanced standing who have completed an accredited Radiography program. Transcripts/course descriptions are evaluated on a case by case basis for academic rigor and equivalency to UNMC courses.

3) Completion of the UNMC professional Radiation Therapy program curriculum.

4) A minimum total of 120 semester credit hours is required for the Bachelor of Science in Radiation Sciences Technology.

Applications

Application forms may be obtained on-line at http://net.unmc.edu/apply/radsci.asp. As indicated on the application form, the candidate must also include an application fee, three reference forms, a disclosure statement, and official transcripts from previously attended high school and colleges. All application materials must be received no later than February 1st of the year of expected enrollment. A personal interview with the Admissions Committee will be arranged for those candidates considered for admission.

Contact: Lisa Bartenhagen, MS,R.T.(R)(T)
Program Director
Radiation Therapy Program
University of Nebraska Medical Center
984545 Nebraska Medical Center
Omaha, NE 68198-4545
Phone: (402) 559-4236
FAX: (402) 559-2181
e-mail: labarten@unmc.edu
www.unmc.edu/alliedhealth/rste

Starting Date

Candidates who are accepted into the program are enrolled in late August.

Plan of Instruction

Students in the program receive all of their didactic education at UNMC. Distance education is accomplished through on-line instruction and use of IP video technology. The initial portion of the program is primarily academic with limited clinical involvement. As the program progresses, clinical experience is increased with the final clinical component demanding advanced responsibilities in all phases of the clinical environment.

The program complies with the Standards for an Accredited Educational Program in the Radiologic Sciences (JRCERT).

Evaluation

All accepted candidates are admitted on a probationary basis during the first three months of the program.
Throughout the year the faculty and staff evaluate the students' academic performance and clinical competency. Students are invited to evaluate faculty, courses and the program.

## Curriculum

### Fall Semester

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>RSTE 323T</td>
<td>Treatment Planning I</td>
<td>3</td>
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<tr>
<td>RSTE 424T</td>
<td>Clinical Oncology I</td>
<td>2</td>
</tr>
<tr>
<td>RSTE 336T</td>
<td>Applied Radiation Therapy I</td>
<td>3</td>
</tr>
<tr>
<td>RSTE 414T</td>
<td>Sectional Anatomy &amp; Pathology I</td>
<td>2</td>
</tr>
<tr>
<td>RSTE 470T</td>
<td>Pt. Caregiving in Rad Onc I</td>
<td>1</td>
</tr>
<tr>
<td>RSTE 408T</td>
<td>Radiation Therapy Physics</td>
<td>2</td>
</tr>
<tr>
<td>SAHP 430</td>
<td>Scanning the Healthcare Environment</td>
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<tr>
<td>SAHP 418</td>
<td>Research Methods in Allied Health</td>
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**TOTAL 16**

### Spring Semester

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<tr>
<td>RSTE 439T</td>
<td>Applied Radiation Therapy Tech II</td>
<td>3</td>
</tr>
<tr>
<td>RSTE 438N</td>
<td>Advanced Radiation Biology</td>
<td>2</td>
</tr>
<tr>
<td>RSTE 415T</td>
<td>Sectional Anatomy &amp; Pathology II</td>
<td>2</td>
</tr>
<tr>
<td>RSTE 425T</td>
<td>Clinical Oncology II</td>
<td>2</td>
</tr>
<tr>
<td>RSTE 471T</td>
<td>Pt. Caregiving in Rad Onc II</td>
<td>1</td>
</tr>
<tr>
<td>SAHP 431</td>
<td>Management in Health Care</td>
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**TOTAL 15**

### Summer Session

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<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>RSTE 440T</td>
<td>Quality Management in Radiation Oncology</td>
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<tr>
<td>RSTE 442T</td>
<td>Professional Projects</td>
<td>3</td>
</tr>
<tr>
<td>RSTE 443T</td>
<td>Applied Radiation Therapy Tech III</td>
<td>6</td>
</tr>
<tr>
<td>RSTE 445T</td>
<td>Comprehensive Seminar and Board Review</td>
<td>2</td>
</tr>
</tbody>
</table>

**TOTAL 12**

The curriculum for the distance education option is delivered over a 24-month period to accommodate the needs of western Nebraska.

## Course Descriptions

### RSTE 323T. Treatment Planning I (3 cr)

This course presents the general principles, aims, goals, modalities and techniques of radiotherapy. Therapeutic equipment used in radiation therapy and dose calculations are included. The ASRT Professional Curriculum and JRCERT accreditation guidelines are discussed. Instruction in ethics for the radiation therapist is reinforced and oral and written communication skills are developed with the writing and presentation of a literature review pertaining to radiation oncology. A seminar series including cultural competency is also provided.

### RSTE 429T. Treatment Planning II (3 cr)

This course covers concepts of clinical dosimetry, brachytherapy and treatment planning. Included are isodose summation, construction and calculations. The importance of lifelong learning is addressed with the construction and presentation of an educational exhibit incorporating radiation therapy’s role in cancer care. A seminar series emphasizing professionalism and leadership is also provided.

### RSTE 336T. Applied Radiation Therapy I (3 cr)

These courses present the general principles, aims and detailed techniques of proper application of ionizing radiation to the human body. The etiology, diagnosis and treatment of malignancies are addressed. Recognition of the invasive and metastatic patterns for various tumors, staging, and grading procedures and their roles in determining prognosis is stressed. Histologies and neoplastic pathology content is integrated in the course content.

### RSTE 408T. Radiation Therapy Physics (2 cr)

This course builds upon the radiation physics knowledge and understanding acquired in diagnostic radiographic and nuclear medicine technology program curricula. The content is intended to provide understanding of the application of radiation
SAHP 430. Scanning the Healthcare Environment
(1 cr)
This course provides the health professions student with knowledge concerning the complex issues surrounding the economics of health care and health care delivery. Health care is changing rapidly and allied health professionals are affected by such changes in both their personal and professional lives. This course is designed to assist students in gaining an understanding of why change is occurring and identifying strategies to affect the changes to ensure that the patient is served. The topics to be covered include the economics of health care, the history of health care in the 20th century, federal involvement in health care, principles of insurance, elements of a health care plan, medicare, medicaid, restructuring, and health care reform. Students are expected to develop a healthcare plan and to write a paper on responding to the challenge of the uninsured.

SAHP 418. Research Methodologies in Allied Health (2 cr)
This course is designed to provide the fundamental concepts of research methods in allied health professions. The topics include literature review, statistical analysis, analytical reading and writing, research and proposal design, protection of human/animal subjects, limitation and justification of the research question and also quality assurance and method selection. Students will design a research proposal on presented information.

RSTE 438N. Advanced Radiation Biology (2 cr)
This course utilizes a qualitative and quantitative approach to study the effects of ionizing and non-ionizing radiation upon life systems with special emphasis upon man. The radiobiological effects of various types of radiation are compared and contrasted.

SAHP 431. Management in Health Care (2 cr)
This course introduces allied health students and practitioners to the concept of organizational theory and behavior in health care. The topics to be covered include the principles of motivation, team building, leadership, management, organizational culture and individual responses to organizational cultures. In addition, some basic methods for planning and implementing organizational change will be discussed. The second half of the course will focus on applications of management principles to the health care setting in the areas of financial management, risk management, and the process of hiring, coaching, evaluating and dismissing employees. The basic concepts of continuous quality improvement and the application of several quality tools will be employed in the development of a quality improvement project proposal and the preparation of a resume for an entry-level professional allied health position in the student’s discipline.

RSTE 440T. Quality Management in Radiation Oncology (1 cr)
This course addresses the aspects of quality management in radiation oncology. Concepts and applications of Continuous Quality Improvement (CQI), quality control and quality assurance procedures are included. The AAPM recommendations for equipment using ionizing radiation are discussed and quality control procedures are demonstrated in the clinical setting.

RSTE 442T. Professional Projects (3 cr)
This course will emphasize the dosimetry and treatment planning aspects of the radiation therapy profession. Completion of the dosimetry workbook documents experiences and learning in dosimetry and physics. The second component of this course requires the student to investigate a clinical case demonstrated during their clinical experience and expand on the information to develop a well written case study which will then be presented to their peers. This will allow the radiation therapy student to facilitate analytical and critical thinking skills, apply their written and oral communication skills and foster professional development and growth. Professional development will also be addressed by the completion of two Bioterrorism & Public Health Emergency modules sponsored by the University of Nebraska Medical Center. The final component of this course will be for the student to investigate the billing/coding and insurance aspects of treatment delivery in order to gain a better understanding and appreciation for the profession.

RSTE 443T. Applied Radiation Therapy III (6 cr)
This clinical course is designed to provide the Radiation Therapy student with a working knowledge of Radiation Therapy. It will provide the student the opportunity to apply academic & clinical skills previously learned with minimal instruction, while maintaining direct supervision and assistance. The student will participate clinically with the theory and operation of linear accelerators, simulators and treatment planning equipment with increased levels of responsibility. Professionalism, assessment and care of the cancer patient is also emphasized. Assignments/rotations for this course will be a continuation of Applied Radiation Therapy II.

RSTE 445T. Comprehensive Seminar and Board Review (2 cr)
This course is a comprehensive review of didactic learning material presented in the professional radiation therapy curriculum completed thus far in the student’s educational process. It will assist the therapy student in a way to
demonstrate an overall understanding of the knowledge and skills needed to be a successful, competent radiation therapist. One component of this course will review content categories including: Radiation protection and quality assurance; Treatment planning and delivery; and Patient care, management and education.
Radiography

Assistant Professors Mitchell (Program Director), Jones (Clinical Coordinator); Associate Professor Temme (Associate Director); Professor Moore (Medical Advisor RSTE Division); Instructor Stevens.

As a member of the allied health professions, the Radiographer assists the radiologist in gathering precise patient information for the diagnosis of disease and injury. The patient and the medical professional rely on the mature judgment, knowledge and skill of the radiographer to operate complex equipment safely and efficiently. To acquire specific expertise, the radiographer must have a firm foundation in physics and the biological sciences, as well as in the professional and technical disciplines related to radiologic sciences. Equally important to these educational requirements, is the sincere desire to learn and an interest in helping others.

The Radiographer works with other members of the medical team in emergencies, surgery and special radiographic procedures. Graduates will find employment opportunities in hospitals, clinics and other health care facilities. The technologist may choose to work as a Department Administrator, Educator, Quality Control Technologist or Company representative.

Imaging specialties found within the radiography profession include: Mammography, Surgical Radiography, Computed Tomography, Cardiovascular Interventional Technology, Bone Densitometry, and Magnetic Resonance Imaging.

Organization

The Division of Radiation Sciences Technology Education (RSTE) is part of the School of Allied Health Professions of the College of Medicine. In addition to Radiography, the Division offers six other programs: Radiation Therapy, Diagnostic Medical Sonography (Ultrasound) Nuclear Medicine Technology, Computed Tomography/Magnetic Resonance Imaging (CT/MRI), Cardiovascular Interventional Technology (CVIT), and the RT to BSRT Degree Completion Program. Students must follow routine application selection process for admission. The program offers a Bachelor of Science in Radiation Science Technology.

Requirements for Admission

Candidates must have graduated from an accredited high school, submit ACT or SAT examination scores, and have completed the college prerequisites/corequisites as outlined in this bulletin.

Minimum college prerequisites: 35 semester hours of prerequisites and 15 semester hours of electives to total 50 hours. The following courses are required: English Composition, 6 hours; (English electives may be substituted if proficiency is established by examination): College Algebra, Pre-calculus, or Calculus, 3 hours; Chemistry with Lab, 4 hours; Biology, Zoology, Anatomy and Physiology (Human or Vertebrate), 4 hours; General Physics, 4 hours; Communication, Speech or Expository Writing, 3 hours; Humanities or Social Sciences (Psychology, Sociology, Economics, History, Political Science, Religion, Philosophy, Anthropology, Art-History), 6 hours; Medical Terminology, 2 hours; and Statistics, 3 hours. Basic science courses must qualify for science majors.

NOTE: No grade lower than “C” will transfer to UNMC for credit.

Degree Requirements

Minimum of 120 semester credit hours:
- 35 semester hours prerequisites
- 15 semester hours electives
- 72-75 hours of professional radiography curriculum at UNMC

Starting Date

Candidates who are accepted into the program are enrolled in August.

Applications

Application forms may be obtained from the RSTE website www.unmc.edu/alliedhealth/rste. As indicated on the application form, the candidate must include an application fee, three reference forms, and official transcripts from the previously attended high school and colleges, and submit ACT or SAT examination scores. All application materials must be received prior to the February 1st deadline preceding the date of expected enrollment. A personal interview with the Admissions Committee will be arranged for those candidates considered for admission.

Plan of Instruction

Following college prerequisites, the program consists of 21 months of study. Students are eligible to graduate and may apply to sit for the American Registry of Radiologic Technology certification examination at the end of the second year. The curriculum complies with the Standards for an Accredited Education Program for the Radiographer as outlined by the Joint Review Committee on Education in Radiologic Technology (JRCERT). The program is accredited by the JRCERT.

The course of study consists of lectures, demonstrations, laboratory, and supervised clinical experience. When not in class, the student is supervised by the staff radiographers in the performance of various types of Radiologic procedures. Gradually increasing responsibilities are assigned to students as their competence increases. The student participates in all imaging activities by scheduled rotations through appropriate sections of the Department of Radiology. In addition, students may participate in a 1-2 week clinical assignment in a rural community hospital as part of the Rural Health Education Network opportunities offered at UNMC.

The curriculum includes the following courses:
### First Year
#### Fall Semester
<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>RSTE 312R</td>
<td>Radiographic Technology ........................</td>
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<tr>
<td>RSTE 315R</td>
<td>Applied Radiographic Technology ..........</td>
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<td>NRSG 250</td>
<td>Principles of Care -Hospitalized Patient..</td>
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<tr>
<td>CBA 452</td>
<td>Anatomy ..........................................</td>
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<td>PHYS 252</td>
<td>Physiology ........................................</td>
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<tr>
<td>SAHP 420</td>
<td>Computers in Health Care ....................</td>
<td>2</td>
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<tr>
<td>RSTE 402R</td>
<td>Intro to Radiation Physics .................</td>
<td>3</td>
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#### Spring Semester
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<tr>
<td>RSTE 313R</td>
<td>Radiographic Technology II .............</td>
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<tr>
<td>PHYS 253</td>
<td>Physiology .....................................</td>
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<td>RSTE 308R</td>
<td>Intro to Radiation Science Technology ..</td>
<td>2</td>
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<tr>
<td>RSTE 316R</td>
<td>Applied Radiographic Technology II ..</td>
<td>4 (3 or 4)</td>
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<td>RSTE 310R</td>
<td>Gerontology for the Radiation Science Professional</td>
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#### Summer Session
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<td>RSTE 323R</td>
<td>Applied Radiographic Technology III ...</td>
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<td>RSTE 324R</td>
<td>Applied Radiographic Technology IV ...</td>
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<td>CLS 300</td>
<td>Basic Lab Methods for Allied Health Professionals</td>
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<td>SAHP 411</td>
<td>Critical Thinking ................................</td>
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<td>SAHP 415</td>
<td>Communication &amp; Cultural Competency ..</td>
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#### Second Year
#### Fall Semester
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<tr>
<td>RSTE 413R</td>
<td>Radiologic Contrast Agents ............</td>
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<tr>
<td>RSTE 414R</td>
<td>Health Physics ............................</td>
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<td>PHAR 470</td>
<td>Pharmacology ...................................</td>
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<td>RSTE 404R</td>
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<td>NU 325</td>
<td>Pathophysiology ................................</td>
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<td>SAHP 418</td>
<td>Research Methods in Allied Health ...</td>
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<td>SAHP 430</td>
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#### Spring Semester
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<td>SAHP 431</td>
<td>Management in Health Care ..............</td>
<td>2</td>
</tr>
<tr>
<td>RSTE 408R</td>
<td>Applied Radiographic Technology VI ..</td>
<td>4 (4 or 6)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>14</strong></td>
</tr>
</tbody>
</table>

**TOTAL CORE PROGRAM HOURS** 75

### Additional Options
Upon completion of the Radiography curriculum, the student may apply to one of the post-primary certification programs (Diagnostic Medical Sonography, Radiation Therapy, CT/MRI, Cardiovascular Interventional Technology), or apply to do an additional year in Nuclear Medicine.

### ADVANCED COMPONENT OPTIONS

#### COMPUTED TOMOGRAPHY/MAGNETIC RESONANCE IMAGING (CT/MRI)

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>RSTE 431R</td>
<td>Senior Magnetic Resonance Imaging ...</td>
<td>4</td>
</tr>
<tr>
<td>RSTE 433R</td>
<td>Senior Computerized Tomography .......</td>
<td>4</td>
</tr>
<tr>
<td>RSTE 420R</td>
<td>MRI Physics and Systems ..................</td>
<td>2</td>
</tr>
<tr>
<td>SAHP 430</td>
<td>Scanning the Health Care Environment ..</td>
<td>1</td>
</tr>
<tr>
<td>SAHP 431</td>
<td>Management in Health Care ..............</td>
<td>2</td>
</tr>
<tr>
<td>SAHP 433</td>
<td>Health Care Management Project ........</td>
<td>1</td>
</tr>
<tr>
<td>RSTE 442R</td>
<td>Student Teaching .............................</td>
<td>1</td>
</tr>
<tr>
<td>RSTE 410R</td>
<td>CT/MRI Anatomy and Pathology ..........</td>
<td>4</td>
</tr>
<tr>
<td>RSTE 411R</td>
<td>CT/MRI Anatomy and Pathology ..........</td>
<td>4</td>
</tr>
<tr>
<td>RSTE 438N</td>
<td>Advanced Rad Biology ....................</td>
<td>2</td>
</tr>
<tr>
<td>RSTE 423R</td>
<td>CT Physics and Systems ..................</td>
<td>1</td>
</tr>
<tr>
<td>RSTE 428R</td>
<td>CT Physics and Systems .................</td>
<td>1</td>
</tr>
<tr>
<td>RSTE 421R</td>
<td>CT/MRI Exam Protocols &amp; Positioning ...</td>
<td>2</td>
</tr>
<tr>
<td>RSTE 422R</td>
<td>CT/MRI Exam Protocols &amp; Positioning ...</td>
<td>2</td>
</tr>
<tr>
<td>RSTE 413R</td>
<td>Radiologic Contrast Agents ............</td>
<td>1</td>
</tr>
<tr>
<td>RSTE 436R</td>
<td>CT/MRI Clinical Internship .............</td>
<td>6</td>
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<tr>
<td>SAHP 418</td>
<td>Research Methodologies ..................</td>
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<td><strong>TOTAL</strong></td>
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</table>

#### CARDIOVASCULAR-INTERVENTIONAL TECHNOLOGY (CVIT)

#### Fall Semester
<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHAR 470</td>
<td>Pharmacology ..................................</td>
<td>2</td>
</tr>
<tr>
<td>SAHP 418</td>
<td>Research Methodologies ..................</td>
<td>2</td>
</tr>
<tr>
<td>RSTE 410R</td>
<td>CT/MRI Anatomy and Pathology ..........</td>
<td>4</td>
</tr>
<tr>
<td>RSTE 413R</td>
<td>Radiologic Contrast Agents ............</td>
<td>1</td>
</tr>
<tr>
<td>SAHP 430</td>
<td>Scanning the Health Care Environment ..</td>
<td>1</td>
</tr>
<tr>
<td>RSTE 470R</td>
<td>Cardiovascular-Interventional Tech ....</td>
<td>2</td>
</tr>
<tr>
<td>RSTE 473R</td>
<td>Applied Cardiovascular Interventional Technology I ..</td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

* Courses available to UNMC Radiography students through an articulation with Greenville Technical College, Greenville, South Carolina.
** Courses available to UNMC Radiography students through an articulation with Central Community College in Nebraska.
### Spring Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>SAHP 431</td>
<td>Management in Health Care</td>
<td>2</td>
</tr>
<tr>
<td>RSTE 411R</td>
<td>CT/MRI Anatomy and Pathology II</td>
<td>4</td>
</tr>
<tr>
<td>RSTE 438N</td>
<td>Advanced Rad Biology</td>
<td>2</td>
</tr>
<tr>
<td>RSTE 471R</td>
<td>Cardiovascular-Interventional Tech II</td>
<td>2</td>
</tr>
<tr>
<td>RSTE 474R</td>
<td>Applied Cardiovascular Interventional Technology II</td>
<td>4</td>
</tr>
<tr>
<td>RSTE 442R</td>
<td>Student Teaching</td>
<td>1</td>
</tr>
<tr>
<td>RSTE 464N</td>
<td>Independent Study</td>
<td>1-2</td>
</tr>
<tr>
<td>TOTAL</td>
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<td>16-17</td>
</tr>
</tbody>
</table>

Radiography students are provided with a seminar their first year in the program to address Professionalism.

### Course Descriptions

**CBA 452. Anatomy (5 cr)**

Lectures, class recitations, demonstrations and laboratory work dealing with the structure of the human body. Preserved specimens and fresh animal specimen are used for study.

**CLS 300. Basic Lab Methods for Allied Health Professionals (1 cr)**

This course introduces the theory and techniques essential for the proper collection and testing of laboratory specimens. An overview of the commonly utilized laboratory test procedures for hematology, urinalysis, chemistry and microbiology will be covered. Components of phlebotomy, clinical laboratory structure and function, quality control, preventive maintenance, safety, specimen integrity, documentation/panic values, CLIA>88 regulations, proficiency testing, and competency assessment will also be covered.

**HPRO 410. Health Care Ethics (2 cr)**

This course will introduce Allied Health students to the ethical issues they are likely to encounter while working in health care. Topics covered include informed consent, confidentiality, paternalism, respect for autonomy, end of life care, etc. This course is web-based, with students meeting in person monthly for small group discussions led by departmental faculty. All lectures, assignments, and case discussions will proceed online. Students may take a basic 1-credit hour version of the course, a more detailed 2-hour version, or the more advanced 3-hour version.

**NRSG 250. Principles of Care of the Hospitalized Patient (1 cr)**

This course introduces the basic concepts of patient care. Topics include ethical considerations, patient and family communication, body mechanics, patient observation and physical examination, vital signs determination, emergencies and their management, medical-surgical asepsis, management of the patient who receives oxygen, intravenous or nasogastric tube therapies or has a urinary drainage system, and altering the patient's environment to prevent or control the spread of infection.

**NU 325. Pathophysiology (4 cr)**

The course will focus on the pathophysiologic basis for alterations in health across the life span. Theories of disease causation will be explored. Acquired, immune, infectious, carcinogenic and genetic alterations in health in the body systems will be presented with an emphasis on etiology, cellular and systemic pathophysiologic responses and clinical manifestations. Radiographic pathology will be included. Interdisciplinary management will be introduced.

**PHAR 470. Pharmacology (2 cr)**

The primary goal of this course is to provide basic pharmacologic information that will impart an understanding of the action of drugs on the human organism, so that the nursing student can apply this knowledge prior to, during, and after the judicious administration of drugs in the practice of nursing. Familiarity with the general pharmacologic actions of common classes of drugs will enable the nurse to be better able to evaluate expected therapeutic responses in patients, as well as to evaluate for possible adverse effects. The student will be introduced to basic pharmacology with an emphasis on how drugs act in humans in ways that relate to nursing. This is accomplished through utilization of the nursing process: assessment, intervention and evaluation.

**PHYS 252. Physiology (2 cr)**

This course is a study of the function of the circulatory and nervous systems.

**PHYS 253. Physiology (2 cr)**

This course is a continuation of 252 and studies the function of the respiratory, excretory, endocrine, digestive and reproductive systems.

**RSTE 305R. Special Project (2 cr)**

This is an independent study assignment designed to give the student the opportunity to develop and present a research paper and project on selected special topics in Radiologic Technology. The project is entered for competition at state and national level, building on the student’s leadership skills.

**RSTE 308R. Introduction to Radiation Science Technology (2 cr)**

This course will provide an introduction and overview of Diagnostic Medical Sonography, Nuclear Medicine, Radiation Therapy Technology, CT/MRI, CVIT, and Radiography in a combined lecture, demonstration and clinical observation format.

**RSTE 310R. Gerontology for the Radiation Science Professional (1 cr)**

This course addresses the geriatric population, which is
the fastest growing segment of our society today. The content will include literature reviews, patient care skills, communication skills, empathy and compassion. It will address the effects of aging and disease conditions on various organ systems of the body. The social, cultural, physiological, economical and environmental influences on the health status of the elderly will be covered. Adapting procedural standards of the radiation science professional will be examined. The course will prepare the student for interaction with the geriatric population.

RSTE 312R. Radiographic Technology I (4 cr)

Lectures, demonstrations and laboratory work of anatomical positioning of the more common radiographic examinations are introduced. Principles of radiographic exposure are presented with emphasis on technique factors and theory. Image formation is discussed to include radiographic film processing. Basic application of radiography is applied in the clinical setting. Course includes an introduction into the field of radiography.

The course will include lectures, demonstrations and laboratory work of anatomical positioning of the human body. Presentations are given by Radiologists in regard to general Radiologic pathology. Basic application of the theory and laboratory is applied in the clinical setting. This course also introduces basic operation of radiographic equipment and application of Quality Control procedures.

RSTE 313R. Radiographic Technology II (4 cr)

The purpose of this course is to prepare the student in the more advanced levels of Diagnostic Radiography. This course includes four units of instruction: I. didactic instruction of radiographic positioning, II. practice laboratory and demonstration, and III. case study film critique presentations by students. The didactic and laboratory positioning units will provide the student with the knowledge and skills to perform a number of radiographic procedures. Students will present case studies on selected radiographic exams in the film critique unit. There will be lectures covering GI and GU procedures.

RSTE 315R. Applied Radiographic Technology I (2 cr)

This clinical course is intended to initiate participation of the Radiography student into the patient care clinical setting. Clinical application of the clinical education setting is competency based and will provide the student with the experience and confidence needed to assist and perform radiographic procedures parallel to their didactic education. The clinical environment gives the student an opportunity to demonstrate their communication, critical thinking, and decision making skills.

RSTE 316R. Applied Radiographic Technology II (4 cr)

This clinical course is intended to initiate participation of the Radiography student in patient care and routine radiographic imaging procedures. This clinical education experience is competency-based and will provide the student with the confidence needed to assist and perform radiographic procedures that parallel progress in their didactic education. The clinical environment gives the student an opportunity to demonstrate their communication, critical thinking, and decision making skills. Students start having clinical assignments in the early evenings and weekends. These rotations are limited and dispersed throughout the remaining curriculum.

RSTE 323R. Applied Radiographic Technology III (5 cr)

This clinical course is intended to initiate participation of the Radiography student in patient care and routine radiographic imaging procedures. The clinical environment gives the student an opportunity to demonstrate their communication, critical thinking, and decision making skills. Students start having clinical assignments in the early evenings and weekends. These rotations are limited and dispersed throughout the remaining curriculum.

RSTE 324R. Applied Radiographic Technology IV (5 cr)

This clinical course is intended to initiate participation of the Radiography student in patient care and routine radiographic imaging procedures. The clinical environment gives the student an opportunity to demonstrate their communication, critical thinking, and decision making skills.

RSTE 350R. Radiographic Pathology (2 cr)

Common pathologic conditions will be presented along with the radiographic findings. This course will be based on a systematic approach to the diseases involving a specific organ system.

RSTE 402R. Introduction to Radiological Physics (3 cr)

Production, characteristics and control of radiation as applicable to radiographic techniques and radiation sciences are presented. Radiation production as it relates to imaging equipment is presented.

RSTE 404R. Applied Radiographic Technology V (4 cr)

This clinical course is a continuation of skills learned previously in Applied Radiographic Technology I through IV. It is intended to initiate participation of the Radiography student with the experience and confidence needed to competently perform diagnostic radiographic imaging procedures. Clinical participation includes assisting or performing radiographic procedures under the direct or indirect supervision of a registered technologist. Students will have clinical assignments in all post-primary certification areas with mammography and bone densitometry as optional. The clinical environment gives the student an opportunity to demonstrate their communication, critical thinking, and decision making skills.
RSTE 407R. Radiographic Imaging Seminars (2 cr)
This course is comprised of a comprehensive review of didactic learning material presented in the professional radiography program curriculum. Review encompasses radiation protection, equipment operation and maintenance, image production and evaluation, radiographic procedures to include anatomy, positioning, procedures and pathology, and patient care and management.

RSTE 408R. Applied Radiographic Technology VI (4 cr)
This clinical course is a continuation of skills learned previously in Applied Radiographic Technology I through V. It is intended to initiate participation of the Radiography student with the experience and confidence needed to competently perform diagnostic radiographic imaging procedures. Clinical participation includes assisting or performing radiographic procedures under the direct or indirect supervision of a registered technologist. Students will complete a Bone Reading Room Rotation. The clinical environment gives the student an opportunity to demonstrate their communication, critical thinking, and decision making skills.

RSTE 410R. CT/MRI Anatomy and Pathology I (4 cr)
Sectional Anatomy, Pathology, and Physiology as it relates to CT/MRI images will be covered. Basic terminology, instrumentation and safety of CT and MRI will be included. This is the first semester of a two-semester course.

RSTE 411R. CT/MRI Anatomy and Pathology II (4 cr)
This is a continuation of Sectional Anatomy, Pathology and Physiology as it relates to CT/MRI imaging.

RSTE 413R. Radiologic Contrast Agents (1 cr)
This course presents the physical principles of contrast media related to imaging, the physical and chemical properties of contrast media solutions, the pharmacokinetics of contrast media, physiologic actions of contrast media, contrast-related nephrotoxicity, mechanisms of contrast media reactions, and the economic and legal issues involving contrast media.

RSTE 414R. Health Physics (1 cr)
Introduction to practices and techniques used in personnel monitoring, area monitoring, radiation surveys, storage operations and radioactive waste disposal is presented. Applications of federal and other regulations and additional health physics activities for radiation sciences are emphasized. Professional ethics is discussed due to risk versus benefit in the administration of ionizing radiation.

RSTE 420R. CT/MRI Physics and Systems (2 cr)
This course will provide a comprehensive overview of the physics and basic theory of operation of computed Tomography and magnetic resonance imaging systems. This introductory course is intended for radiation science students as well as medical students and Radiology residents.

RSTE 421R. CT/MRI Exam Protocols and Positioning I (2 cr)
This course will include both lecture/demonstration of proper CT/MRI patient preparation, patient positioning, and technical knowledge. Technical parameters will include neuro imaging of the brain and spine; body imaging of the chest, abdomen, pelvis, and neck.

RSTE 422R. CT/MRI Exam Protocols and Positioning II (2 cr)
This course is a continuation of CT/MRI Positioning I. The CT/MRI exam protocols will include imaging of the extremity and joints, vascular imaging of the brain, neck, body, and extremities and 3-D reconstruction.

RSTE 423R. CT Physics and Systems I (1 cr)
This course will provide a comprehensive overview of the physics and basic theory of operation of computerized tomography. The following topics will be included in CT physics and systems I: historical perspectives, computing and digital image processing concepts, principles, data acquisition, and spiral-helical scanning.

RSTE 428R. CT Physics and Systems II (1 cr)
This course is a continuation of CT Physics & Systems I. Topics covered include: Image reconstruction, image quality, radiation dose, quality control, artifacts, and speciality exams.

RSTE 431R. Senior Magnetic Resonance Imaging (2-4 cr)
Supervised clinical experience in the MRI section is provided. Students will be exposed to all aspects of MR Imaging to include imaging, patient selection and management.

RSTE 433R. Senior Computerized Tomography (2-4 cr)
Supervised clinical experience in the CT section is provided. Students will be exposed to all aspects of CT imaging, to include imaging hardware and software and departmental management.

RSTE 436R. CT/MRI Clinical Internship (6 cr) Senior Radiologic Technology (2 cr)
This course, conducted in the clinical setting, will intensify the student's exposure to diagnostic Radiologic Technology. Administrative concepts discussed in RSTE 416R or 417R will be implemented.

RSTE 438N. Advanced Radiation Biology (2 cr)
This course is directed to the senior level students enrolled in the CT/MRI curriculum, Interventional Cardiovascular Imaging curriculum, Nuclear Medicine Technology Program and the Radiation Therapy Program. Content will include review and continuation of basic radiobiology involved with radiographic and nuclear medicine imaging. It will address the radiobiological/biophysical events at the cellular and subcellular levels. Analysis of factors influencing radiation response of cells and tissues will be
covered. Construction and evaluation of radiobiological data on graphs, charts, and survival curves will be included. Relationships of time, dose, fractionation, volume and site as they apply to both normal and tumor biology will be evaluated. The principles of radiation response modifiers, hyperthermia, chemotherapy, and their influence on biologic effects in combination with radiation will be examined. The biological effects and safety considerations for working around radio frequency fields and magnetic fields will be presented.

Note: This is an interdisciplinary course for radiation science modalities. Students are expected to learn biological considerations specific to several modalities within the radiation science professions.

RSTE 442R. Student Teaching (1 cr)

The student will be assigned the Division of RSTE, Radiography Program for practical application of teaching skills. The student will apply the use of terminal objectives, curriculum development, preparation of lesson plans and audiovisuals towards didactic instruction.

RSTE 464N. Independent Study (1-2 cr)

Course Description:

This course is for the RSTE student who has need of special or additional study. Independent study is designed to provide options for study around the interests and needs of the individual student. The focus of study is chosen under the direction of a program faculty member.

RSTE 470R. Cardiovascular-Interventional Tech I (2 cr)

This didactic course includes instruction over: the history of Angiography, medical and legal implications of angiographic procedures, pharmaceuticals and contrast agents used in interventional radiology, patient care procedures, quality control, angiographic equipment, and image enhancement techniques.

RSTE 471R. Cardiovascular-Interventional Tech II (2 cr)

This didactic course includes instruction over: procedural angiography including; imaging of the heart, pulmonary vascular system, thoracic aorta, visceral Angiography, peripheral Angiography, neuroangiography, central venous access procedures and nonvascular interventional procedures.

RSTE 473R. Applied Cardiovascular Interventional Technology I (4 cr)

This clinical course is designed to enhance and begin to prepare the CVIT student technologist with the experience and confidence needed to efficiently perform CVIT procedures. Clinical participation includes pre-procedure set-up, circulation during CVIT procedures, post-procedure responsibilities and darkroom duties. The clinical environment gives the student an opportunity to demonstrate their communication, self motivation, knowledge, and critical thinking skills.

RSTE 474R. Applied Cardiovascular Interventional Technology II (4 cr)

This clinical course is designed to further enhance preparation of the CVIT student technologist with the experience and confidence needed to efficiently perform CVIT procedures. Clinical participation includes pre-procedure set-up, circulation, imaging, and scrubbing during CVIT procedures, post-procedure responsibilities and darkroom duties. Procedures will include angiography, nonvascular interventions, vascular interventions, cardiac interventions, central venous access, and venography. The clinical environment gives the student an opportunity to demonstrate their communication, self motivation, knowledge, and critical thinking skills.

RSTE 475R. Applied Cardiovascular Interventional Technology III (6 cr)

This clinical course is designed to further enhance preparation of the CVIT student technologist with the experience and confidence needed to efficiently perform CVIT procedures.

SAHP 411. Critical Thinking (1cr)

This course will introduce the student to concepts in critical thinking. Students will learn how to identify, assess, and create arguments. These skills will assist students in the clinical practice by providing the with the tools necessary to reason carefully about what they see, hear, and read. Course topics include the benefits of and common barriers to critical thinking, a discussion of how words are used, common patterns of argument and common fallacies of reasoning.

SAHP 415. Communication and Cultural Competency (2 cr)

Communication and Cultural Competency is an upper-level course for allied health professions students to facilitate understanding of the role of cultural competence in the health care arena and explore the ethical and legal implications of this topic. The course will begin by helping the student understand the value of diversity in our society. Secondly, the course will allow the student to make self-examination of their own beliefs, values and biases. This will be followed by the dynamics involved when two cultures interact. Students will examine specific cultural characteristics as they apply to health care and propose ways of adapting diversity to the delivery of health care. The course will include an in-depth assessment of the Culturally and Linguistically Appropriate Services (CLAS) standards and cultural competency information available to healthcare organizations.

SAHP 418. Research Methodologies in Allied Health (2 cr)

This course is designed to provide the fundamental concepts of research methods in allied health professions. The topics include literature review, statistical analysis, analytical reading and writing, research and proposal design, protection of human/animal subjects, limitation and justification of the research question and also quality assurance and method
Students will design a research proposal based on information presented.

SAHP 420. Computers in Health Care (2 cr)

This course is an introduction to computer sciences where emphasis will be placed on understanding the importance of computers in healthcare. Students will be exposed to the MS-DOS and windows systems and various applications including word processing, spreadsheets, databases, and networks. This course is an introduction to computer processes to include general terminology, data processing, and computer language. The application of HIS and RIS processing is presented.

SAHP 430. Scanning the Health Care Environment (1 cr)

This course provides the health professions student with knowledge concerning the complex issues surrounding the economics of health care and health care delivery. Health care is changing rapidly and allied health professionals are affected by such changes in both their personal and professional lives. This course is designed to assist students in gaining an understanding of why change is occurring and identifying strategies to affect the changes to ensure that the patient is served. The topics to be covered include the economics of health care, the history of health care in the 20th century, federal involvement in health care, principles of insurance, elements of a health care plan, Medicare, Medicaid, restructuring, and health care reform. Students are expected to develop a healthcare plan and to write a paper on responding to the challenges of the uninsured.

SAHP 431. Management in Health Care (2 cr)

This course introduces allied health students and practitioners to the concept of organizational theory and behavior in health care. The topics to be covered include the principles of motivation, team building, leadership, management, organizational culture and individual responses to organizational cultures. In addition, some basic methods for planning and implementing organizational change will be discussed. The second half of the course will focus on applications of management principles to the health care setting in the areas of financial management, risk management, and the process of hiring, coaching, evaluating and dismissing employees. The basic concepts of continuous quality improvement and the application of several quality tools will be employed in the development of a quality improvement project proposal and the preparation of a resume for an entry-level professional allied health position in the student’s discipline.

SAHP 433. Health Care Management Project (1 cr)

This is an independent study course focusing on a management topic in a prescribed course of study. Includes literature review and individual or team-focused work relating to management functions and performance improvement. Student’s work will be supervised and evaluated by department faculty members.

Available/Optional Courses for Radiography Program

ADNR 139. Pharmacology (2 cr)

Basic concepts of pharmacology including classification, action, indications, contraindications, dosage and dosage calculations.

BIOS 225. General Anatomy & Physiology I (4 cr)

Microscopic and macroscopic study of the organ systems of the human body integrated with physiological functions. All units have related laboratory work. Note: Previous biology, chemistry, and/or significant medical background helpful, but not required.

BIOS 226. General Anatomy & Physiology II (4 cr)

Prereq. BIOS 225

A continuation of Anatomy and Physiology I. All units have related laboratory work.

HLTH 1992. Basic Patient Care in Imaging Technology (1 cr)

Introduction to the care of hospitalized patients for allied health students which focuses on basic concepts and skills. This course is designed for the radiology technology students and concentrates on the cognitive, interpersonal and psychomotor skills needed to provide a safe environment for the interaction with clients.

HUSR 201. Gerontology (1-3 cr)

This course is an overview of the social, physical and biological aspects of aging.

RAD 118. Seminars in Mammography (1 cr)

This on-line course provides a mammography registry review and an avenue for discussion and problem-solving for practical situations concerning patient imaging issues. It also provides an avenue to include new modality methods into the curriculum.

RAD 122. Breast Anatomy, Physiology and Pathology (1 cr)

This on-line course is a detailed study of human breast anatomy, physiology and pathology including correlation to the radiographic appearance of normal anatomy and benign and malignant mammographic findings.

RAD 123. Mammographic Positioning (1 cr)

This on-line course covers all aspects of positioning the patient for all screening and diagnostic exams including the breast implant patient and mammographic image evaluation.

RAD 124. Film/Screen Techniques, Equipment and Quality Control (1 cr)

This on-line course is a detailed study of dedicated mammography equipment, film/screen imaging techniques, image evaluation, and the quality control tests for the mammography technologist.
RSTE 340R. Applied Mammography Practicum (1 cr)
This clinical course is designed to provide the student with a working knowledge of Mammography and initiate student participation in routine mammography imaging procedures. The experience is competency-based and is intended to provide the student with the confidence needed to assist and perform patient preparation and education, perform, evaluate and record all quality control tests, and perform mammography imaging procedures. The student will participate in mammography exams with advanced emphasis placed on operating equipment, producing quality images, applying techniques and protocols, proper positioning, review, critique and recognition of imaging findings associated with various pathologies, and MQSA (Mammography Quality Standards Act) quality control guidelines.

RSTE 440R. Case Studies and Journal Review (2 cr)
This is an independent upper-level course designed for radiation science seniors in a baccalaureate degree program to facilitate analytical and critical thinking skills, apply their written and oral communication skills, and foster professional development and growth. Students will research, identify, and form a differential diagnosis for clinical cases imaged by various diagnostic modalities, critique medical cases and professional peer-reviewed journal articles. They will witness, reflect upon, and discuss the interdisciplinary medical process, patient clinical presentation, historical interview, diagnostic follow up, home care and support, and the healthcare provider/patient relationship. This course will allow students to broaden their education experience in radiation science and their specific modality of study by investigating cases from a wider perspective.

RSTE 449R. Quality Management in Radiation Science (2 cr)
This course is designed to teach the student the advanced technical aspects of a Quality Management program. This will include film processors, radiographic equipment, fluoroscopic equipment, specialized and ancillary equipment as well as other imaging modalities such as CT, MRI, diagnostic medical sonography, and nuclear medicine. Diagnostic imaging departments must utilize a Quality management program as a condition of accreditation from the JCAHO. The purpose of such a program is to deliver optimum patient care, to make the diagnosis of the final images as accurate as possible, and for maximum cost efficiency. Since much of the Quality Control portion of a Quality Management program requires practical application, an extensive laboratory experience will be required.
Faculty

Roxanne Alter, Assistant Professor of Clinical Laboratory Science Education, B.S. 1978 University of Missouri, M.S. 1991 University of Nebraska.

Joseph C. Anderson, Professor of Radiology, B.S. 1963 University of Nebraska, M.S. 1967 University of Nebraska, M.D. 1968 University of Nebraska Medical Center.

Lora Arnold, Assistant Professor of Clinical Laboratory Science Education, BSMT 1977 Lincoln Hospital, B.A. 1976 Hastings College, M.S. University of Nebraska.

Angela Ask, Adjunct Assistant Professor of Perfusion Science, MPS 2005 University of Nebraska Medical Center, Post Baccalaureate Certificate 1995 University of Iowa, B.S. Biology 1993 University of Iowa.

Samuel C. Augustine, Clinical Assistant Professor of Radiation Science Technology Education (Nuclear Medicine Technology), B.S. 1973, Pharm. D. 1979 University of Nebraska Medical Center.


Lisa A. Bartenhagen, Assistant Professor and Program Director of Radiation Therapy, Division of Radiation Sciences Technology Education, M.S. 2005 Midwestern State University, B.S. 1990 University of Nebraska at Lincoln, B.S. 1993 University of Nebraska Medical Center.

Christi Bartes, Adjunct Clinical Instructor of Clinical Laboratory Science Education, B.S.M.T., 1999, University of Nebraska Medical Center.

Elliott Bedows, Associate Professor, Physician Assistant Education, Ph.D. 1977, University of Illinois.

Reba A. Benschoter, Professor Emeritus, B.A. 1952 Briar Cliff College, M.S. 1956 Iowa State University, Ph.D. 1978 University of Nebraska-Lincoln.

Diane Bever-Keim, Volunteer Instructor of Medical Nutrition Education, B.S., 1976 Kansas State University (Coordinated Program in Dietetics).


Laura D. Bilek, Assistant Professor of Physical Therapy Education, B.S. 1988 University of Nebraska Medical Center, PhD 1994 University of Nebraska Medical Center.


Wynette Bolte, Adjunct Clinical Instructor of Clinical Laboratory Science, B.S. Chem 1988, BSMT, 1993, University of Nebraska Medical Center.

Michael Borkon, Adjunct Assistant Professor of Clinical Perfusion Education, A.B. 1972 Case Western Reserve University, M.D. 1975 Johns Hopkins University School of Medicine.

Peggy L. Bottjen, Project Coordinator for the School of Allied Health Professions, Assistant Professor of Clinical Laboratory Science, B.S. 1976 University of Iowa, M.P.A. 2001 University of Nebraska at Omaha.

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