

## **School of Allied Health Sciences**

### **MISSION AND GOALS**

The primary mission of the School of Allied Health Sciences (SAHS) is to provide quality professional instruction at the undergraduate and graduate levels; conduct basic and applied research; and perform public service related to the improvement of health care delivery. Graduates will exhibit high ethical professional standards; be devoted to lifelong learning; and be prepared to respond to local, regional, or national level demands in their fields of study.

### **DESCRIPTION**

The School recently underwent an organization change in that the Dean of the School also serves as the Dean of the School of Nursing. Additionally, there were two major internal changes to the School: the department of Kinesiology and the department of Nutrition Sciences have merged and Clinical Laboratory Sciences was moved from Nutrition Sciences to the department of Health Physics (which subsequently changed the department name to Health Physics and Diagnostic Sciences).

The Department of Physical Therapy now has a Doctor of Physical Therapy (D.P.T.) program that was implemented in Summer 2005 and a transitional Doctor of Physical Therapy program that began in Summer 2007. The Department of Physical Therapy discontinued the M.S. program when the D.P.T. program began. Plans are underway to convert the two-year Radiography Certificate Program to a four-year B.S. degree program. Due to persistent low enrollment, plans are being made to eliminate the B.S. in Health Physics program.

The main areas of emphasis within the School are clinical education and research. Within the last few years, the school has increased the size of clinical education programs. In many cases, the size of clinical education programs are restricted by the accrediting body standards for student-to-teacher ratio and/or the size of affiliated sites, which limits the number of students in some classes.

Concurrently, the School has emphasized the importance of securing external funding to support faculty research. Over the past five years, the School has invested approximately \$190,000 in start up funds for new faculty hires (with the Provost's Office contributing, approximately, an additional \$200,000). In addition to the start up investments, the School has renovated existing space and has acquired approximately 5,500 square feet for departments to use for teaching and/or research. The School has also invested in a supporting maintenance agreement for the Dual Energy X-Ray equipment that is used by several faculty across the College.

### **Stakeholders**

Local and regional stakeholders include Clark County School District (CCSD) high schools, UNLV athletic department, local hospitals, diagnostic imaging centers, clinical laboratories, radiation oncology centers, government labs, physical therapy clinics, extended care facilities, and local fitness centers and athletic clubs.

Several of our clinical programs graduate students who are then eligible for board certification exams in their chosen clinical discipline, such as athletic training, nuclear medicine, ultrasound, and radiography. These students subsequently serve the community upon gaining employment in the health profession.

The majority of the clinical programs require students to gain clinical experience. For example, students who pursue the registered dietitian credential intern in local hospitals and students studying fitness management intern in local fitness facilities. Graduate students serve the community either through clinical rotations, e.g. Physical Therapy, or through funding opportunities. For example, graduate students who are certified athletic trainers have received graduate assistantships to serve as athletic trainers in several CCSD high schools

Faculty spend significant amounts of time with students in the clinical setting and, as such, they interact regularly with clinical preceptors and collaborate with local physicians on research projects of mutual interest.

Benchmarks of effectiveness include the growth in the programs and the receptiveness of the community entities for our student placements. Evidence of the receptiveness of the community to be engaged with our programs include the willingness of local clinics, hospitals and labs to: (1) maintain their clinical affiliations with the programs, (2) hire graduates from the programs, and (3) research collaborations with faculty.

## **ANALYSIS AND APPRAISAL**

### **Planning**

The planning process occurs primarily at the department and/or program level. The majority of departments or programs within a department within the School are accredited through national agencies and, as such, these programs are required to submit self-studies on a regular basis. In large part, the planning process is governed by feedback from program evaluators of the accrediting bodies. Stakeholders and students also contribute to the planning process. Each accredited program has an advisory board consisting of stakeholders from the community. Feedback from board members often results in programmatic changes. Opinions of students, as expressed on faculty evaluations and/or meetings, also contribute to the planning process.

### **Educational Programs**

The School of Allied Health Sciences offers eight undergraduate degree programs and they are:

- B.S. Athletic Training
- B.S. Clinical Laboratory Sciences
- B.S. Comprehensive Medical Imaging
- B.S. Health Physics
- B.S. Kinesiological Sciences
- B.S. Nuclear Medicine
- B.S. Nutrition Sciences

The undergraduate programs are accredited by a number of groups, as shown in the table below.

<b>Program</b>	<b>Accrediting Agency (Complete Name and Abbreviation)</b>	<b>Date of Most Recent Visit</b>	<b>Date of Next Visit</b>
Athletic Training	Commission on Accreditation of Athletic Training Education Programs (CAATE)	2005	2010
Nutrition Dietetics Internship Program	Commission on Accreditation for Dietetics Education (CADE)	2008	To be determined
Nutrition	Commission on Accreditation for Dietetics Education (CADE)	2005	2015
Clinical Laboratory Sciences	National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)	September 2008	September 2016
Nuclear Medicine	Joint Review Committee on Educational Programs in Nuclear Medicine Technology (JRCNMT)	March 2007	March 2011
Radiography	Joint Review Committee on Education in Radiologic Technology (JRCERT)	July 2007	July 2015

In general, the outcomes of all the degree programs within the School can be summarized as follows:

- Produce graduates with knowledge in core and specialty education areas (e.g., anatomy, exercise physiology, nutrition, pathology, radiation safety, radiation biology, radiopharmaceuticals, imaging acquisition and analysis, theoretical and problem solving aspects of health physics, mathematics, fundamental principles of all major imaging modalities, medical terminology and patient care).

- Produce graduates with knowledge of specialty skills (e.g., competencies in clinical lab sciences including technical skills, theoretical knowledge, analytical skills, and research design; application of principles of nutrition theory and practice in health promotion, disease prevention and disease management; and, design strategies for improving human performance).
- Produce graduates who can communicate specialty knowledge effectively.

There are five graduate degrees offered within the School and an additional graduate degree in collaboration with Chemistry and they are:

- M.S. Exercise Physiology
- M.S. Health Physics
- M.S. Kinesiology
- D.P.T Doctorate of Physical Therapy
- Ph.D. Radiochemistry (joint between Chemistry and Health Physics)

Of the graduate degrees, two are accredited by national agencies (M.S. Health Physics, D.P.T). The outcomes of these degree programs are generally developed to satisfy the requirements of the accrediting agencies. To summarize, the educational outcomes of the graduate degrees in the School are:

- Upon obtaining a graduate degree in the Department of Kinesiology students will be able to:
  - Design and implement a research study
  - Communicate and interpret research results
  - Evaluate current published research related to human performance
  - Design, implement, and manage a program for improving one aspect of human performance.
- Produce graduates with advanced knowledge in core and specialty education.
- Produce graduates with advanced knowledge of how to evaluate empirical research, design and implement a research study, and interpret and communicate research results accurately and effectively.
- Produce graduate students who are experts in delivering, evaluating, and researching clinical practices.

The Physical Therapy program is accredited by the Commission on Accreditation in Physical Therapy Education (CAPTE). The most recent visit occurred in April 2005 and the date of the next visit is 2015. The M.S. in Health Physics is accredited by the Applied Science Accreditation Commission, Accreditation Board for Engineering and Technology (ABET). That visit was held in November 2008.

### **Assessment**

Even though recent reviews of the curriculum have been positive, each program has made changes to continue to improve. For example, three new courses were added to the Athletic Training curriculum to improve content in injury prevention, strength and conditioning, and to improve certification exam and graduate School preparation. Also, the Nuclear Medicine program deleted outdated courses.

Student learning outcomes, assessment plans, and semester reports can be found at:

[http://provost.unlv.edu/Assessment/reports\\_healthscience.html](http://provost.unlv.edu/Assessment/reports_healthscience.html)

### **Closing the Loop**

In response to faculty assessment of the program and profession, the Physical Therapy program was revised from a MS degree to a D.P.T in 2005. The change allowed faculty to expand the curriculum to incorporate a greater breadth of knowledge that included augmenting areas of deficiency, and improved writing of student objectives. This change has allowed for an increased chance for students to secure employment upon graduation.

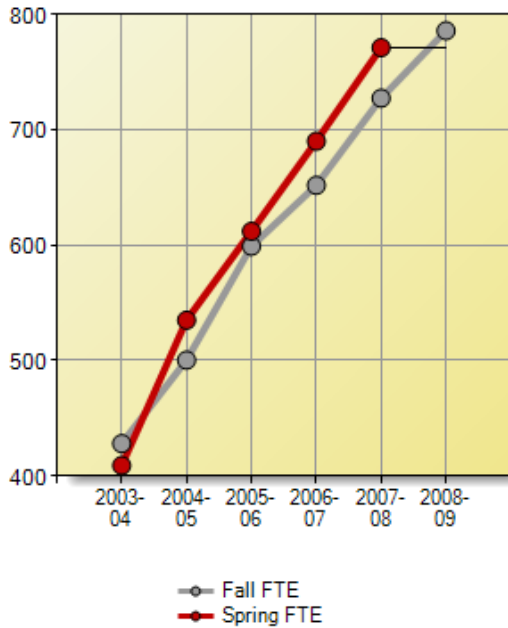
A faculty Program Director assessed the needs of the Athletic Training Program and found that adding a full-time Clinical Coordinator would allow faculty greater flexibility to focus on teaching and research efforts versus managing the logistics of the program. A main responsibility of the Clinical Coordinator is

to work closely with the students and affiliated sites to ensure that students are receiving appropriate clinical education.

During the last site visit in March 2007, the reviewers from the Joint Review Committee on Educational Programs in Nuclear Medicine Technology noted that radiation safety was the weakest area for Nuclear Medicine students based on national board exam scores. This concern was addressed by incorporating more radiation safety training in both didactic and lab courses. Subsequently, students scored higher in this area than in any other content area tested on the national board exams.

**Students**

The graph below illustrates the undergraduate FTE for the School of Allied Health Sciences. It represents FTE through Fall 2008 and does not include Spring 2009. Each department in the School has either maintained or grown FTE over the past four years.



The retention rates are strong within the School, varying from 70% (Kinesiology) to 97% (Health Physics). Likewise, graduation rates are high (e.g., Physical Therapy: 94.3%).

The enrollment in each graduate program is stable – with growth being seen in Kinesiology and Physical Therapy programs. Each program is at or near capacity as limited by student-to-faculty ratio.

**Undergraduate Headcount**

Department	Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008
<a href="#">Clinical Lab Sciences</a>	49	51	47	52	52
CRT (Certificate In Radiography)	49	64	78	62	41
<a href="#">Health Physics</a>	100	116	122	143	178
<a href="#">Kinesiology</a>	556	599	616	581	584
<a href="#">Nutrition Sciences</a>	107	118	108	123	136
<a href="#">Radiography Certification</a>	130	118	95	101	109
<b>Undergraduate Total:</b>	<b>999</b>	<b>1073</b>	<b>1072</b>	<b>1064</b>	<b>1101</b>

### Masters Headcount

Department	Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008
<a href="#">Health Physics</a>	11	15	12	14	14
<a href="#">Kinesiology</a>	39	43	42	45	52
<a href="#">Physical Therapy</a>	58	20	3	1	
<b>Graduate Total:</b>	<b>108</b>	<b>78</b>	<b>57</b>	<b>60</b>	<b>66</b>

### Doctoral Headcount

Department	Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008
<a href="#">Physical Therapy</a>		35	56	71	86
<b>Doctoral Total:</b>		<b>35</b>	<b>56</b>	<b>71</b>	<b>86</b>

The percentage of female graduate students is close to 60%. This ratio has been stable over the last five years in both graduate and undergraduate programs.

### Undergraduate Headcount by Gender

Gender	Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008
Female	604	664	669	662	671
Male	395	409	403	402	430
<b>Undergraduate Total:</b>	<b>999</b>	<b>1073</b>	<b>1072</b>	<b>1064</b>	<b>1101</b>

### Masters Headcount by Gender

Gender	Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008
Female	59	39	25	28	32
Male	49	39	31	32	34
Unknown			1		
<b>Graduate Total:</b>	<b>108</b>	<b>78</b>	<b>57</b>	<b>60</b>	<b>66</b>

### Doctoral Headcount by Gender

Gender	Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008
Female		19	31	36	40
Male		16	25	35	46
<b>Doctoral Total:</b>		<b>35</b>	<b>56</b>	<b>71</b>	<b>86</b>

There is not a clear picture of the ethnicity make up of graduate students since a large percentage (40%, Kinesiology; 24% Physical Therapy) are designated as unknown, however, the School has had a consistent representation of different ethnicities. The school has had consistent representation of a variety of ethnicities (see figure below). The school does not actively recruit undergraduate students. That being said, several local high schools do visit different programs as a way to expose high school students to Health Sciences professions and our faculty support the effort by schools by providing laboratory tours (for example). There are no plans to begin a recruitment plan due to lack of school resources.

### Undergraduate Headcount by Ethnicity

Ethnicity	Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008
African American	85	89	99	89	102
Asian	184	200	191	215	238
Caucasian	502	513	522	527	524
Foreign National	20	16	13	11	16
Latino	104	125	127	122	127
Native American	10	16	13	14	11
Not Disclosed		4	12	16	17
Unknown	94	110	95	70	66
<b>Undergraduate Total:</b>	<b>999</b>	<b>1073</b>	<b>1072</b>	<b>1064</b>	<b>1101</b>

Students in each program have been historically successful at passing professional exams. For example, first time pass rate on National Certification Examination for Athletic Trainers in 2007-08 was 85% with the national average for first time pass rate in 2007-08 at 39%. First time pass rate on National Registration Examination for Dietitians was 93% and the accreditation standard is 80%. Clinical Laboratory Sciences graduates have had a 100% pass rate on the national certification board exam for the past four years. Nuclear Medicine graduates had a 100% pass rate on both national certification board exams in 2007. Radiography graduates had a 96% pass rate on the national board certification exam in 2007. For the fifth consecutive year, a Radiography graduate earned the highest score in the nation. Approximately 85% of Health Physics graduates have passed their board exams. Approximately 80% of Comprehensive Medical Imaging graduates pass their board exams within 2 years of graduation.

Upon graduation, students from the SAHS have been successful at securing employment in their chosen health care industry. For example, 100% of Clinical Laboratory Sciences graduates find career relevant employment within three months of graduation. Between 95 and 100% of Nuclear Medicine graduates work in the nuclear medicine field. Traditionally, approximately 95% of Radiography graduates find work in their field. Approximately 75% of Health Physics graduates are working in the health physics field. Between 90 and 95% of Comprehensive Medical Imaging graduates find employment in their field within three months of graduation.

### Faculty and Staff

Overall, the ratio of faculty to students is not satisfactory within the School. For example, below are some of the faculty-to-student ratios:

- Kinesiology: 1:30
- Nutrition: 1:34
- Physical Therapy: 1:30
- Radiography: 1:50
- Comprehensive Medical Imaging: 1:59

The problem of inadequate faculty-to-student ratio is easily seen in the department of Kinesiology and Nutrition Sciences. For example, in Fall 2008, there were 235 Annual FTE for 10 faculty whereas in Nutrition there were 215 Annual FTE for 3 faculty. This department is servicing a large number of students with few faculty. However, describing the extent of the problem is complicated since some faculty are teaching courses that the faculty to student ratio is dictated by accrediting bodies. For example, Athletic Training clinical courses must not exceed 16 students per instructor. That means we have some faculty teaching with ideal faculty to student ratios and others that are teaching a very high number of students. This also means that some faculty who teach specialty courses have to teach several courses or sections rather than one or two large courses or sections. Since most of our programs have a strong clinical component, students would benefit from lower faculty to student ratios (e.g., 1:10 - 1:20).

The School faculty has a fairly good distribution of men and women: 33.3% women, 60.6% men. In the Department of Kinesiology and Nutrition Sciences, 50% of the faculty are women; in the Department of Physical Therapy, about 30% of the faculty are women; in the Department of Health Physics, 42% of the faculty are women. There was no active strategy to create this balance. Rather, it is a reflection of the disciplines. For example, nutrition tends to attract more women to the field whereas Kinesiology tends to attract a mix of men and women. Overall, this leads to an even distribution of men and women in that department. The School does not seem to have adequate representation of minorities. However, of the last six faculty hires, two represented minority ethnic groups and three were female.

Of the 32 faculty in the School, nine serve in leadership roles: three Department Chairs, five Program Directors, and one Associate Dean (in addition to the Dean). Presently, there are two faculty vacancies and three pending vacancies, which means 1/3 of the faculty are serving in administrative roles; however, none of these are full time administrative assignments, but rather approximately 25%. The number of administrative faculty is adequate, but the number of faculty is inadequate.

There are five administrative assistants within the School and one executive assistant. The School would benefit from additional administrative assistants in order to relieve the burden of administrative tasks that are currently placed on faculty who are faced with the challenge of serving as an administrator with inadequate clerical support. Departments have used student workers to support administrative assistants.

There is one support staff in the School, a program officer, who is responsible for managing affiliation agreements, assessment, and workload practices within the School. The responsibility of managing affiliation agreements is quite time consuming given that there are over 200 affiliation agreements between programs within the School and affiliated sites.

Due to the low number of administrative staff in the School, even with this support staff member, the burden of carrying out administrative tasks (e.g., grant award management, equipment repair) falls upon the faculty.

## **Research**

The research conducted by faculty within the School is categorized primarily as applied research. Areas of emphasis include human performance, e.g., Biomechanics of Human Locomotion in Water: An Electromyographic Analysis by post-doctoral fellow Dr. Kenji Masumoto and Dr. John Mercer, published in *Exercise and Sports Science Reviews*; clinical practices, e.g. Pre-activity Stretching May Hinder Athletic Performance, a master's thesis project by athletic training student Michele Samuels under the direction of Dr. Bill Holcomb which was published in *Journal of Strength and Conditioning Research*; and the study of the effects of walking backwards on a treadmill on balance (retro walking) conducted by graduate students Jennifer Aldridge and Geoff Melcher under the direction of Dr. Janet Dufek, in *Health Physics*.

The Selective Disruption of the Blood-brain Barrier by Photochemical Internalization study began in October 2007 and ran through December 2008. This was a collaborative project with the Nevada Cancer Institute which also provided funding for the study. The project addressed a significant need in neuro-oncology and, as such, it has implications for the treatment of malignant brain tumors. The project has been very successful as it has provided preliminary data to pursue extramural funding. Additionally, two health physics master's degrees were awarded based on work associated with this project.

Two recent hires in the School of Nursing have been made available to SAHS faculty interested in applying for external grants. This research support includes the guidance of an Associate Dean for Research and a professional staff member who oversees pre-award issues, grant submission, and post-award compliance.

The School of Allied Health Sciences has some unique research projects under way and one of them is the development of a radioanalytical counting laboratory for support of education and evaluation of environmental samples. This project began in July 2005 and will run through July 2009. Funds from this

Department of Energy sponsored project have been used to establish a state-of-the-art radioanalytical facility for teaching, research and service. The impact of this facility is significant since it is the only lab in the State of Nevada capable of rapid analysis of radioactive materials. Rapid analysis of samples is particularly important in the event of a nuclear terrorist event and, as such, the lab meets homeland security needs. The lab also meets a significant community need for analysis of environmental samples of air, soil and water. The lab has analyzed samples on a fee-for-service basis for a number of local and regional entities. The research funded from this grant has resulted in the development of novel automated procedures for rapid analysis of radioactivity in a variety of samples. Approximately 15 graduate students have been involved in the research and service components funded by this project. In addition, equipment purchased on this grant has been used in two lab courses, HPS 403/603 (Radiation Physics and Instrumentation Laboratory) and HPS 718 (Radiochemistry Laboratory).

Another project is Analyses of the Dose Risk to Civilians from High-Energy X-Ray Equipment Used for the Detection of Weapons of Mass Destruction at Various US Entry Locations which began in June 2007 and will run through June 2009. This project is sponsored by UNLV's Institute of Security Studies and Varian Medical Systems and involves health physics students and researchers from the Department of Mechanical Engineering along with scientists from Varian Medical Systems. This is an interdisciplinary effort with significant involvement from the local community. The project addresses a homeland security need as evidenced by Varian's willingness to support the project.

### **DISTINCT CHARACTERISTICS**

- Quality of education is high as evident by the high pass rate on national certification exams. For example, first time pass rate for Athletic Trainers in 2007-08 was 85% (national average for first time pass rate in 2007-08 was 39%); first-time pass rate on National Registration Examination for Dietitians was 93% (accreditation standard is 80%).
- Faculty are engaged in research activities as evident by the number of invited lectures, presentations at national and international conferences, publication rate, and external award applications submitted and funded.
- Faculty are engaged in professional and community service as evident by positions held with professional organizations pro bono services offered to community events (e.g., Championship Bull Riding Association, Las Vegas Marathon).
- Student learning labs are well-equipped with state-of-the-art equipment.
- There is a high degree of student involvement through student organizations (e.g., Student Technologist Association in Radiological Sciences (STARS)).

### **CHALLENGES**

The State of Nevada is currently experiencing a decrease in its budget and so there are currently no plans for new programs that require additional resources. However, the School is positioned well for growth if new faculty lines become available. For example, the Department of Physical Therapy could increase the number of graduate students if there were additional faculty and research support. The Department of Kinesiology and Nutrition Sciences is positioned to build upon a newly created (and currently under-funded) program in Strength and Conditioning as well as a graduate program in Nutrition Sciences. The Department of Health Physics has prepared a proposal to establish a Ph.D. program in Nuclear Engineering and Health Physics.

Funding needs to be secured by the School through development efforts, contracts and/or external funding opportunities. For example, the School does not have funding to support additional renovations of newly acquired space thereby making that space unsuitable for teaching and research.

Enrollment growth in the School has been consistent; however, there is a danger that enrollment will decline as the number of PTIs are reduced and faculty workload is increased. Concomitantly, with an increase in faculty workload there is a danger that research productivity will decrease, thus leading to fewer opportunities to secure funding to support research either through development, contracts, and/or awards.