Shippensburg University

College of Arts & Sciences

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Events: Summer 2005

Summer Science Academy For Girls: "Mars Mania"

June 19-23 in FSC

For girls who have completed grades 6, 7, and 8.

Academy taught by faculty and supervised by education students.

Rural Academy Math Workshops for Teachers

July 6-15 in MCT

Theme: Math Connections
Featured Speaker:
Francis "Skip" Fennel
NCTM President-Elect

Festival Celebration 2005

All concerts will be held in Memorial Auditorium for free. Donations will be accepted.

July 14 8:00pm

Orchestra/ Dr. Norman Nunamaker, Conductor

Featuring selections of:
Mozart, Bach, Elgar, and Schubert
Soloists: John Eaken, Violin
Joseph Esmilla, Viola

July 21 8:00pm

Orchestra/ Dr. Norman Nunamaker, Conductor

Featuring selections of:
Dvorak and Brahms
Soloist: Christopher Rex, Cello

July 28 8:00pm

Orchestra & Chorus/ Dr. Blaine Shover, Conductor

Featuring selections of:
Haydn and Bernstein

Affiliations: SU Expands Resources

Shippensburg University has long utilized articulation agreements with other institutions to enhance program opportunities for its students. These agreements allow students to earn credits at other institutions, which are guaranteed to transfer towards their respective degrees at Shippensburg University. Such agreements enable institutions to take fuller advantage of resources and better serve their students.

The Shippensburg University Biology department currently has similar affiliations with eight health professional institutions and with eight clinical institutions. These eight clinical institutions offer programs in medical technology. Each agreement has its own requirements, which students must first meet, such as GPA and required courses, in order to be given preferential consideration during application to the program.

For the majority of these agreements, Shippensburg students must first fulfill their coursework requirements in three years at SU before beginning their first professional year at one of these cooperating institutions. The credits from that year are then transferred into their degree requirements to earn a Bachelors of Science from Shippensburg.

The Biology department's Health Professional program has affiliations with the following institutions:

Philadelphia College of Osteopathic Medicine

Pennsylvania College of Optometry

Temple University's Schools of Dentistry and Podiatric Medicine

University of Pittsburgh School of Pharmacy

New York Chiropractic College

Arcadia University

Thomas Jefferson University College of Health Professions

The Biology department's Medical Technology program also has clinical-year articulations with the following institutions:

Abington Medical Center

Altoona Hospital

Augusta Medical Center

Lancaster Gen. Hospital

Reading Medical Center

Saint Vincent Medical Center

Williamsport Hospital

York Hospital

For more information contact **Dr. David Long** x1433.

Shippensburg Classes at HACC

Students will now be able to take Shippensburg upper division undergraduate courses at select Harrisburg Area Community College campuses. This is a result of a new collaborative agreement between the two schools. Shippensburg President Anthony Ceddia and HACC President Edna Baehre signed the agreement on November 11, 2004 at HACC's Penn Center in Harrisburg.

Beginning Spring 2005, both HACC's Penn Center and Gettysburg campuses will host Shippensburg faculty members teaching upper division courses to both Shippensburg and HACC students who have either completed 60 credits of coursework or who have received an Associates degree. Shippensburg University also plans to offer graduate biology courses at HACC's Wildwood Campus beginning Summer 2005.

SU will provide transfer information, admission and financial aid services as well as library services, advising, bookstore and academic support services. HACC will provide the classrooms, computer labs, science labs and multimedia equipment as well as faculty office space.

Health Sciences Popular with Biology Students

Constituting just over 44% of Shippensburg University's 270 current biology majors, the Health Sciences Program includes students in the Biology/ Health Professions concentration, Biology/ Medical Technology double major, and the Thomas Jefferson University-Allied Health Sciences program.

Dr. David Long is the Director of the Health Sciences and Medical Technology programs. Both he and Dr. Michael McNichols serve as advisors to the Health Sciences Club, which hosts guest speakers from the health services field and provides social activities for students in the Health Sciences Program. Internships are also strongly encouraged as a way to obtain first-hand exposure to the health care discipline. Students in the past have worked in hospitals and labs, volunteered at rehabilitation centers, and shadowed medical professionals.

To further prepare students for employment in the health services, the Biology Department requires majors to complete at least one one-credit seminar in which students each select a topic within the theme of the seminar and give an oral presentation. Recent themes have included Careers in Biology and Introduction to Biotechnology. The current theme for the Spring 2005 semester seminar is Careers in Health Sciences, which brings in a new health practitioner each week as a guest speaker to discuss career possibilities. Upon graduation, the students in the Health Sciences program take positions as health practitioners in a variety of different medical and professional settings or enter health professional programs.

Shippensburg University currently has numerous affiliation and articulation agreements with health professional institutions that allow Health Science students to continue their education beyond the Shippensburg classroom, either by completing their degree in residency at the affiliated institution or by guaranteeing acceptance into professional programs if certain criteria are met. Most recently added to the extensive list of prestigious institutions with which Shippensburg has affiliation agreements are the University of Pittsburgh School of Pharmacy and Temple University School of Dentistry, both allowing students to pursue professional education after only three years of undergraduate study at Shippensburg.

Young Poets

A Poem by Cassie Jacobs (age 9)*

A Poem Found
Is a poem wanted.
A poem lost
Is a poem hunted.
Poems here,
Poems there.
Poems gone, and poems that care.
No matter what kind
Of poem it is,
It will always be
a whiz
to write
in total peace.

Fish by Ashley Nowak (age 8)*

Fish
Fish
Fish
Fish
Fat fish
Small fish
Short, black, dirty fish
Orange, big-eyed, blue fish
These are just a few.
Dead fish
Live fish
Wet, stinky, eating fish
Long, skinny, boring fish
Amazing fish, too
Old fish
New fish
Don't forget bass fish
Last of all, best of all
I like goldfish!

**These poems were submitted by elementary school students. Cassie is the daughter of a faculty member and Ashley is the daughter of a Ship graduate.*

Department Spotlight: Biology

Shippensburg's Biology Department has an impressive three hundred biology majors and forty minors, which indicates a strong interest in current and prospective students. These students have several tracks to choose from in the department, including Health Professions, Ecology and Environmental Biology, Secondary Education, Biotechnology, general Biology. As if those aren't enough, there are also specialized tracks related to health sciences available.

The department has nineteen faculty on-staff to effectively educate and assist their students, including three full professors, seven associates, six assistants, and three temporary instructors. The biology faculty provides various services to the local community, such as diagnostic services and involvement with Shippensburg government and church committees.

Children are one focus of the department's efforts to encourage early student-interest in the sciences. For example, biology faculty can often be found as judges in student science fairs. More notably, the biology department is involved with special programs for young students including:

The **Summer Science Academy for Girls** has successfully brought twenty to thirty girls to Shippensburg's campus each summer to receive a valuable learning experience through hands-on science activities. The program has evolved from the original effort by the current chair of the department, **Dr. Gregory Paulson**, **Dr. Elaine Anderson** who has since retired, and current **Associate Dean Dr. Gene Fiorini**.

The **Pittsburgh Partnership** program. Inner-city high school students are given an opportunity to spend three weeks living on campus at Shippensburg. These students get a sneak-peak at the college experience while taking various courses, including biology.

The biology department is also heavily involved in research projects. Undergraduate and graduate students in the department gain valuable experience helping with faculty research. These opportunities provide students with invaluable hands-on experience, and can be a significant factor in reaching their academic and career goals.

Twelve Shippensburg biology students will be presenting their research at the annual meeting of the **Pennsylvania Academy of Science** in April. Similarly, students have presented their research findings at local, regional, national, and international professional meetings. Several students have already had the distinction of seeing their work published in professional journals.

New research tracks recently developed by the department involve the investigation of wildlife diseases, as well as the study of the ecology of vertebrates at **Letterkenny Army Depot**.

Things to look for in future semesters:

An effort is currently being made to develop a **forensic science** concentration as part of the biotechnology track. Talks are also underway to develop working relationships with **Fort Detrick** (USAMRID) and private industry to enhance the biotechnology program.

Research and Internship Opportunities in Biology

Biology offers a wide variety of research and internship experiences to its students. Some recent experiences of several Biology students are summarized here.

By **William Bardwell**

This past summer, I had the opportunity to work at 3V Inc. in Charlotte, NC as an intern in the sales and marketing department. 3V Inc. is a privately owned specialty chemical manufacturer of optical brighteners, thickeners, and UV absorbers. The internship consisted of working 40-60 hours a week cultivating new accounts and assisting the outside sales representatives with new leads on these new accounts. I also would form reports and have to present them in bi-monthly meetings with the president of sales to discuss the intricate details of the projects I took on at 3V Inc. I learned many things regarding the corporate world and different techniques that are successful in marketing scientific products. Initially, I thought the requirement of an internship would be a major hassle but it prepared me for the "real world" upon graduation from college.

William Bardwell is a senior Biotechnology major with a Business minor.

By **Rachel Yaggie**

This past summer, I participated in an REU program through the Nanobiotechnology Center at Cornell University. This internship exposed me to the field of nanobiotechnology and to the tools and processes that link engineering and biology. The ultimate goal of the project that I worked on is the production of neural repair kits. In order to design these nanoscale prosthetic devices, the electrical interactions between neurons needed to be quantified. This was accomplished by using the atomic force microscope as a patch clamp. A voltage was applied to one neuron and the voltage received by an adjacent neuron was monitored. From this, the electrical behavior of the cells can be monitored at varying distances and layouts to determine the role arrangement plays in electrical conduction between neurons. This data could also be used to construct a basic three dimensional model of electrical interactions in a very simple brain. This model would not even represent the brain of even the simplest insects, but would provide a much closer model than anything currently available today.

Rachel Yaggie is a senior Biotechnology major.

By **Michelle Gerhard**

Last summer I worked for the USDA doing the Plum Pox homeowner survey. The position was a great experience. In order to survey the homes, there was a three-day training course that helped to identify leaves and how to use the necessary equipment. The purpose of the Plum Pox project is to collect leaf samples of stone fruit trees and ornamentals for testing for the presence of the plum pox virus. The virus affects these trees by deforming and discoloring the fruit so it is not longer viable. This is a problem for orchard growers. Last summer, one positive was found in an orchard and one positive was found in a homeowner's yard. The project surveys orchards and homeowner properties in Cumberland, Adams, and Franklin counties. Each team was a pair of employees that were assigned to a specific township. We went door-to-door and surveyed homeowners' yards for stone fruit trees and ornamentals. Eight leaves of each tree were collected and labeled. Then the property was marked using GPS. If interested in further information contact Joan Miller at 717-477-0705.

Michelle Gerhard is a senior Biotechnology major.

By **Matthew Troese**

While earning my Bachelor of Science degree in Biology at Shippensburg University, I had the opportunity to gain research experience. I started conducting research at the beginning of my junior year and continued working on a project for 2 years. For my project I tested for the presence of bacterial infections in a population of white-tailed deer. Tests were conducted which looked for the presence of antibodies in deer blood. The presence of antibodies would indicate that the deer has been infected by the disease. The two diseases I tested for were Lyme disease and Ehrlichiosis. Both of these diseases are transmitted by ticks. The deer in this study were found to have antibodies to both diseases. This is important because it means the ticks in this area have these diseases, which means humans could also become infected if bitten by a tick. While working on this project, I gained experience in field and laboratory techniques while learning about wildlife diseases. Working with various teachers and students was a lot of fun. Also, I presented my results at scientific meetings and wrote grant proposals. This is a good practice of speaking and writing skills. Through this experience I gained valuable insight into how research is conducted and the benefits it can offer.

Mathew Troese is a junior Biology major.

National Biological Honor Society

The SU chapter of the **Beta Beta Beta National Biological Honor Society** was reactivated in Fall 2003. The society's primary purpose is to honor Biology majors for their dedication and work in the sciences. Several members of the chapter are conducting their own research, although the chapter as a whole has not yet begun working on research.

At the moment the chapter provides services such as judging local science fairs, and assisting at the **Children's Fair**, which took place at the end of March. SU senior and Rho Epsilon president, **Andrea Nichol**, says she hopes after getting more established they will be able to attend research conventions and hold research seminars at Shippensburg.

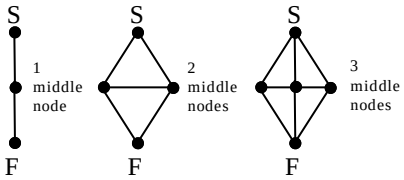
Rho Epsilon has thirty current graduate and undergraduate members, and will be inducting thirty new members in mid April. Members must have junior status and have at least a 3.3 GPA in biology classes.

Shippensburg chapter officers:

President: **Andrea Nichol**
Vice President: **Matthew Troese**
Secretary: **Amy Carroll**
Treasurer: **Michelle Gerhard**
Historian: **William Bardwell**
Advisor: **Dr. Lehman**
Advisor: **Dr. Maret**
Advisor: **Dr. Stewart**
Advisor: **Dr. Elliott**

Mathematics Puzzler

Puzzler: In each graph below count the total number of paths (a **path** does not retrace over any node or edge) from the start node S to the finish node F.



Based on your observations above, determine the total number of paths from node S to node F if there are a total of (n + 2) nodes.