

Academic Program of Study

A. Number of Credit Hours required

The **HSCI honors program** will consist of a minimum of 18 credits, including 12-15 credits of HSCI honors enriched courses and 3-6 credits of honors thesis research.

B. Types of Courses

1. Honors-enriched Courses (minimum 12 credits): Several HSCI upper level and some lower level courses will be enriched with an addition of a variety of experimental and/or theoretical project components specifically designed to expose an honors student to a higher level of learning experience.

2. Honors Research Methods (2 credit): An honors course involving an exhaustive review of Microbiological, Biochemical, Molecular Biological, Physiological and experimental animal methods and their application in research in health sciences.

3. Honors Thesis Research (3-6 credits). Students will identify and initiate a research project appropriate for the Honors Thesis. An Honors thesis may be completed based on either an experimental (6 credit hours) or a theoretical (3 credit hours) research problem.

C. Course Descriptions

1. Honors-Enriched Courses:

a. HSCI 2500-088 Honors AIDS: Biology and Beyond (3 credits):

A study of the social, political, and biological dimensions of HIV/AIDS. The evolution of the HIV/AIDS pandemic and its impact on society and the most current scientific knowledge regarding the biology of HIV, antiviral drugs, and vaccines will be discussed.

b. HSCI 3000-088 Honors Human Anatomy (4 credits):

(Prerequisite: General biology). A study of the human body with an emphasis on functional gross anatomy is presented to facilitate an understanding of body structure and function. Laboratory provides a learning experience through the use of anatomical specimens, models, and charts. Six hours lecture and lab combined per week.

- c. HSCI 3020-088 Honors Human Physiology (4 credits):** (Prerequisite: HSCI 3000). A study of the homeostatic mechanisms in man as they pertain to normal physiology and mechanisms of disease. The teaching laboratory provides the students an opportunity to learn by measuring many of the vital physiological processes. Three hours lecture and lab per week.
- d. HSCI 3030-088 Honors Introduction to Biochemistry (4 credits):** (Prerequisite: CHEM 1110/11 and CHEM 1120/21). An introduction to general biochemistry of eukaryotic and prokaryotic cells. Includes study of the cell chemistry, mechanisms of energy production, enzymes, basics of macromolecular structures and transcription and translation of genetic information. Laboratory includes techniques involved in studying the biochemistry of cells. Three hours lecture and three hours laboratory per week.
- e. HSCI 3510-088 Honors Pathogenic Microbiology (4 credits):** (Prerequisite: HSCI 3320 General Microbiology). A lecture and lab course presenting the key concepts and mechanisms of the infectious disease process and its prevention and control with an emphasis on bacterial pathogens and how they cause disease. In addition, the laboratory component is designed to introduce the student to the basic techniques for the isolation and identification of pathogenic bacteria.
- f. HSCI 3540-088 Honors Immunology (3 credits):** A lecture presenting current concepts of the basic mechanisms of immunity and selected laboratory techniques to study the development of the immune response.
- g. HSCI 4067-088 Honors Neurology (4 credits):** (Prerequisites: Human anatomy 3000 and Human physiology 3020). A basic study of human neuroanatomy and neurophysiology. This course explores the motor and sensory pathways, as well as the integration systems of the central nervous system. Laboratory work utilizes preserved human specimens, models, slides and charts. Two hours lectures and two 2-hour labs per week.
- h. HSCI 4607-088 Honors Bacterial Physiology (4 credits):** (Prerequisites: HSCI 3320 and Organic Chemistry required. Completion of a biochemistry course is recommended). A

consideration of the biochemical nature of the growth of microorganisms. Includes studies of bacterial cytology, enzymes, nutritional requirements, metabolic pathways, and genetic regulation. Laboratory includes studies of selected aspects of metabolism during bacterial growth and the use of bacterial vectors for cloning DNA. Two hours lecture and three hours laboratory per week.

- i. HSCI 4730-088 Honors Molecular and Microbial Genetics (3 credits):** (Prerequisite(s): HSCI 3320). An introduction to microbial genetics, focusing on the genetics and molecular biology of bacteria and bacteriophages. The course will include basic techniques of microbial genetics and gene manipulation with emphasis on the application of molecular genetics in basic and applied research.
 - j. HSCI 4747-088 Honors Mycology (4 credits):** (Prerequisite(s): HSCI 3320 and Organic Chemistry). A survey of the fungi with emphasis on form, structure, genetics, growth and nutrition, classification, ecology, and economic importance. The fundamentals of general mycology and the procedures used for the isolation and identification of fungi including yeasts, mold, and actinomycetes are investigated in the laboratory.
 - k. HSCI 4770-088 Honors Virology (4 credits):** (Prerequisite(s): HSCI 3320 or equivalent). An introduction to the pathogenesis and molecular biology of viruses including methods of isolation, cultivation, and characterization. Two hours lecture and two 2-hour labs per week.
- 2. HSCI 4507/HSCI 5507 Honors Research Methods (2 credits):** This required course for all honors students will be offered in both the fall and spring semesters and will involve an exhaustive review of Microbiological, Biochemical, Molecular Biological, Physiological and experimental animal methods and their application in research in health sciences. The course will be team-taught by faculty who will bring their research expertise to the classroom to make learning research methods more interesting.
 - 3. HSCI 4018 Honors Thesis (3-6 credits):** The Department of Health Sciences will require the completion of an honors thesis (HSCI 4018) as the capstone course. Students are expected to talk/discuss with a faculty member and choose an advisor for the honors thesis by the end of the second semester of their junior year at the latest. A faculty member in the

Department of Health Sciences, chosen by the student, will direct the thesis project. Two additional faculty members, one from Health Sciences and one from outside the Department, will serve on an advisory committee with the project director and also act as readers of the thesis. A formal thesis will be submitted and publicly presented at the project's conclusion. A student must make a B or higher in the honors thesis to get honor recognition on their transcript.

D. Specific Honors-Enriched Course Requirements

In each of the honors-enriched courses listed under C. 1. in addition to the above mentioned course curricula, an honors student will meet with the instructor and sign a contract agreeing to carry out one or more of the enrichment experiences listed below. The program coordinator will keep the contract on file.

1. Research a topic for weekly discussions with the instructor
2. An oral presentation on selected topics
3. Prepare critiques on several research articles
4. Extension of laboratory experiment(s) for further study
5. A book reading
6. A study on a special topic followed by an exam
7. An internship
8. Any other component decided by the instructor