

UNMC High School Alliance 2020–2021 Course Descriptions

- **Biomedical Research**

Lead Faculty: Ken Bayles, PhD

UNMC Graduate Studies students will guide the High School Alliance students through an exploration of The Central Dogma. Students will learn to use lab equipment and how to conduct experiments utilizing the latest technology. Students will investigate current biomedical research through hands-on experience and training. Students will gain an appreciation for the biological processes that occur at the molecular level and develop an understanding of how bench lab research leads to the interventions of health care providers.

Notes:

- **Exploration of Human Anatomy**

Lead Faculty: Ethan Snow, PhD

Go beyond the textbook and classroom, and gain the experience of working with UNMC faculty and UNMC professional students in the Gross Anatomy Lab. Students in this course will learn the inter-workings of the human body through distinctive classroom lessons and hands on activities in the anatomy lab. Students will gain a greater appreciation for the complexity of the human body.

Notes:

- **Human Genetics – Medical and Societal Implications**

Lead Faculty: Maurice Godfrey, PhD

The Genetics course will explore the connections between science understanding and the actions human's take with that information. The course brings the ethics of the use of genetics information to the discussion table, giving students the opportunity to think about how information could and should be used. Concepts covered within the course include the nature of genetic material, patterns of inheritance, gene expression and regulation, genetic variation, evolution, and genetics within society. Students will undertake laboratory-based and interactive exercises, including molecular biology techniques, and will examine the ethics surrounding genetic testing and the policies for the future. Students are also given the opportunity to analyze a genetics based novel, and make connection to the concepts that are presented in class. Bryan Sykes's DNA USA, is an additional tool to bridge the gap between genetic concepts and general genetic understandings.

Notes:

- **Infectious Disease – Microbes: The Good, The Bad, The Ugly**

Lead Faculty: Kevin McGuire, MHPTT, MLS(ASCP)CM

Marnie Imhoff, MA, MBA, MLS, (ASCP)CM

This introductory course focuses on the study of human infectious disease and the clinical laboratory's role in diagnosis and treatment. Emphasis is placed on the correlation of clinical laboratory data with the diagnosis and treatment of bacterial, fungal, parasitic and viral infections. Instructional methods include lecture, class discussions, learner-centered projects, real-life case studies, and a hands-on laboratory component.

Notes:

- **The Study of Patient Care**

Lead Faculty: Stacie Ethington, MSN, RN

This course will engage students in the basic understanding of patient care. Instructional methods include, but are not limited to, class discussions, learner-centered projects, case studies, lecture, and work in the simulation lab using high-tech human patient simulation Manikins. Students will meet health care practitioners working in the fields of trauma, neonatal intensive care, community/home healthcare, nursing education and research, among others.

Notes:

- **Pathology – Connecting Cells to the Clinic: Fundamentals of Disease**

Lead Faculty: Geoffrey A. Talmon, MD

Through a combination of lectures, discussions, projects, and hands-on activities, students in this course will explore the mechanisms that underlie many common diseases and conditions. Using examples from the media and real life as a framework, students will be exposed to concepts such as inflammation and healing, cancer, immunology and system-based pathology. Students will gain an appreciation for how changes that occur at the microscopic level lead to physical symptoms and develop an understanding of how the interventions of health care providers alter disease processes.

Notes:

- **Introduction to Pharmacy**

Lead Faculty: Christopher Shaffer, PharmD, BCPS

This course will focus on the many different aspects that surround the wide range of expertise needed within the pharmacy profession. Students will be given instruction on Pharmacognosy (history of medicines), drug discovery and formulation, pathophysiology and therapeutics to specific diseases, and personalized medicine. Students will have the opportunity to learn from, and shadow, pharmacists in varying career fields, explore pharmacy through hands-on activities, and investigate real-world scenarios involving medications and point of care testing.

Notes:

- **Community Health–Outside the Individual: Investigating the Public’s Health**

Lead Faculty: Jessica Tschirren, PhD

Clean drinking water. Sewage and waste disposal. Restaurant inspections. Data on the high rates of STDs in Omaha. Racism’s impacts on infant mortality rates. These issues and many more, describe the daily work of public health professionals in Nebraska and across the country. This class will explore public health from all angles and through core areas of epidemiology, environmental health, health promotion, biostatistics, health policy, and maternal and child health. We will offer information, play board games, take field trips, reflect, and listen together. Our end goal is to better understand community health issues, the need for social justice, and routes for improving health through education, prevention, environmental factors, policy, and justice.

Notes:

- **Intro to Behavioral Health: Concepts and Careers from Family Therapy to Forensic Psychiatry**

Lead Faculty: Christian Klepper, PsyD and Tara Sjuts, PhD

From skyrocketing deaths from prescription painkillers to the devastating aftermath of school shootings, behavioral health providers are at the front lines of a battle for the emotional health of our country. This course will equip students with core concepts in behavioral health including the criteria for common mental health diagnoses, cutting edge treatments, and the public health impact of untreated disorders. It will also offer a practical guide to exploring mental health careers and the faculty will include practicing psychiatrists, psychologists, social workers, alcohol and drug abuse counselors, psychiatric nurses, etc. The course will have a strong active learning emphasis and include a mix of interactive seminar discussions, interviews with live or simulated patients, shadowing experiences/field trips, and a media project about stigma and mental health.

Notes:

- **The Biology and Prevention of Cancer**

Lead Faculty: Joyce Solheim, PhD

The Biology and Prevention of Cancer course will introduce students to the molecular and cellular level of cancer through a combination of discussions, exploration, and hands-on activities. Students will then form teams to develop and implement cancer prevention campaigns focused on the communities in which they interact. As this course begins, UNMC and Nebraska Medicine is aiming to become a “Comprehensive Cancer Center,” by expanding its population research in cancer prevention and control. Students will interact with the UNMC doctors and professors as they learn more about this designation.

Notes:

- **Medical Imaging**

Lead Faculty: Kim Michael, MA, RT(R), RDMS, RVT, FSDMS
Tanya Custer, MS, RT (R)(T)

This course allows an in-depth investigation into pathology that may be encountered by the health care professional in clinical practice. The relationship of clinical symptoms, lab values, and imaging findings will be covered for each disease process. The course will cover three broad topics: the abdomen, the pelvis, and miscellaneous. Students taking this course will also experience the anatomage table, the virtual environment radiotherapy training system (VERT), and ultrasound technology as part of the curriculum.

Notes:

- **Art and Science of Decision Making**

Lead Faculty: To Be Determined

Utilizing skills acquired through an array of disciplines such as literature, art, ethics, and observation, students in this course will gain a greater appreciation for the many elements a health care provider must consider throughout the medical-decision making process. Students will explore the mathematics behind various therapy options, historical context through art and literature, and the unique ethical dilemmas health care providers face throughout the medical decision-making process by observing actual direct patient/caregiver interactions.

Notes: