BSE - BIOMEDICAL SCIENCES AND ENGINEERING

BSE Class Schedule (https://courses.illinois.edu/schedule/DEFAULT/DEFAULT/BSE/)

Courses

BSE 600 Global One Health credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/BSE/600/)
Same as VCM 547. See VCM 547.

BSE 602 Public Health Clinical Applications credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/BSE/602/)
The Public Health Clinical Applications rotation was developed in 2006 for veterinary students. However, this rotation is applicable for medical students with an interest in public health that want to expand on concepts of study design, surveillance, sampling, sample handling, field epidemiology and biostatistics. The rotation will integrate medical and veterinary medical students around epidemiology to understand components affecting health from food safety and production to obesity to water systems at the interface of human, animal and ecosystem health. Additionally, students will work in close contact with local and state health departments, gain an understanding of the scope of activities in which local and state health departments are involved, study major and current health threats to humans, animals and the ecosystem and consider policy initiatives to address those threats. Day long field trips and one overnight trip within the state are possible. 4 professional hours. Approved for S/U grading only. May be repeated in separate semesters to a maximum of 8 hours. Prerequisite: Students must be professional student in the Carle Illinois College of Medicine.

BSE 603 Architecture and Medicine credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/BSE/603/)
Same as ARCH 523. See ARCH 523.

BSE 612 Foundations credit: 1 to 11 Hours. (https://courses.illinois.edu/schedule/terms/BSE/612/)
This course is designed with the larger goal of enabling incoming students to achieve similar baseline levels of understanding of the fundamentals of the major topic areas, Foundational concepts for the following disciplines will be covered: genetics, behavioral health, biochemistry, molecular biology, cellular biology and histology, physiology, microbiology, immunology, pathology, pharmacology, anatomy and embryology and epidemiology/biostatistics. For each of these areas, there is integration of relevant clinical contexts to prepare students for their subsequent organ-system based courses. 1 TO 11 professional hours. Approved for S/U grading only. May be repeated in separate terms to a maximum of 13 professional credits. Prerequisite: Restricted to students enrolled in the MD program at Carle Illinois College of Medicine.

BSE 631 Cardiovascular credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/BSE/631/)
Topics include ischemic heart Dx, cardiomyopathy/CHF, aortic stenosis, atrial fibrillation, peripheral vascular disease, pediatric ASD. 4 professional hours. Approved for S/U grading only. May be repeated in separate semesters for a total of 12 credit hours with approval from the Student Progress and Promotions Committee. Prerequisite: Restricted to students enrolled in the MD program at Carle Illinois College of Medicine.

BSE 632 Respiratory credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/BSE/632/)
Topics include Asthma, Chronic Obstructive Pulmonary Disease (COPD), Pulmonary Fibrosis, Respiratory Failure, and Pulmonary Vasculitis. 3 professional hours. Approved for S/U grading only. May be repeated in separate semesters for a total of 9 credit hours with approval from the Student Progress and Promotions Committee. Prerequisite: Restricted to students enrolled in the MD or MD/PhD program at Carle Illinois College of Medicine.

BSE 633 Renal credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/BSE/633/)
Topics include Urinary Tract Infection (UTI) with Pyelonephritis, Urinary Obstruction-Benign Prostatic Hyperplasia (BPH), Acute Renal Failure - toxic, Chronic Renal Failure - Diabetes Mellitus (DM), and Polycystic Renal Disease- pediatrics. 3 professional hours. Approved for S/U grading only. May be repeated in separate semesters for a total of 9 credit hours with approval from the Student Progress and Promotions Committee. Prerequisite: Restricted to students enrolled in the MD or MD/PhD program at Carle Illinois College of Medicine.

BSE 634 Clinical Neuroscience credit: 5 Hours. (https://courses.illinois.edu/schedule/terms/BSE/634/)
Topics include neurovascular disorders, seizures, brain injury, dementia, tumors of the brain, disorders involving neuroinflammation, psychotic disorders, affective disorders, anxiety disorders, as well as disorders of the peripheral nervous system and neuromuscular junction. 5 professional hours. Approved for S/U grading only. May be repeated in separate semesters, for a total of 15 credit hours with approval from the Student Progress and Promotions Committee. Prerequisite: Restricted to students enrolled in the MD program at Carle Illinois College of Medicine.

BSE 635 Musculoskeletal and Integumentary System credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/BSE/635/)
Topics include primary inflammatory diseases such as rheumatoid arthritis, lupus, polymyalgia rheumatica and associated disorders, degenerative diseases of the joints such as osteoarthritis, primary diseases of muscle, primary diseases of bone such as osteoporosis and osteogenesis imperfecta as well as mechanical trauma to bone leading to fracture. The course will also cover disorders of the integumentary system. 4 professional hours. Approved for S/U grading only. May be repeated in separate semesters for a total of 12 credit hours with approval from the Student Progress and Promotions Committee. Prerequisite: Restricted to students enrolled in the MD program at Carle Illinois College of Medicine.

BSE 636 Digestion, Nutrition, & Metabolism credit: 1 to 5 Hours. (https://courses.illinois.edu/schedule/terms/BSE/636/)
Topics include malabsorption syndrome, vitamin D deficiency, G6PD deficiency, TPN, obesity, GERD with stricture/Barretts, Crohn's disease, peptic ulcer disease with hemorrhage, chronic diarrhea, pyloric stenosis – peds hepatitis C, and colonic polyposis. 1 to 5 professional hours. Approved for S/U grading only. May be repeated in separate semesters for a total of 15 credit hours with approval from the Student Progress and Promotions Committee. Available for honors grade. Prerequisite: Participation in ongoing study of the digestive system. Restricted to students enrolled in the MD program at Carle Illinois College of Medicine.

BSE 638 Human Development and Reproductive Health credit: 8 Hours. (https://courses.illinois.edu/schedule/terms/BSE/638/)
Builds upon the clinical, basic science, and engineering fundamentals of genetics, the reproductive endocrine system, human development through the life cycle, and sexual and reproductive health. The CI MED curricular threads, namely bioethics and medical humanities, leadership, lifespan health, health systems science, and the social and structural determinants of health will be appropriately interwoven. 8 professional hours. Approved for S/U grading only. May be repeated in separate semesters for a total of 24 professional hours. Prerequisite: Restricted to students enrolled in the MD program at Carle Illinois College of Medicine.

BSE 642 Hematology, Oncology, Infection, and Immunity credit: 1 to 6 Hours. (https://courses.illinois.edu/schedule/terms/BSE/642/)
Topics include lung cancer, colon cancer, breast cancer, renal cancer, prostate cancer, pancreatic cancer, iron deficiency anemia, sickle cell anemia, lymphoma- non-Hodgkin, acute myelocytic leukemia, chronic lymphocytic leukemia, idiopathic thrombocytopenia, pneumonia, sepsis UTI – pyelonephritis, cellulitis, HIV anaphylaxis, allergic dermatitis, and myocarditis encephalitis. 1 to 6 professional hours. Approved for S/U grading only. May be repeated in separate semesters for a total of 24 credit hours with approval from the Student Progress and Promotions Committee. Available for honors grade. Prerequisite: Restricted to students enrolled in the MD program at Carle Illinois College of Medicine.

BSE 644 Multisystem Conditions credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/BSE/644/)
The Multisystem Conditions course is a required course for students in Phase 1 of the Carle Illinois College of Medicine Curriculum. In this course, students work in small groups to approach complex diseases and conditions they may see in the clinical environment. 4 professional hours. Approved for S/U grading only. May be repeated in separate semesters to a maximum of 12 hours. Prerequisite: Restricted to students enrolled in Phase 1 of the Carle Illinois College of Medicine curriculum.

BSE 645 Synthesis & Summary credit: 6 Hours. (https://courses.illinois.edu/schedule/terms/BSE/645/)
This course will review critical concepts in the areas of Behavioral Science, Biochemistry, Cells and Tissues, Human Development and Genetics, Microbiology, Immunology, Pathology, and Pharmacology, Population Health. The course will be organized around the major organ systems: Blood and Lymphoreticular System, Cardiovascular, Endocrine, Gastrointestinal, Hematology and Oncology, Musculoskeletal, Neurology, Psychiatry, Renal, Reproductive, Respiratory, Skin and Subcutaneous Tissue. 6 professional hours. Approved for S/U grading only. Prerequisite: This course is restricted to Carle Illinois College of Medicine Students.

BSE 655 Research Elective credit: 1 to 16 Hours. (https://courses.illinois.edu/schedule/terms/BSE/655/)
The goal of this course is to introduce the students to the foundations of selected multi-disciplinary research in medical/engineering field. Students will learn about the purpose for research; identifying researchable issues; finding, evaluating, and using sources effectively; recognizing methods associated with different types of data and disciplines; and writing a literature review. 1 to 16 professional hours. Approved for S/U grading only. May be repeated up to 16 hours in the same semester, to a maximum of 64 hours in separate semesters. Prerequisite: This course is restricted to Carle Illinois College of Medicine students.

BSE 660 Self-Designed Study credit: 1 to 16 Hours. (https://courses.illinois.edu/schedule/terms/BSE/660/)
Students will develop skills and gain experience working collaboratively with other professional through a self-designed study. Develop a self-guided study when students have an interest in an intellectual issue that is best studied through an integrative approach based in multiple academic disciplines. This course will introduce the student to a selected multi-disciplinary study or project in the medical/engineering field, addresses appropriate methodology, provides opportunities for advanced level research or other creative projects, and culminates in an integrative experience. It must be arranged between the student and an individual faculty member or external collaborator, and subsequently approved by the dean of Academic Affairs. 1 to 16 professional hours. Approved for S/U grading only. May be repeated up to 16 hours in the same semester to a maximum of 32 hours over separate semesters. Prerequisite: This course is restricted to Carle Illinois College of Medicine students.

BSE 666 Academic Progress I (Longitudinal) credit: 0 Hours. (https://courses.illinois.edu/schedule/terms/BSE/666/)
Provides students with an opportunity to demonstrate core medical skills. The course includes assessment of students' understanding of clinical skills, professionalism, anatomy, and medical knowledge. Areas covered in the course include: cardiovascular, respiratory, renal, neurology, musculoskeletal, digestive, nutrition, metabolism, endocrine, genitourinary, oncology, hematology, infection, and immunity. 0 professional hours. Approved for S/U grading only. May be repeated in separate semesters. Prerequisite: Restricted to Carle Illinois College of Medicine students.

BSE 680 Innovation, Design, Engineering and Analysis Projects (Longitudinal) credit: 0 to 6 Hours. (https://courses.illinois.edu/schedule/terms/BSE/680/)
IDEA—Innovation, Design, Engineering, and Analysis—is a required course designed to integrate medicine and innovation starting in the preclerkship year (Year 1) through the clinical immersion year (Year 3), giving students the knowledge and opportunities needed to create novel solutions that advance patient care. The course prepares students to identify unmet needs and apply systematic, innovation-driven methods to create effective and meaningful solutions in healthcare. 0 to 6 professional hours. Approved for S/U grading only. May be repeated in separate semesters to a maximum of 15 hours. Prerequisite: Restricted to students enrolled in Carle Illinois College of Medicine.

BSE 685 Medicine - Capstone Project (Longitudinal) credit: 2 to 4 Hours. (https://courses.illinois.edu/schedule/terms/BSE/685/)
Selecting one of the clinical challenges investigated during the Innovation, Design, Engineering and Analysis Projects (Longitudinal), students will work to potentially translate new approaches, technologies, and treatments in healthcare. 2 to 4 professional hours. Approved for S/U grading only. May be repeated in separate semesters to a maximum of 12 professional hours. Prerequisite: Restricted to students enrolled in Phase 3 of the Carle Illinois College of Medicine curriculum.

BSE 686 Medicine - Data Science Project (Longitudinal) credit: 2 to 4 Hours. (https://courses.illinois.edu/schedule/terms/BSE/686/)
Develop skills in data science for health care through the Data Science Project. Identify an exciting data-driven question, find data sources to address the question, and access and utilize those data to improve clinical care. Students will interact with databases, utilize tools for analyzing clinical or molecular data, and learn about the immense potential of medical data science while familiarizing themselves with the issues of human subject's protection and privacy regulations around data. 2 to 4 professional hours. Approved for S/U grading only. May be repeated in separate semesters to a maximum of 12 hours. Prerequisite: Restricted to students enrolled in Phase 3 of the Carle Illinois College of Medicine curriculum.

BSE 700 Innovations in Problem Based Learning credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/BSE/700/)
This elective will provide students multiple opportunities to identify compassionate innovation through problem-based learning facilitation. The students will learn how to facilitate a PBL session and how to identify moments in cases where compassionate innovation can be furthered. This will be done through creating additional probes or tasks in the cases to be used by future facilitators. Students will also have the opportunity to create notes and evaluations on first year students. These notes/evaluation will be reviewed by Carle Illinois facilitators. The overall goal of this is not only to improve cases for current PBL students, but to assist students participating in the elective in ideation and entrepreneurship. This will help students as they create IDEA projects in the clerkships as well as preparing them for Capstone and potentially Data Science projects. Based on student interest, certain areas of this elective may be emphasized to achieve student goals. 4 professional hours. Approved for S/U grading only. Prerequisite: Students must be in Phase 2 or Phase 3 of the curriculum. Restricted to students enrolled in the MD or MD/PhD program at Carle Illinois College of Medicine.

BSE 701 Introduction to Telemedicine credit: 2 Hours. (https://courses.illinois.edu/schedule/terms/BSE/701/)
This introduction to telemedicine will help students understand the role of telemedicine in various contexts such as in primary care, for underserved or rural patients, during times of crisis (disasters, pandemics) and more. Considerations include benefits & limitations, tools & technology, patient interactions & follow-up, insurance considerations, legal and regulatory issues, and research. Students will have an opportunity to research an area of telemedicine and present what they have learned. This could be new uses of telemedicine, new tools, policy/legal considerations, expanding the reach of telemedicine, or any other issue related to telemedicine. Outputs could include a literature review, program plan, roadmap, white paper or other presentation medium. 2 professional hours. Approved for S/U grading only. Prerequisite: Restricted to students enrolled in the Carle Illinois College of Medicine.

BSE 702 Medical Spanish credit: 2 Hours. (https://courses.illinois.edu/schedule/terms/BSE/702/)
Carle Illinois College of Medicine strives to support physicians who want to serve diverse populations. To that end, students may enroll in a medical Spanish course. This hybrid online course allows students to increase their proficiency in Spanish, while also practicing with a standardized patient. 2 professional hours. Approved for S/U grading only. Prerequisite: Restricted to students enrolled in the Carle Illinois College of Medicine.

BSE 703 Medical Informatics credit: 2 Hours. (https://courses.illinois.edu/schedule/terms/BSE/703/)
A detailed overview of biomedical and health informatics for medical students. The course provides up-to-date details on the informatics field, which includes: electronic health records, data standards and interoperability, clinical decision support, healthcare data analytics, population health, patient engagement, and telemedicine. It also describes and sets the context for new technologies, such as SMART on FHIR, machine learning, artificial intelligence, and wearables. 2 professional hours. Approved for S/U grading only. Available for honors grades. Prerequisite: Restricted to students enrolled in the Carle Illinois College of Medicine.

BSE 704 Medicine in Literature credit: 2 Hours. (https://courses.illinois.edu/schedule/terms/BSE/704/)
The medical encounter between patients and physicians has been represented in literary texts such as poems, short stories and novels for centuries. In this elective, students will be given the opportunity to reflect on the medical experience through an analysis of literary texts from various time periods and cultural contexts. Particular attention will be paid to the difference in perspective by patients, physicians and other actors in the healthcare setting. Our reading of literature will be complemented by texts from the field of narrative medicine, which uses the tools of literary analysis and close reading to understand patients' histories and fine-tunes awareness of the cultural and social determinants of health. 2 professional hours. Approved for S/U grading only. Prerequisite: Restricted to students enrolled in the Carle Illinois College of Medicine.

BSE 705 Race in Medicine credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/BSE/705/)
This elective provides an opportunity to explore the topics of unconscious bias, history of race in medicine and effects on systemic racism in medicine. The goal is to give time to grow in personal insight and development in this area to progress to become a compassionate and unbiased health care provider. Progress towards this goal will be made through the personal journey of completing a 21 day equity challenge and reflection paper, participation in online discussion boards, and group projects looking at the history and current state of racism and social determinants of health in medicine. 4 professional hours. Approved for S/U grading only. Prerequisite: Restricted to students enrolled in the Carle Illinois college of Medicine curriculum. The course is only available during the Discovery Learning timeframe.

BSE 706 Literature Reviews in Pathology credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/BSE/706/)
Pathology is a multidisciplinary science that connects theory (basic sciences) with practice (clinical sciences). This elective provides students with opportunities to explore the role of pathology in medical education. This course might be of particular interest to those who are generally interested in medical education and/or pathology as a future specialty. 4 professional hours. Approved for S/U grading only. May be repeated in separate semesters to a maximum of 8 hours. Prerequisite: Restricted to students enrolled at the Carle Illinois College of Medicine.

BSE 707 Interreligious Perspectives on Health and Medicine credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/BSE/707/)
Explores and develops an appreciation for the many ways in which religion and religious identities are present in, and absent from, medical spaces in the United States. This course is intended to support physicians-in-training develop the background, vocabulary, and experiences necessary to practice medicine thoughtfully and sensitively in a religiously diverse society. 4 professional hours. Approved for S/U grading only.

BSE 708 Social Medicine and the Normative Body credit: 2 Hours. (https://courses.illinois.edu/schedule/terms/BSE/708/)
Examines the intersection of intergenerational, socio-historical depictions, and articulations of the standardized human body or the normalized body and how its legitimization shaped the practice of medicine and public health. Particular attention will be placed on gendered, abled, racialized, cognitive, and/or socio-economic dichotomies that become attached to the normalized body and sifted through inequitable medical practices and socio-medical stigma. An examination of these histories and historiographies relative to contemporary society will help students better assess the processes by which medical inequities have been erroneously validated and constructed. 2 professional hours. Approved for S/U grading only. Prerequisite: Restricted to students enrolled in the Carle Illinois College of Medicine.

BSE 709 Microbiomes Matter: The Path to Regenerative Systems of Farm, Food and Health in the Age of Climate credit: 2 Hours. (https://courses.illinois.edu/schedule/terms/BSE/709/)
Through this elective, students will expand their understanding of food systems, the production, processing, consumption, and disposal of food products. This will allow students to draw parallels between the microbiome in the human gut and soil and the impacts of these relationships on human health. Students will engage with a multidisciplinary team of professionals, to understand the connection between regenerative agriculture, food, nutrition, and human and planetary health through the microbiome. 2 professional hours. Approved for S/U grading only. Prerequisite: Restricted to students enrolled in the Carle Illinois College of Medicine.

BSE 710 Computational Genomics credit: 2 Hours. (https://courses.illinois.edu/schedule/terms/BSE/710/)
The first week of this elective is an intensive course for scientists and clinicians covers the basics of computational genomics, while integrating the latest technologies and computational methodologies. University of Illinois faculty and Mayo Clinic scientists teach lectures and lead hands-on lab exercises in a variety of subject areas including genome sequencing and assembly, polymorphism and variant analysis, epigenomics, and systems biology. The second week is an in-depth independent study that focuses on a project using the skills from the first week. 2 professional hours. Approved for S/U grading only. Prerequisite: This course is restricted to students enrolled in the Carle Illinois College of Medicine.

BSE 711 Climate Change, Planetary Health and Sustainability credit: 2 Hours. (https://courses.illinois.edu/schedule/terms/BSE/711/)
Medical students should learn how to practice medicine in the context of the current health impacts of climate change. Throughout the U.S. and globally, climate change contributes to increasing morbidity and mortality, including heat illness, respiratory and cardiovascular disease from air pollution, vector and water borne diseases, food and water insecurity, mental stress, and injuries. We highlight health threats, policies, and actions for physicians, engineering/medical researchers, and medical students. 2 professional hours. Approved for S/U grading only. Available for honor grades. Prerequisite: Restricted to students enrolled in the MD program at Carle Illinois College of Medicine.

BSE 712 Artificial Intelligence in Health credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/BSE/712/)
Artificial Intelligence (AI) has been proposed to address a variety of challenges in health, both within a clinical setting and beyond the direct patient-physician interaction. The goal of this course is to critically engage with readings on timely topics in AI and health. The strengths and weaknesses of each paper will be discussed both from an AI and evidence-based medicine perspective. Those constructive debates will inform the student's final project that will propose a computational intervention that is more likely to successfully improve health. 4 professional hours. Approved for S/U grading only. Prerequisite: Restricted to students enrolled at Carle Illinois College of Medicine.

BSE 720 Advanced Anatomy credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/BSE/720/)
Provides a focused concentration on gross anatomy via literature review and intensive cadaver dissection related to the student's specific clinical interest. Topics will emphasize clinical conditions that have clear anatomic correlates. Key topics will include the 3D relationships of gross anatomical structures, foundational anatomical knowledge required to interpret results of different imaging modalities, and the application of anatomical knowledge in carrying out surgical, diagnostic, or therapeutic clinical procedures. 4 professional hours. Approved for S/U grading only. Available for honors grades. Prerequisite: Restricted to students enrolled in the MD program at Carle Illinois College of Medicine.

BSE 721 Neurocardiology credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/BSE/721/)
Introduces students to the fields of scientific and clinical Neurocardiology. Involves a thorough overview of the interplays between the nervous and cardiovascular systems at the basic science and clinical levels. Course instruction will include lectures, invited research talks, and an extensive review and discussion of the medical/scientific literature in the field. Additionally, students will develop a research idea related to neurocardiology and receive formal training and guidance on how to write an NIH grant. The project will culminate with a completed modified F30 research proposal by the end of the elective. 4 professional hours. Approved for S/U grading only. Prerequisite: Restricted to students enrolled in Phase 2 or Phase 3 of the Carle Illinois College of Medicine.

BSE 730 Introduction to Deep Learning on Healthcare Data credit: 2 Hours. (https://courses.illinois.edu/schedule/terms/BSE/730/)
Covers deep learning methods, healthcare data and applications using deep learning methods. Includes activities such as online lectures or video lectures, programming labs, literature review, and individual or group presentations. The overall goal is to understand basic data science workflow for healthcare data such as electronic health records, clinical notes, and medical images, to learn basic deep learning models, and to learn the structure of data science projects. 2 professional hours. Approved for S/U grading only. Prerequisite: Experience with Python programming, basic machine learning, and Jupyter notebooks. Restricted to students enrolled in the Carle Illinois College of Medicine curriculum.

BSE 732 Healthcare Process Management credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/BSE/732/)
In this elective we will apply principles and tools of operations management to explore improvement opportunities in the design, delivery, and management of the health care value chain. We will be examining the health care operation from the perspective of operations metrics such as: cost, quality, time (access), and variety/customization. 4 professional hours. Approved for S/U grading only. Prerequisite: Successful completion of the Carle Illinois College of Medicine Phase 1 curriculum. Restricted to students enrolled in Phase 2 or Phase 3 of the Carle Illinois College of Medicine curriculum.

BSE 733 Introduction to Research credit: 1 Hour. (https://courses.illinois.edu/schedule/terms/BSE/733/)
This elective course offers a comprehensive understanding of research fundamentals at Carle Illinois and the University of Illinois. Students will learn study design, literature searches, hypothesis generation, and research methodologies. They will also gain skills in statistics, outcome assessment, budgeting, ethics, safety protocols, mentorship, collaboration, and securing funding. Upon completion, students will have a solid foundation and skills to excel academically and professionally in research. 1 professional hour. Approved for S/U grading only. Prerequisite: Restricted to students enrolled in the Carle Illinois College of Medicine.

BSE 734 Medical Chinese credit: 2 Hours. (https://courses.illinois.edu/schedule/terms/BSE/734/)
Medical students with basic conversational Chinese skills will be provided opportunities to learn phrases commonly used in the patient interview as well as practice patient interviews in Mandarin. Students will also be introduced to basic concepts of Traditional Chinese Medicine in the context of patient interaction. The goal is to equip students with basic Medical Chinese needed to provide care and advocate for the Chinese community. 2 professional hours. Approved for S/U grading only. Prerequisite: Restricted to students enrolled in Phase 3 of the Carle Illinois College of Medicine curriculum.

BSE 735 Leadership in PBL I credit: 1 Hour. (https://courses.illinois.edu/schedule/terms/BSE/735/)
Students will delve into the world of Project-Based Learning (PBL) from the perspective of a facilitator. Through training, participants will gain a comprehensive understanding of leadership characteristics and the correct implementation of PBL principles. The course aims to equip interested students with the necessary background and context to become student leaders in PBL sessions. Students may engage in the student leader role by enrolling in the second part of this two-part elective series. 1 professional hour. Approved for S/U grading only. Prerequisite: Restricted to students enrolled in Carle Illinois College of Medicine.

BSE 736 Leadership in PBL II credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/BSE/736/)
Students are expected to participate in PBL sessions as student leaders, equipping them with skills essential for leadership in whichever domain they choose including clinical, research, entrepreneurial, and engineering fields. The overall goal of this elective is to provide opportunities for leadership and near-peer PBL facilitation. 4 professional hours. Approved for S/U grading only. Prerequisite: Completion of all clerkships and Leadership in PBL I. Restricted to students enrolled in the Carle Illinois College of Medicine.

BSE 737 Exploring Anatomy through the Virtual Reality Lens credit: 1 Hour. (https://courses.illinois.edu/schedule/terms/BSE/737/)
In this immersive elective, students have the opportunity to better understand and visualize the 3D view of several complex anatomical areas and their related clinical/surgical applications. Integrating this technology into anatomy won't only allow students to practice hands-on dissection of a complex anatomical area of their choice, after consultation with the anatomy faculty, but also give them a chance to use VR to dive deeper and enhance their understanding of the human body. 1 professional hour. Approved for S/U grading only. Prerequisite: Restricted to students enrolled in Carle Illinois College of Medicine.

BSE 738 Advanced Anatomy for Teaching credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/BSE/738/)
Advanced Anatomy for Teaching is an elective course designed to enhance regional anatomy knowledge and teaching skills. Through one-on-one and small group lab instruction, students will learn best practices in anatomy education, reflect on their teaching principles, and create educational resources. Students will create either an educational resource to be used for teaching anatomy or an in-depth literature review of medical education pedagogy. 4 professional hours. Approved for S/U grading only. Prerequisite: Restricted to students enrolled beyond Phase 1 of the Carle Illinois College of Medicine.

BSE 739 Medical Device Product Development credit: 1 to 16 Hours. (https://courses.illinois.edu/schedule/terms/BSE/739/)
Covers the foundational principles for developing medical devices, clinical diagnostic systems, medical decision-making tools. The pathway from device innovation through clinical development to product approval will be the focus. Content for the course includes best practices in industry, regulation guidance for developing products, and case studies. 1 TO 16 professional hours. Approved for S/U grading only. Students may repeat the course in separate semesters up to 16 credit hours total. Prerequisite: Restricted to students enrolled in Carle Illinois College of Medicine.

BSE 740 Artificial Intelligence in Medicine credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/BSE/740/)
This course offers a comprehensive exploration of AI's impact on healthcare. Healthcare professionals will gain a conceptual understanding of AI applications through medical case studies and machine learning models. The course empowers participants to confidently read AI literature, make data-driven decisions, identify AI tools, and actively participate in the selection and deployment of AI-based medical software. 4 professional hours. Approved for S/U grading only. Prerequisite: Restricted to students enrolled in the Care Illinois College of Medicine.

BSE 741 Gamified Learning in Broadly Defined Medical Education credit: 4 Hours. (https://courses.illinois.edu/schedule/terms/BSE/741/)
This course surveys existing research on the design and evaluation of gamified learning strategies situated in the context of health sciences and medical education. Upon completing the course, students will be able to understand design principles and implications of gamified learning strategies in delivering pertinent knowledge, skills, and abilities to intended audience groups in broadly defined medical education contexts via formal and informal learning processes. 4 professional hours. Approved for S/U grading only. Prerequisite: Restricted to students enrolled in Carle Illinois College of Medicine.

BSE 742 Network Science for Health and Social Care credit: 1 Hour. (https://courses.illinois.edu/schedule/terms/BSE/742/)
Network science studies complex systems with networks, borrowing theories and methods from a wide range of disciplines, including mathematics, statistical mechanics, data mining, and information visualization. Network science impacts every domain of scientific inquiry, including domains that describe and explore structural and relational aspects important for the health and social care professional. The introductory course provides hands-on experiences with network construction, visualization and analysis using online lectures, visualization labs, student presentations and individual/group research projects. 1 professional hour. Approved for S/U grading only. Prerequisite: Restricted to students enrolled in Carle Illinois College of Medicine.

BSE 743 Introduction to Health Systems Science credit: 1 Hour. (https://courses.illinois.edu/schedule/terms/BSE/743/)
Health Systems Science is a cornerstone for aspiring physician innovators. It equips students with the tools to navigate and improve healthcare systems, emphasizing the integration of health systems science with professional identity development. Through modules and reflective case studies, students become prepared to lead and innovate within the healthcare landscape by applying key concepts to real-world scenarios and enhancing their roles as system-aware physicians. 1 professional hour. Approved for S/U grading only. Prerequisite: Restricted to students enrolled in Carle Illinois College of Medicine.

BSE 744 Simulation I credit: 2 Hours. (https://courses.illinois.edu/schedule/terms/BSE/744/)
Simulation I is an immersive, dynamic, two-week introduction to medical simulation activities, providing a gateway to a profound understanding of medical scenarios and their management through simulation techniques. Functioning as supervised participants, students will actively engage in diverse day-to-day simulation activities, collaborating with a team of educators and facilitators. This hands-on experience will culminate in a simulation experience with reports, and self-reflection of needs within the community/medical curriculum to drive the development of their simulation. 2 professional hours. Approved for S/U grading only. Prerequisite: Restricted to students enrolled in Carle Illinois College of Medicine.

BSE 745 Medical Ethics at the Beginning and End of Life credit: 2 Hours. (https://courses.illinois.edu/schedule/terms/BSE/745/)
We will examine issues in medical ethics at the beginning and end of life, namely, those pertaining to abortion, the treatment of newborns, dementia, physician assisted suicide, and euthanasia. We will discuss, among other things, ethics-based versus policy-based arguments, different types of patient interests (short-term experiential interests vs. long-term critical interests), and various prima facie rights (the right to life, the right over one's body, and the right to die). 2 professional hours. Approved for S/U grading only. Prerequisite: Restricted to students enrolled in the Carle Illinois Collage of Medicine.

BSE 746 Medical Hindi credit: 2 Hours. (https://courses.illinois.edu/schedule/terms/BSE/746/)
Students will complete specific modules of readings and videos daily and practice medical vocabulary in Hindi/Urdu as a group virtually twice weekly. The group meeting will allow for reviewing module content and practicing patient interview skills in Hindi/Urdu with a focus on recognizing cultural differences that are specific to the South Asia healthcare system. The goal is to encourage medical students to provide more culturally sensitive care and advocate for the local Hindi-speaking patient population. 2 professional hours. Approved for S/U grading only. May be repeated in separate semesters to a maximum of 12 hours. Prerequisite: Restricted to students enrolled in Carle Illinois College of Medicine.

BSE 747 Survey of Health Systems Science credit: 2 Hours. (https://courses.illinois.edu/schedule/terms/BSE/747/)
Survey of Health Systems is a follow-up elective to Introduction to Health Systems Science. The goal is for students to shadow administrators at various healthcare practices to compare and contrast. The focus will be on understanding common threads and differences between types of practices and deepening understanding of practicing high-value care. 2 professional hours. Approved for S/U grading only. Due to the coordination of many faculty to arrange for this elective, at least 1 month is needed to arrange shadowing times before the elective starts and it is strongly encouraged to not drop the elective within 2 weeks of the start date. Prerequisite: Restricted to students enrolled in the Carle Illinois College of Medicine.

BSE 748 Residency-Ready: Writing A Review Paper on Medical Innovations in Your Chosen Specialty credit: 8 Hours. (https://courses.illinois.edu/schedule/terms/BSE/748/)
Third- and fourth-year medical students will be empowered with the skills and knowledge necessary to become physician-innovators in their chosen clinical specialties as they prepare for residency. Participants will explore cutting-edge breakthroughs, refine critical thinking, and enhance scientific writing and problem-solving skills. By strengthening residency applications, this course positions students as standout candidates ready to make a meaningful impact in their future clinical field. 8 professional hours. Approved for S/U grading only. Prerequisite: Restricted to students who completed the second year of the Carle Illinois College of Medicine program.

BSE 749 Comprehensive Immunology Course-Level 1 credit: 1 Hour. (https://courses.illinois.edu/schedule/terms/BSE/749/)
Immunology is a cornerstone of modern medicine, impacting all clinical specialties. The elective is designed to provide M2-M4 students, with an in-depth understanding of immunological principles, to address gaps in their M1 immunology education. It provides a detailed exploration of the immune system, reinforcing key concepts in both innate and adaptive immunity through focused, comprehensive content. 1 professional hour. Approved for S/U grading only. May be repeated in separate semesters to a maximum of 12 hours. Prerequisite: Restricted to students enrolled in the Carle Illinois College of Medicine.

BSE 750 Clinical Pharmacology and Therapeutics credit: 1 Hour. (https://courses.illinois.edu/schedule/terms/BSE/750/)
This is self-directed learning in pharmacology, where students review drug classes, covering mechanisms of action, side effects, therapeutic uses, and contraindications. Weekly case-based session integrate pharmacological principles with clinical decision-making. 1 professional hour. Approved for S/U grading only. May be repeated in separate semesters to a maximum of 12 hours. Prerequisite: Completion of the first year. Restricted to students enrolled in the Carle Illinois College of Medicine.

BSE 751 Contribution of Freestanding Clinics to Patient Care credit: 1 Hour. (https://courses.illinois.edu/schedule/terms/BSE/751/)
This will serve to facilitate medical student application of their knowledge of healthcare systems and resources to optimize high-quality care for patients, communities, and populations. The course will provide the opportunity to understand services standalone clinics provide, why patients choose to visit such clinics, and cost-benefit analyses between inpatient and outpatient clinics of hospital systems. 1 professional hour. Approved for S/U grading only. May be repeated in separate semesters to a maximum of 12 hours. Prerequisite: Family Medicine Clerkship. Restricted to students enrolled in Carle Illinois College of Medicine.

BSE 752 Community Service Learning credit: 2 Hours. (https://courses.illinois.edu/schedule/terms/BSE/752/)
Students will, in partnership with a community service partner, and through cultural humility training provided by University Extension, understand and apply public and community health principles, bridging the gap between individual patient care and population health. Students will design or propose a community innovation to present to the community partner leadership and faculty at the end of the course. 2 professional hours. Approved for S/U grading only. Prerequisite: Completion of the first year. Restricted to students enrolled in Carle Illinois College of Medicine.

BSE 753 Essential Social, Emotional, Behavioral Skills for Medicine credit: 1 Hour. (https://courses.illinois.edu/schedule/terms/BSE/753/)
Social, emotional, and behavioral skills (SEB skills) help us to implement medical skills more effectively. This course provides opportunities to help understand and develop SEB skills through assessments, readings, and hands-on activities. We intend to cover techniques for improving interpersonal, leadership, teamwork, task management, emotion regulation, and innovation skills. Students will work with the instructor to identify areas they would like to enhance and then design a personalized or small group approach to training. 1 professional hour. Approved for S/U grading only. Prerequisite: Restricted to students enrolled in the Carle Illinois College of Medicine.

BSE 754 Wealth Management for Medical Professionals credit: 3 Hours. (https://courses.illinois.edu/schedule/terms/BSE/754/)
This course addresses a critical gap in undergraduate medical education by providing career-specific financial literacy instruction tailored to the structure and demands of medical training. Unlike general wealth management courses offered through business curricula, this course focuses on physician-specific financial challenges, including high educational debt, delayed earnings, uneven cash flow during residency, elevated professional risk exposure, and the financial decision-making demands that accompany transitions to residency and independent practice. 3 professional hours. Approved for S/U grading only. Prerequisite: Restricted to students enrolled in the Carle Illinois College of Medicine.

BSE 770 Service Learning Elective credit: 1 to 16 Hours. (https://courses.illinois.edu/schedule/terms/BSE/770/)
Service Learning offers educational experiences that involve students providing non-clinical service to the community in response to identified community needs. Through this course, Carle Illinois students have the opportunity to engage in service-learning activities, collaborate with diverse community members, and develop essential skills for independent and continuous learning throughout their lives. Students will reflect on the connections between their participation in these activities, their medical school curriculum, and their responsibilities as both citizens and future medical professionals. 1 TO 16 professional hours. Approved for S/U grading only. Prerequisite: Restricted to students enrolled in the Carle Illinois College of Medicine.

BSE 799 Advanced Non-Clinical Electives credit: 0 to 8 Hours. (https://courses.illinois.edu/schedule/terms/BSE/799/)
Third- and fourth-year students are eligible to participate in short-term elective opportunities that can enhance their medical education. The AAMC Visiting Student Learning Opportunities program enables eligible students to pursue these opportunities other than at their home institutions. They offer clinical, clinical and research, non-clinical, hybrid, and research experiences in the U.S. and globally at teaching hospitals, community clinics, and urban or rural sites. Eligibility and availability are determined by the host institution. 0 to 8 professional hours. Approved for S/U grading only. May be repeated up to 20 hours in the same semester if topics vary, and separate semesters to a maximum of 32 hours. Prerequisite: Restricted to students enrolled in the Carle Illinois College of Medicine.