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The immune system is a disease defense system composed of a series of biological structures and processes in an organism. The immune system can detect many pathogens, including viruses and bacteria, and distinguish them from healthy tissues. It participates in the maintenance of the normal functions of almost all tissues and organs of the human body and is closely related to human health. Especially in the environment where epidemic diseases are raging around the world and immune diagnc [illegible] nology is advancing by leaps and bounds, immunology and immunological technology [illegible] important role in safeguarding human health.

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This course will expand and introduce the basic knowledge of immunology and related technologies, including the composition and function of the immune system, immune diseases, immunity and aging, antibody technology, etc. the existing knowledge of senior high school students. On this basis, we will further discuss the application of immu knowledge and technology in the prevention, diagnosis and treatment of diseases, such as the prevention of infecti diseases by vaccines and the immunotherapy of tumors. Finally, the students will deeply understand the important discipline in the maintenance of human health and the characteristic [illegible] of the interaction and integration of immuno technology and other disciplines, which will also inspire the stude [illegible] relat [illegible] nt majors in th

This course aims to enable students to understand the basic knowledge points of medical immunolog immunological technology, the characteristics and development trends of the discipline, and cultivat disciplines.

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	1. 掌握电子电路分析、电路搭接、电路调试、电路故障的分析和排除、电子测量、测试的能力，从而提高发现问题和解决问题的能力，实现电子、电气、信息等专业要求对于硬件电路的工程运用与实践的能力发展；（B1，B2） 2. 从生物医学工程应用出发，提高对不同电路方案进行对比分析能力，提高设计系统的能力，理解模拟电路在生物医学领域中的应用；(A5，B3) 3. 通过团队合作进行实验操作，了解模拟电路中理想电路、理想模型与实际电路、实际模型之间关系，使之能够用理想模型、简化模型来分析实际电路，并在此基础上，利用计算机的运算能力开展优化、工程化处理。（C2，C5，D1） 4．培养并养成良好的科学素养和严谨的科学工作方法和态度，通过规范原始数据、完整记录实验条件、现象，开展电子测量方法的培养，从测试、记录、数据分析、拟合、处理全过程中，实验方法和能力的培养；[illegible]对原始数据敬畏，形成一种良好的科学实验的态度。(B1, B2, D1)				

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	本门课是生物医学工程专业的专业基础课，它是学生完成了高等数学、信号与系统等课程后，进一步为学习专业知识打基础的课程。本课程将通过讲课、课堂练习、上机实验等多种方式，使学生建立 "数字信号处理"的基本概念，掌握数字信号处理的基本分析方法和分析工具，为培养和提升学生利用信号处理以及相关数学方法、分析和解决生物医学工程领域的相关问题的能力，具有不可或缺的重要地位。主要教学内容包括时域离散信号及离散[illegible]					
	This course is to teach the basic repre[illegible] and theory of frequency analysis of discrete-time signals and linear shift invariant (LSI) system[illegible]o, it is to teach the basic processing techniques of discrete-time signals and LSI system. The students will learn basic skills of Matlab-based discrete-time signals description and system designs. We will prepare the students with the ability to present digital signals; to present and describe the linear shift-invariant system; to perform linear convolution; to analyze the spectrum change of analog signal when passing a digital system; to get the Z transform [illegible] e Fourier Transform, discrete Four transform and their relationships; to use Z transform, discrete Fourier transform to a the discrete-time signals; to do fast discrete Fourier transform of a time series and the linear convolution; to realize the digital systems with different structures; to analyze system properties according to the zeros and poles of the system; to design a digital FIR/IIR filter; to use MATLAB to present digital signals, perform basic operations of signals and design digital systems, FIR and IIR filters.					

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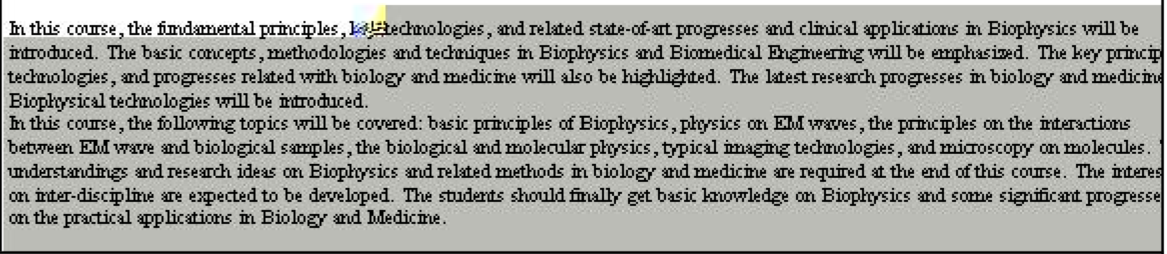
<tr><td></td><td colspan="8">
In this course, the fundamental principles, key technologies, and related state-of-art progresses and clinical applications in Biophysics will be introduced. The basic concepts, methodologies and techniques in Biophysics and Biomedical Engineering will be emphasized. The key princip
technologies, and progresses related with biology and medicine will also be highlighted. The latest research progresses in biology and medicine
Biophysical technologies will be introduced.
In this course, the following topics will be covered: basic principles of Biophysics, physics on EM waves, the principles on the interactions between EM wave and biological samples, the biological and molecular physics, typical imaging technologies, and microscopy on molecules.
understandings and research ideas on Biophysics and related methods in biology and medicine are required at the end of this course. The interes
on inter-discipline are expected to be developed. The students should finally get basic knowledge on Biophysics and some significant progresse
on the practical applications in Biology and Medicine.</td></tr>
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	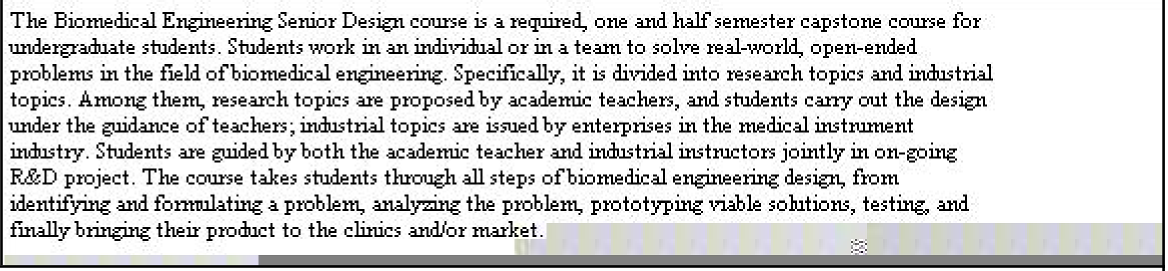 The Biomedical Engineering Senior Design course is a required, one and half semester capstone course for undergraduate students. Students work in an individual or in a team to solve real-world, open-ended problems in the field of biomedical engineering. Specifically, it is divided into research topics and industrial topics. Among them, research topics are proposed by academic teachers, and students carry out the design under the guidance of teachers; industrial topics are issued by enterprises in the medical instrument industry. Students are guided by both the academic teacher and industrial instructors jointly in on-going R&D project. The course takes students through all steps of biomedical engineering design, from identifying and formulating a problem, analyzing the problem, prototyping viable solutions, testing, and finally bringing their product to the clinics and/or market.						

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	结合本校办学定位、学生情况、专业人才培养要求，具体描述学习本课程后应该达到的知识、能力、素质、价值水平。 1.能了解人工智能的基本方法，了解人工智能的发展历程，了解人工智能与相关学科、应用结合后的前景；（A1，A3，B1，B2，B3，B4，C3，D1，D3） 2.能使用人工智能工具，构建针对实际问题的解决方案。（ B2，B3，B4，C2，C3，C5）						

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	Medical diagnosis has icrofluidic devices, li d biopsy, new imaging technology, and so on. Furthermore, artificial intelligence and big data analytics have gre potential in clinical diagnostics. The combination of Point-of-Care innovations and wireless communication, whi is already represented by mobile phones, has enabled medical diagnostics to move out of large diagnostic labor ries and become available under a wider range of conditions. New fabrication methods, such as 3D printing, a new functional materials further accelerate innovation in related medical diagnostics. Personalized diagnos and precision diagnostics have set new goals and challeng development of basic research, the product transformation of technology and the innovation and entrepreneurs of related industries have also attracted the attention of all parties. This course aims to comprehensively introduce students to the basics and applications of medica cutting-edge technology; discuss the transition from basic scientific research to clinical medical di iagnosis and students understand the new design software, proc osis; let es, and actually participate in the developme of new types of devices in the practical aspec of this course. Through class teaching, innovative practice, case analysis, presentations and discussions, th course enables students to understand the fundamentals of medical diagnostic frontier technology and th application in biomedical fields in a multi-dimensional manner, inspiring students' interest in medical diagnosis ar biomedical engineering. It also lays the foundation for the current urgent need for cross-combination research tale s.						