**附件一：2021秋季及2022年春季线上学分项目课程列表**

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| **专业** | **课程名称** | **课程说明** | **总课时** | **上课时间****(美国西部时间)** | **学分** |
| **艺****术****、****设****计** | 儿童插图读物 | Develop a portfolio as a children's book illustrator. You will learn the creative process of designing art for picture books, as well as build your design skills and stretch your imagination. Discover the magic of book making from simple concept to finished and portfolio-worthy artwork. You will learn how to transform basic drawing through personal style and use of colors to develop your own character designs by using visual details to create a compelling storybook. | 30 | 9月28日-12月7日 直播 | 2 |
| 视觉设计原则 | Explore the underlying principles of visual/graphic design through a series of weekly studio exercises, online lectures, readings, seminars and guidance in Adobe Illustrator and Photoshop. You use these software demos to explore color theory (CMYK, RGB, Hexadecimal #), grid systems, logo design, perception, balance, line, repetition, composition and Gestalt principles of design. | 30 | 9月30日-12月30日固定时间段录播 | 2 |
| 照明设计基础 | Gain familiarity with architectural lighting techniques in this introductory course. Learn the fundamentals of lighting—luminaire sources and types, regulations and technical terminology—and determine how to apply them to practical situations for residential and commercial interiors. Specific exercises, sightseeing and case studies train you to draw lighting plans, write specifications and create study models. | 35 | 9月30日-12月16日 直播 | 2 |
| 插画I | Adobe Illustrator is the industry standard tool for creating vector graphics, a must have skill in any graphic designer's toolbox. Through step-by-step instructions, you will learn to use Illustrator's powerful drawing tools to create drawings, icons, logos, brand identity and original print and digital artwork.  | 30 | 10月2日-12月11日 直播 | 2 |
| UX设计的可访问性 | Get an introduction to important aspects of accessibility. You first examine the principles of universal design and define the concept of multimedia accessibility that can lower the barriers to entry and improve the experience of websites, apps and forms for people with disabilities. Class discussions center on the core concepts of accessibility as they apply to UX design, including an overview of assistive technologies; rethinking disabilities; proper use of color, contrast, and tagging; and form accessibility. | 30 | 10月4日-12月6日 直播 | 2 |
| **健****康****科****学** | 变态心理学 | From work in the public policy sector to private relationships, having insight into and the understanding of normal and abnormal behavior is both useful and practical. Learn to recognize abnormal behavior when it occurs, understand what promotes it and then know what steps can be taken to address it. You’ll also learn about the dynamics and prevention of abnormal behavior, including neuroses, psychoses, character disorders, psychosomatic reactions, schizophrenia and other abnormal personality patterns. | 45 | 录播，时间灵活 | 3 |
| 生物心理学 | Address questions of how the human brain and nervous system produce our range of behaviors—sensation, emotions, sleep and dreams, reproductive behavior, language and memory—as you explore brain-behavior relationships with an emphasis on clinical examples. Clinical examples include depression, schizophrenia, eating disorders, sleep disorders, aggression, post-traumatic stress disorder, visual agnosia, dyslexia and amnesias. You’ll begin with studying the basic structure and function of the nervous system, then move to explore the organic bases of behavior. | 45 | 录播，时间灵活 | 3 |
| 医疗保健中的伦理和法律问题 | Explore the legal and ethical issues that health care professionals and health advocates face as a natural part of the clinical practice process. Examine the principles that guide ethical practice, the ethical dilemmas that exist in a variety of settings, and local and federal health guidelines. You also investigate tools for identifying and implementing an approach to ethical professional practice in health care settings. | 15 | 录播，时间灵活 | 1 |
| 普通营养学 | If you are a student in a health-related career or simply want a better understanding of the subject, this course enables you to critically examine many of the popular myths about nutrition and gain a foundation for making wise nutritional choices. Learn about dietary nutrients and toxicants and the role of nutrition in optimal health. Topics include macro- and micronutrient needs; how to determine individual caloric and nutrient needs; digestion and absorption; and current food issues, including food safety. | 45 | 录播，时间灵活 | 3 |
| 普通心理学 | In this course, you focus on psychology's study of human subjects and discover how to remain objective as you learn to interpret human behavior. Get an introduction to the principal areas, problems and concepts of psychology, including topics such as development, learning, perception, emotion, personality, stress and pathology. Then, demonstrate your understanding of the course topics through a research paper and final exam. | 45 | 录播，时间灵活 | 3 |
| 物质使用和心理健康障碍的综合行为药理学 | Behavioral pharmacology, the scientific study of the effects that drugs have on human behavior, uses addiction research to help understand why people become addicted to drugs such as alcohol, methamphetamine and opioids. Explore the neurochemical, physical and mental effects of commonly used psychoactive substances on the human biological system. Research the basic pharmacology of psychoactive drugs, the medical consequences of compulsive illicit use and therapeutic approaches for managing substance-use disorders. You also review the four major classes of drugs that are of clinical significance in treating four major categories of psychiatric disorders: anxiety, depression, mania and schizophrenia. | 45 | 录播，时间灵活 | 2 |
| 发展心理学导论 | Study the life-span developmental approach to developmental psychology, which includes ecological/systems and person-in-context theory approaches. You’ll gain perspective on biological, physical, cognitive, emotional, linguistic, sociocultural and spiritual changes across the life span—from prenatal and birth through the major stages of childhood, adolescence, and adulthood. In this survey course, you also study fundamental theories, perspectives, and critical thinking about historical and current arguments in the field. | 45 | 录播，时间灵活 | 3 |
| 健康信息学导论 | This course provides an introduction to the concepts and practices of health informatics from a clinical and financial perspective. You also delve into understanding the role of an informaticist. | 45 | 录播，时间灵活 | 2 |
| 流行病学原理 | Epidemiology is the study of the distribution of disease and health in human populations. Learn the basic principles of epidemiology, their application to specific public health situations and criteria for critically evaluating epidemiology studies. Discuss epidemiological concepts and their application to sample problems. Topics include disease risk, methods of evaluating the causative factors of disease, and the assessment of epidemiological study designs and research activities. | 30 | 录播，时间灵活 | 2 |
| 心理学研究方法 | Gain an understanding of the scientific methods behind psychological research, and how research in psychology is planned, carried out, communicated and critiqued. Learn methods of designing, collecting, analyzing and interpreting data using examples from a variety of specialty areas in psychology. You conduct several research projects that help you think more critically about the role of scientific research. | 录播+ Project | 9月10日-12月3日固定时间段 | 3 |
| **商****业****、****法****律** | 劳工法 | Become familiar with legislation and court decisions significant to human resources so that you can appreciate the concern related to employee rights and the sensitive nature of the employer’s role in dealing with evolving human resources management issues. The complex issues inherent in human resource management require a solid understanding of the interrelationship between state and federal legislation and court decisions, and of the daily activities of the human resources function.  | 30 | 9 月28日-12月7日直播 | 2 |
| 社交媒体营销策略 | Explore social media and semantic web strategies and tactics by using contemporary and emerging new-media channels, and digital and mobile technologies and platforms. Learn how to establish realistic business and performance goals within these environments; integrate new communications platforms and technologies into existing marketing plans; systematically evaluate new technologies and delivery platforms to determine an optimal marketing mix; and evaluate in-market results. Analyze the strengths and pitfalls offered by channels such as email, RSS, SEO-optimized websites, blogs, audio and video podcasts, social and business networking sites, and social media newsrooms.  | 30 | 10月6日-12月15日直播 | 2 |
| 商业管理中的敏捷原则和实践 | An Agile management framework of values, principles and practices allows managers at all levels to more effectively respond to change, work collaboratively with customers and increase productivity. Learn the core principles of Agile management and how to apply them in an organization. Through highly interactive exercises, discover how to use the Agile framework to successfully leverage change, improve team interaction and satisfy customers. | 30 | 10月18日-11月17日 直播 | 2 |
| 高级会计 | Get a comprehensive understanding of consolidated financial statements and how to prepare them. Focus on the accounting principles, methods and techniques that relate to particular types of business and nonbusiness entities, including corporations, partnerships, government units, estates and trusts, and nonprofits. Limited time is devoted to exploring certain tax aspects of consolidated financial statements. You also learn about foreign-currency transactions and translation of foreign-currency financial statements. | 45 | 2022年1月11日-4月19日录播固定时间 | 3 |
| 中级会计 II | Build on your learning from Intermediate Accounting I UGBA X421.1 by focusing on developing financial statements that clearly and accurately depict a company's performance. You'll study stockholders' equity, earnings per share, income taxes, leases, pensions, revenue and cash flows. | 45 | 2022年1月11日-4月19日或3月15日-6月21日录播固定时间 | 3 |
| 国际金融 | Understand international finance from both corporate and international banking viewpoints, as well as financial constraints on international business and differences between domestic and international environments. Examine the international monetary system, the differences between foreign trade and foreign investments, international sales terms, measurement and management of foreign-exchange exposure, international financial markets and banking, import/export financing, current-asset management and international taxation. | 30 | 2022年1月18日-3月22日直播 | 2 |
| 财务报表分析 | Take a deeper focus into the financial theory and application in financial statement analysis. Start by reviewing financial statement analysis and then delve deeply into ratio analysis (liquidity and solvency) and valuation. This course is designed to take you past the standard financial ratio calculations and to encourage you to take a hard look at the information, keeping in mind that analysis is only as good as the data from which it is derived. | 30 | 2022年1月25日-3月29日 录播固定时间 | 2 |
| 中级会计1 | You'll focus on applying concepts in developing a set of financial statements that clearly and accurately depicts a company's performance. You'll study income, balance sheet and cash flow statements; revenue recognition; accounting for cash and receivables; inventory valuation; intangible assets; acquisition and disposition of property, plant and equipment (PPE); depreciation and impairment of assets; and investments. | 45 | 2022年2月1日-5月10日直播 | 3 |
| 金融会计 | Focus on the interpretation, analysis and communication of information that is useful to a variety of users outside of the business organization. Examine economic events' and transactions' impacts on basic financial statements. Gain an applications-level understanding of financial accounting concepts, including preparation and analysis of financial statements. | 45 | 2022年2月2日-5月11日直播 | 3 |
| 企业风险管理 | Risk management has most often been confined to quantitative topics such as derivatives and risk measurements that aim to limit financial risk. Unfortunately, the spectrum of risks that may emerge in enterprises include many more aspects. Learn a more holistic approach that covers all the decisions and actions of employees in an active enterprise. Review the issues and challenges in total risk management, and explore techniques for balancing enterprise risk and reward to enable performance optimization. | 30 | 2022年2月15日-4月19日录播固定时间 | 2 |
| 中级企业融资 | A continuation of Basic Corporate Finance BUS ADM X430.1, this course rounds out the comprehensive overview of corporate finance topics and examines the concepts, techniques and tools that financial managers use to make effective investing, financing and working capital management decisions. Understand advanced capital budgeting topics, financing decisions, working capital management and multinational finance. | 30 | 2022年2月15日-4月19日或4月5日-6月7日 录播固定时间 | 2 |
| 管理会计 | Managerial accounting, also called management accounting, focuses on providing information to help individuals inside an organization make better operational decisions. It differs from financial accounting, which focuses on providing information to persons or companies outside of the organization, such as creditors. In this introductory course, you learn basic accounting concepts and how managers use accounting data to make decisions. | 45 | 2022年3月1日-6月7日直播 | 3 |
| 成本会计 | Get an introduction to cost terms and purposes, and learn how to control and improve profitability through planning, budgeting, pricing and cost management. Learn about the foundations of successful business decision-making and financial performance evaluation process in various types of enterprises. | 45 | 2022年3月1日-6月7日录播固定时间 | 3 |
| 业务分析计划和方法 | Rapid and effective business and process transformation is vital in today's competitive world. Learn business analysis fundamentals and the “Business Analysis Planning and Monitoring” knowledge area, which is the first of six generally accepted areas that define the profession's framework. Discover how practitioners determine/plan which activities are necessary in order to complete a business analysis effort. You will master the essential analysis theories that govern the performance of all other business analysis/transformation tasks. | 30 | 2022年3月8日-5月3日录播固定时间 | 2 |
| 行为金融学 | Look at the financial industry and practice within the context of behavioral theory to understand individuals' psychological aspects and reactions to financial markets and economic conditions. More than three decades of academic research on how human behavior and psychology affect financial decisions and markets is beginning to enter the public domain. Learn how this new approach either supports or refutes conventional wisdom. | 30 | 2022年3月15日-5月17日录播固定时间 | 2 |
| 企业融资 | Get an introduction to the concepts and methods that financial managers use to make effective investing and financing decisions, and begin to explore the ways in which value is created and measured. Devote specific attention to the financial management context, the time value of money, risk and return, the cost of capital, the valuation of stocks and bonds, capital budgeting decision-analysis tools, the impact of financial leverage on cost of capital and valuation, dividend policy and an overview of financial statement analysis. | 30 | 2022年4月5日-6月7日 直播 | 2 |
| 管理数学 | Get an introduction to quantitative and statistical techniques in preparation for M.B.A. coursework or grow in your business career. You'll learn math principles in a business context and apply those principles to the study of economics, statistics, probability, finance and capital budgeting. Key topics from probability and descriptive statistics include measures of central tendency, probability distributions, correlations, and regression and statistical hypothesis testing. Topics from finance include mathematical analysis of investments and financial decision-making.  | 录播 | 时间灵活 | 2 |
| 商业分析基础 | Gain a complete overview of the business analysis profession, as well as the knowledge, tools and techniques used by BAs. This course is appropriate for students wanting to learn more about the profession. It also provides a framework for certificate seekers before they launch into deeper learning and training. | 录播 | 时间灵活 | 2 |
| 商业应用经济学 | Get an overview of general economic issues, principles and concepts in both microeconomics and macroeconomics. Topics include understanding how the economy works, making better business decisions and comprehending the powerful lessons of the economic approach. | 录播 | 时间灵活 | 2 |
| 宏观经济学导论 | Get an introduction to the basic concepts and tools used in macroeconomic analysis: the theory, measurement and determination of national income; business cycles; the multiplier; fiscal policy, budget deficits and the national debt; aggregate supply and aggregate demand; exchange rates and balance of payments accounts; and stabilization policy for unemployment and inflation. | 录播课 | 时间灵活 | 3 |
| 微观经济学导论 | Study how markets work, and gain a real understanding of the role of economics in business and in public and private decision making. Learn ways to think about how humans allocate resources, including markets and prices, consumer and producer behavior, and risk and cost measurement. Use this knowledge for further study in economics, or apply it to your everyday business dealings to make more effective decisions. | 录播课 | 时间灵活 | 3 |
| **教****育****学****、****政****治****学** | 发音作为一种沟通技巧 | Learn the study of curriculum and instructional planning in relation to specific occupations, including the role of integrated academic and career technical education curricula. Topics include curriculum design and coordination of student learning objectives/outcomes, design of formative and summative assessment, analysis of student work, rubric design, and the preparation of unit and lesson plans. | 录播 | 10月12日-11月16日 固定时间 | 2 |
| 英语发音教学 | Compare different teaching solutions to specific pronunciation problems, and learn practical techniques for creating lively and effective pronunciation lessons. Examine American English pronunciation, including stress, rhythm, intonation, consonants and vowels. You also explore the linguistic and psychological factors affecting communicative clarity. | 15 | 10月14日-11月18日 直播 | 1 |
| 美国政治导论 | Explore the theoretical implications of democracy and justice in this in-depth look at the structure of the U.S. political system. Analyze the basic workings of the Constitution and the institutions of the federal government, including Congress, the presidency, the judiciary and governmental bureaucracy. Examine the system of electoral politics—including parties, interest groups, social movements, public opinion and participation—as well as several areas of public policy: defense, foreign policy, civil rights and liberties, and social spending. | 录播 | 时间灵活 | 4 |
| **英****美****文****学****、****写****作** | 诗歌创作工作坊 | Explore multiple writing and revision techniques, drawing possibilities for new work from your own work and the poems of others. Learn to open up your poems to further invention and revise them to invite both surprise and mastery. You read published poems and essays to encourage shared discussions about the craft, style, aesthetics, process and psychology of writing. Finally, you gain insight into the world of publication through researching and sharing information on literary journals and assembling a submission packet. You emerge with a good number of new or revised poems and a collection of useful writing and revision tools, as well as skills for discussing new work one on one or in a workshop setting. | 30 | 10月5日-12月7日直播 | 2 |
| 美国小说 | Survey the major American novelists and short-story writers of the 19th and early 20th centuries, including Mark Twain, Edgar Allen Poe, Stephen Crane, Herman Melville, Edith Wharton, Nathaniel Hawthorne and Jack London. In addition to learning about various literary movements—such as romanticism, realism and naturalism—you consider questions of aesthetics, morality, poverty, racism, gender and power. | 录播课 | 时间灵活 | 3 |
| 美国环境和文化史 | Explore the ways cultural groups have perceived, managed and conserved the American environment from colonial times to the present. Investigate how attitudes toward resource development and nature have shaped the environmental movement.  | 录播课 | 时间灵活 | 4 |
| 莎士比亚 | Study eleven of William Shakespeare's plays—The Taming of the Shrew, Richard II, Othello, Macbeth, Romeo and Juliet, The Merchant of Venice, Much Ado About Nothing, Hamlet, King Lear, The Winter's Tale and The Tempest—recognized as literature of immense cultural importance and popular entertainment. Gain an understanding and appreciation of Shakespearean language and literary forms, as well as a critical awareness of the continuing reinterpretation of Shakespeare's plots and characters. | 录播课 | 时间灵活 | 4 |
| 英国小说 | Survey the English novel by reading authors such as E.M. Forster, Anthony Trollope, Charles Dickens, Charlotte Brontë, George Eliot, Oscar Wilde, Thomas Hardy and Robert Louis Stevenson. Gain perspective on this literary form with an emphasis on how moral, social, psychological, political and philosophical problems were perceived during the Victorian and Edwardian periods. | 录播课 | 时间灵活 | 4 |
| 公共关系写作导论 | Study the essentials of public relations and get a start on a new career. Learn how to make your message newsworthy based on media conventions so you can pitch effectively and ensure optimum coverage. Learn how to write press releases and email pitches and how to package and sell them. Explore techniques to spread your news through strategic use of new media. Final press packets are critiqued by the instructor, giving you the experience to think and write as both a publicist and a journalist. | 录播课 | 时间灵活 | 1 |
| **数****学****、****统****计** | 微积分基础 | Gain exposure to concepts in basic and advanced algebra and some trigonometry. Explore topics such as logarithms, solving or graphing linear equations, and factoring a polynomial at a more advanced level than that of a beginning or intermediate algebra class. You gain a good foundation for study in future calculus classes. | 录播课 | 时间灵活 | 3 |
| 微积分 I | Get an introduction to differential and integral calculus. Examine the key concepts of limit, derivative and continuity, as well as the main applications of derivatives in graphing and optimizing functions. Explore the fundamental theorem of calculus. Finally, apply the concept of integration to calculating volumes through solids of revolutions. | 录播课 | 时间灵活 | 4 |
| 微积分II | This continuation of Calculus 1 MATH X11 includes techniques of integration, applications of integration, infinite sequences and series, first-order ordinary differential equations, exact equations, second-order ordinary differential equations, oscillation and damping, and series solutions of ordinary differential equations. | 录播课 | 时间灵活 | 4 |
| 大学代数 | Study concepts in college algebra, including the solving of linear, quadratic and other algebraic equations and identities; developing mathematical models; and the graphing of linear, exponential, rational, logarithmic and polynomial functions. You also learn 2-variable graphs of the conic sections, and general ideas and properties of functions, complex numbers and matrix algebra operations. | 录播课 | 时间灵活 | 3 |
| 统计学概论 | Learn basic concepts of probability and statistical inference, focusing on an intuitive approach to understanding concepts and methodologies. Get an introduction to statistical and critical thinking, including descriptive statistics, probability, sampling distributions, interval estimation, hypothesis testing and regression. | 录播课 | 时间灵活 | 4 |
| **人****工****智****能****、****大****数****据****、****编****程****、****信****息** | 数据科学导论 | Gain an understanding of the core concepts of data science illustrated through the use of the Python language. Learn the data science lifecycle, roles, and fundamentals and build a solid foundation before diving deeper into the theory and practice of predictive analytics and programming in future courses. | 30 | 9月7日-11月9日 | 2 |
| SQL数据挖掘 | Learn how to analyze and mine data with the Structured Query Language (SQL). Once you’ve gained the fundamentals of SQL, you advance into the uses of SQL data analysis and data mining with real applications. You use Microsoft Excel to further analyze, manipulate and present your data exploration and data mining findings in tabular and graphical formats. This course is ideal if you want to analyze data with SQL queries and learn statistical methods to test the results. | 30 | 10月2日-12月11日 | 2 |
| R应用：数据探索和可视化 | Get an introduction to the R programming language in order to perform data manipulation, statistical analysis and graphics applications. Thousands of libraries or packages are available for everything from time-series analysis and machine learning to data visualization. As a result, R is rapidly becoming the language of choice for engineers, scientists, researchers and business analysts who engage in data preparation and analysis to generate high-quality typographical and graphical results. | 30 | 10月4日-12月13日直播 | 2 |
|  Web 开发 | Learn the fundamentals of full-stack web development using some of the most popular open-source libraries. The stack is comprised of Angular.js/Handlebars (front-end), Node.js/Express (back-end) and MongoDB (NoSQL), MySQL or Postgres (Relational) (DB technologies). In addition, you learn HTML5/CSS/JavaScript/jQuery and DevOps/Software Development skills. Full-stack web development is an important skill set to build fully-functional web applications. | 30 | 10月5日-12月14日 | 2 |
| 数据结构和算法 | Get an overview and hands-on experience with some of the more popular data structures, algorithms, design techniques and tools used in the industry today. The course curriculum focuses on the fundamental data structures and algorithms knowledge that every software engineer must have: arrays; strings; linked lists; stacks; queues; trees; tries; graphs; compression, etc.; and the algorithms associated with working with them (e.g., searching, sorting, depth first search, breadth first search, topological sort, minimum spanning trees, etc.).  | 30 | 10月12日-12月14日直播 | 2 |
| JavaScript和jQuery入门 | Learn the fundamentals of front-end JavaScript, one of the world’s most popular programming languages, widely used for extending the functionality and interactivity of websites. JavaScript is also a powerful, general-purpose, dynamically-typed, object-oriented programming language. jQuery is the most popular JavaScript library and is designed to simplify client-side scripting of HTML. | 30 | 2022年1月6日-3月10日直播 | 2 |
| 中级Python | Go beyond the basics of the latest version of Python, and examine its data structures in depth. You explore and discuss functional programming, object-oriented programming and modules. You also study higher-level functions such as graphic user interfaces, filesystems and data science modules. This course is intended for those who already know Python and want to get more out of it and for developers with experience in other languages. | 30 | 2022年2月3日-4月7日直播 | 2 |
| C++ 编程 | C++ provides all the tools for object-oriented programming, such as data abstraction, inheritance, polymorphism and generic programming. Get a solid introduction to all the major features of American National Standards Institute’s (ANSI) standard C++, including the newer syntactic and semantic constructs, by studying each concept through lucid, fluent examples. You learn all major features of C++, including objects, classes, pointers, and single and multiple inheritance. | 录播课 | 时间灵活 | 2 |
| 数据可视化 | Learn to work with data visualization tools in a course that is ideal for working professionals and students. You also learn how to use data characterization to build effective data visualizations. The course curriculum weaves together theoretical and practical elements to support a holistic approach to creating visualizations. You are given a choice of tools to use on various data sets through exercises and lecture examples. You must actively participate in discussions and complete quizzes and homework to succeed in this course. The course capstone is a final project that is tailored to each student's particular skill-development goals. That project can then be added to your growing portfolio of work. | 录播课 | 时间灵活 | 2 |
| Java入门 | With its platform independence, Java is heavily used in Web applications and middleware that work on Windows, Macintosh, UNIX and other platforms. Examine fundamental programming concepts, and get an introduction to object-oriented programming. On successful completion of the course, you are able to write simple applications and are prepared for courses that assume some familiarity with Java. | 录播课 | 时间灵活 | 2 |
| 网站开发基础 | This course teaches the fundamentals of front-end programming. Students will learn to build websites using HTML and CSS technologies. The course will help the students to learn how to style websites using CSS including learning to build responsive design websites. The students will also be introduced to newer Web application development tools such as the MERN stack including Node.js, NoSQL, and React. | 录播课 | 时间灵活 | 2 |
| C语言程序设计 | Learn the C programming language and its fundamental programming concepts. Gain the knowledge to write simple C language applications and undertake future courses that assume some background in computer programming. Topics include variables, data types, functions, control structures, pointers, strings, arrays and dynamic allocation principles. You need access to any programming environment that allows you to write, edit, compile, link and debug a C program. | 录播课 | 时间灵活 | 2 |
| SQL入门 | Get in-depth training of the core Structured Query Language (SQL), focusing on Data Query Language (DQL) and Data Manipulation Language (DML). You learn the concepts of SQL, including writing complex SQL statements, and gain a basic understanding of database operations. | 录播课 | 时间灵活 | 2 |
| 模拟IC设计 | Study topics such as stability of feedback, frequency compensation, multistage op amps and CMOS op amp designs with HSPICE. You are required to work on a research project that covers the design of an advanced CMOS op amp, a compact, low-voltage, low-power op amp and high-performance CMOS comparators for flash ADC applications. | 录播 | 时间灵活 | 2 |
| Capstone半导体IC设计 | Advances in cloud computing, mobile devices and CMOS nanotechnology have ushered in the era of semiconductor IC design with multistandard challenges. Gain a competitive advantage by upgrading your problem-solving skills in these areas. This capstone design course is intended for those who have completed the other required courses for the Certificate Program in Semiconductor IC Design. Lecture topics include advanced microelectronic circuits and advanced analog ICs such as current mirrors, differential amplifiers, single-stage amplifiers, frequency response, low-frequency feedback, stability and frequency compensation, CMOS op amp, folded-cascode CMOS op amp, and rail-to-rail techniques. You also have the opportunity to work on an optional research project with an emphasis on analog ICs or mixed-signal design. The chosen research topic should be topical, practical and able to be implemented in numerous applications such as data acquisition and cloud computing systems. | 录播 | 时间灵活 | 1 |
| 电子电路的计算机模拟 | Gain hands-on experience using SPICE to simulate, verify, examine and design microelectronic circuits for a wide variety of practical applications in the analog and digital realms. Learn how to develop input files that can reflect transistor-level models. | 录播 | 时间灵活 | 1 |
| 数字集成电路 | Gain a solid understanding of digital operation principles, and then examine more complex entities such as multiplexers and flash memory. Study essential concepts; SPICE verification; and design skills from CMOS ECL and BiCMOS logic to memory design. During the course, you work on a research project that addresses subjects such as embedded SRAM (eSRAM), non-volatile memory and high-speed embedded DRAM. | 录播 | 时间灵活 | 2 |
| 基础模拟IC | Learn how to analyze, simulate and design CMOS analog integrated circuits. This course is ideal if you are a working professional who has no strong foundation in analog design but are interested in upgrading your knowledge and skills or developing your semiconductor career. Lecture topics include basic current mirrors, high-performance current mirrors, single-stage CMOS amplifiers, differential amplifiers, output stages and short-circuit protection circuitry. As a part of the course curriculum, you have the opportunity to work on a research project with an emphasis on sample-and-holds or bandgap voltage reference. Your research topic must be topical, practical and able to be be implemented in many applications such as data acquisition or A/D conversion systems. | 录播 | 时间灵活 | 2 |
| 基本混合信号设计 | The high growth rate of signal-processing applications such as video and wireless communications creates demand for more sophisticated high-speed and high-resolution data-converter techniques. This course is ideal if you have electronics industry experience or knowledge and are interested in upgrading your hands-on data-conversion design skills. Course topics include data-converter fundamentals, characterization, performance limitations, and Nyquist-rate digital-to-analog and analog-to-digital converters. | 录播 | 时间灵活 | 1 |
| 数据基础 | Communications and NetworkingLearn about data communications in this introductory course in networking technology. Gain a practical understanding of relevant terminology, concepts and other information necessary to be knowledgeable in data communications. By the end of the course, you should be able to make intelligent decisions about the appropriate design, purchase, integration and use of data communications equipment and systems. | 录播 | 时间灵活 | 2 |
| IC滤波器和振荡器 | Study integrated analog filters, oscillators and multivibrators, topics that are crucial for developing analog modules that implement many applications in signal processing or wireless communications. You undertake individual research projects that can include such subjects as switch-capacitor circuits, continuous-time filters and VCOs for PLL applications. The instructor guides you to choose a practical research topic that has real-world applications, such as frequency synthesizers or televisions. | 录播 | 时间灵活 | 2 |
| 计算机与编程导论 | Get an overview of computer technology and programming. Using a Raspberry Pi, you learn how computers internally represent information, and the logic and hardware they use to process it. You also learn about programming languages and concepts using Python as an example. Other topics covered include operating systems, computer applications, computer systems, software development technologies and data communications. | 录播 | 时间灵活 | 2 |
| 网络安全导论 | Learn to protect computer technology assets using mechanisms to enforce confidentiality, integrity and availability of data. As fraud, identity theft and cyberwarfare continue to occur exponentially, online security is vital. In this course, you examine various mechanisms to implement a comprehensive cybersecurity program within an enterprise organization. Specific mechanisms include security policies, ethics, asset security, security engineering, cryptography, security assessments, security training, threat detection, forensics and software development security. | 录播 | 时间灵活 | 2 |
| 数据分析导论 | Get an overview of advanced Excel, SQL and R to perform analysis on huge sets of data. Learn the theory behind formulating statistical models using regression analysis. You also study segmentation theory and methods such as k-means clustering used for data mining and analysis. | 录播 | 时间灵活 | 2 |
| 微电子电路导论 | Examine the underlying concepts and industry-standard simulation tools for IC design, with particular emphasis on the operational amplifier characteristics. Study practical amplifier behaviors in the frequency domain. Gain an understanding of analog circuits through analysis-by-inspection and PSPICE simulation. Topics include basic operational amplifier circuits and applications, s-domain analysis, bandwidth and slew rate limitations, and analysis of frequency limitations of amplifiers. You gain an essential foundation for advancing to more intricate IC-design topics such as oscillators and filters. | 录播 | 时间灵活 | 1 |
| 微电子学概论 | Get an overview of the realm of analog and digital integrated circuits through an application-oriented approach. You start from frequently used and applicable semiconductor device and circuit theories, and then narrow your investigation into more complex circuit schematics and application modules such as amplifiers, operational amplifiers with bipolar and complementary-metal-oxide-semiconductor technologies, digital inverters, precision rectifiers, voltage regulators, and biasing techniques of amplifiers. | 录播 | 时间灵活 | 1 |
| 半导体器件导论 | Get an introduction to basic semiconductor vocabulary and concepts such as energy bandgap and minority carriers, and then pursue a more targeted investigation into the behaviors of semiconductor devices. Topics include intrinsic and extrinsic semiconductors, carrier transports and p–n junctions. As part of the curriculum, you undertake an individual research project that covers subjects such as the ultimate limits of integrated electronics or integrated strategy for confronting commoditization in the foundry industry. You then learn to apply those concepts to many applications, including complementary metal-oxide-semiconductors, bipolar junction transistors, light-emitting diodes and sensors. | 录播 | 时间灵活 | 1 |
| Java的创造力 | Java’s platform independence (write once, run anywhere) allows the same code to run on Windows, Macintosh, UNIX, mobile phones and supercomputers. Java is popular for enterprise applications that run on Web servers. This high-level language enhances productivity and reduces bugs through automatic memory management and strong typing. Using the free Java Development Kit (JDK 6 SE), you learn practical fundamentals of the Java programming language, as well as basic object-oriented programming so that you can write simple applications and take intermediate courses in Java. | 录播 | 时间灵活 | 2 |
| 用于IC设计的半导体器件 | Creating state-of-the-art IC design requires an in-depth understanding of basic characteristics of semiconductor devices and their second-order effects and device modeling. This course is ideal if you are a working professional who has no experience in IC design yet are interested in increasing your understanding of semiconductor devices and their modeling to begin your integrated-circuit design career. Study bipolar junction transistors and metal-oxide semiconductors, with an emphasis on physical concepts, operation principles, second-order effects, and modeling and simulation. You complete an individual project, with topic options that include nanoelectronics, transistor scaling and future trends, recent breakthroughs and real-world issues in complementary metal–oxide–semiconductor (CMOS) nanotechnology ranging from 90nm down to 22nm, CMOS device design and performance parameters, and future trends in the statistical IC design in nanoelectronics. | 录播 | 时间灵活 | 2 |
| 半导体IC放大器 | Develop intuitive skills for analyzing microelectronic circuits without using intricate mathematics by focusing on the analysis-by-inspection method. Topics covered include low-frequency bipolar-junction-transistor and metal-oxide-semiconductor amplifiers, amplifier frequency response, and high-frequency analysis-by-inspection versus SPICE simulation. Review case studies and complete tasks that help you understand challenging analog circuits. | 录播 | 时间灵活 | 1 |

**附件二：**成绩单样本

