INNOVATION IN PRODUCT DESIGN AND DEVELOPMENT (INNO)

INNO 200. Introduction to Innovation and Venture Creation. 1 Hour.
Semester course; 1 lecture hour. 1 credit. A speaker series focused on the discussion of pertinent topics related to product innovation and venture creation. Students will be exposed to numerous topics through guest speakers supplemented by readings and class discussion. Topics include conceptualization, patents, capitalization, venture formation, commercialization, market assessment, project management and product life cycle management.

INNO 210. The Innovation Intersection: Industry and Entrepreneurship. 3 Hours.
Semester course; 3 lecture hours. 3 credits. This course will explore the intersection of industries of innovation and entrepreneurship in the social world we live in. This course will operate as part speaker series, part podcast and part group dialog. Topics include, but are not limited to, innovation in education, systemic exclusion and discrimination, ecosystem building, innovation in health care, equity, access, and funding.

INNO 221. Introduction to Arts and Design Principles. 3 Hours.
Semester course; 1 lecture and 2 studio hours. 3 credits. Introduces arts and design principles to students from non-arts disciplines. Students will begin to understand how art and design play a role in product innovation. Open to all VCU undergraduate students.

INNO 223. Introduction to Business Principles. 3 Hours.
Semester course; 3 lecture hours. 3 credits. Introduces business fundamentals to students from non-business disciplines. Particular focus will be concepts and issues in product innovation and contemporary business. Open to all VCU undergraduate students.

INNO 225. Introduction to Engineering and Technology Principles. 3 Hours.
Semester course; 3 lecture hours. 3 credits. Introduces engineering and technology fundamentals to students from non-engineering disciplines. Particular focus is the engineering problem-solving process as applied to open-ended problems. Students will be introduced to the different types of engineering, examine engineering and technology issues and apply the engineering problem-solving process in the context of product innovation. Open to all VCU undergraduate students.

INNO 250. Introduction to Global Coding for Data. 3 Hours.
Semester course; 3 lecture hours. 3 credits. Introduces fundamental skills and techniques required to manipulate, analyze and extract insights from data using various programming languages. In addition to technical skills, this course places an emphasis on intercultural skills, professional development, problem-solving through a global lens and essential skills to succeed in the workforce.

INNO 251. Introduction to Global Digital Marketing. 3 Hours.
Semester course; 3 lecture hours. 3 credits. Introduces fundamental skills, core principles and techniques of digital marketing through a global lens. Students will learn how businesses and organizations rely on digital marketing strategies to connect with their target audiences, enhance brand visibility and drive growth. In addition to technical skills, this course places an emphasis on intercultural skills, professional development, problem-solving through a global lens and essential skills to succeed in the workforce.

INNO 252. Introduction to Global Coding for Web. 3 Hours.
Semester course; 3 lecture hours. 3 credits. Introduces fundamental skills, core principles and techniques to build dynamic mobile and web experiences for users from around the world, using industry-standard best practices. Students also learn cultural web application nuances relevant to developing web applications that are accessible to all users. In addition to technical skills, this course places an emphasis on intercultural skills, professional development, problem-solving through a global lens and essential skills to succeed in the workforce.

INNO 253. Introduction to Global Data Analytics. 3 Hours.
Semester course; 3 lecture hours. 3 credits. Introduces fundamental skills, core principles and techniques to analyze real-world data and make data-driven decisions, using industry-standard best practices. Students will develop the ability to collaborate on technical challenges in a diverse business environment and grapple with real-world case studies featuring international organizations. In addition to technical skills, this course places an emphasis on intercultural skills, professional development, problem-solving through a global lens and essential skills to succeed in the workforce.

INNO 291. Special Topics in Product Innovation. 1-3 Hours.
Semester course; 1-3 lecture hours. 1-3 credits. May be repeated for a maximum of six credits. Study of current and emerging topics in the field of product innovation. Topics may vary from semester to semester. See Schedule of Classes for specific topics to be offered.

INNO 310. Introduction to Global Coding for Data. 3 Hours.
Semester course; 3 lecture hours (delivered online). 3 credits. Introduces fundamental skills and techniques required to manipulate, analyze and extract insights from data using various programming languages. In addition to technical skills, this course places an emphasis on intercultural skills, professional development, problem-solving through a global lens and essential skills to succeed in the workforce.

INNO 311. Introduction to Global Digital Marketing. 3 Hours.
Semester course; 3 lecture hours (delivered online). 3 credits. Introduces fundamental skills, core principles and techniques of digital marketing through a global lens. Students will learn how businesses and organizations rely on digital marketing strategies to connect with their target audiences, enhance brand visibility and drive growth. In addition to technical skills, the course places an emphasis on intercultural skills, professional development, problem-solving through a global lens and essential skills to succeed in the workforce.

INNO 312. Introduction to Global Coding for Web. 3 Hours.
Semester course; 3 lecture hours (delivered online). 3 credits. Introduces fundamental skills, core principles and techniques to build dynamic mobile and web experiences for users from around the world, using industry-standard best practices. Students also learn cultural web application nuances relevant to developing web applications that are accessible to all users. In addition to technical skills, the course places an emphasis on intercultural skills, professional development, problem-solving through a global lens and essential skills to succeed in the workforce.

INNO 313. Introduction to Global Data Analytics. 3 Hours.
Semester course; 3 lecture hours (delivered online). 3 credits. Introduces fundamental skills, core principles and techniques to analyze real-world data and make data-driven decisions, using industry-standard best practices. Students will develop the ability to collaborate on technical challenges in a diverse business environment and grapple with real-world case studies featuring international organizations. In addition to technical skills, the course places an emphasis on intercultural skills, professional development, problem-solving through a global lens and essential skills to succeed in the workforce.

INNO 351. Creativity for Innovation and Entrepreneurship. 1 Hour.
Semester course; 1 lecture hour. 1 credit. Students are introduced to the role of creativity in innovation and entrepreneurship. A multidisciplinary orientation and approach are emphasized.

INNO 352. Making Innovation Happen. 1 Hour.
Semester course; 1 lecture hour. 1 credit. Students are introduced to the role of innovation in today's society. A multidisciplinary orientation and approach are emphasized.

INNO 353. Making Entrepreneurship Happen. 1 Hour.
Semester course; 1 lecture hour. 1 credit. Students are introduced to the role of entrepreneurship in today's society. A multidisciplinary orientation and approach are emphasized.

INNO 450. Realizing Innovation and Entrepreneurship. 1 Hour.
Semester course; 1 lecture hour. 1 credit. Students will learn how innovation and entrepreneurship are manifested in today's society. A multidisciplinary orientation and approach are emphasized.

INNO 460. Product Innovation: da Vinci Project. 3 Hours.
Semester course; 3 credits. Prerequisite: permission of instructor. Students from the School of the Arts, School of Engineering and School of Business work together on a semester-long product innovation project with a corporate sponsor under faculty supervision. Topics and activities may include project management, team building, concept generation and testing, market analysis, visualization, and prototyping.

INNO 491. Special Topics in Product Innovation. 1-3 Hours.
Semester course; 1-3 lecture hours. 1-3 credits. May be repeated for a maximum of six credits. Study of current and emerging topics in the field of product innovation. Topics may vary from semester to semester. Open to all undergraduate students.

INNO 492. Independent Study in Product Innovation. 1-3 Hours.
Semester course; 1-3 independent study hours. 1-3 credits. May be repeated for a maximum total of six credits by students pursuing a da Vinci Center certificate. Enrollment restricted to students with junior standing and permission of adviser and da Vinci Center director. Intensive study or research under supervision of a faculty member in an area not covered in depth or contained in the regular curriculum.

INNO 493. Internship in Product Innovation. 1-3 Hours.
Semester course; 1-3 field experience hours. 1-3 credits. May be repeated for a maximum of three credits. Enrollment requires permission of the academic director. Supervised pragmatic work experiences in product innovation and development. Each internship credit requires 40 logged hours of work for the sponsoring organization. Training is provided under the direction and supervision of qualified professional practitioners.

INNO 501. Arts Principles for Product Innovation. 3 Hours.
Semester course; 3 lecture hours. 3 credits. Enrollment is restricted to students in the Master of Product Innovation program or with approval of the instructor. Introduces studio-based arts instruction to individuals with a background in business, engineering or other non-arts discipline. Lectures and assignments expose students to a broad range of skills and vocabulary, enabling them to comprehend, analyze and communicate visually. Working individually and in teams, the core experience will be formed through iterative making, via direct, hands-on material experience.

INNO 502. Business Principles for Product Innovation. 3 Hours.
Semester course; 3 lecture hours (delivered online, face-to-face or hybrid). 3 credits. Enrollment is restricted to students in the Master of Product Innovation program, the Graduate Certificate in Health Care Innovation and the Master of Science in Nursing with a concentration in nursing leadership and organizational science or with approval of the instructor. Introduces theoretical frameworks and practical applications of innovation strategy. This fast-paced class introduces business model innovation and explores the different areas of product innovation that improve the likelihood of success. Topics include customer segmentation, value proposition development, financial considerations, operations, internal innovation, emerging technology and change management.

INNO 503. Technology Principles for Product Innovation. 3 Hours.
Semester course; 3 lecture hours. 3 credits. Enrollment is restricted to students in the Master of Product Innovation program or with approval of the instructor. Introduces technology and technological principles to students with non-engineering-related degrees. A particular focus is learning and applying a technology problem-solving process to different types of open-ended problems. The process includes the steps of needs identification, information gathering, idea generation, evaluation and selection.

INNO 590. da Vinci Project. 3 Hours.
Semester course; 3 lecture hours. 3 credits. Enrollment is restricted to students enrolled in the Master of Product Innovation program, the Nursing, Master of Science (M.S.) with a concentration in nursing leadership and organizational science and the M.B.A. dual degree with the Master of Product Innovation or with approval of instructor. Students will engage in an interdisciplinary product innovation project with a corporate sponsor under faculty supervision. Topics and activities will hone product innovation skills, including project management, team building, concept generation and testing, market analysis, visualization, and prototyping.

INNO 591. Topics in Product Innovation. 1-3 Hours.
Semester course; 1-3 lecture hours (delivered online, face-to-face or hybrid). 1-3 credits. May be repeated for a maximum of nine credits. Enrollment is open to seniors and graduate-level students or with departmental approval. Study of current and emerging topics in the field of product innovation. Topics may vary by semester. See the Schedule of Classes for offerings each semester.

INNO 600. Integrative Design Studio. 3 Hours.
Semester course; 3 lecture hours. 3 credits. Enrollment is restricted to students in the Master of Product Innovation program, the graduate Certificate in Health Care Innovation and the M.B.A. dual degree with the Master of Product Innovation, or with approval of the instructor. Integrates the theory and practice of product innovation across the arts, business and engineering disciplines. Students are exposed to and apply a broad set of skills and tools to aid in understanding, envisioning and communicating product innovation. Working in interdisciplinary teams, students will hone teamworking skills and collectively address contemporary issues associated with product innovation, such as sustainability. Course requirements may be fulfilled with select study abroad opportunities.

INNO 610. Innovation, Design Thinking and Change Management. 3 Hours.
Semester course; 3 lecture hours (delivered online, face-to-face or hybrid). 3 credits. Enrollment is restricted to graduate- or professional-level students or with departmental approval. Innovation, design thinking and change management are critical skills across disciplines and are part of a larger collection of 21st-century skills that benefit individuals and organizations. Students will learn to apply tools for innovation, find the right problems, identify solutions and develop a mindset ready to embrace and implement innovation and change. In addition to providing an introduction to these concepts, students will actively participate in real-world innovation projects and will earn certifications in design thinking and change management.

INNO 651. Master's Project in Product Innovation I. 6 Hours.
Semester course; 2 lecture and 4 laboratory hours (delivered online, face-to-face or hybrid). 6 credits. Prerequisites: INNO 501 and INNO 502, INNO 502 and INNO 503, or INNO 501 and INNO 503; and INNO 590 and INNO 600. Enrollment is restricted to students in the Master of Product Innovation program; students enrolled in the graduate Certificate in Health Care Innovation may be permitted to take this course with department approval. This capstone experience requires that an interdisciplinary team or individual engage in various facets of a real product development initiative. The project may be an approved company-sponsored or student-originated effort. Applying arts, business and engineering skill sets gained from previous course work, students will identify a potential opportunity and conceive viable product concepts to be pursued across the three project stages of concept generation, concept development and refinement, and concept finalization. The semester will culminate with each team or individual pitching a set of prototypes and business cases for preferable concepts, with at least one viable concept supported by a viable business case and expected class deliverable. Graded as S/U/F.

INNO 652. Master's Project in Product Innovation II. 6 Hours.
Semester course; 2 lecture and 4 laboratory hours (delivered online, face-to-face or hybrid). 6 credits. Prerequisite: INNO 651. This is the second course of the capstone experience that may culminate in one of three ways: 1) Viable projects from the prerequisite course will allow interdisciplinary teams or individuals to continue engaging in the facets of a company-sponsored or student-originated product development initiative, resulting in a proposal of at least one well-detailed, functional product prototype accompanied by a formal business plan, as well as writing requirements to document process, successes and pitfalls; 2) For projects unsuccessful in achieving viability or where industry experience is a serious interest, students may pursue a guided internship in product development, product management or a related field, culminating with deep written reflection on the experience as well as writing requirements to document process, successes and pitfalls; or 3) Students may propose to complete original research and compose a graduate thesis based on an approved topic of innovation. Thesis students may be asked to submit a writing sample prior to department approval of this option, and will be required to form a committee of three full-time faculty members or administrators, with one party external to the department. Graded as S/U/F.

INNO 691. Topics in Product Innovation. 1-3 Hours.
Semester course; 1-3 lecture hours (delivered online, face-to-face or hybrid). 1-3 credits. May be repeated for a maximum of six credits. Enrollment is restricted to students in the Master of Product Innovation program and the graduate Certificate in Health Care Innovation, or with approval of the instructor. Study of current and emerging topics in the field of product innovation. Topics may vary by semester. See the Schedule of Classes for offerings each semester.

INNO 697. Guided Study in Product Innovation. 1-3 Hours.
Semester course; 1-3 independent study hours. 1-3 credits. May be repeated for a maximum of six credits. Students in the M.P.I. program who wish to do research on problems in the area of product innovation will submit a detailed outline of their problem. They will structure a research study, undertake this study and prepare a written report on the problem. Approval of proposed work is required by the program director.