Design

The Master of Design (MDes) degree program is a three-semester, professional graduate degree in design that integrates human-centered design with a sophisticated understanding of technology to prepare students to excel in creative practices today and design the thoughtful technologies of tomorrow. Jointly offered by the College of Engineering and the College of Environmental Design, the program's interdisciplinary curriculum connects technical rigor, design theory, and social practice and prepares students for a broad range of creative and technical roles for designing innovative products, services, and environments.

Housed at the Jacobs Institute for Design Innovation, the MDes provides a dynamic, hands-on curriculum that uniquely equips students to develop a critical perspective and navigate a range of technical languages and design methodologies. Studio-based coursework integrates programming, human-centered design process, and communication with hardware and software development. Exploratory project briefs encourage students to use design process to identify new problem spaces and to explore ideas through co-creative processes, iteration, and prototyping. A set of debate-focused seminars help shape students' critical lens on design through analysis and discussion of the ethical, ecological, and societal implications of practice within an evolving environmental and socio-technology landscape. Students further deepen their knowledge through technical electives and offerings in social practice or entrepreneurship relevant to their interests and career goals. Their studies culminate in a Design Studio where they work in teams and bring their distinct perspectives to bear on applied projects.

With support from MDes Career Services, students enhance their academic preparation through Design@Large — an opportunity outside of an MDes course or studio where they apply what they have learned in a professional context, typically in the summer between their second and third semesters (see Professional Development Activities).

The Master of Design (MDes) is designed for early to mid-career professionals with an interest in pursuing graduate work at the intersection of design and technology, with applications that might include artistic production, technological innovations, product or communication design, and design experiences or interventions, etc. Competitive applicants have some prior technical preparation and an interest in design as a creative, goal-oriented activity that can contribute to the emergence of innovative new technologies and environments.

Application Criteria

The following are required for admission to the Berkeley MDes program. The following includes the University's general graduate admission requirements:

- Online Application
- Application Fee
- University Transcripts
- Curriculum Vitae (CV) or Resume, showing relevant work and/or research experience
- Two Essays (personal statement and statement of purpose)
- Three Letters of Recommendation
- Project portfolio, showing previous design work
- English Language Proficiency Requirement (if required)
- The GRE Exam is not required.

In addition, students may be invited for an interview, either in-person or remote, and should be prepared to explain their qualifications, motivations to apply to the program, and goals for the program.

Portfolio Requirements

All applicants are required to submit a portfolio that demonstrates their creative and technical proficiency. Depending on your individual practice, this may include examples of visual design work, software systems, interactive electronics, videos, paintings, 3D models, ceramics, performances, musical compositions, social practices, or many other types of creative or technical pursuits.

Your portfolio should be legible to a general audience of designers, and should not only present representations of final outcomes/designs in their intended contexts, but also accounts of your design process, and samples of early design iterations. Portfolios are expected to include both images and supporting text and should convey the context from which the project arose and the lens through which to understand and critique the work. Collaborative work is encouraged, but please credit all authors and highlight your specific contribution. Similarly, academic, professional, and personal work are all welcome, but please differentiate these distinct types of work.

In our experience, strong portfolios often opt to describe a limited selection of projects in depth, rather than account for a large breadth of projects superficially. We suggest highlighting between 3–5 of your most compelling exemplars of creative work. The most important role of a portfolio is to clearly communicate your skills, experience, and perspective. Your portfolio must include your name and contact information and be submitted as a stand-alone PDF formatted document. You may submit your portfolio of up to 20 pages maximum and 20MB total PDF file size. Portfolios that are submitted in excess of this page and size restriction will not be reviewed by the admissions committee. Any URLs or links to outside materials within your portfolio or elsewhere in your application will not be reviewed. You may optionally include up to two minutes of additional time-based media (audio/video).

Graduate Division Admissions
Applying for Graduate Admission

Thank you for considering UC Berkeley for graduate study! UC Berkeley offers more than 120 graduate programs representing the breadth and depth of interdisciplinary scholarship. A complete list of graduate academic departments, degrees offered, and application deadlines can be found on the Graduate Division website (http://grad.berkeley.edu/programs/list/).

Prospective students must submit an online application to be considered for admission, in addition to any supplemental materials specific to the program for which they are applying. The online application can be found on the Graduate Division website (http://grad.berkeley.edu/admissions/).

Admission Requirements

The minimum graduate admission requirements are:

1. A bachelor's degree or recognized equivalent from an accredited institution;

2. A satisfactory scholastic average, usually a minimum grade-point average (GPA) of 3.0 (B) on a 4.0 scale; and

3. Enough undergraduate training to do graduate work in your chosen field.

For a list of requirements to complete your graduate application, please see the Graduate Division's Admissions Requirements page (https://grad.berkeley.edu/admissions/steps-to-apply/requirements/). It is also important to check with the program or department of interest, as they may have additional requirements specific to their program of study and degree. Department contact information can be found here (http://guide.berkeley.edu/archive/2023-24/graduate/degree-programs/).

Where to apply?

Visit the Berkeley Graduate Division application page (http://grad.berkeley.edu/admissions/apply/).

The Master of Design (MDes) program requires nine core courses and three electives (see below) for a minimum of 38 credits for the degree.

Required Courses

DES INV 200	Design Frameworks: History & Methods	3
DES INV 201	Debates in Design (Students are required to take this course twice; once during the fall semester in year one, and again during the fall semester of year two.)	3
DES INV 202	Technology Design Foundations	4
DES INV 211	Designing Emerging Technologies I	5
DES INV 212	Designing Emerging Technologies II	3
DES INV 213	Thesis Studio	6
DES INV 219	Capstone Portfolio	2
DES INV 290	Advanced Special Topics in Design Innovation	1-4
ENGIN 183	Special Topics in Technology Innovation and Entrepreneurship	1-4

Elective Courses

The MDes requires three electives: one technical elective, and at least one entrepreneurship or social practice elective from the approved lists of courses, shown below. The third elective may be either an additional elective from the approved list (technical, social practice, or entrepreneurship) or any 3 or 4 unit upper division or graduate level course offered at UC Berkeley, subject to enrollment availability. Students may submit petitions for alternate courses to the Executive Director.

Approved Technical Electives

ARCH 249	Special Topics in the Physical Environment in Buildings	1-4
ARCH 252	Form and Structure	3
ARCH 259	Special Topics in Building Structures	1-4
ARCH 269	Special Topics in Construction and Materials (Indoor Microbiome, Detoxification, and Artificial Intelligence and Matter; Plant Fibers and Design: Origins and Future; Timber Frame and Mass Timber Construction)	1-4
ART 172	Advanced Digital Media: Computer Graphics Studio	4
CIV ENG 190	Special Topics in Civil and Environmental Engineering	1-4
COMPSCI 161	Computer Security	4

COMPSCI 169A	Introduction to Software Engineering	3
COMPSCI 188	Introduction to Artificial Intelligence	4
COMPSCI 194	Special Topics (Data Engineering)	1-4
COMPSCI 260B	Human-Computer Interaction Research	3
COMPSCI 184 or COMPSCI 284A	Foundations of Computer Graphics Foundations of Computer Graphics	4
COMPSCI 188	Introduction to Artificial Intelligence	4
COMPSCI C200A	Principles and Techniques of Data Science	4
COMPSCI C249A	Introduction to Embedded Systems	4
COMPSCI 260A	User Interface Design and Development	4
COMPSCI 284A	Foundations of Computer Graphics	4
COMPSCI 287H	Algorithmic Human-Robot Interaction	4
COMPSCI 289A	Introduction to Machine Learning	4
COMPSCI 294	Special Topics (Intro to Computer Vision and Computational Photography)	1-4
COMPSCI 297	Field Studies in Computer Science (Immersive Computing and Virtual Reality)	12.0
CY PLAN 257	Data Science for Human Mobility and Socio-technical Systems	4
DATASCI 207	Applied Machine Learning	3
ENGIN 150	Basic Modeling and Simulation Tools for Industrial Research Applications	3
IND ENG 290	Special Topics in Industrial Engineering and Operation Research (Entrepreneurship & Innovation: Data-X (Applied Data Science with Venture Application))	2-3
INFO 253A	Front-End Web Architecture	3
INTEGBI/BIO ENG/MEC ENG C217	Biomimetic Engineering -- Engineering from Biology	3
MAT SCI 200A	Survey of Materials Science	4
MEC ENG 122	Processing of Materials in Manufacturing	3
MEC ENG C201	Modeling and Simulation of Advanced Manufacturing Processes	3
MEC ENG 236U	Dynamics and Control of Autonomous Flight	3
MEC ENG 270	Advanced Augmentation of Human Dexterity	4
MEC ENG 280A	Introduction to the Finite Element Method	3
MUSIC 158A	Sound and Music Computing with CNMAT Technologies	4
MUSIC 159	Computer Programming for Music Applications	4
NWMEDIA 190	Special Topics in New Media (Advanced Digital Animation)	1-4
NWMEDIA C203	Critical Making	4
NWMEDIA/INFO C262	Theory and Practice of Tangible User Interfaces	4

Approved Entrepreneurship Electives

ENGIN 183C	Challenge Lab	4
ENGIN 183D	Product Management	3
ENGIN 183	Special Topics in Technology Innovation and Entrepreneurship	1-4
ENGIN 283	Special Topics in Technology Innovation and Entrepreneurship	1-4

Approved Social Practice Electives

ARCH 209	Special Topics in Architectural Design (Virtual Reality: Theory and Representation; Special Topics in Architectural Design: Housing as Design Generator; Contradictions in Disaster and Resilience)	3
ARCH 239	Special Topics in Architecture Design Theory and Criticism (Design Dispossession and Dissent)	1-4
ARCH 279	Special Topics in the History of Architecture (Design Radicals)	1-4
ART 160	Special Topics in Visual Studies (Social Practices; Making and Exhibiting Art in Pandemic Times)	4
CY PLAN 190	Advanced Topics in Urban Studies (Ghosts and Visions)	1-4
CY PLAN 205	Introduction to Planning and Environmental Law	3
CY PLAN 207	Land and Housing Market Economics	3
CY PLAN C213	Transportation and Land Use Planning	3
CY PLAN 216	Active Transportation	3
CY PLAN C217	Transportation Policy and Planning	3
CY PLAN C251	Environmental Planning and Regulation	3
CY PLAN 255	Urban Informatics and Visualization	3
CY PLAN 257	Data Science for Human Mobility and Socio-technical Systems	4
NWMEDIA 151AC	Transforming Tech: Issues and Interventions in STEM and Silicon Valley	4
NWMEDIA 200	History and Theory of New Media	4
NWMEDIA C265	Interface Aesthetics	3
NWMEDIA 290	Special Topics in New Media (Locative Media)	1-4
Approved Design Electives (may be taken as free/open elective)		
ARCH 209	Special Topics in Architectural Design (Architecture and Landscape)	1-4
ARCH 229	Special Topics in Digital Design Theories and Methods	1-4
ARCH 269	Special Topics in Construction and Materials (Constructing Interior Objects)	1-4

The goal of the Master of Design (MDes) program is to educate a cohort of designers to have a deep understanding of the foundations of emerging technologies and a rigorous design approach for analyzing ethical, ecological and societal implications of a continuously evolving environmental and socio-technology landscape. To meet this goal, MDes students are expected to:

- Master methods of problem-conception and problem-solving at a range of social and ecological scales.
- Hone methods of implementation grounded in the creative practice of design.
- Gain core design skills, in terms of process, materials, craft, and representation.
- Deepen and expand their technical skills in 1-2 emerging technology areas.
- Explicitly consider contexts and impacts of design decisions.
- Use design as a tool for collaboration and team-work.
- Communicate design ideas effectively to diverse collaborators and audiences.
- Weave all of the above together in multiple practice-focused studios.

As part of enrollment in the program, each MDes student receives a Jacobs Maker Pass for access to Jacobs Hall makerspace and a materials budget each semester to purchase materials from the store at Jacobs Hall. Access to the Fabrication Shop in College for Environmental Design (CED) and to the CITRIS Innovation Lab is also included.

Starting in the second semester of the program, each MDes student is assigned a desk in the MDes studio to support their individual and collaborative work.

MDes students may apply for GSI positions, when they are available, for undergraduate design courses offered at The Jacobs Institute for Design Innovation. These teaching opportunities are optional and MDes students are expected to be able to balance GSI responsibilities with their own educational commitments with little difficulty.

MDes students are expected to complete Design@Large, a professional development requirement for the program. Design@Large requires students to engage in an experience outside of an MDes course or studio where they apply what they have learned in a broader context. Design@Large experience typically takes place in the summer between the Spring and Fall semesters and is uniquely defined to align with students' interests and career goals.

MDes students may satisfy this requirement in the following ways:

- Securing an internship
- Having an international experience
- Contributing to a research project
- Launching or contributing to a new start-up or business
- Working in government, service or non-profit organization

The MDes Program provides Career Services advising and other resources to aid students in their pursuit of internships or other professional opportunities as part of this requirement. It is each student's responsibility, however, to define and identify their Design@Large experience.

MDes students demonstrate the completion of the Design@Large requirement by documenting a project or contribution from their experience in DES INV 219: Capstone Portfolio, a culminating course, required for all MDes students in the last semester of the program. In this course, students compile a portfolio of work that has been completed during the MDes program, selecting meaningful pieces that demonstrate the achievement of key learning objectives and highlight the underlying themes of their course of study in the program. As part of this documentation, the Capstone Portfolio must also include and reflect on their Design@Large experience.

Expand all course descriptions [+]Collapse all course descriptions [-]

DES INV 200 Design Frameworks: History & Methods 3 Units

Terms offered: Spring 2024, Spring 2023, Spring 2022
This course exposes students to the mindset, skillset and toolset associated with design, and interweaves practical design methods with readings and lectures on the history of design and technology.
Design Frameworks: History & Methods: Read More [+]

Hours & Format

Fall and/or spring: 15 weeks - 1.5 hours of lecture and 1.5 hours of discussion per week

Additional Details

Subject/Course Level: Design Innovation/Graduate

Grading: Letter grade.

Design Frameworks: History & Methods: Read Less [-]

DES INV 201 Debates in Design 3 Units

Terms offered: Fall 2024, Fall 2023, Fall 2022
As today's most pressing challenges cut across disciplinary boundaries, designers need to articulate new methods for connecting conceptual knowledge with technical skills and develop new ways of integrating ideas from various perspectives and world views. Each year students in this colloquium-style course explore a topic in design. Invited lecturers present a relevant project or challenge from their professional careers at a given intersection of critical contemporary issues expressed at a particular scale of design practice. Speakers share background material or readings in advance, allowing students to arrive with thoughtful questions and discussion points. Students compose written reflections throughout and following each speaker.
Debates in Design: Read More [+]

Rules & Requirements

Repeat rules: Course may be repeated for credit up to a total of 1 time.

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 1 hour of colloquium per week

Additional Details

Subject/Course Level: Design Innovation/Graduate

Grading: Letter grade.

Debates in Design: Read Less [-]

DES INV 202 Technology Design Foundations 4 Units

Terms offered: Fall 2024, Fall 2023, Fall 2022
This course introduces foundational design and technology frameworks and builds skill sets essential to the design of products, services, and experiences enabled by emerging technologies. It follows a human-centered design process that includes research, concept generation, and prototyping, with an emphasis on iteration and refinement. It also develops fluency across a range of core technologies, from fabrication to micro-controllers, and how to operationalize them within a design context. These activities are supported by regular practice of design critique. Students engage with a highly technical semester-long project to create a product-service system leveraging both hardware and digital technologies that addresses a well-defined need.
Technology Design Foundations: Read More [+]

Objectives & Outcomes

Course Objectives: Students are expected to build fluency in the following skill sets through Technology Design Foundations:
Iteratively prototyping a range of physical and interactive concepts;
Validate hypotheses using technical and experiential prototypes, and statistical methods;
Visually and experientially communicating design concepts to inspire audiences and solicit feedback.
design ideation;
establishing empathy for users and stakeholders;
framing complex problems as actionable design opportunities;

Student Learning Outcomes: - Communicate both conceptual and concrete ideas effectively, using a range of visual and verbal presentation techniques
- Give form to design ideas through prototyping at a range of fidelities, and using a range of materials and tools, including electronics, to convey specific information about a design idea
- Lead key steps in an iterative and human-centered design process, including conducting research, uncovering insights, generating ideas, and developing and testing prototypes.
- Work effectively in teams with a toolkit of resources to support productive teamwork
Upon completing this course, students will be able to:

Rules & Requirements

Repeat rules: Course may be repeated for credit with advisor consent.

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 2 hours of studio per week

Additional Details

Subject/Course Level: Design Innovation/Graduate

Grading: Letter grade.

Technology Design Foundations: Read Less [-]

DES INV 210 Studio Foundations 3 Units

Terms offered: Fall 2023
Studio Foundations introduces students to the key concepts of a design studio and the foundational principles and methods that inform the ways designers work, collaborate, and practice.
Studio Foundations: Read More [+]
Rules & Requirements

Prerequisites: This course is only open to students in the first year of the Master of Design (MDes) program. There are no other prerequisites

Hours & Format

Fall and/or spring: 15 weeks - 2-3 hours of lecture and 1.5-2.5 hours of studio per week

Additional Details

Subject/Course Level: Design Innovation/Graduate

Grading: Letter grade.

Studio Foundations: Read Less [-]

DES INV 211 Designing Emerging Technologies I 5 Units

Terms offered: Spring 2024, Spring 2023, Spring 2022
This course is an intensive, project-based course that focuses on design of interactive artifacts that use emerging technologies. Students are led through a sequence of projects of varying lengths (from one week to three weeks). This serves as the first in a two part sequence of courses (with DES INV 212) intended to develop student skills in designing with technology as a material. Projects include both individual and team activities, with teams frequently changing in size and composition.
Designing Emerging Technologies I: Read More [+]
Rules & Requirements

Prerequisites: Students must have either completed or be concurrently enrolled in DES INV 202: Technology Design Foundations and DES INV 200: Design Frameworks

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Design Innovation/Graduate

Grading: Letter grade.

Instructor: ERIC PAULOS

Designing Emerging Technologies I: Read Less [-]

DES INV 212 Designing Emerging Technologies II 3 Units

Terms offered: Fall 2022, Spring 2022
This course is an intensive, project-based course which serves as part of the core required curriculum for students in the Master of Design program. Students are led through a sequence of projects of varying lengths (from one week to one month). The course builds on Designing Emerging Technologies I, and focuses on developing fluency with a different set of technologies. Projects include both individual and team activities, with teams frequently changing in size and composition.
Designing Emerging Technologies II: Read More [+]
Rules & Requirements

Prerequisites: DES INV 211: Designing Emerging Technologies I

Hours & Format

Fall and/or spring: 15 weeks - 1.5 hours of lecture and 1.5 hours of laboratory per week

Additional Details

Subject/Course Level: Design Innovation/Graduate

Grading: Letter grade.

Designing Emerging Technologies II: Read Less [-]

DES INV 213 Thesis Studio 6 Units

Terms offered: Fall 2023, Fall 2022, Spring 2022
In this final studio course of the MDes program, students develop proposals for novel designed artifacts - which may consist of physical objects, products, services, environments, curios, interfaces, or processes - that employ emerging technologies to produce positive impacts for humans, culture, the environment, or society at large. Through a guided sequence of progressive milestones of thinking and making, the work of the studio culminates in a final critique, a final exhibition of projects, and a discursive text that documents this process and positions the product in a broader social and technical context.
Thesis Studio: Read More [+]
Rules & Requirements

Prerequisites: This course is only open to students who are in the final semester of the Master of Design (MDes) program and have successfully completed both DESINV 218 Thesis Seminar and DESINV 211 Designing Emerging Technologies with a grade of C- or higher

Hours & Format

Fall and/or spring: 15 weeks - 3.5-4.5 hours of studio, 1.5-2.5 hours of lecture, and 2-2 hours of workshop per week

Additional Details

Subject/Course Level: Design Innovation/Graduate

Grading: Letter grade.

Thesis Studio: Read Less [-]

DES INV 218 Thesis Seminar 1 Unit

Terms offered: Summer 2024
This course prepares Master of Design students for the final semester of the program, and emphasizes design research and the pivotal role of the thesis in academic and professional settings. Here, students are equipped with the necessary research and technical writing skills to engage deeply with complex design issues. Special focus is given to mastering literature reviews as a means to critically analyze domain-specific discourses, identify research gaps, and effectively position their work within the vast landscape of design and technology, fostering a foundation for intellectual rigor and innovation in their forthcoming thesis projects.
Thesis Seminar: Read More [+]

Rules & Requirements

Prerequisites: This course is only open to students who are in the penultimate term of the Master of Design (MDes) program and have successfully completed DES INV 200 Design Frameworks and DES INV 201 Debates in Design with a grade of C- or higher

Hours & Format

Summer:
6 weeks - 4-6 hours of seminar per week
8 weeks - 1.5-2.5 hours of seminar per week
10 weeks - 1-2 hours of seminar per week

Additional Details

Subject/Course Level: Design Innovation/Graduate

Thesis Seminar: Read Less [-]

DES INV 219 Capstone Portfolio 2 Units

Terms offered: Spring 2024, Fall 2023, Fall 2022
In this culminating course for the MDes degree, you compile a portfolio of work that has been completed during the MDes program, selecting at least four meaningful pieces that demonstrate the achievement of key learning objectives and highlight the underlying themes of your course of study. Two projects should be deeper investigations of projects done in previous classes. The third project featured should be a deep dive into the project pursued in studio. The fourth entry of the portfolio should reflect on Design@Large, an experience you have had outside of an MDes course or studio where you have furthered your design knowledge and expertise within a broader context.
Capstone Portfolio: Read More [+]

Rules & Requirements

Prerequisites: Culminating course taken at the end of the MDes program

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of seminar per week

Additional Details

Subject/Course Level: Design Innovation/Graduate

Grading: Letter grade.

Capstone Portfolio: Read Less [-]

DES INV 290 Advanced Special Topics in Design Innovation 1 - 4 Units

Terms offered: Spring 2024, Fall 2023, Spring 2023
Selected advanced topics in design innovation.
Advanced Special Topics in Design Innovation: Read More [+]

Rules & Requirements

Prerequisites: Varies by topic. Check syllabus and/or Jacobs Institute website for specific prerequisites

Repeat rules: Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring:
7 weeks - 1-8 hours of lecture per week
8 weeks - 1-8 hours of lecture per week
15 weeks - 1-4 hours of lecture per week

Summer:
6 weeks - 2-10 hours of lecture per week
8 weeks - 2-10 hours of lecture per week

Additional Details

Subject/Course Level: Design Innovation/Graduate

Grading: Letter grade.

Advanced Special Topics in Design Innovation: Read Less [-]