The Master of Design (MDes) degree program, is a three-semester professional graduate degree in design of emerging technologies that emphasizes critical design and social practice to address the new realities of emerging technologies in the 21st century. Jointly offered by the Colleges of Engineering and Environmental Design, the program’s integrated curriculum connects technical rigor, design theory, and social practice and invites students to delve into the respective areas of expertise of the Colleges with its focus on innovative technologies and design interventions in the built environment.

Housed in the Jacobs Institute for Design Innovation, the MDes has a unique hands-on studio pedagogy and encourages students to explore ideas and learn through co-creative processes, iteration, and making. The core courses provide fluency in emerging technologies and essential skills in human-centered design process, prototyping, and communication. Technical electives and offerings in social practice or entrepreneurship allow students to select coursework that deepens their knowledge and skillets in areas relevant to their interests and career goals. Over three semesters, students also develop a critical lens on technology and design through a sequence of debate-focused seminars and hone their ability to collaborate and work together. Their studies culminate in a design studio where they work in teams and bring their distinct perspectives to bear on applied projects.

In addition to MDes career services, students may enhance their academic preparation by securing a professional internship or pursuing international experience, each an option during the summer between the first and second years of the program. Students graduate from the MDes with an informed understanding of design, human-centered approaches, and technology and have a unique ability to use these skills dynamically to anticipate emergent needs and environments. Preparation can be a degree in an engineering discipline, work experience before applying. Strong candidates will have an interest in design as a creative, goal-oriented activity and skills in courses and projects. Applicants without clear technical expertise of the Colleges with its focus on innovative technologies and design interventions in the built environment.

The Master of Design (MDes) program requires nine core courses, two technical electives, and one additional elective in social practice or entrepreneurship to meet a minimum of 38 units.

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>DES INV 200</td>
<td>Course Not Available</td>
<td></td>
</tr>
<tr>
<td>DES INV 201</td>
<td>Course Not Available (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.)</td>
<td></td>
</tr>
<tr>
<td>DES INV 202</td>
<td>Course Not Available</td>
<td></td>
</tr>
<tr>
<td>DES INV 211</td>
<td>Course Not Available</td>
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<tr>
<td>DES INV 212</td>
<td>Course Not Available</td>
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<tr>
<td>DES INV 213</td>
<td>Course Not Available</td>
<td></td>
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<tr>
<td>DES INV 219</td>
<td>Course Not Available</td>
<td></td>
</tr>
<tr>
<td>IND ENG 195</td>
<td>A. Richard Newton Lecture Series</td>
<td>1</td>
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</tbody>
</table>

**Elective Courses**

The MDes requires two technical electives, and at least one entrepreneurship or social practice elective from the approved lists of courses, shown below. Students may submit petitions for alternate courses to the Executive Director.

**Approve Technical Electives**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTEGBI/BIO</td>
<td>Biomimetic Engineering -- Engineering from Biology</td>
<td>3</td>
</tr>
<tr>
<td>ENG/MEC ENG C217</td>
<td>Human-Computer Interaction Research</td>
<td>3</td>
</tr>
<tr>
<td>COMPSCI 260B</td>
<td>Foundations of Computer Graphics</td>
<td>4</td>
</tr>
<tr>
<td>or COMPSCI 2184</td>
<td>Introduction to Artificial Intelligence</td>
<td>4</td>
</tr>
<tr>
<td>COMPSCI 189</td>
<td>Introduction to Machine Learning</td>
<td>4</td>
</tr>
<tr>
<td>or COMPSCI 2189</td>
<td>Introduction to Machine Learning</td>
<td>4</td>
</tr>
<tr>
<td>IND ENG 290</td>
<td>Special Topics in Industrial Engineering and Operation Research (005: Entrepreneurship &amp; Innovation: Data-X)</td>
<td>3</td>
</tr>
<tr>
<td>MAT SCI 200A</td>
<td>Survey of Materials Science</td>
<td>4</td>
</tr>
<tr>
<td>MEC ENG 122</td>
<td>Processing of Materials in Manufacturing</td>
<td>3</td>
</tr>
</tbody>
</table>

**Approved Entrepreneurship Electives**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>IND ENG 185</td>
<td>Challenge Lab</td>
<td>4</td>
</tr>
<tr>
<td>IND ENG 186</td>
<td>Product Management</td>
<td>3</td>
</tr>
<tr>
<td>IND ENG 290</td>
<td>Special Topics in Industrial Engineering and Operation Research</td>
<td>2-3</td>
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</tbody>
</table>

**Approved Social Practice Electives**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>INFO/NWMEDIA</td>
<td>Interface Aesthetics</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 209</td>
<td>Special Topics in Architectural Design (001: Virtual Reality: Theory and Representation)</td>
<td>3</td>
</tr>
<tr>
<td>ARCH 209</td>
<td>Special Topics in Architectural Design (003: Contradictions in Disaster and Resilience )</td>
<td>3</td>
</tr>
</tbody>
</table>

The Master of Design (MDes) has been 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 design, and design interventions in cities. 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.

**Pre-requisites for Admission**

Applicants to the MDes program must have an undergraduate degree at a minimum. While post-baccalaureate work experience is not required for this program, prospective students are encouraged to have 1-3 years of work experience before applying. Strong candidates will have an interest and prior experience in human-centered design of technologies and/or environments. Preparation can be a degree in an engineering discipline, business, or a design field such as architecture, landscape architecture, art practice, theatre performance and dance or information design.

All applicants must have requisite technical preparation, for example a technical minor or certificate, or equivalent professional experience. Students in the MDes are expected to independently learn new software tools and programming languages, and to quickly deploy these tools and skills in courses and projects. Applicants without clear technical
preparation from their academic or professional background should, at a minimum, develop intermediate programming experience prior to the start of the program, and have sufficient knowledge of some technical subject area at the level required to take two courses from the list of technical electives.

Outstanding undergraduates with professional experience, such as internships, may also be considered. Desirable but non-required qualifications include experience in technology, entrepreneurship, social or environmental policy, and/or community engagement.

Application Criteria
The following are required for admission to the Berkeley MDes program in addition to 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)
- GRE Exam (recommended but 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 the student's individual practice, this may include examples of visual design work, 3D models, software systems, interactive electronics, videos, paintings, ceramics, performances, musical compositions, social practices, or any other creative or technical pursuit.

The portfolio should be legible to a general audience of designers and should present accounts of design process and samples of early design iterations, as well as representations of final outcomes/designs in their intended contexts. Portfolios are expected to include both images and 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 with highlights of the student's specific contribution. Similarly, academic, professional, and personal work are all welcome, with differentiation of these distinct types of work.

Strong portfolios highlight 3-5 of the designer's most compelling exemplars of creative work. The most important role of a portfolio is to clearly communicate the student's skills, experience, and perspective.

The portfolio must include the student name and contact information and be submitted as a stand-alone PDF formatted document. As an optional supplement, up to two minutes of additional time-based media (audio/video) may be provided. No other uploaded or external materials will be considered; URLs or separately uploaded content will not be reviewed.

Graduate Division Admissions
Minimum Requirements for Admission
The following minimum requirements apply to all graduate programs and will be verified by the Graduate Division:

1. A bachelor’s degree or recognized equivalent from an accredited institution;
2. A grade point average of B or better (3.0);
3. If the applicant comes from a country or political entity (e.g., Quebec) where English is not the official language, adequate proficiency in English to do graduate work, as evidenced by a TOEFL score of at least 90 on the iBT test, 570 on the paper-and-pencil test, or an IELTS Band score of at least 7 on a 9-point scale (note that individual programs may set higher levels for any of these); and
4. Sufficient undergraduate training to do graduate work in the given field.

Applicants Who Already Hold a Graduate Degree
The Graduate Council views academic degrees not as vocational training certificates, but as evidence of broad training in research methods, independent study, and articulation of learning. Therefore, applicants who already have academic graduate degrees should be able to pursue new subject matter at an advanced level without the need to enroll in a related or similar graduate program.

Programs may consider students for an additional academic master's or professional master's degree only if the additional degree is in a distinctly different field.

Applicants admitted to a doctoral program that requires a master’s degree to be earned at Berkeley as a prerequisite (even though the applicant already has a master's degree from another institution in the same or a closely allied field of study) will be permitted to undertake the second master's degree, despite the overlap in field.

The Graduate Division will admit students for a second doctoral degree only if they meet the following guidelines:

1. Applicants with doctoral degrees may be admitted for an additional doctoral degree only if that degree program is in a general area of knowledge distinctly different from the field in which they earned their original degree. For example, a physics PhD could be admitted to a doctoral degree program in music or history; however, a student with a doctoral degree in mathematics would not be permitted to add a PhD in statistics.
2. Applicants who hold the PhD degree may be admitted to a professional doctorate or professional master's degree program if there is no duplication of training involved.

Applicants may apply only to one single degree program or one concurrent degree program per admission cycle.

Required Documents for Applications
1. Transcripts: Applicants may upload unofficial transcripts with your application for the departmental initial review. If the applicant is admitted, then official transcripts of all college-level work will be required. Official transcripts must be in sealed envelopes as issued by the school(s) attended. If you have attended Berkeley, upload your unofficial transcript with your application for the departmental initial review. If you are admitted, an official transcript with evidence of degree conferral will not be required.
2. **Letters of recommendation**: Applicants may request online letters of recommendation through the online application system. Hard copies of recommendation letters must be sent directly to the program, not the Graduate Division.

3. **Evidence of English language proficiency**: All applicants from countries or political entities in which the official language is not English are required to submit official evidence of English language proficiency. This applies to applicants from Bangladesh, Burma, Nepal, India, Pakistan, Latin America, the Middle East, the People’s Republic of China, Taiwan, Japan, Korea, Southeast Asia, most European countries, and Quebec (Canada). However, applicants who, at the time of application, have already completed at least one year of full-time academic course work with grades of B or better at a US university may submit an official transcript from the US university to fulfill this requirement. The following courses will not fulfill this requirement:

   • courses in English as a Second Language,
   • courses conducted in a language other than English,
   • courses that will be completed after the application is submitted, and
   • courses of a non-academic nature.

If applicants have previously been denied admission to Berkeley on the basis of their English language proficiency, they must submit new test scores that meet the current minimum from one of the standardized tests. Official TOEFL score reports must be sent directly from Educational Test Services (ETS). The institution code for Berkeley is 4833. Official IELTS score reports must be mailed directly to our office from the British Council. TOEFL and IELTS score reports are only valid for two years.

**Where to Apply**

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

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.
   • 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.

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.

Students are encouraged to secure a professional internship during the summer between their first and second years in the program. The MDes Program provides Career Services advising and other resources to aid students in their pursuit of internships or other professional opportunities.

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

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

Terms offered: Spring 2020, Fall 2019

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 [-]**