

THE STATE OF USER EXPERIENCE (UX) EDUCATION

By Coleen Sallot

ABSTRACT: User experience design, known as simply UX, is the process of designing digital (and physical) products with a special focus on how people view and interact with a product (User Testing, 2019). According to industry estimates, demand for UX design is projected to grow 13-27 percent within the next ten years (Kent State, 2020). However, a 2019 study showed that the majority of UX professionals in the United States are self taught. Only 12.5 percent of UX professionals have earned a graduate degree in their field, and only four percent have completed a PhD (Rosala, 2019). In a world where the need for designing technology is becoming increasingly important, this paper researches the state of UX education, particularly graduate education, and discusses the growing divide between academia and industry needs.

INTRODUCTION

In the old days of web design, designers worked in design tools like Photoshop and Illustrator; familiarized themselves with color theory, layout, and typography; and read books by Jakob Nielsen and Don Norman. At the same time, they had a key understanding of how to translate their craft into the digital space, helping to bridge the gap between design and development.

Today, the user experience (UX) design field is not so simple: user researchers conduct research; UX designers translate that research into journey maps, sketches and wireframes; visual designers convert low-fidelity mockups into high-fidelity interactive prototypes; and front-end developers translate those interactive prototypes into working code (Siang, 2020). By focusing only on one part of the process, designers often lose sight of the big picture, essentially “dropping the ball over the wall” to the next person without a true understanding of what problem they’re trying to solve and what is required to turn fiction into reality.

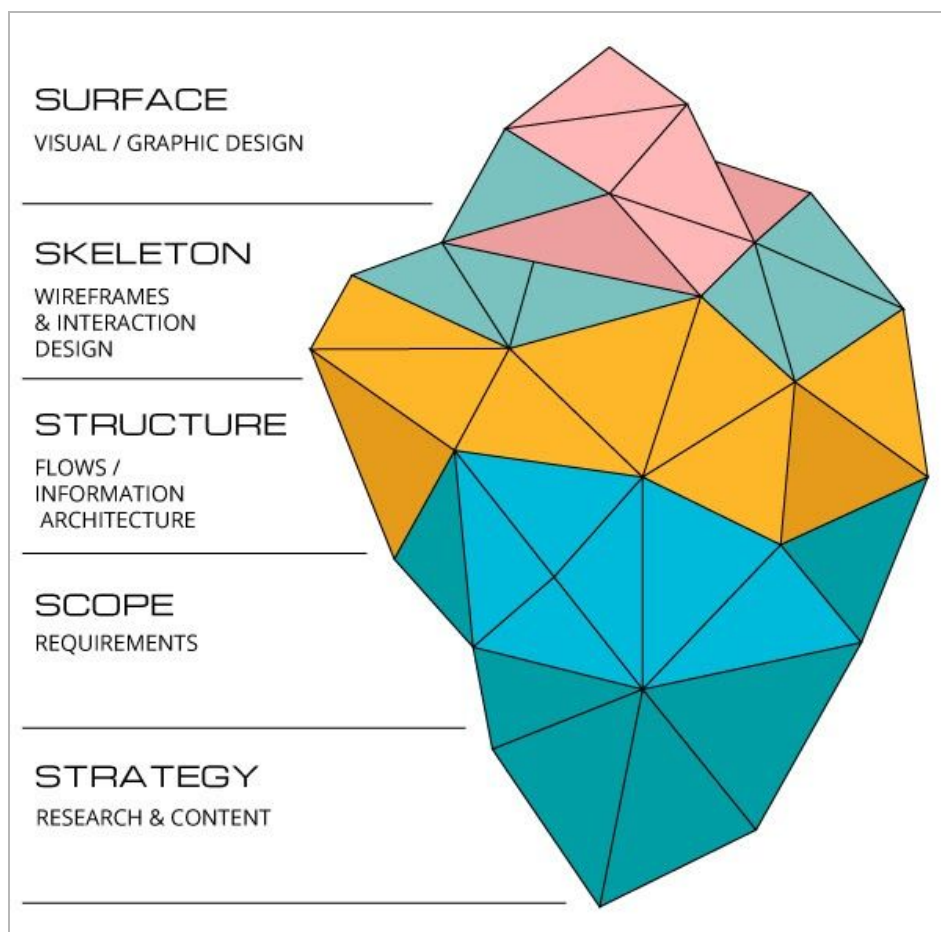
A big part of this mindset comes from a lack of professional education. On a June 2020 call, Jakob Nielsen specifically called out UX education, saying “it’s really terrible, to be honest, the level of university education.” (Nielsen, 2020) According to a 2019 study, the majority of UX professionals are self-taught, with little experience in visual design or front-end development. Only 12.5 percent have earned a graduate degree in their field, and only four percent have completed a PhD (Rosala, 2019). This has contributed to a widening rift between industry and academia, to the point where Nielsen has lamented the need to retrain graduates so they can function in the working world (Nielsen, 2020).

WHAT IS UX DESIGN?

User experience can be defined as the “overall experience of a person using a product or service,” particularly in terms of its ease of use and ability to meet users’ needs (Thinkful, 2020). This typically revolves around digital products, such as websites, mobile applications, or even kiosks, but it can apply to any product regardless of the medium (Norman, 2002). For example, a door handle on the outside means we pull it to open it, or a light switch in the down position indicates the light is off. People generally describe their experiences in terms of value, function, usability and general impression (Babich, 2020).

Don Norman first coined the term “user experience” as an architect at Apple in 1993, stating he “wanted to cover all aspects of the person’s experience with a system, including industrial design, graphics, the interface, the physical interaction, and the manual.” (Stevens, 2019). According to his counterpart, Jakob Nielsen, user experience “encompasses all aspects of the end-user's interaction with the company, its services, and its products (Nielsen, 2019).

Jesse James Garrett conceptualized UX best in his classic book *The Elements of User Experience*, where he displays each of the five planes of UX as an iceberg (Thinkful, 2020).



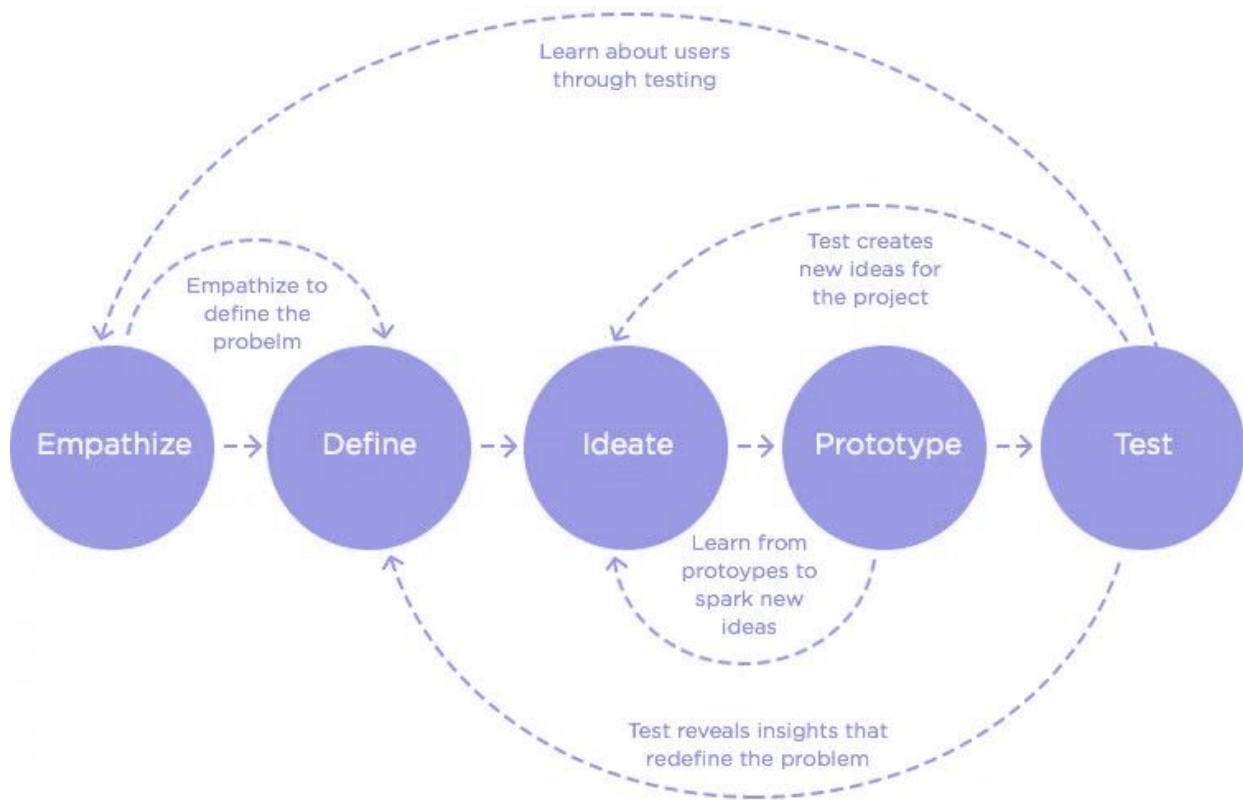
User Experience Iceberg (Thinkful, 2020)

In the diagram on the previous page, Garrett places traditional graphic design in the top *Surface* tier. However, the whole of user experience uses *Strategy*--comprehensive user research--as its foundation, and then builds upon that foundation to determine *Scope*, *Structure* and *Skeleton*.

UX Design Process

In a recent interview by User Testing, 15 UX experts defined UX design as “the process used to determine what the experience will be like when a user interacts with your product,” “solving problems through empathy,” or “improving how useful, easy, pleasant, marketable, or addictive it is to use a product.” (User Testing, 2019). Above all, most experts agree that user experience design is a defined process that revolves around the user.

The Interaction Design Foundation uses the Design Thinking process as its foundation, represented in the diagram below. Created by the Hasso-Plattner Institute of Design at Stanford, Design Thinking consists of five specific phases: Empathize, Define, Ideate, Prototype, and Test. By beginning with research to better understand users’ needs and pain points, designers can define the core problems they are trying to solve. Designers then use divergent thinking to generate multiple ideas and then use convergent thinking to ideate and narrow those ideas into a unified vision, which are prototyped and tested (Dam, 2020).

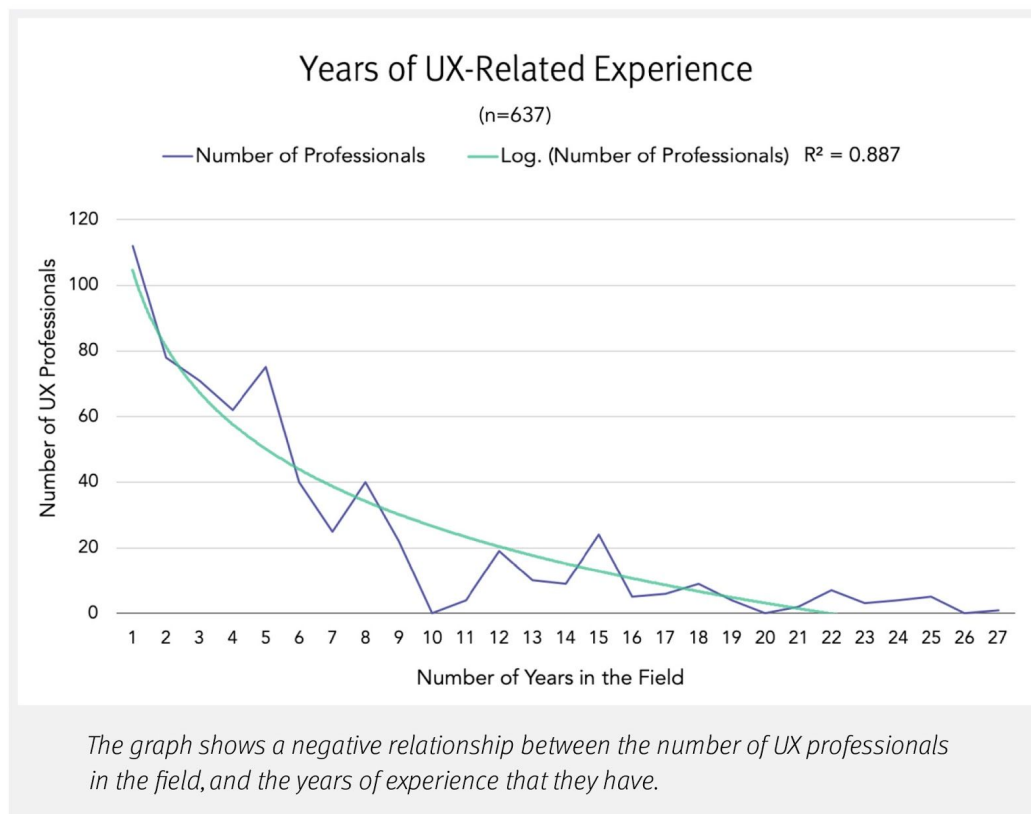


Design Thinking Process (JustinMind, 2020)

CURRENT STATE OF UX PROFESSIONALS

According to CNN Money’s Top 100 Jobs in America report, UX design is a lucrative field with great pay and work satisfaction. Industry estimates forecast the field to grow 13-27 percent within the next 10 years (CNN Money, 2017). Most recently, employment listing giant Indeed positioned UX design at #56 in its 2020 Top 100 Highest-Paying Jobs report (Indeed, 2020).

Most importantly, UX professionals are, for the most part, satisfied with their career, and this level of satisfaction increases over time. Research shows that the majority of UX professionals have been in the field for 4-6 years, while approximately 20 percent have over ten years of experience (Rosala, 2019).

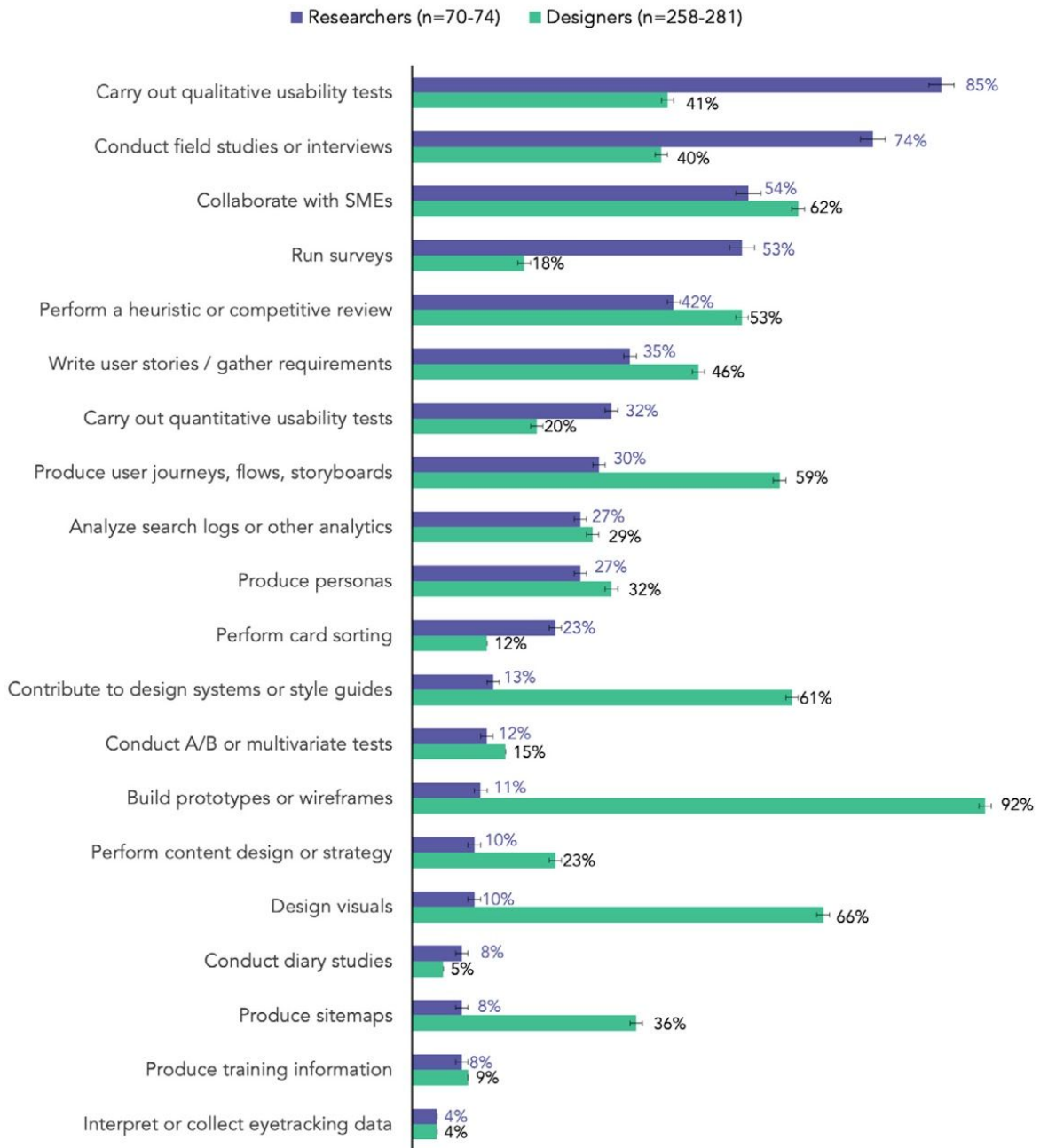


User Experience Careers, Rosala, 2019

Skills and Competencies

While in the old days of web design, designers focused on hard skills like Photoshop, Illustrator, graphic design essentials, and web development, today’s designers come from a variety of backgrounds and skill sets (Rosala, 2019). UX designers are expected to perform a variety of functions ranging from psychology, business, market research, design and technology (White, 2020). Specific competencies include Research and Analysis, Information Architecture, Wireframing, Prototyping, and Visual Design (Lesley University, 2020). Soft skills, such as curiosity, empathy, communication and collaboration, are rated as especially important by both UX professionals and employers (Rosala, 2019).

Activities Often Performed by Designers and Researchers



The graph shows the percentage of UX researchers and designers that claimed to often do 20 different activities in their job. Error bars represent the 95% confidence interval.

User Experience Careers, Rosala, 2019

Job Roles

The UX design field consists of a variety of job titles and functions.

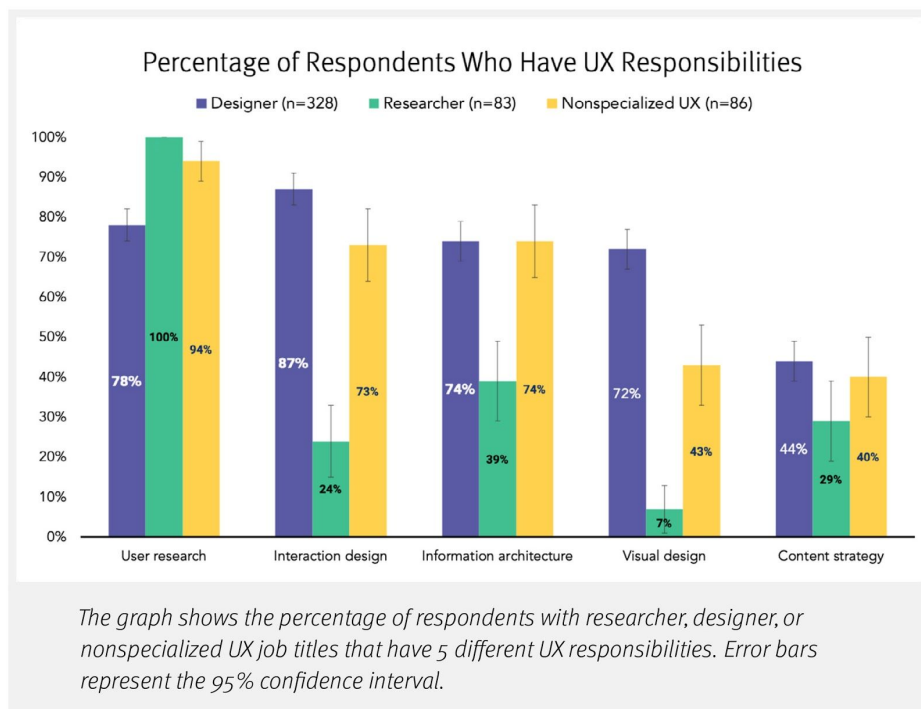
UX designers are experienced generalists who drive all parts of the design process for a project. Their role centers on creating successful user experiences through research, problem solving, ideating and prototyping design solutions, and testing designs with users (Siang, 2020).

User Researchers use qualitative and quantitative user research methods, such as surveys, interviews, observations and contextual inquiries, to gain a deep understanding of a user’s attitudes, behaviors, goals, needs, and pain points (Siang, 2020).

Interaction Designers use research and team input to design interactions and engaging experiences regardless of the medium. Interaction design consists of five different dimensions: words, visual representations, physical objects or space, time and behavior (Siang, 2020).

Information Architects use research and their knowledge of the business to build and optimize how users view and locate information. This can range from creating process flows and detailed site maps to working as a content strategist and writing copy (Siang, 2020).

Visual Designers turn low-fidelity wireframes and prototypes into high-fidelity visual designs. As user interface designers, they understand how to create applications that are usable yet desirable. At the same time, they have a deep understanding of color theory, typography, and layout, as well as brand standards, marketing and design systems (Siang, 2020).



User Experience Careers, Rosala, 2019

Types of Work

UX professionals work on a variety of projects. While the majority work on websites and web/mobile applications, they also design enterprise applications, style guides, medical hardware, business processes, kiosks, and smart products and environments (Rosala, 2019).

Type of work	Percentage of respondents
Websites / web apps	93%
Mobile apps	76%
Enterprise apps	53%
Docs & tutorials	49%
Desktop applications	39%
Style guides	32%
Cloud services	16%
Artificial intelligence	15%
Medical hardware / software	12%
Customer service or business processes	11%
Social / collaborative software	9%
Kiosks	9%
Packaging	7%
Server / network / sensor systems	6%
Smart environments / sensor systems	5%
Installations / interactive exhibits	4%

The table shows what our 2019 respondents have worked on in the last 5 years.

User Experience Careers, Rosala, 2019

INDUSTRY VIEW OF UX

Due to the fluidity of the UX discipline, there appears to be ongoing confusion amongst employers of what UX is and how that relates to the skills they need. Erik Flowers immortalized this ongoing conflict in his famous poster, *UX is not UI* (Flowers, 2014):

HOW UX WANTS TO BE SEEN

- Field research
- Face to face interviewing
- Creation of user tests
- Gathering and organizing statistics
- Creating personas
- Product design
- Feature writing
- Requirement writing
- Graphic arts
- Interaction design
- Information architecture
- Usability
- Prototyping
- Interface layout
- Interface design
- Visual design
- Taxonomy creation
- Terminology creation
- Copywriting
- Presenting and speaking
- Working tightly with programmers
- Brainstorm coordination
- Design culture evangelism

HOW UX IS TYPICALLY SEEN

- Field research
- Face to face interviewing
- Creation of user tests
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www.uxisnotui.com

helloerik.com/ux-is-not-ui [@Erik_UX](https://twitter.com/Erik_UX)

In the UX market, there is a definitive separation between user experience design and user interface (UI) design, but skills most often requested by employers revolve around high-fidelity prototyping, which require detailed knowledge of visual design. Popular recruiter ZipRecruiter conducted a detailed analysis comparing keywords on job descriptions to keywords used on UX resumes, and prototyping was one of the top three skills requested by employers (ZipRecruiter, 2019). In addition, 50 percent of job listings require a detailed design portfolio (Dunford, 2018).

Top Skills Listed in Job Descriptions



ZipRecruiter, 2019

Top Skills Listed in Resumes



ZipRecruiter, 2019

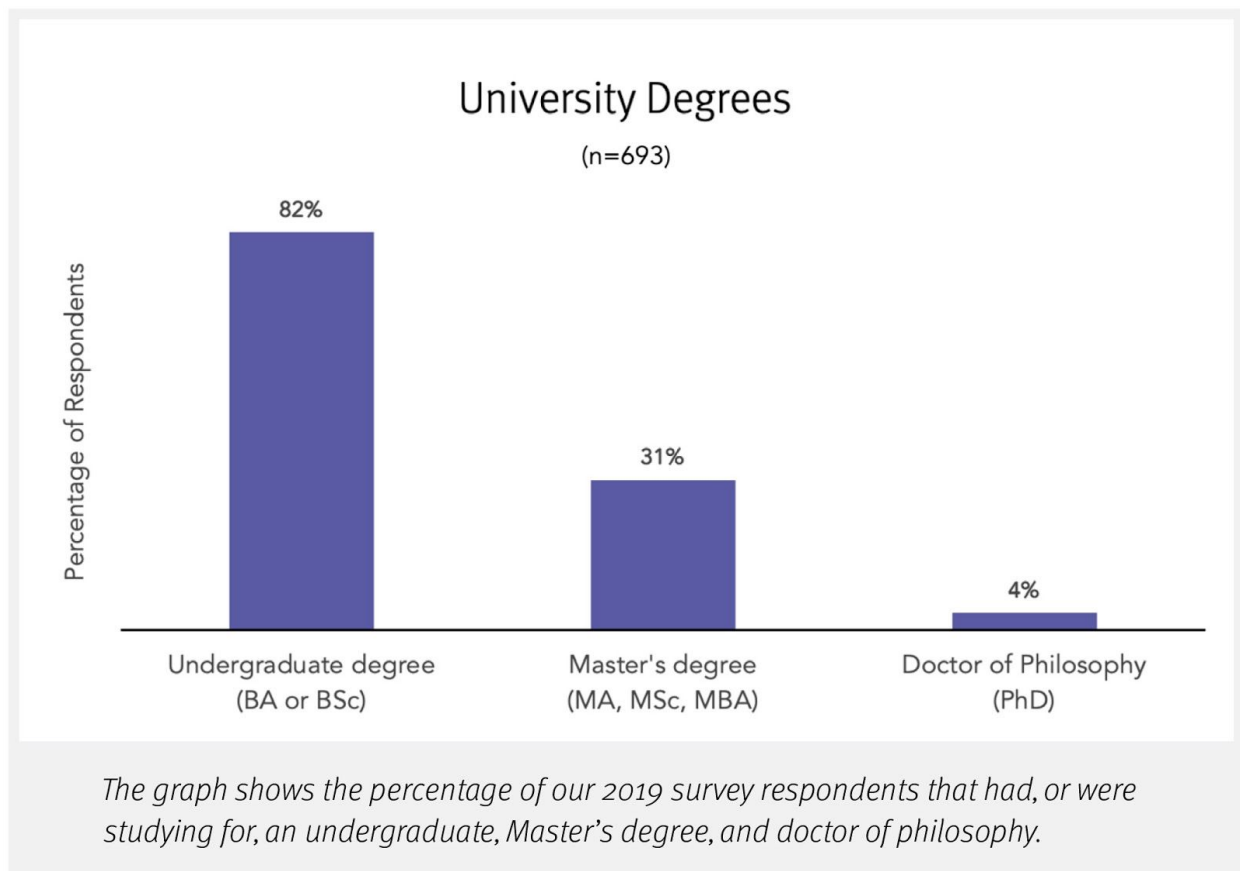
Most Common Skills Listed in Job Listings

Competency	Mentions	Frequency	Category
Collaborative	22	92%	Attributes
Prototypes	21	88%	Artifacts
Visual Design	19	79%	Design Types
Interaction Design	18	75%	Design Types
User Research	18	75%	Activities
UX Design	18	75%	Design Types
Passionate	17	71%	Attributes
Experience	16	67%	Qualifications
Wireframes	16	67%	Artifacts
Cross-functional Teams	15	63%	Business Knowledge
Education	15	63%	Qualifications
Mobile	15	63%	Technical Skills
User Testing	14	58%	Activities
Concepts	13	54%	Artifacts
Design Standards	13	54%	Design Knowledge
Information Architecture	13	54%	Artifacts
Leadership	13	54%	Business Knowledge
Portfolio	13	54%	Qualifications
Project Management	13	54%	Business Knowledge
User Flows	13	54%	Artifacts
Adobe Creative Suite	12	50%	Design Tools
Innovative	12	50%	Attributes
User-Centered Design	12	50%	Design Knowledge
Written Communication	12	50%	Communication

The Interaction Design Competency Framework, Dunford, 2018

THE CURRENT STATE OF UX EDUCATION

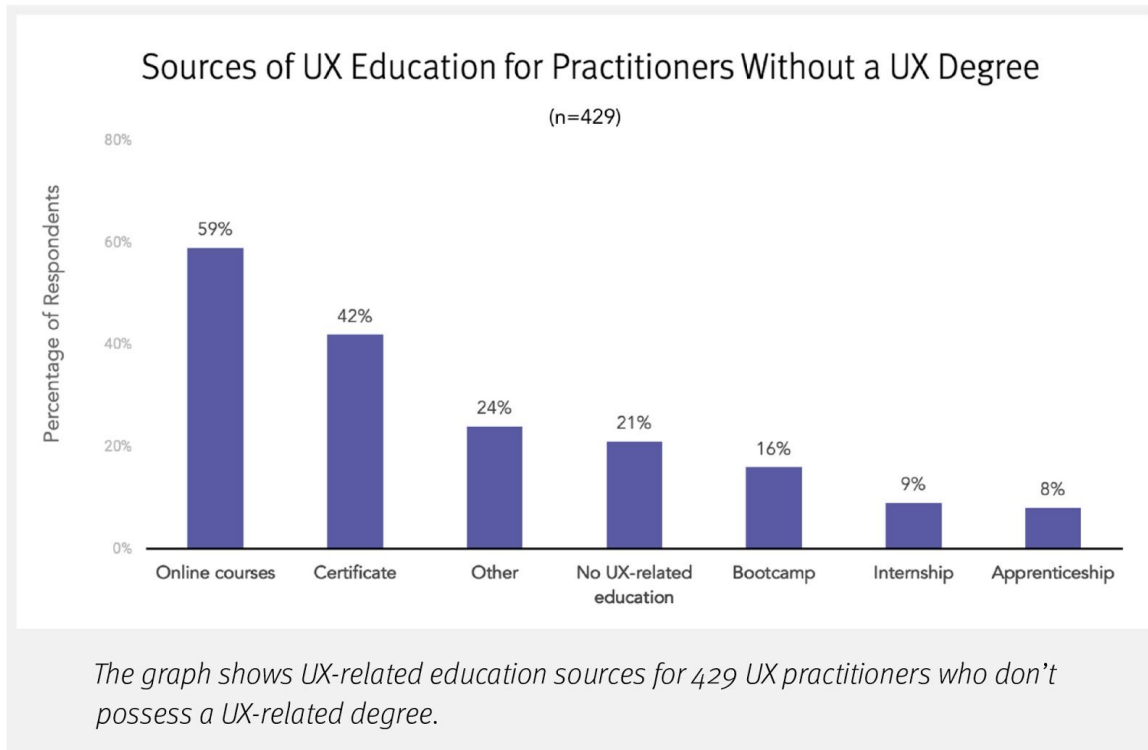
The UX space is a diverse field that brings together knowledge of psychology, business, marketing, communications, design and technology. However, a 2019 study showed that the majority of UX professionals in the United States are self taught. While 31 percent of UX professionals have completed graduate education, only 12.5 percent have earned a graduate degree in their field, and only four percent have completed a PhD (Rosala, 2019).



User Experience Careers, Rosala, 2019

By comparison, as shown on the chart on the following page, the majority of UX professionals have completed some type of online course or in-person workshop to learn a new technique or skill. Sixteen percent have completed a UX Bootcamp, a highly immersive program that spans 12 to 20 weeks and provides project-driven education in a variety of UX domains. Of the 21 percent have no education of any kind in the UX field, the majority have educated themselves via books, articles, or other literature (Rosala, 2019)

UX practitioners can choose from a variety of both academic-led (Appendix C) and non-academic-led (Appendix D) certification programs. Some specialize in only UX, while others provide training in both UI and UX design. The majority provide online instruction.



User Experience Careers, Rosala, 2019

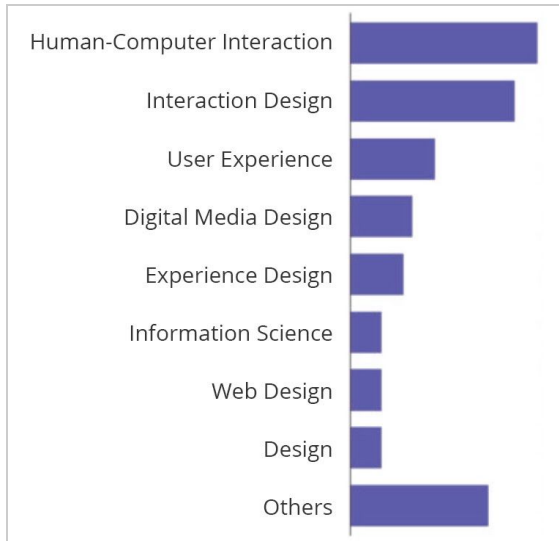
UX Graduate Degree Programs

When conducting an analysis of graduate programs for UX, it is important to distinguish UX from other design fields, including graphic design. As described earlier, while UX contains elements of graphic design, by nature it uses research as its foundation and is much deeper in its level of analytical thinking.

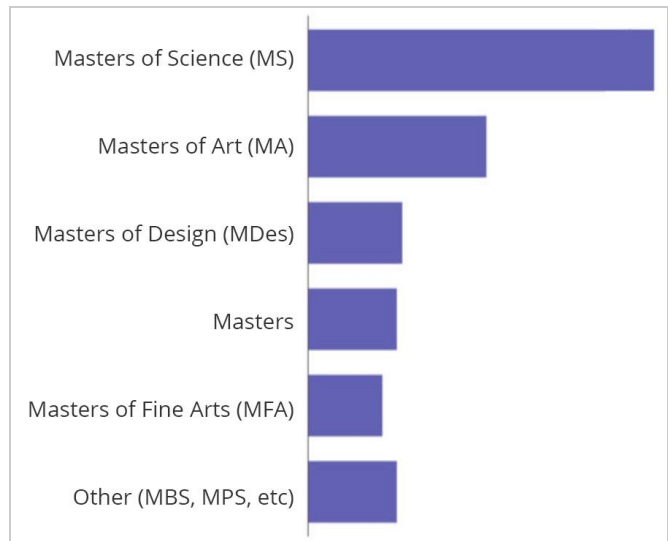
There are approximately 70 UX-related graduate programs in the United States (Appendix A). Of these, only nine programs directly cater to UX. The rest span a variety of topics that are related but not specifically UX.

Communication	Information Technology
Computer Science	Interaction Design
Design	Interactive Design
Digital Media	Interface Design
Experience Design	Media Design
Human Factors	Product Design
Human-Centered Design	Service Design
Human-Computer Interaction	User Experience
Information Science	Web Design

Degree Topics of Study (Appendix A)



Degree Title Groupings (Appendix A)



Degree Types (Appendix A)

Managing Department	Human-Computer Interaction	Interaction Design	User Experience	Digital Media
Arts		5		
Business	1		1	
Design	1	6	2	5
Engineering	1		2	1
HCI	2			
Information	9	2	3	1
Computer Science	5		1	
Psychology	2			
TOTAL	21	13	9	7

Top Degree Titles vs. Managing Departments (Appendix A)

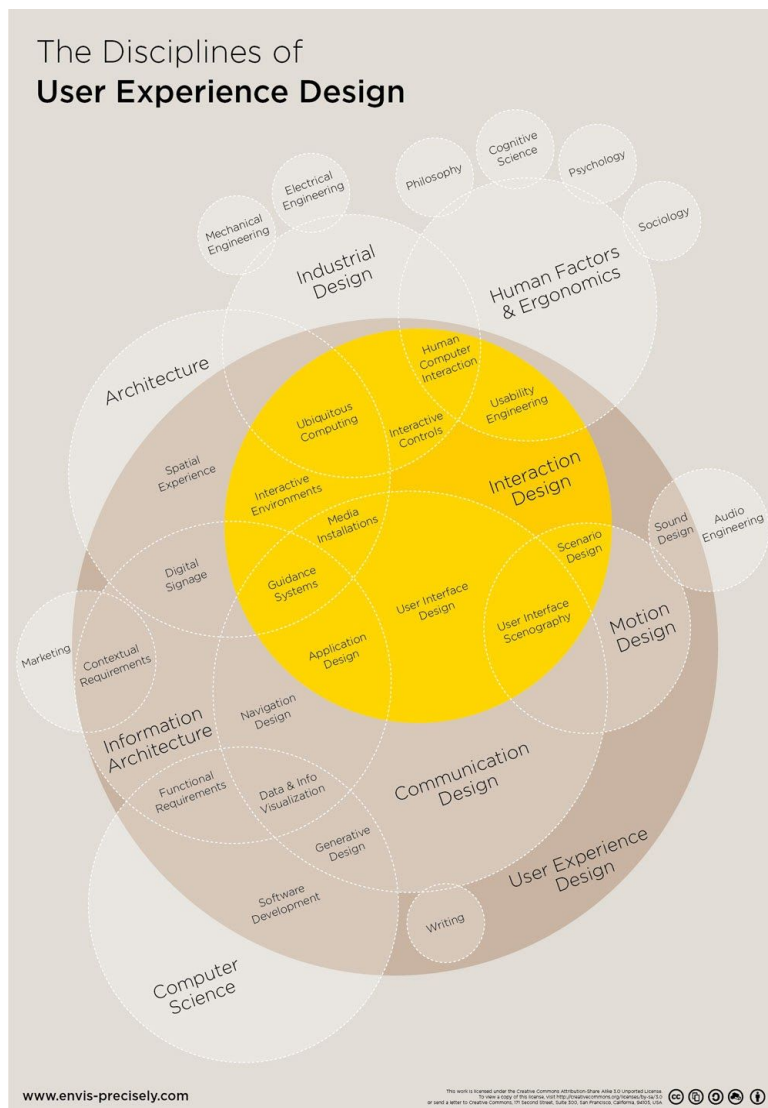
Analysis shows that the top two fields for UX are Human-Computer Interaction (HCI) and Interaction Design. Created back in the 1980s as a way to evaluate the relationship between people and technology, HCI has grown as a major player in the UX field (Interaction Design Foundation, 2020). HCI programs generally come from more scientific disciplines, such as engineering, computer science, and information science, as well as psychology, and typically result in a Master of Science degree. Many HCI programs contain courses on UX, but generally with an analytical focus.

On the other hand, Interaction Design (IXD) is primarily an arts and design discipline focused on the design of interactions between people and products (Siang, 2020). In the education landscape, interaction design programs provide training in design tools, visual design, and prototyping, and typically result in a Master of Arts or Master of Fine Arts degree.

UX degree programs primarily come from the same departments as HCI, but are considered a blend of HCI and interaction design. Courses include research methods, interaction design, human factors and cognitive psychology, prototyping, and usability, and typically result in a Master of Science degree.

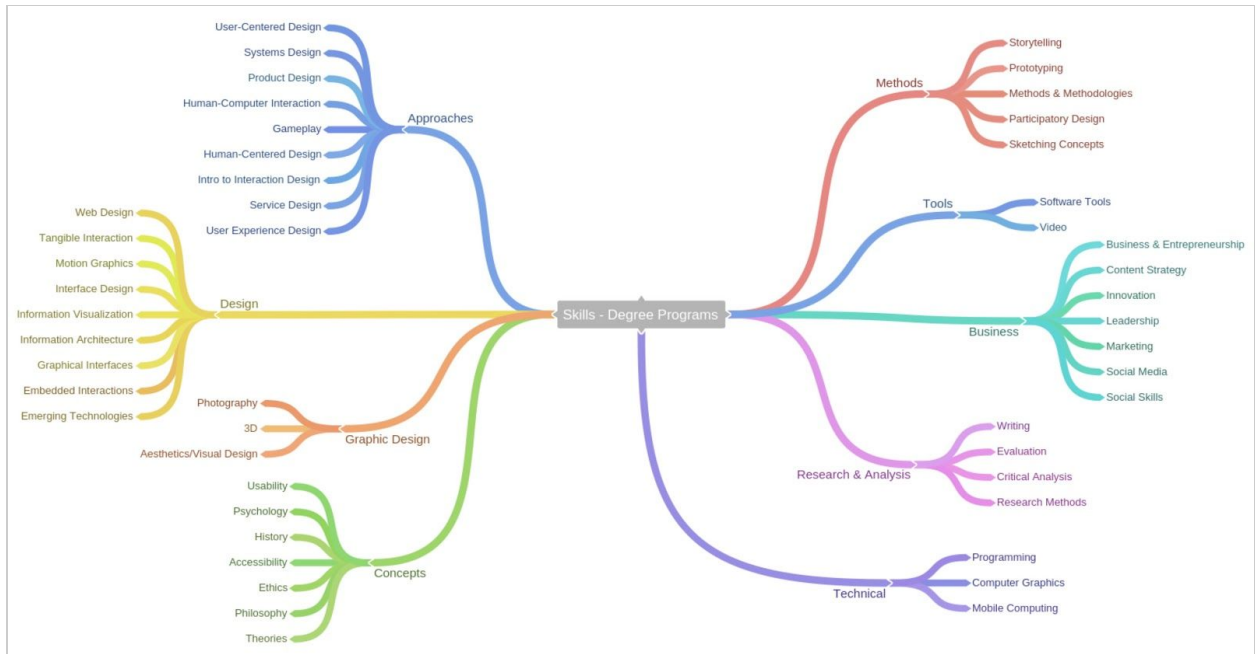
ACADEMIC VIEW OF UX

In 2018, UX Instructor Oz Chen penned an infamous article called “The Myth of the UX Degree.” His biggest complaint was that Human-Computer Interaction and Interaction Design are only subsets of UX, and that there is no “one-size-fits-all” program that teaches all aspects of UX (Chen, 2018).



Glaser, 2014

As shown in the previous page, UX is a broad field that encompasses many different facets of design, including HCI, Human Factors and Ergonomics, Information Architecture, Communication Design, Computer Science, Motion Design, Industrial Design, and Architecture (Glaser, 2014).



Overview of Competencies Taught Across All UX-Related Programs (Dunford, 2018)



Core Competencies Taught in UX-Specific Programs (Appendix B)

In contrast, when analyzing graduate programs specifically focused on UX, required competencies vary based on the managing department and its core focus. Master of Arts programs typically emphasize visual and interaction design, while Master of Science programs typically focus on human factors, information architecture, and software engineering (Appendix B).

Some experts, such as Don Norman, argue this goes beyond the simple matter of a degree programs' managing department, but to that fact that their theoretical foundations are grounded in the social sciences and computer science--not design (Norman, 2014). As a result, there appear to be no common definitions for core concepts and no common standards and curriculum for what UX students should be taught (Dunford, 2018).

While academic professionals agree that UX education needs to be improved, there is little consensus on how this should be accomplished. Some advocate for teaching skills and tools in addition to theory, while others recommend more group work and creating projects in concert with real-world clients. In particular, academia has struggled to keep up with today's rapidly changing technology. Unlike boot camps, which have the ability to quickly pivot to cater to new technologies and concepts, academic institutions must follow curricula requirements that are often out-of-date (Dunford, 2018). This has prompted a discussion on whether formal education should focus on cultivating critical thinkers instead of teaching specific skills (Chen, 2018).

These growing pains have resulted in a widening rift between industry and academia. In a 2018 study, interviews with industry professionals showed a definitive disconnect between what UX graduates have been taught and the skills employers need in the field. While critical thinking is important, employers are more interested in a candidate who can get started right out of the gate. They want someone who's an expert in Photoshop, Illustrator or Sketch and knows the ins and outs of graphic design, including color theory, typography, layout and whitespace (ZipRecruiter, 2019). Some bemoan the lack of coding skills, which enable designers to better ensure their designs work within the reality of the technical space. They also want someone who understands how to put design thinking into practice and, most importantly, is able to marry the needs of users with the needs of the business (Dunford, 2018).

Unfortunately, this has had a negative impact on how employers view UX education. As mentioned previously, 50 percent of employers use a candidate's portfolio as the biggest indicator of knowledge and success. Unless the degree is from a well known institution such as MIT or Carnegie Mellon, employers tend to view a degree or certification as secondary to skills, and even worse, as only a door to entry-level employment (Dunford, 2018).

THE FUTURE OF UX EDUCATION

The state of UX education is not in a good place. On a June 2020 call, Jakob Nielsen specifically called out UX education, saying "it's really terrible, to be honest, the level of university education." He lamented the fact that most UX professionals do not have any degrees or formal education in the field, and of those who do, he talked about the need to retrain them so they can function in the working world (Nielsen, 2020).

The creation of boot camps were presented as an alternative to formal education, but for the most part, UX is too broad a discipline for new students to learn within a short period of time (Chen, 2018). And while students are typically required to create projects and a portfolio, they haven't received the theoretical background and visual acuity to make their work stand out from the rest (Levitt, 2020). As a result, many UX professionals complete certification programs to obtain additional skills, but as mentioned previously, these are more to demonstrate their capabilities to employers than to generate a greater depth of detailed knowledge.

Some universities have created new design degree programs to enable UX professionals to grow and evolve in order to accommodate today's rapidly changing market. Miami University of Oxford, Ohio and Northeastern University have each created Experience Design MFA programs that combine design studio classes with in-depth theory and research. On the other hand, DePaul University's Experience Design MA program uses computing and social science to provide a more scientific and analytical framework (Appendix A).

Rethinking Design Education

Since 2014, design expert Don Norman has called special attention to the lack of design education (Norman, 2014), but 2020 was the catalyst for putting those thoughts into action. This spring, he and a group of design professionals called out the inadequacies of the design profession, especially regarding their ability to resolve performance, systemic, contextual and global challenges (Norman, 2020).

In June 2020, Norman put out a public call soliciting contributors for a working committee to completely rethink UX and design education. The plan is to use the Computer Science Curriculum Committee as a model, which is designed to similarly handle a large number of specialties and a variety of different types of training programs and schools, and is revamped every ten years. Tier 1 topics would consist of topics that should be known by all designers, such as sketching, prototyping, design research, and others. Tier 2 topics would be based on specialization (Future of Design Education, 2020).

The committee has set out several goals to accomplish (Future of Design Education, 2020):

- To develop a family of curricula that spans all design disciplines and programs.
- To provide directions for the use of new technologies, especially artificial intelligence (AI).
- To create new domains of application, particularly regarding the performance, systemic, contextual and global challenges of today's world.
- To ensure that curricula address ethical issues, including those around racial, class and cultural prejudices.
- To provide a means by which more designers move into positions of leadership and authority, where design has a front-row seat at the business table.

In the short term, the main focus will be on developing guiding principles; identifying key nameable, discrete areas of design knowledge; identifying general skills and attitudes important for designer success; and developing curricular principles to guide curricula and learning experiences. This

information will then be used to build out an entire model for design education (Future of Design Education, 2020).

CONCLUSION

Fifty years ago, Victor Papanek called out the state of design education: “Education for designers (like nearly all education) is based on learning skills, nourishing talents, understanding the concepts and theories that inform the field, and, finally, acquiring a philosophy. It is unfortunate that our design schools proceed from wrong assumptions. The skills we teach are too often related to processes and working methods of an age that has ended.” (Papanek, 1971)

Today, the field of UX design and design education find themselves at a similar crossroads. They can choose to continue their current course, to the point where academia has little input into the trajectory of where UX design goes in the future. Or, they can choose to take a step backwards to completely rethink the model of UX education--and for design as a whole--so it can “move the design profession” to a place that fully realizes “the value of design in the 21st century.” (Norman, 2020)

Since the inception of the Internet, technology has been leading the charge, with design constantly playing catch-up. But with the help of experts like Don Norman and Jakob Nielsen, we can put design in the driver’s seat, able to not only maneuver whatever strides and pivots technology brings, but to actually lead in an ever changing and evolving world.

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APPENDIX

Appendix A - Detailed List of UX-Related Graduate Programs in the U.S.

City	State	Institution	Program	Degree	Format	Managing Dept
Tempe	AZ	Arizona State University	User Experience Design	Master of Science	In-Person	Engineering
Berkley	CA	University of California Berkley	Information Management and Systems	Master of Science	In-Person	Information
Irvine	CA	University of California Irvine	Human-Computer Interaction	Master of Science	In-Person	Information and Computer Science
Pasadena	CA	Art Center College of Design	Media Design	Master of Fine Arts (MFA)	In-Person	Media Design Practices
San Francisco	CA	California College of the Arts	Interaction Design	Master of Design	In-Person	Design
San Francisco	CA	Academy of Art University	Web Design + New Media	Master of Arts	In-Person, Online	Web Design and New Media
San Francisco	CA	Academy of Art University	Web Design + New Media	Master of Fine Arts (MFA)	In-Person, Online	Web Design and New Media
San Jose	CA	San Jose State University	Human Factors/Ergonomics	Master of Science	In-Person	Human Factors
Stanford	CA	Stanford University	Symbolic Systems	Master of Science	In-Person	Humanities and Sciences
Boulder	CO	University of Colorado Boulder	Creative Technology and Design	Master of Science	In-Person	Design and Technology
Washington	DC	George Washington University	Interaction Design	Master of Arts	In-Person	Arts and Sciences
Newark	DE	University of Delaware	Interaction Design	Master of Arts	In-Person	Arts and Sciences
Gainesville	FL	University of Florida	Web Design (Mass Communication)	Master of Arts	Online	Journalism and Communications
Miami	FL	University of Miami	Interaction Design (Interactive Media)	Master of Fine Arts (MFA)	In-Person	Cinema and Interactive Media
Atlanta	GA	Georgia Tech	Digital Media	Master of Science	In-Person	Information Design and Technology
Atlanta	GA	Georgia Tech	Human-Computer Interaction	Master of Science	In-Person	Information Science and Technology
Ames	IA	Iowa State University	Human-Computer Interaction	Master of Science	In-Person	Virtual Reality Applications Center

Chicago	IL	IIT Institute of Design	Design	Master of Design	In-Person	Design
Chicago	IL	DePaul University	Digital Communication of Media Arts	Master of Arts	In-Person	Computing and Digital Media
Chicago	IL	DePaul University	Experience Design	Master of Arts	In-Person	Computing and Digital Media
Chicago	IL	DePaul University	Human-Computer Interaction (Applied)	Master of Science	Online	Computing and Digital Media
Chicago	IL	Columbia College	Interaction Design	Master of Arts	In-Person	Interactive Arts and Media
Evanston	IL	Northwestern University	Information Design and Strategy	Master of Science	In-Person	Professional Studies
Bloomington	IN	Indiana University	Human-Computer Interaction	Master of Science	In-Person	Informatics and Computing
West Lafayette	IN	Purdue University	User Experience Design (Computer Graphics Technology)	Master of Science	In-Person	Computer Graphics Technology
Lawrence	KS	University of Kansas	User Experience + Interaction	Master of Arts	In-Person	Design
Boston	MA	Northeastern University	Experience Design	Master of Fine Arts (MFA)	In-Person	Arts, Media and Design
Boston	MA	Northeastern University	Experience Design	Master of Science	In-Person	Arts, Media and Design
Boston	MA	Bentley University	Human Factors in Information Design	Master of Science	Online	Information Design
Cambridge	MA	Massachusetts Institute of Technology	Media Arts and Sciences	Master of Science	In-Person	MIT Media Lab
Medford	MA	Tufts University, School of Mechanical Engineering	Human Factors Engineering	Master of Science	In-Person	Mechanical Engineering
Baltimore	MD	University of Maryland, Baltimore County	Human-Computer Interaction (Human Centered Computing)	Master of Science	In-Person	Information Studies
Baltimore	MD	The University of Baltimore	Interaction Design & Information Architecture	Master of Science	Online	Arts and Sciences

Baltimore	MD	Maryland Institute College of Art (MICA)	User Experience Design	Master of Professional Studies (MPS)	Online	Design
College Park	MD	University of Maryland	Human-Computer Interaction	Master of Science	In-Person	Information Studies
Ann Arbor	MI	University of Michigan	Integrative Design	Master of Design	In-Person	Art and Design
Ann Arbor	MI	University of Michigan	User Experience Design	Master of Science in Information	In-Person	Information
Detroit	MI	College for Creative Studies	Interaction Design	Master of Fine Arts (MFA)	In-Person	Design
Raleigh	NC	University of North Carolina	Experimental Media Arts	Master of Arts	In-Person	Design
New Brunswick	NJ	Rutgers University	Interaction Design and Informatics	Master of Science in Information	Online	Information
New Brunswick	NJ	Rutgers	User Experience Design	Master of Business and Science	Hybrid	Business
Ithaca	NY	Cornell University	User Experience Design	Master of Professional Studies (MPS)	In-Person	Information Science
New York	NY	Parsons The New School for Design	Communication Studies	Master of Professional Studies (MPS)	In-Person	Design
New York	NY	Parsons The New School for Design	Design and Technology	Master of Fine Arts (MFA)	In-Person	Design
New York	NY	New York University	Digital Media (Integrated)	Master of Science	In-Person	Engineering
New York	NY	Pratt Institute	Information Experience Design	Master of Science	In-Person	Information Science
New York	NY	School of Visual Arts (SVA)	Interaction Design	Master of Fine Arts (MFA)	In-Person	Design
New York	NY	Touro College Graduate School of Technology	Web and Multimedia Design	Master of Arts	In-Person	Information Systems
Oswego	NY	SUNY Oswego	Human-Computer Interaction	Master of Arts	In-Person	Computer Science

Rochester	NY	Rochester Institute of Technology	Human-Computer Interaction	Master of Science	In-Person	Information
Cincinnati	OH	University of Cincinnati	Design	Master of Design	In-Person	Design, Architecture, Art, and Planning
Kent	OH	Kent University	User Experience Design	Master of Science	Online	Library & Information Science
Oxford	OH	Miami University	Experience Design	Master of Fine Arts (MFA)	Online	Arts
Harrisburg	PA	Harrisburg University	Human-Centered Interaction Design	Master of Science	In-Person	Computer Science
Philadelphia	PA	Drexel University	Human-Computer Interaction and User Experience	Master of Science in Information	In-Person, Online	Information
Philadelphia	PA	Thomas Jefferson University	User Experience and Interaction Design	Master of Science	In-Person	Design and Engineering
Pittsburgh	PA	Carnegie Mellon University	Design	Master of Design	In-Person	Design
Pittsburgh	PA	Carnegie Mellon University	Human-Computer Interaction	Master of Science	In-Person	Human Computer Interaction Institute
Pittsburgh	PA	Carnegie Mellon University	Integrated Innovation for Products and Services	Master of Integrated Innovation for Products and Services	In-Person	Integrated Innovation Institute
Pittsburgh	PA	Carnegie Mellon University	Interaction Design	Master of Professional Studies (MPS)	In-Person	Design
Providence	RI	Rhode Island School of Design	Digital + Media	Master of Fine Arts (MFA)	In-Person	Design
Austin	TX	The University of Texas at Austin School of Information	Information Studies	Master of Science in Information	In-Person	Information
Dallas	TX	University of Texas Dallas	Interaction Design	Master of Arts	In-Person	Arts, Technology and Emerging Communication
Frisco	TX	University of North Texas	Interaction Design	Master of Arts	In-Person	Visual Arts and Design

Houston	TX	Rice University	Human-Computer Interaction	Master of Science in Psychology	In-Person	Psychological Sciences
Fairfax	VA	George Mason University	Human Factors and Applied Cognition Psychology	Master of Arts Psychology	In-Person	Human Factors and Applied Cognition
Seattle	WA	University of Washington	Design	Master of Design	In-Person	Art, History & Design
Seattle	WA	University of Washington	Human Centered Design	Master of Science	In-Person	Human Centered Design and Engineering
Seattle	WA	University of Washington	Human-Computer Interaction and Design	Master of Design	In-Person	Design: Use: Build

Appendix B - Breakdown of Curriculum in UX-Specific Graduate Programs

Institution	Degree	Managing Dept	Research Methods	Interaction Design	Digital Tools	Usability	Prototyping	Visual Design	Business Basics	Human Factors	Software Engineering	Information Architecture	Data Visualization
University of Kansas	MA	Design	R	R			R	E	R	R			
Thomas Jefferson University	MS	Design and Engineering	R		R		R	R	R	R		R	
Rutgers	MS	Business	R	R			R	R				E	
Maryland Institute College of Art (MICA)	MPS	Design	R	R	R	R	R		E	R			
Cornell University	MPS	Information Science	E	E			R			R	R		R
Arizona State University	MS	Engineering	R	E	R	R		E		R			R
Kent University	MS	Library & Information Science	R	R	R	R						R	
University of Michigan	MS	Information	R	R	R	R		R		R	R		
Purdue University	MS	Computer Graphics Technology	R	E		R	R			E			
TOTAL			100%	50%	55%	55%	67%	33%	22%	67%	22%	22%	22%

R - Required courses

E - Electives

Appendix C - Academic-Led UX Certification Programs (U.S.)

City	State	Institution	Program	Degree	Format
Fullerton	CA	California State University, Fullerton	User Experience and Customer-Centered Design	Certificate (Professional)	Online
Los Angeles	CA	University of California, Los Angeles	User Experience Design	Certificate (Professional)	Online
San Diego	CA	University of California San Diego	User Experience Design	Certificate (Professional)	Online
Gainesville	FL	University of Florida	Web Design	Certificate (Graduate)	Online
Bloomington	IN	Indiana University	Human-Computer Interaction	Certificate (Graduate)	Online
Boston	MA	Northeastern University	Experience Design	Certificate (Graduate)	In-Person
Boston	MA	Northeastern University	Experience Design	Certificate (Graduate)	In-Person
Newark	NJ	NJIT	UI/UX Digital Design Essentials	Certificate (Graduate)	In-Person
Ithaca	NY	Cornell University	User Experience Design	Certificate (Professional)	Online
New York	NY	Pratt Institute	Digital Design	Certificate (Professional)	Online
Philadelphia	PA	Drexel University	Human-Computer Interaction and User Experience	Certificate (Graduate)	Online
Salt Lake City	UT	University of Utah	Human Factors and Psychology	Certificate (Undergraduate)	In-Person
Fairfax	VA	George Mason University	Transportation Human Factors or Usability	Certificate (Graduate)	In-Person

Appendix D - Non-Academic-Led UX Certification Programs (U.S.)

City	State	Institution	Program	Degree	Format
San Francisco	CA	Springboard	UI/UX Design	Certificate (Professional)	Online
San Francisco	CA	DesignLab	UI/UX Design	Certificate (Professional)	Online
San Francisco	CA	Nielsen Norman Group	UI/UX Design	Certificate (Professional)	In-Person, Online
Fairfield	IA	Human Factors International	Usability, User Experience	Certificate (Professional)	Online
New York	NY	Thinkful	UI/UX Design	Certificate (Professional)	Online
New York	NY	General Assembly	UI/UX Design	Certificate (Professional)	In-Person, Online
Chattanooga	TN	Center Centre	User Experience Design and Technology	Certificate (Diploma)	In-Person
Austin	TX	Austin Center for Design	Interaction Design and Social Entrepreneurship	Certificate (Professional)	Online