UNIVERSITY OF MARYLAND
OFFICE OF THE PRESIDENT

1101 Thomas V. Miller, Jr. Administration Building
College Park, Maryland 20742
301.405.5803 TEL
301.314.9560 FAX

July 6, 2021

James D. Fielder, Jr.
Secretary of Higher Education
Maryland Higher Education Commission
6 N. Liberty Street
Baltimore, MD 21201

Dear Secretary Fielder:

I am writing to request approval for a new Bachelor of Arts program in Technology and Information Design. The proposal for the new program is attached. I am also submitting this proposal to the University System of Maryland for approval.

The proposal was endorsed by the appropriate faculty and administrative committees. I also endorse this proposal and am pleased to submit it for your approval.

Sincerely,

Darryll J. Pines
President
Glenn L. Martin Professor of Aerospace Engineering

DJP/mdc

cc: Antoinette Coleman, Associate Vice Chancellor for Academic Affairs
Jennifer King Rice, Senior Vice President and Provost
Keith Marzullo, Dean, College of Information Studies

Office Use Only: PP#

Cover Sheet for In-State Institutions
New Program or Substantial Modification to Existing Program

Institution Submitting Proposal	University of Maryland, College Park

Each action below requires a separate proposal and cover sheet.

- (●) New Academic Program
- ( ) New Area of Concentration
- ( ) New Degree Level Approval
- ( ) New Stand-Alone Certificate
- ( ) Off Campus Program
- ( ) Substantial Change to a Degree Program
- ( ) Substantial Change to an Area of Concentration
- ( ) Substantial Change to a Certificate Program
- ( ) Cooperative Degree Program
- ( ) Offer Program at Regional Higher Education Center

Payment Submitted: (●) Yes ( ) No
Payment Type: (●) R*STARS # ( ) Check #
Payment Amount: $850.00
Date Submitted: 8/3/2021

Department Proposing Program	College of Information Studies	
Degree Level and Degree Type	Bachelor's; Bachelor of Arts	
Title of Proposed Program	Technology and Information Design	
Total Number of Credits	120	
Suggested Codes	HEGIS: 07.0202	CIP: 30.3101
Program Modality	(●) On-campus	( ) Distance Education (*fully online*)
Program Resources	(●) Using Existing Resources	( ) Requiring New Resources
Projected Implementation Date	(●) Fall ( ) Spring ( ) Summer	Year: 2022
Provide Link to Most Recent Academic Catalog	URL: https://academiccatalog.umd.edu/	
Preferred Contact for this Proposal	Name: Michael Colson	
	Title: Senior Coordinator for Academic Programs	
	Phone: (301) 405-5626	
	Email: mcolson@umd.edu	
President/Chief Executive	Type Name: Darryll J. Pines	
	Signature: Darryll J. Pines	Date: 07/06/2021
	Date of Approval/Endorsement by Governing Board:	

Revised 1/2021

A. Centrality to the University's Mission and Planning Priorities

Description. The College of Information Studies (iSchool) at the University of Maryland is proposing a new Bachelor of Arts in Technology and Information Design, known as InfoDesign. This program is designed to teach students to frame important problems at the intersection of people and information; to design solutions for those problems; and to realize, deploy and iterate on those solutions. Students will participate in hands-on studio and laboratory classes in user-centered design, technology development, problem-solving and cross-disciplinary communication. Graduates may become designers, planners, technology consultants, project managers, or entrepreneurs, in such wide-ranging fields as user experience, mobile development, healthcare, law, entertainment, policy, smart-city development, libraries and archives. The locus of study of this program is closely connected to graduate programs in the iSchool in Information Management, in Human-Computer interaction, and in Library and Information Science. The iSchool's mission combines these areas of research strength "to foster access to information, improve information interfaces, and expand how information is used in an evolving world."

Relation to Strategic Goals. The University's mission statement includes an intent to create a climate of intellectual growth and mutual respect, that addresses policy issues critical to the state, nation, and world, that sits at the forefront of multi-disciplinary knowledge, and that improves student learning and success through expanded use of innovative teaching methods and opportunities for collaboration and engagement. The iSchool's vision statement reads, "We envision a world... where information and technology can be fully leveraged to solve real world problems and foster a culture of trust and respect." The iSchool's mission is to use our groundbreaking and innovative research and academics to strengthen information institutions, foster responsible information use, increase information reliability, and ensure equitable access to information. In support of these goals, the InfoDesign program will teach students to use technology in the service of the greater good; to apply and expand their creativity; to approach life and work with a start-up mentality, in which they must try solutions and fail first to succeed; to see opportunities for innovation amidst grand challenges; and to engage in rapid development and prototyping and subsequently conduct rapid evaluation and assessment efforts to make their ideas real. The major will teach students the importance of developing a deep understanding of people, places and communities and understanding the dynamics of people, information, and technology at the micro, meso, and macro scales.

Funding. Resources for the new program will be drawn from a reallocation of resources from within the iSchool, leveraging the growing popularity of its master's programs. Details of the budget are presented in section L below. No new tuition revenue to support the program is assumed; it is expected that the major will draw from existing academic majors, including the iSchool's relatively new B.S. in Information Science, which has grown to an enrollment of over 1200 majors since its inception just five years ago in 2016. The new Bachelor of Arts will serve students whose interests are less focused on the technical aspects of information science but more on meeting the needs of humans as information consumers.

Institutional Commitment. The Provost and President fully support the development of this program. The iSchool's significant increase in growth in the undergraduate sector has been supported by the university with additional resources for tenure track and professional track instructional faculty, as well as planned enhancements in space.

B. Critical and Compelling Regional or Statewide Need as Identified in the State Plan

Need. As technology and information use continues to evolve and increase in influence in business, public life, and personal lives, an academic program that incorporates human understanding, technological development, and information design is more important than ever. Technology and information use will not only continue to shape the businesses and workforce needs of the future, but also continue to have a profound effect on nearly all aspects of our lives. From a practical standpoint, this program will emphasize entrepreneurship and job creation of human-centered technological and information science jobs, that is, jobs that cannot be easily replaced by automation. From a social standpoint, the program will also emphasize the ethical and social impact of technology and information design, as well as the importance of applying technological innovation to problems facing humanity. This program, therefore, responds to a regional, statewide, and national need to increase knowledge about information and design in a way that responds to societal needs in our rapidly changing world.

State Plan. This program addresses three components within the Maryland State Plan for Postsecondary Education: (1) student success; (2) innovation; and (3) workforce development. To the first component, this degree program is geared towards students whose interdisciplinary interests make them a poor fit for other, disciplinarily defined degree programs. Students who begin their undergraduate degree believing that they are particularly interested in computer science, business, or education (for example), may discover that they are in fact interested in the intersection between design, information, and technology. A degree program designed specifically to support such students will increase the likelihood of retention and graduation. Secondly, as the Secretary notes in his opening to the Maryland State Plan, Maryland is well known for its quality of higher education, and its reputation as "the most innovative state in the nation." This degree program - the first of its kind in Maryland, and one of very few across the nation - will advance both. Third, to support the goal of "student success with less debt", this unique program will provide alternative educational pathways for students, reducing the likelihood that they will leave with debt and without a degree. The market demand for the primary skills this degree will provide ensures that our graduates will have access to well-paying jobs that assist in rapidly paying down any student debts that they may have accrued.

C. Quantifiable and Reliable Evidence and Documentation of Market Supply and Demand in the Region and State

The USBLS Occupational Outlook Handbook shows a projected rate of growth of 12% from 2018 to 2028 in Computer and Information Technology Occupations (CITO) and note that this rate of growth is "much faster than the average for all occupations." Within CITO, there are two subcategories that are a particularly good fit for graduates of this degree program: Computer and Information Research Scientists; and Web Developers. The projected increase for Computer and Information Research Scientists is 16%, and the USBLS handbook notes that such individuals "are likely to enjoy excellent job prospects, because many companies report difficulties finding these highly skilled workers." The projected increase for Web Developers is 13% and is driven specifically by the "growing popularity of mobile devices and e-commerce."

Within Arts and Design Occupations, the only relevant occupation is that of Graphic Designer. Graphic Designers are only projected to increase 3%, less than average. USBLS notes that Graphic Designers face challenges on the market, but we anticipate that the focus on information and technology will set our graduates apart.

Within Business and Financial Occupations, the category of Management Analyst (also known as Business Analyst or Process Consultant) is an apt fit, and these are projected to increase by 14%. The USBLS handbook notes that "demand for the services of these workers should grow as organizations continue to seek ways to improve efficiency and control costs."

Currently, there are no similar programs in the state, and consequently we expect the rapid increase in demand to continue, exceeding the existing supply of skilled workers, making this degree program a crucial contributor to industry and society. We anticipate 80 students graduating per year, beginning three years after implementation of this degree.

D. Reasonableness of Program Duplication

The InfoDesign major will not result in unreasonable duplication of an existing program within the state. Programs in the area with some curricular similarity fall into two categories: 1) those with a business or entrepreneurship focus; and 2) those with a fine arts and physical design focus. These programs represent pieces of the new proposed major, but not the overall curriculum nor the innovative combination of skills and content proposed here.

Morgan State University (MSU) and Mount Saint Mary's University (MSMU) offer programs in entrepreneurship that have some overlap with InfoDesign. MSU's major in Entrepreneurship is housed within its Earl G. Graves School of Business & Management and is heavily focused on commercialization, customer identification and validation, business plan development and intellectual property protection. It does not have the emphasis on design and creativity central to the InfoDesign program. MSMU's Entrepreneurship major is an interdisciplinary program but is similar to MSU's, with emphasis on skills such as financial management, small business development, business plan design, and social media and marketing. The InfoDesign major will include some emphasis on these types of skills, but they will be integrated with the development of design principles. The University of Maryland, Baltimore County (UMBC) offers an Entrepreneurship minor and supporting coursework most closely aligned with the computer science and information systems undergraduate programs in the College of Engineering and Information Technology. This is a supplementary, not stand-alone, program that does not have a dedicated design focus.

The Maryland Institute College of Art (MICA) offers a BFA in Interactive Arts, which shares some similarities to InfoDesign. Focused on "crafting interactions across an array of media and forms," the Interactive Arts program more narrowly emphasizes human-computer interaction, with specific attention to technologies such as P2P/Blockchain, Artificial Intelligence (AI), and Virtual Reality/Augmented Reality (VR/AR). Students focus on coding and immersive media, rather than on the broader cycle of iterative design that underpins InfoDesign. Students in the MICA program also take a first year of fundamentals in fine arts, making the program inaccessible to students not interested in developing traditional drawing and color theory skills. MICA also offers a Game Design concentration (similar to a minor) that teaches design skills, but again, specifically within a specific context. The University of Baltimore offers a similar program, a B.A. in Simulation and Game Design, which focuses primarily on coding skills, without discussion of design principles applied to broader subject matter.

Much closer to InfoDesign is MICA's Product Design BFA. The Product Design program is a hands-on curriculum focused on reimagining objects and inventing new ones through the same type of ethical values

and iterative design processes that underpin InfoDesign. The Product Design BFA, however, is focused on the design of physical objects, rather than the proposed major's broader focus that includes design of intangible products. Like the Interactive Arts program, the Product Design program is restricted to fine arts students who take a first year of fundamentals in fine arts, making the program inaccessible to students not interested in developing traditional drawing and color theory skills.

While not in Maryland, Virginia Tech could prove to be a relatively local competitor to InfoDesign with its B.S. in Industrial Design or its BFA in Creative Technologies. However, the Industrial Design program is constructed similarly to MICA's Product Design program, which emphasizes the creation of tangible objects. And the Creative Technology program focuses on design within the limited scope of digital and new media technologies.

E. Relevance to Historically Black Institutions (HBIs)

Because there is no analogous program in the state, and because we anticipate the largest source of students to be those who internally transfer from another major, the creation of the InfoDesign major should not have an impact on any of the state's HBIs.

F. Relevance to the identity of Historically Black Institutions (HBIs)

We do not anticipate any impact on the identities of the State's HBIs.

G. Adequacy of Curriculum Design, Program Modality, and Related Learning Outcomes

Curricular Development. The development of this curriculum has grown out of the intersecting expertise in UMD's iSchool, on people, information, and society. Beginning in 2018, the iSchool's faculty and administrative leaders worked with the iSchool's Leadership, Entrepreneurship, Advocacy, and Development (iLead) advisory group to identify a set of challenges anticipated to shape iSchool education, nationally, over the coming decade. Suggestions included the need for graduates who could grapple with life and work challenges related to AI and robotic automation, and who could foster entrepreneurship in small communities, particularly among underrepresented or under-resourced groups. Skills associated with gathering and analyzing data would be critical to support these efforts. Using a collaborative process of "design fiction" the iSchool faculty identified an additional series of educational objectives, including producing graduates who could create more engaging news across multiple media and support better understanding of platforms that govern finances, social networks and news consumption; creation of jobs that balance equity and productivity through entrepreneurship; and producing technical professionals who understand organizations and their ethical and political impact.

Graduates will know how to design, reason, and act in circumstances with high levels of uncertainty, thus preparing them to respond to grand challenges with long and noisy feedback loops. They will be able to function in complex environments and work across many levels of analysis because grand challenges typically require integrated efforts across many interlocking levels of a problem.

Faculty Oversight. The program will be managed by a Faculty Director, who will be appointed by the Dean for a three-year term and may be reappointed. The Faculty Director, in collaboration with the Assistant and

Associate Deans, academic administrators, and members of the faculty, will provide intellectual leadership for the proposed major. The Faculty Director will chair a curricular committee to provide faculty oversight of academic and pedagogical strategies, policies for student recruitment, and curricular planning for the major. Appendix A contains a list of the relevant faculty who will be actively engaged in teaching the core elements of the data science courses in the curriculum.

Educational Objectives and Learning Outcomes. The educational objectives of the program are as shown below. Upon completion of the program, students will be able to:

1. Frame important problems at the intersection of people and information:
   a) Analyze the interplay of people, information, and technology at various scales (e.g., individuals or small groups, communities or organizations, regions, or institutions);
   b) Leverage a systems-thinking approach through modeling and simulation;
   c) Design solutions for these problems.

2. Implement design thinking skills, including user research, ideation, prototyping, and participatory design:
   a) Communicate ideas to gather momentum and iterate through sketching, prototyping and data visualization;
   b) Iteratively assemble existing components to form new solutions within a supportive culture of critique;
   c) Attend to the ethical and equitable implications of their designs.

3. Realize, deploy, and iterate on these solutions at appropriately selected scale(s):
   a) Assess the scale of the problem and the appropriate deployment of potential solutions;
   b) Organize people to properly implement solutions through leadership and entrepreneurship skills;
   c) Evaluate success of a solution in a socially embedded setting, to include the employment of skills such as testing, evaluation, and auditing.

Metrics to monitor and assess student outcomes are based on our shared vision of high standards for the entire learning experience at the iSchool and include standards for the courses and activities, faculty effectiveness, and administrative and technical support services for students. Faculty and content designers will use these metrics to guide the development and any necessary revisions of each course. Assessment strategies will include direct measures of student learning, such as evaluation of students' performance in integrative design studio courses by supervisors and instructors based upon stated program objectives; the evaluation of students' portfolios; internal and external reviews of studio projects; and performance on examinations given in foundational core and specialization courses. Indirect measures will include job placement data; surveys of graduates and employers; exit interviews; and satisfaction surveys. Appendix B has a curriculum map indicating which courses will be assessed for which outcomes. Students graduating from InfoDesign will also be eligible for the Greater Washington Partnership Capital CoLab Digital Generalist and Data Analytics Specialist credentials (see https://capitalcolab.com/).

Institutional assessment and documentation of learning outcomes. The degree to which InfoDesign is meeting its goals will be assessed by a process that is consistent with that outlined in the UMD Undergraduate Program Learning Outcomes Assessment Plan. The Undergraduate Program Committee will direct the assessment process. Assessments will be conducted annually in the spring semester, beginning in

the first year of the program. The assessment report to the Provost each fall will include the results of the assessment and recommendations for program improvement that are based on these results.

Course requirements. The program requires 55 credits of coursework directly related to the major, in addition to the University's general education requirements. These include 17 credits of core courses, plus an additional 18 credits (6 courses) from a suite of electives, shown in the table below (courses labeled with an asterisk are new).

Core Courses	Title	Credits
INST104*	Design Across Campus	3
INST126	Introduction to Programming for Information Science	3
IDEA258	Special Topics in Innovation (IDEA258A Becoming a Design Thinker: Tools and Mindsets for Innovation)	1
INST201	Introduction to Information Science	3
SOCY105	Introduction to Contemporary Social Problems	3
STAT100	Elementary Statistics and Probability	3
INST204*	Designing Fair Systems	3
PLCY380	Innovation and Social Change: Do Good Now	3
INST367*	Prototyping and Development Technologies Studio	3
INST406*	Cross-disciplinary Design Communication Lab	3
INST454*	Modeling and Simulating Systemic Problems	3
INST466	Technology, Culture, and Society	3
INST491*	Integrated Capstone for Technology and Information Design	3
	Total Core Courses	**37**
Major Electives	**18 credits (6 courses) from the list below**	
INST311	Information Organization	3
INST352	Information User Needs and Assessment	3
INST366	Privacy, Security and Ethics for Big Data	3
INST401	Design and Human Disability and Aging	3
INST402	Designing Patient-Centered Technologies	3
INST404*	Youth Experience Design Studio	3
INST405*	Game Design Studio	3
INST441	Information Ethics and Policy	3
INST460*	Video Games as Emergent Experiences	3
INST463*	AI and Society	3
	Total Credits	**55**

A typical four-year plan can be found in Appendix D, and course descriptions can be found in Appendix C. All other course descriptions are available in the University's Undergraduate Catalog (https://academiccatalog.umd.edu/).

General Education. Students will complete some of their general education requirements by way of fulfilling major requirements, with space in the curriculum for all other General Education requirements. Students

who transfer to UMD with an associate degree from a Maryland community college are deemed to have completed their General Education requirements except for Professional Writing, which is typically taken in their third year of study.

Accreditation or Certification Requirements.

N/A

Other Institutions or Organizations. The department does not currently intend to contract with another institution or non-collegiate organization for this program.

Student Support. Students enrolled in this program will have access to all the resources necessary to succeed and make the most of the learning opportunity. Students entering the university as either first-time college students or transfer students will learn about the program through their orientation program. Students entering the major as internal transfers will meet with an advisor in the program when they declare the major. Existing administrative and advising resources will be used, which include a Director of Undergraduate Operations, a team of undergraduate advisors, and two coordinators. Advising capacity will expand as the program grows.

Marketing and Admissions Information. The program will be clearly and accurately described in the university website and be marketed at university recruiting events.

H. Adequacy of Articulation

Montgomery College is typically the largest feeder of transfer students to the university on the College Park campus. As the program develops, outreach will continue with other local community colleges in, for example, Frederick and Prince Georges County. Students who complete the associate degree at a Maryland Community College and transfer to the University of Maryland are deemed to have completed their general education requirements, except for Professional Writing. The University does not, typically, create specific articulation agreements with community colleges for programs such as this one that may have a variety of pathways for entry. The four-year plan provides a strong indicator of what courses should be taken at the community college prior to transfer.

I. Adequacy of Faculty Resources

Program faculty. Appendix A contains a list of the relevant faculty who will be actively engaged in teaching the core course and list of electives for the major.

Faculty training. Faculty teaching in this program will have access to instructional development opportunities available across the College Park campus, including those offered as part of the Teaching and Learning Transformation Center. For online elements of the coursework, instructors will work with the learning design specialists on campus to incorporate best practices when teaching in the online environment.

J. Adequacy of Library Resources

The University of Maryland Libraries has assessed library resources required for this program. The assessment concluded that the University Libraries can meet, with its current resources, the curricular and research needs of the program.

K. Adequacy of Physical Facilities, Infrastructure, and Instructional Resources

No additional facilities are needed to deliver the program: most courses will be taught in any of the University's 334 general purpose classrooms. The iSchool is also in the process of designing a community space, code-named "TinkerTech" that will include infrastructure for virtual and augmented reality game design and other digital media design, providing student access to software and technology through common licensing. The University is in the process of repurposing space on the ground floor of Hornbake Library to accommodate the iSchool's expansion. This area will have studio-friendly classrooms and team workspaces in addition to office space.

L. Adequacy of Financial Resources

Resources for the program will come primarily from a reallocation of resources within the iSchool. No new tuition revenue is assumed. Tables 1 and 2 contain a listing of resources and expenditures, with explanatory information below.

Resources:

1. Reallocated Funds: The University anticipates that some additional startup costs will be incurred until a full cohort of students is enrolled in the program. Reallocated resources will come from a redirection of effort from within the iSchool and from general university funds.
2. Tuition revenue: The University does not anticipate an overall increase in enrollment, and thus no new additional tuition revenue is projected for those students.
3. Grants, Contracts and External Sources: none
4. Other Sources: none

Expenditures:

1. Most courses are already available and taught by faculty across the engaged colleges. Additional instructional FTE will be required to staff new sections of courses beginning in FY23, which is year 1 of program delivery.
2. Approximately 3.0 FTE of administrative support will be assigned to assist with program management, student advising, and class coordination once the program is in full operation.
3. Approximately 1.0 FTE of staff support will be technical support for system software administration and data management.
4. Teaching assistants will be allocated for the program each semester to assist with classroom instruction/discussion.
5. Equipment funding includes computing needs and hourly undergraduate student employees.
6. No new library resources are required for the program, but expenses include software licenses and annual cloud storage fees.
7. Renovations to or reallocation of space is not required.
8. Operational expenses include tuition remission for graduate teaching assistants.

M. Adequacy of Program Evaluation

Formal program review is carried out according to the University of Maryland's policy for Periodic Review of Academic Units, which includes a review of the academic programs offered by, and the research and administration of, the academic unit (http://www.president.umd.edu/policies/2014-i-600a.html). Program Review is also monitored following the guidelines of the campus-wide cycle of Learning Outcomes Assessment (https://irpa.umd.edu/Assessment/loa_overview.html). Faculty within the department are reviewed according to the University's Policy on Periodic Evaluation of Faculty Performance (http://www.president.umd.edu/policies/2014-ii-120a.html). Since 2005, the University has used an online course evaluation instrument that standardizes course evaluations across campus. The course evaluation has standard, university-wide questions and allows for supplemental, specialized questions from the academic unit offering the course.

N. Consistency with Minority Student Achievement goals

The student populations in the colleges engaged in this new major are among the most diverse at the university, with percentages of URM students five to 10 percentage points above that of the overall undergraduate student population. More generally, diversity, equity, and inclusion (DEI) sit at the core of the values of the engaged colleges. Educators and scholars in these units serve as powerful thought leaders in anti-racism scholarship, health disparities, and racial inequities in access to technology and information. The program is grounded in the importance of applying DEI principles across the curriculum.

O. Relationship to Low Productivity Programs Identified by the Commission

N/A

P. Adequacy of Distance Education Programs

N/A

Tables 1 and 2: Resources and Expenditures

Tuition revenue is based on AY2020-21 rates for the University. It does not include mandatory fees or laboratory fees. The University is not anticipating overall enrollment growth on the College Park campus because of this new major, so no new tuition revenue is included for the on-campus delivery.

Resources	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
1.Reallocated Funds	$375,000	$950,000	$1,000,000	$1,325,000	$1,400,000
2. Tuition/Fee Revenue (c+g below)	$0	$0	$0	$0	$0
a. #FT Students					
b. Annual Tuition/Fee Rate	$14,046	$14,468	$14,902	$15,349	$15,809
c. Annual FT Revenue (a x b)	$0	$0	$0	$0	$0
d. # PT Students					
e. Credit Hour Rate	$475.90	$490.18	$504.88	$520.03	$535.63
f. Annual Credit Hours	14	14	14	14	14
g. Total Part Time Revenue (d x e x f)	$0	$0	$0	$0	$0
3. Grants, Contracts, & Other External Sources	$0	$0	$0	$0	$0
4. Other Sources	$0	$0	$0	$0	$0
TOTAL (Add 1 - 4)	**$375,000**	**$950,000**	**$1,000,000**	**$1,325,000**	**$1,400,000**

Expenditure Categories	Year 1	Year 2	Year 3	Year 4	Year 5
1. TTK Faculty (b+c below)	$161,625	$332,948	$342,936	$529,836	$545,731
a. #FTE	1.0	2.0	2.0	3.0	3.0
b. Total Salary	$125,000	$257,500	$265,225	$409,773	$422,066
c. Total Benefits	$36,625	$75,448	$77,711	$120,063	$123,665
2. PTK Faculty (b+c below)	$0	$239,722	$246,914	$254,321	$261,951
a. #FTE	0.0	2.0	2.0	2.0	2.0
b. Total Salary	$0	$185,400	$190,962	$196,691	$202,592
c. Total Benefits	$0	$54,322	$55,952	$57,630	$59,359
3. Admin. Staff (b+c below)	$94,780	$97,623	$100,552	$103,569	$106,676
a. #FTE	1.0	1.0	1.0	1.0	1.0
b. Total Salary	$70,000	$72,100	$74,263	$76,491	$78,786
c. Total Benefits	$24,780	$25,523	$26,289	$27,078	$27,890
4. Total Support Staff (b+c below)	$64,650	$133,179	$137,174	$141,290	$145,528
a. #FTE	1.0	2.0	2.0	2.0	2.0
b. Total Salary	$50,000	$103,000	$106,090	$109,273	$112,551
c. Total Benefits	$14,650	$30,179	$31,084	$32,017	$32,977
5. Graduate Assistants (b+c)	$0	$91,009	$187,478	$241,378	$248,619
a. #FTE	0.0	2.0	4.0	5.0	5.0
b. Stipend	$0	$51,500	$106,090	$136,591	$140,689
c. Total Benefits	$0	$12,515	$25,780	$33,192	$34,187
d. Tuition Remission	$0	$39,509	$81,388	$104,787	$107,931
6. Equipment	$25,000	$25,000	$25,000	$25,000	$25,000
7. Library	$5,000	$5,000	$5,000	$5,000	$5,000
8. New or Renovated Space	$0	$0	$0	$0	$0
9. Other Expenses: Operational Expenses	$25,000	$25,000	$25,000	$25,000	$25,000
TOTAL (Add 1 - 8)	**$376,055**	**$949,481**	**$1,070,054**	**$1,325,393**	**$1,363,505**

Notes: Graduate assistants are included in the budget to support instruction, and other expenses include tuition remission for graduate teaching assistants. "Equipment" includes hourly wages for undergraduate student employees.

Appendix A: Faculty who will support the Social Data Science Program

All faculty hold doctoral degrees in a field relevant to the discipline. Faculty biographies and research interests for all faculty can be found on the iSchool's web site (https://www.ischool.umd.edu/about); All faculty listed below are full-time. Specific course assignments have not yet been made but will be made in time to schedule the courses for the target start term of the program.

Faculty Name	Highest Degree Earned - Field and Institution	Rank
Elizabeth Bonsignore	Ph.D., Information Studies, University of Maryland	Assistant Research Scientist
Joel Chan	Ph.D., Cognitive Psychology, University of Pittsburgh	Assistant Professor
Tamara Clegg	Ph.D., Interactive Computing, Georgia Tech	Associate Professor
Vedat Diker	Ph.D., Information Science, SUNY Albany	Principal Lecturer
Niklas Elmqvist	Ph.D., Computer Science, Chalmers University of Technology (Sweden)	Professor
Dan Greene	Ph.D., American Studies, University of Maryland	Assistant Professor
Jonathan Lazar	Ph.D., Information Systems, University of Maryland, Baltimore County	Professor
Alex Leitch	Master of Design, Art, Media and Design, Ontario College of Art and Design	Lecturer
Wayne Lutters	Ph.D., Information and Computer Science, University of California, Irvine	Associate Professor
Katie Shilton	Ph.D., Information Studies, University of California, Los Angeles	Associate Professor
Mega Subramanian	Ph.D., Information Studies, Florida State University	Associate Professor
Jessica Vitak	Ph.D. in Media and Information, Michigan State University	Associate Professor
Caro Williams-Pearce	Ph.D., Curriculum and Instruction, University of Wisconsin	Assistant Professor

Appendix B: Student Learning Outcome Curriculum Map

SLO / Core Course Mapping	IDEA258	INST126	INST104	INST201	SOCY105	STAT100	PLCY338D	INST362	INST367	INST406	INST454	INST466	INST491
Frame important problems at the intersection of people and information													
FRAME: Analyze the interplay of people, information, and technology at various scales (e.g., individuals or small groups, communities or organizations, regions or institutions)					2		3	3					4
FRAME: Leverage a systems-thinking approach through modeling and simulation	1										4		
Design solutions for these problems													
DESIGN: Implement design thinking skills, including user research, ideation, prototyping, and participatory design	2		1				3	3		3			4
DESIGN: Communicate ideas to gather momentum and iterate through sketching, prototyping and data visualization	1		1	2	1		1	2	4	4			4
DESIGN: Iteratively assemble existing components to form new solutions within a supportive culture of critique	1	3											4
DESIGN: Attend to the ethical and equitable implications of their designs			1	3						2		4	
Realize, deploy, and iterate on these solutions at appropriately selected scale(s)													
REALIZE: Assess the scale of the problem and the appropriate deployment of potential solutions	1										4		2
REALIZE: Organize people to properly implement solutions through leadership and entrepreneurship skills	2						2	2					4
REALIZE: Evaluate success of a solution in a socially embedded setting, to include the employment of skills such as testing, evaluation, and auditing	1		1				3	2	2				4

Levels of Mastery
1: Awareness
2: Content Literacy
3: Expert Experience-Guided
4: Expert Experience-Independent

Appendix C: Course Descriptions for the core courses of the Social Data Science major

Courses in this list represent the core curriculum required of all students, beyond their Fundamental Studies general education requirements. Most courses are already approved and have been offered. All approved course descriptions can also be found in the University's Undergraduate Catalog (https://academiccatalog.umd.edu/).

Core Course requirements (37 credits)

INST104 Design Across Campus (3). Explores different design meanings and methodologies in various disciplines through modules created by faculty members in INFO, ARCH, ARHU, BSOS, CMNS and ENGR. (NEW)

INST126 Introduction to Programming for Information Science (3). An introduction to computer programming for students with very limited or no previous programming experience. Topics include fundamental programming concepts such as variables, data types, assignments, arrays, conditionals, loops, functions, and I/O operations.

IDEA258A Becoming a Design Thinker: Tools and Mindsets for Innovation (1). Boost your creative confidence. Unleash your inner design thinker. Learn how to see the world like a designer. Become an idea-generating machine by embracing methods and mindset that bolster creativity and lead to innovation in this 1-credit course open to all majors. You'll only pass if you learn how to fail.

INST201 Introduction to Information Science (3). Examining the effects of new information technologies on how we conduct business, interact with friends, and go through our daily lives. Understanding how technical and social factors have influenced the evolution of information society. Evaluating the transformative power of information in education, policy, and entertainment, and the dark side of these changes.

SOCY105 Introduction to Contemporary Social Problems (3). An examination of contemporary social problems through sociological perspectives; ways in which social problems are part of the organization of society; a detailed study of selected social problems including social conflict and social inequality.

STAT100 Elementary Statistics and Probability (3). Simplest tests of statistical hypotheses; applications to before-and-after and matched pair studies. Events, probability, combinations, independence. Binomial probabilities, confidence limits. Random variables, expected values, median, variance. Tests based on ranks. Law of large numbers, normal approximation. Estimates of mean and variance.

INST204 Designing Fair Systems (3). Explores how policy shapes design and how design can act as de facto policy. Introduces students to interdisciplinary research on fairness, accountability, transparency, and justice in technical systems, bringing together fields such as law, computer science, and political theory. Students will learn how to assess the impact of automated decision-making in domains such as criminal justice and transportation, conduct audits of these systems, and re-design them for increased community input. (NEW)

PLCY380 Innovation and Social Change: Do Good Now (3). Introduces students to the concept of social innovation while exploring the many mechanisms for achieving social impact. It is team-based, highly interactive and dynamic, and provides an opportunity for students to generate solutions to a wide range of problems facing many communities today. Deepens students' understanding of entrepreneurship and innovation practices by guiding them through the creation and implementation process as applied to a project idea of their choice.

INST367 Prototyping and Development Technologies Studio (3). Builds upon students' experiences with interaction design to develop a deeper understanding of the process of defining, iterating, developing, and researching products. When interacting with systems, people build expectations and mental models of how

things work, based upon their previous experience with similar products or processes, and the successful or unsuccessful nature of their interactions determines the success of the design. This studio course is about how to build a product that people find usable, useful, and desirable, and conduct research throughout that building process from contextual inquiry to evaluating the final product. (NEW)

INST406 Cross-disciplinary Design Communication Lab (3). Best practices of writing and sketching for designers. Students learn how to solicit needs from clients and other stakeholders; how to craft proposals, be they technical or process-oriented; how to create visually compelling documents; and how to present written analyses for audiences of varying levels of expertise. (NEW)

INST454 Modeling and Simulating Systemic Problems (3). Growing complexities in organizations and societies have brought about systemic problems that cannot be fully understood and addressed using solely traditional linear approaches, and purely local solutions limited to a single organization. This course explores paradigms, methods and tools for articulating complex, non-linear, feedback-driven relationships in a range of socio-technical systems, which may span distributed organizations and other social structures, through formal models. Those models can then be simulated to identify the root causes of the systemic problems present and develop solution strategies for addressing those problems. (NEW)

INST466 Technology, Culture and Society (3). Individual, cultural, and societal outcomes associated with development of information & communication technologies (ICTs), including pro- and anti-social factors. Unpacking how gender, race, ethnicity, sexual orientation, disabilities, and political affiliations affect consumption and production of online experiences. Unpacking how structures of dominance, power and privilege manifest at individual, institutional and cultural levels. Understanding the relationship between local and global problems in technology development. Comparing global and historical variation in the design, deployment, use and regulation of technology. Prerequisite: minimum grade of C- from INST201 or INST301; minimum grade of C- from PSYC100 or SOCY105; must be in the Information Science or Technology and Information Design programs.

INST491 Integrated Capstone for Technology and Information Design (3). Capstone course for the major. Students collaborate in teams on a second semester-long project for a real-world client, bringing together lessons from across the Technology and Information Design curriculum to frame the client's problems, design a solution to them, and realize the solution in context. Students apply knowledge they have gained in the program to work with clients to craft design proposals, conduct user and system analyses, and review project successes and failures. (NEW)

Major elective options (students will choose 18 credits):

INST311 Information Organization (3). Examines the theories, concepts, and principles of information, information representation and organization, record structures, description, and classification. Topics to be covered in this course include the methods and strategies to develop systems for storage, organization, and retrieval of information in a variety of organizational and institutional settings, as well as policy, ethical, and social implications of these systems. Must be in the Technology and Information Design or Information Science programs.

INST352 Information User Needs and Assessment (3). Focuses on use of information by individuals, including the theories, concepts, and principles of information, information behavior and mental models. Methods for determining information behavior and user needs, including accessibility issues will be examined and strategies for using information technology to support individual users and their specific needs will be explored.

INST366 Privacy, Security and Ethics for Big Data (3). Evaluates major privacy and security questions raised by big data, Internet of Things (IoT), wearables, ubiquitous sensing, social sharing platforms, and other AI-driven systems. Covers history of research ethics and considers how ethical frameworks can and should be applied to digital data.

INST401 Design and Human Disability and Aging (3). Focuses on the design of consumer products and information systems to enable their use by persons with a wider range of physical, sensory, and cognitive abilities. Overviews aging and major types of impairment as they relate to resulting problems using consumer products and information systems. Focuses on principles of design of mass market products.

INST402 Designing Patient-Centered Technology (3). What does it mean to design a human-centered digital health technology specifically for patients? What are the methods we can use to gather design considerations, and how to use the findings to inform the design? Through a combination of project- and lecture-based class, students will learn topics such as Patient-Centered Technology; Co-Design; Health Monitoring; Persuasive System Design; Goal Setting & Gamification; Health Literacy, and Patient-Clinician Communication. We will apply these concepts to support the unique needs of older adults and patients with a variety of conditions (e.g., diabetes, stroke, dietary issues, enigmatic disease), and to support an individual's health and well-being.

INST404 Youth Experience Design Studio (3). Explores historical, organizational and contemporary contexts for formal and informal learning spaces, principles of teaching and learning, and information literacy. Students will use methods of design thinking specifically in and for youth contexts, including user-centered design, understanding user needs, ideation, contextual design, participatory design, iterative prototyping and visual design. (NEW)

INST405 Game Design Studio (3). Games are a structured form of play that are typically undertaken for recreational--but sometimes also educational and even professional--purposes. But what constitutes a successful game? In this course, you will learn the fundamentals of game design: applying elements and principles of game design, such as goals, rules, and challenges to create games, such as board games, card games, and digital games. You will be introduced to the basic tools and methods of game design: paper and digital prototyping, design iteration, design critique, and user testing. As part of the course, you will be designing and remixing several games of different types, each which you will be able to add to your growing portfolio of game design concepts. (NEW)

INST441 Information Ethics and Policy (3). Explores via case studies the legal, ethical, and technological challenges in developing and implementing policies for managing digital assets and information. Emphasizes access questions pertinent to managing sensitive information and the roles and responsibilities of information professionals. Prerequisite: One course with minimum grade of C- from (INST341, PLCY380)

INST460 Video Games as Emergent Experiences (3). Videogames are designed objects that players bring their own history to, resulting each time in a unique emergent experience. If you've ever wondered why you love a certain game but others hate it, why you prefer one genre of game over another, or why the frustration you feel in complicated games is often actually enjoyable, this is the class for you! We will examine design principles instantiated in various games, analyze how failure and feedback support productive gameplay, discuss how mechanics and aesthetics contribute to emergent experiences, and develop an understanding of the field of games scholarship. (NEW)

INST463 AI and Society (3). Reviews the technical, legal, and business history of artificial intelligence, and contemporary deployments in domains such as hiring, health, policing, and advertising. Students will discuss both high-level ethical issues and concrete policy dilemmas related to, e.g., self-driving cars, and compare their impact in different social and geographic settings. Students will conduct independent research on the design, testing, deployment, and assessment of AI technologies. (NEW)

Appendix D: Sample Four Year Plan for Social Data Science Major

Fall			Spring		
Year 1					
ENGL101 (FSAW)	Academic Writing	3	STAT100 (FSAR) (MC)	Elementary Statistics and Probability	3
IDEA258A (MC)	Become a Design Thinker	3	INST126 (MC)	Intro: Programming for Info Science	3
INST104 (MC)	Design Across Campus	3	SOCY105 (DSHS) (MC)	Intro: Contemp. Social Problems	3
Gen Ed (DSHU) (SCIS)	Humanities/I-Series	3	Gen Ed (DVUP) (SCIS)	Diversity: Plural Societies/I-Series	3
MATH115 (FSMA)	Pre-Calculus	3	Gen Ed (FSOC)	Oral Communication	3
	Total credits	15		Total Credits	15
Year 2					
INST201 (DSHS) (MC)	Introduction to Information Science	3	PLCY380 (MC)	Innovation and Social Change	3
INST204 (MC)	Designing Fair Systems	3	Gen Ed (DVCC)	Diversity: Cultural Competence	3
Gen Ed (DSNL)	Natural Science Lab	4	INST311 (ME)	Info Organization	3
Gen Ed (SCIS)	I-Series	3	Gen Ed (DSNS)	Natural Science	3
Gen Ed (DSHU)	Humanities	3	Elective		3
	Total Credits	16		Total Credits	15
Year 3					
INST406 (MC)	Design Communication Lab	3	INST367 (MC)	Prototyping and Development Studio	3
INST367 (MC)	Prototyping and Development Studio	3	INST404 (ME)	Youth Experience Design Studio	3
INST352 (ME)	Info User Needs and Assessment	3	INST441 (ME)	Information Ethics and Policy	3
ENGL39X (FSPW)	Professional Writing	3	Gen Ed (DSSP)	Scholarship in Practice	3
Elective		3	Elective		3
	Total Credits	15		Total Credits	15
Year 4					
INST454 (MC)	Modeling and Simulating Systemic Problems	3	INST491 (MC) (DSSP)	Integrated Capstone	3
INST466 (MC)	Technology, Culture and Society	3	INST463 (ME)	AI and Society	3
INST405 (ME)	Game Design Studio	3	Electives		8
Electives		6			
	Total Credits	15		Total Credits	14
Total Credits: 120					

Category	Credits	Code
Major Requirements: 55 Credits		
Major Core Courses	37	MC
Major Elective Courses	18	ME
Major courses may double-count to fulfill General Education requirements (see below).		
General Education Requirements: 40 Credits Minimum		
Fundamental Studies: 15 Credits		
Fundamental Studies Academic Writing	3	FSAW
Fundamental Studies Professional Writing	3	FSPW
Fundamental Studies Oral Communication	3	FSOC
Fundamental Studies Mathematics	3	FSMA
Fundamental Studies Analytic Reasoning[2]	3	FSAR
[2] If a student passes an Analytic Reasoning course that requires a Fundamental Studies Math course as a prerequisite, then the Fundamental Studies Math course is considered to be fulfilled (e.g., students who place into and pass a calculus course, which counts for FSAR, do not need to take a less advanced Math course to fulfill the FSMA requirement).		
Distributive Studies: 25 Credits		
Distributive Studies Natural Sciences	3	DSNS
Distributive Studies Natural Science Lab Course[3]	4	DSNL
Distributive Studies History and Social Sciences	6	DSHS
Distributive Studies Humanities	6	DSHU
Distributive Studies Scholarship in Practice[4]	6	DSSP
[3] A second DSNL course can fulfill the DSNS course requirement.		
[4] Students learn and practice skills of critical evaluation and participate in the process of applying knowledge in the pursuit of a tangible goal. At least one course must be outside of the major.		
I-Series Courses: 6 Credits [5]		
The signature courses of the UMD General Education program, I-Series courses investigate a significant issue in depth and demonstrate how particular disciplines and fields of study address problems.		
I-Series Course	6	SCIS
[5] I-Series credits may be double-counted with courses taken for the Distributive Studies requirement.		
Diversity: 4-6 Credits[6]		
Diversity Understanding Plural Societies[7] Courses examine how diverse cultural and ethnic groups co-exist.	3-6	DVUP
Diversity Cultural Competence Courses help students develop skills to succeed in a diverse world.	0-3	DVCC
[6] These credits may be double-counted with courses taken for the Distributive Studies requirement.		
[7] Students may take either two DVUP courses or one DVUP course and one DVCC course.		