

**Board of Trustees  
Academic and Student Affairs Committee  
January 9, 2023 at 9:00  
Zoom Meeting – No Physical Location Available**

The public is invited to view the meeting on YouTube. The link to the Board of Trustees YouTube page can be found the Board website: <https://www.maine.edu/board-of-trustees/>

**AGENDA**

9:00am - 10:00am

Tab 1                      **Faculty Initiated Discussion**  
Shared Courses across UMS Universities and Faculty Governance Council Update

10:00am - 10:10am

Tab 2                      **Student Representative Discussion**

**10:10am - 10:20am**

**Tab 3                      New Academic Program Proposal: B.S. Human-Centered Technology Design, UM**

10:20am - 10:35am

Tab 4                      **Unified Accreditation Update**

10:35am - 11:05am

Tab 5                      **Chief Academic Officers (CAO) Update**

11:05am - 11:20am

Tab 6                      **2022-2023 Demographics, Enrollment, and Trends Update**

**Items for Committee decisions and recommendations are noted in red.**

Note: Times are estimated based upon the anticipated length for presentation or discussion of a particular topic. An item may be brought up earlier or the order of items changed for effective deliberation of matters before the Committee.

University of Maine System  
Board of Trustees

**AGENDA ITEM SUMMARY**

**NAME OF ITEM:** Faculty Initiated Discussion and Faculty Governance Council Update

**INITIATED BY:** David M. MacMahon, Chair

**BOARD INFORMATION:** X

**BOARD ACTION:**

**BOARD POLICY:**

N/A

**UNIFIED ACCREDITATION CONNECTION:**

N/A

**BACKGROUND:**

The Academic and Student Affairs Committee of the Board invites faculty-rank members of the Faculty Board representatives to bring forward discussion items relevant to their university communities and the University of Maine System. The faculty representatives, working in conjunction with the ASA Chair, have decided that the January 2023 ASA meeting's subject will be a discussion of shared courses across UMS universities. Additionally, Faculty Governance Council representatives Professor Lisa Leduc, Ph.D. (UMPI) and Professor William Otto, Ph.D. (UMM) will update the Board on the work of the Faculty Governance Council.

12/22/2022

University of Maine System  
Board of Trustees

**AGENDA ITEM SUMMARY**

**NAME OF ITEM:** Student Representative Discussion

**INITIATED BY:** David M. MacMahon, Chair

**BOARD INFORMATION:** X

**BOARD ACTION:**

**BOARD POLICY:**

N/A

**UNIFIED ACCREDITATION CONNECTION:**

N/A

**BACKGROUND:**

The Academic and Student Affairs Committee of the Board invites Student Representatives of the Board of Trustees to bring forward discussion items relevant to their university communities and the University of Maine System.

12/22/2022

University of Maine System  
Board of Trustees

## **AGENDA ITEM SUMMARY**

**NAME OF ITEM:** New Academic Program Proposal: B.S. Human-Centered Technology Design, UM

**INITIATED BY:** David M. MacMahon, Chair

**BOARD INFORMATION:**

**BOARD ACTION:** X

**BOARD POLICY:**

305.1 Program Approval, Review & Elimination Procedures

**UNIFIED ACCREDITATION CONNECTION:**

N/A

**BACKGROUND:**

The University of Maine (UM) is seeking permission to offer a Bachelor of Science in Human-Centered Technology Design. This proposed degree program focuses on applied aspects of technology and design to support human use. It is a technical program which explores ways to integrate new technologies such as artificial intelligence, augmented reality, virtual reality and the internet of things into daily use. Employment for graduates of this field is projected to increase in Maine and nationally, with expected employment growth above 16% over the next 10 years.

The proposal was reviewed at all appropriate faculty and administrative levels at UM and was reviewed and subsequently recommended by the Chief Academic Officers Council. Dr. Jeffrey St. John, Interim Vice Chancellor of Academic Affairs, recommended the program to the Chancellor. Chancellor Malloy signed his approval of the Bachelor of Science in Human-Centered Technology Design, UM on December 13, 2022.

**TEXT OF PROPOSED RESOLUTION:**

That the Academic and Student Affairs Committee forwards this item to the Consent Agenda at the January 29-30, 2023 Board of Trustees meeting for approval of the following resolution:

That the Board of Trustees accepts the recommendation of the Academic and Student Affairs Committee, and approves the Bachelor of Science in Human-Centered Technology Design at the University of Maine at Orono.

12/22/2022



**Vice Chancellor for  
Academic Affairs**  
15 Estabrooke Drive  
Orono, ME 04469

**Tel: 207-973-3211**

**Fax: 207-581-9212**

**[www.maine.edu](http://www.maine.edu)**

Date: December 13, 2022

To: Dannel Malloy, Chancellor  
University of Maine System (UMS)

From: Jeffrey St. John, Interim VCAA ) S

Regarding: UM Program Proposal: B.S. in Human Centered Technology

The University of Maine

University of Maine  
at Augusta

University of Maine  
at Farmington

University of Maine  
at Fort Kent

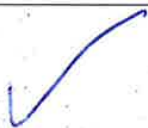
University of Maine  
at Machias

University of Maine,  
at Presque Isle

University of  
Southern Maine

Please find the attached program proposal from the University of Maine (UM) to offer the B.S. in Human Centered Technology. The attached material includes documentation of university level support including approval from the President Joan Ferrini-Mundy and Provost John Volin, as well as the full program proposal.

The proposed addition of the B.S. in Human Centered Technology was reviewed and recommended by the Chief Academic Officers' Council (CAOC) on December 1, 2022. I also recommend this program for your approval.

| I approve   | I do not approve for the reasons listed below | Additional information needed for decision | Action   |
|---|---|--|--|
|  |   |  | Approve the UM B.S. in Human Centered Technology |

  
Chancellor Dannel Malloy

12.13.22  
Date

Office of the Executive Vice President  
for Academic Affairs & Provost



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Orono, Maine 04469-5703  
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Fax: 207.581.1633  
umaine.edu

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**TO:** Robert Placido  
Vice Chancellor for Academic Affairs (UMS)

**FROM:** John C. Volin  
Executive Vice President for Academic Affairs & Provost (UM/UMM)

**SUBJECT:** Proposal for a Bachelor of Science (B.S.) in Human-Centered Technology Design within the College of Liberal Arts and Sciences

**DATE:** November 28, 2022

**CC:** Meredith Whitfield, Chief of Staff  
Emily Haddad, Dean, College of Liberal Arts and Sciences  
Penny Rheingans, Director, School of Computing & Information Sciences

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The Faculty of the College of Liberal Arts and Sciences (CLAS) propose the establishment of a Bachelor of Science (B.S.) in Human-Centered Technology Design, to be housed in the School of Computing and Information Sciences (SCIS).

The BS in Human-Centered Technology Design is envisioned as the only program of its kind in Maine that intersects computer science, new media, and spatial informatics. The project-based learning curriculum supports and expands opportunities for research learning experiences and career pathways. Market research through Burning Glass indicates clear unmet need for HCTD graduates, with job postings far outpacing the number of degrees awarded. With a median salary in Maine of \$92,000, graduates of this program can expect to enter a competitive professional field in-state. Full-time remote work in this field is also expected to increase nationally for the foreseeable future, ensuring that graduates join a workforce pipeline for those who wish to stay in Maine to live and work.

Given the importance of growing enrollment in the proposed Maine College of Engineering, Computing and Information Science (MCECIS), this proposed program is in a growing and innovative area and will attract new students – particularly one outside of the conventional computer science or engineering majors.

The faculty members in SCIS are in communication with faculty and leadership within the College of Engineering. Engineering Faculty would partner in the emerging technology elective area of the degree program, as would the Maine Business School through the entrepreneurship and innovation elective area. Penny Rheingans, Director of the School of Computing & Information Sciences, worked with Dean Jeremy Qualls at USM and Interim President Joe Szakas at UMA. Dean Qualls indicated that USM had no issues with the degree and mentioned a couple of faculty might be interested in offering classes or teaching in the program. As new HCD courses are established, USM faculty could assist in teaching the courses in a collaborative manner.


Interim President Szakas indicated strong support for this proposal. Given UMA's course offerings in programming and computer science, it is expected that a number of UMA online courses could be transferrable to elective offerings within the degree. While the core of the B.S. in Human-Centered Technology Design is expected to be taught by UMaine faculty, we expect and welcome collaboration across UMS in this emerging, yet critical area for Maine's workforce.

APL X-P.1 "Academic Program Approval", Section I "Approval of Undergraduate Majors, graduate degree programs, and advanced certificates of study", Step 3. "University of Maine System (UMS) Evaluation" is the relevant section of the University of Maine System Administrative Practice Letters. An excerpt of the policy indicates "After completion of the campus program evaluation process, University of Maine System evaluation is initiated by submission of the proposal by the university President to the Vice Chancellor for Academic Affairs who will acknowledge receipt of the document and distribute the proposal electronically to members of the Chief Academic Officers Council (CAOC)."

This proposal has received all appropriate campus review and approval. President Ferrini-Mundy and I fully support and recommend the creation of the Bachelor of Science (B.S.) in Human-Centered Technology Design within the College of Liberal Arts and Sciences at the University of Maine.

Please let me know if you have any questions or if there is any additional information you require.

**Approved By:**

  
 \_\_\_\_\_  
 John C. Volin  
 Executive Vice President for Academic Affairs & Provost

11/28/2022  
 \_\_\_\_\_  
 Date

**Attachment(s) (if applicable)**

1. Program Proposal for New Bachelor's Degree  
 Dated: May 3, 2022  
 Subject: Bachelor of Science in Human-Centered Technology Design (HCTD)

**Provost Recommendation:** I support and recommend the creation of the Bachelor of Science in Human-Centered Technology Design within the College of Liberal Arts and Sciences.

**Approved By:**

  
\_\_\_\_\_  
John C. Volin  
Executive Vice President for Academic Affairs & Provost

11/07/2022  
\_\_\_\_\_  
Date

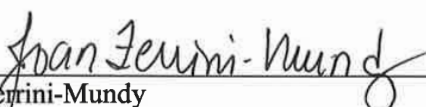
**Action / Decision:**

I Approve: ☒

I Disapprove: ☐

Modification Needed: ☐

Needs Discussion: ☐

  
\_\_\_\_\_  
Joan Ferrini-Mundy  
President

4/16/22  
\_\_\_\_\_  
Date

**Notes:**

Thanks for the efforts at collaboration & interdisciplinarity.

**Attachment(s) (if applicable)**

1. Program Proposal for New Bachelor's Degree  
Dated: May 3, 2022  
Subject: Bachelor of Science in Human-Centered Technology Design (HCTD)



College of  
Liberal Arts and Sciences  
Office of the Dean  
umaine.edu/las/



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May 20, 2022

Dr. John Volin  
Executive Vice President for Academic Affairs & Provost  
Alumni Hall 201  
University of Maine

Dear Provost Volin,

On May 3, Academic Council, the curriculum committee for the College of Liberal Arts and Sciences, recommended approval of a proposal from the School of Computing and Information Science for a new BS degree in Human-Centered Technology Design. The proposal has also received a favorable hearing before the Faculty Senate. Academic Council considered only its academic merits, and concluded that it is a worthy proposal.

Academic Council also relayed that there are important financial and resource implications that must be addressed before the proposal's implementation. These considerations include the proposal's calling for a new tenure-track faculty line (11.a, page 8), and the report from the Department of Psychology that PSY 245 and possibly PSY 241, that are among the 11 credits of required Psychology courses, will need additional TA support if the proposal's anticipated student enrollments come to pass. Should the new program succeed in attracting the number of students indicated in the proposal, there may be additional resource needs beyond those identified.

I fully agree with the Academic Council that this is a strong proposal academically. Programs such as this will play an important role in meeting the UMS TRANSFORMS enrollment and graduation targets for computing and information science fields. This note is simply to reinforce the fact that additional faculty and staff will be necessary in specific areas if those targets are to be met.

Sincerely,

Emily A. Haddad  
Dean

cc: Timothy Cole, Associate Dean for Academics  
Thane Fremouw, Chair, Academic Council; Associate Professor and Chair, Department of Psychology  
Penny Rheingans, Director, School of Computing and Information Science

MAINE'S LAND GRANT AND SEA GRANT UNIVERSITY

School of Computing &  
Information Science



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Orono, Maine 04469-5711  
207.581.2188  
Fax: 207.581.2206  
umaine.edu/cis/  
umaine.edu

May 3, 2022

Below are the endorsements to accept the proposed BS in Human-Centered Technology Design Degree.

Leader, Initiating Department/Unit

5/4/22

College(s) Curriculum Committee Chair(s)

05/03/2022

Dean(s)

5-17-22

Provost

08/29/2022

President

11/16/22

MAINE'S LAND GRANT AND SEA GRANT UNIVERSITY

### ***Human-Centered Technology Design***

#### **Proposed New BS Degree at the CLA&S School of Computing and Information Science**

Co-Applicants: Dr. Nimesha Ranasinghe, Dr. Nicholas Giudice, Michael Scott

Design is evolving in unprecedented ways, and along with it, so are design education expectations—for students, educators, and hiring managers. What does it really mean to “study design” in this third decade of the century? What skills, abilities, and mindsets should designers have to be employable, and how can established designers effectively upskill in the ever-shifting landscape for design?

—Adobe Design Circle (*Design Education Foundations: Challenges & Opportunities for 2021 & Beyond*)

The School of Computing and Information Science (SCIS) has received approval to plan a new BS degree in Human-Centered Technology Design (HCTD). The HCTD program will build on existing courses offered throughout SCIS and the department of Psychology, in collaboration with the University of Maine (UM) College of Engineering (CoE) and in collaboration with faculty and programs at University of Maine at Augusta (UMA), University of Maine at Farmington (UMF) and the University of Southern Maine (USM). No college or university in Maine currently offers a major in HCTD. The proposed degree program would serve as a national program attracting not only in-state students who currently must leave the state to pursue these interests but increasing numbers of out-of-state students, while increasing the reputation and credibility of UM.

#### **The Opportunity**

Human-Centered Technology Design (HCTD) is a fast-growing major that has appeared in engineering, gaming, HCI, arts, digital technology and communication programs at undergraduate and graduate levels in more than 75 U.S. colleges and universities over the last decade. HCTD focuses on what we can do with technology for specific purposes. Designers help produce products and services in a variety of fields and are sought by industries that increasingly rely on sophisticated visualization and simulation of advanced procedures. Interest in game design, for example, is an appealing and intuitive major that attracts increasing numbers of prospective students. According to the U.S. Bureau of Labor Statistics, from 2015 to 2020, employment in fields related to HCTD grew nationally by nearly 25%, from 1,488,920 to 1,965,360, with ten-year projections anticipating 16% growth. In New England, growth from 2015-2020 was up about 12%, from 97,430 to 110,810. Maine experienced significant growth from 2015-2020, from 2,940 to 3,860, with a 10-year growth projection of about 7%. With a median salary in Maine of \$92,000, HCTD graduates can expect to enter a competitive professional field in-state. Full-time remote work in HCTD fields is expected to continue increasing nationally for the foreseeable future, ensuring that a HCTD workforce pipeline offers UM students who desire to stay in Maine to live and work with a high number of high-quality career opportunities “at home.” Furthermore, the Human-Centered technology design and innovation methodologies are being applied in building new commercially viable technology products and services, evident by recent advancements in innovation engineering, human-centered product development, entrepreneurship and startup cultures.

**Burning Glass Analysis.** A recent Burning Glass report shows, for undergraduate degrees, that nationally there were 1,347,013 job postings in the last 12 months. In New England, there were 72,593 job postings. In Maine alone, there were 2,118 job openings, 96% of which required a Bachelor's degree in a related field. However, higher education institutions within the state of Maine only conferred 232 undergraduate degrees within this area over the past year, with UM conferring 61 degrees, USM conferring 39, and UMA conferring 17, and UMF conferring 5. These data demonstrate that there is a wide gap in the number of individuals prepared to fulfill needs for these important jobs.

| Table 1<br>HCTD Burning Glass Topline Overview                             |   |             |           |
|--|---|-------------|-----------|
|  | Maine   | New England | National  |
| Labor insights (Based on Occupation Codes)                                 |   |             |           |
| Job postings (12 months)   | 2,118   | 72,593      | 1,347,013 |
| Top hiring states  | California, Texas, New York, Georgia, Florida, Illinois |             |           |
| Change between 2019-2020   | -7.70%  | 9.10%       | 2.60%     |
| Program Insights (Based on Occupation and CIP Codes)                       |   |             |           |
| Projected Employment Growth (2018-2028)                                    | 7.18%   | 13.78%      | 16.60%    |
| Number of institutions with Program  | 12  | 120         | 1,539     |
| Degrees conferred  | 232   | 9,343       | 146,045   |
| Recent degree conferral growth (2016-2020)                                 | 18%   | 46%         | 35%       |
| Primary CIP Code   | Human-Centered Technology Design (11.0105)              |             |           |
| Programs most likely to confer graduates for the selected Career Outcomes: |   |             |           |

Computer Science (11.0701), Informatics (11.0104), Knowledge Management (52.1207), Design and Visual Communications, General (50.0401), Human-Centered Technology Design (11.0105), Linguistics and Computer Science (30.4801), Graphic Communications, Other (10.0399), Computer Programming, Other (11.0299), Illustration (50.0410), Computer and Information Sciences and Support Services, Other (11.9999), Modeling, Virtual Environments and Simulation (11.0804), Computer Game Programming (11.0204), Computer and Information Sciences, Other (11.0199), Data Science, General (30.7001), Information Resources Management (52.1206), Computer Programming/Programmer, General (11.0201), Management Information Systems, General (52.1201), Information Science/Studies (11.0401), Computer and Information Sciences, General (11.0101), Computer Software Engineering (14.0903), Computer Programming, Vendor/Product Certification (11.0203), Animation, Interactive Technology, Video Graphics, and Special Effects (10.0304), Information Technology (11.0103), Computer Programming, Specific Platforms (11.0205), Computer Software Technology/Technician (15.1204), Data Science, Other (30.7099), Economics and Computer Science (30.3901), Computer Software and Media Applications, Other (11.0899), Computer Engineering, Other (14.0999), Artificial Intelligence (11.0102), Computer Engineering, General (14.0901), Computer Games and Programming Skills (36.0113), Electrical, Electronics, and Communications Engineering, Other (14.1099), Bioinformatics (26.1103), Computer Programming, Specific Applications (11.0202), Computer Hardware Engineering (14.0902), Management Information Systems and Services, Other (52.1299), Interior Design (50.0408), Computer Typography and Composition Equipment Operator (10.0308), Electrical and Electronics Engineering (14.1001), Medical Informatics (51.2706), Commercial and Advertising Art (50.0402), Web/Multimedia Management and Webmaster (11.1004), Human Computer Interaction (30.3101), Telecommunications Engineering (14.1004), Data Visualization (30.7103), Design and Applied Arts, Other (50.0499), Information Technology Project Management (11.1005), Game and Interactive Media Design (50.0411), Fashion/Apparel Design (50.0407), Graphic Communications, General (10.0301), Web Page, Digital/Multimedia and Information Resources Design (11.0801).

HCTD focuses on applied aspects of technology and design with a technical sensibility supporting human use, focusing on the question of how new and emerging technologies, such as AI, AR, VR, IoT, and autonomous vehicles, can be used to improve the human condition and experience through creative and artistic problem-solving. HCTD is a technical program geared toward the person interested in conceptualizing the emergence of technology more broadly in a variety of contexts, including historical, social, cultural, ethical and economic. The HCTD program is envisioned as a collaborative project-based learning (PBL) curriculum—that is, an experiential, hands-on, research-learning education model—fully integrated throughout *all four years* of the undergraduate experience. PBL is a form of situated learning emphasizing student engagement, collaboration and hands-on learning through engagement with complex tasks based on real-life applications. Project-based learning begins with identifying and analyzing a problem, defining the project scope, and forming teams comprising different roles. As a learning methodology that is integrated throughout all four years of an undergraduate program, PBL is increasingly recognized as a strong alternative to traditional programs that introduce internships and other experiential learning opportunities only to upper division students. This approach is vital to develop innovative solutions to multidisciplinary problems that are common in today's sophisticated and complex lifestyles (e.g., human-centric healthcare technologies, social robots that assist in our day-to-day domestic activities) that seamlessly work with the consumers.

A Human-Centered Technology Design major offered by the University of Maine, housed within the School of Information Sciences, would create a range of key opportunities for the UM and the State of Maine:

1. **Strong Model for Professional and Workforce Preparation in the Fields of Computing, Information Science and Engineering.** HCTD would provide a new and important professional and workforce preparation niche for undergraduate majors between those currently offered by the School of Computing and Information Science (Computer Science, New Media), all of which prepare students to help shape the increasingly important role computing and digital media will play in the 21st century. Computer Science is the study of the theoretical foundations,

algorithmic principles, applications, and societal impact of computers, including the areas of software development, computer systems and security, artificial intelligence and machine-learning, data science, and human-computer interaction. New Media offers hands-on training in a wide array of digital tools for confronting real-world challenges, including digital animation, art, code, design, games, moviemaking, wearable computing, and Web and mobile apps. HCTD is an interdisciplinary degree that combines the rigorous programming foundations of Computer Science, the design strategies of New Media, and adds a strong focus on design to address human abilities and needs, drawing on courses in Communication, Innovation Engineering, and Psychology. While all three majors assign project-based homework, Computer Science emphasizes problem-solving and knowledge discovery, HCTD engages design thinking to create conceptual prototypes, and New Media students build specific applications with content of their choosing. The HCTD program would create a deep focus on design from a technical perspective, opening new research and learning opportunities and a pathways-to-careers model that could be emulated as UM pilots its “research learning opportunities for first- and second-year undergraduate students,” and pursues “curricular redesign to reduce failure rates and improve retention in ‘gateway’ STEM courses” [3]. The program’s structure would both strengthen and increase opportunities for undergraduate research experience at UM and improve 21st Century workforce skills training and readiness. The program can also contribute to the Alford Foundation funded system-wide effort to increase the number of computing and engineering-related degrees that UM confers while providing a scalable project-based learning model for the MCECIS program. However, independently of MCECIS and most importantly, the HCTD program will itself strengthen Maine’s ability to meet current and future workforce needs in advanced and emerging industries.

2. **Workforce.** HCTD is a key component of increasing numbers of industries sectors, both technical and services oriented. From new product development to improved client-customer engagement, HCTD is central to much of the change we experience today in the home, at work. As we’ve seen throughout the continuing pandemic, many high-skill work opportunities are migrating from workplace (on site) to home (remote), which would offer UM graduates a much wider range of job opportunities while remaining in Maine. HCTD is even being discovered in retail industries, in healthcare, financial services, tourism, etc, so a degree in HCTD would provide a UM graduate access to a widening horizon of career opportunities in one of the most affordable and livable states in the U.S.
3. **Careers.** Graduates of the HCTD program will have a strong foundation to pursue careers in fields that include mobile and application design, interaction design, game design, motion graphics, digital filmmaking, and Web, UI and UX design. Zeile points to a 2020 Microsoft report that estimates the total number of “technology-oriented” jobs will increase from 41 million in 2020 to 190 million in 2025 (Zeile). According to an analysis by outplacement company LHH, there are currently nearly 2 million (1.92 million) job openings across emerging tech industries in the U.S., including in AI (artificial intelligence), RPA (robotic process automation), edge computing, virtual

reality and augmented reality and Internet of Things (IoT). LHH lists among “America’s most wanted” tech skills: analysis, innovation, strategy, implementing, testing. At the time of writing:

- According to Zippia.com, between 2018 and 2028, the career market for UX designers is expected to grow 3% and produce 8,800 job opportunities across the U.S. The number of UX jobs recently actively recruited globally exceeds 22,000, with a large fraction of offerings remote, for businesses from Anthem and Bayer to Oracle and T-Mobile.
- According to Zippia.com, between 2018 and 2028, the career market for UI designers is expected to grow 13% and produce 20,900 job opportunities across the U.S. The number of UI jobs recently actively recruited globally exceeded 21,000, with a large fraction of offerings remote, for businesses from American Eagle and Hard Rock Hotels and Casinos to Myriad Genetics & Laboratories to Lenovo and Dell.
- The field of Interaction Design has seen tremendous growth as the world adapts to a digital first mindset. Organizations like Facebook, NASA, Microsoft and others actively recruit Interaction Designers, focusing on everything from data visualization to interface design to exploring interaction across multiple technologies.
- User Experience Designer/Researcher User experience researcher jobs were ranked in 2017 among the best 40 jobs in America by CNN Money with a projected growth of 19% in the coming decade.

### **Representative Career Paths/Average Salaries**

Information Architect (IA) (2020 Ave. Salary: \$99,566 [PayScale])  
 Interaction Designer (IxD) (2020 Ave. Salary: \$79,008 [PayScale])  
 User Interface (UI) Designer (2020 Ave. Salary: \$63,828 [PayScale])  
 Mobile Designer (2020 Ave. Salary: \$73,404 [PayScale])  
 Web Designer (2020 Ave. Salary: \$50,904 [PayScale])  
 Designer/Developer (front-end or back-end) (2020 Ave. Salary: \$78,509 [PayScale])  
 Content Strategist (2020 Ave. Salary: \$61,577 [PayScale])  
 Creative Director (2020 Ave. Salary: \$88,754 [PayScale])  
 Lead Designer (2020 Ave. Salary: \$76,453 [Glassdoor])  
 Creative Technologist (2020 Ave. Salary: \$45,677 [Glassdoor])  
 Design Strategist (2020 Ave. Salary: \$58,013 [Glassdoor])  
 Producer (2020 Ave. Salary: \$80,023 [Gamedesigning.org])  
 Front-end Designer/Developer (2020 Ave. Annual Salary: \$77,000 [Glassdoor])  
 Product Managers & Designers (2020 Ave. Annual Salary: \$106,766 [Glassdoor])  
 Interaction Designer/User Experience Designer/Researcher (2020 Ave. Annual Salary: \$90,600 [Glassdoor])  
 Human Factors Engineer (2020 Ave. Salary: \$82,670 [PayScale]).  
 Technical Designer (2020 Ave. Salary: \$88,196 [Glassdoor])  
 System Designer \$88,196 (2020 Ave. Salary: \$56,449 [Glassdoor])  
 Content Designer (2020 Ave. Salary: \$58,627 [Glassdoor])  
 Applications developer (2020 Ave. Salary: \$69,953 [PayScale])

4. **Economic Growth.** Referring to the recent Burning Glass analysis, there are more job opportunities in HCTD related professions in the state each year than there are graduates from the University of Maine System to fill. This points to a limitation on Maine's economic growth in advanced industries: The availability in-state of a highly skilled workforce. Industries from health care to financial and professional business services, from manufacturing to quality control, for both retail and wholesale trade, from recreation to tourism, from transportation logistics to advanced manufacturing and technology, all these sectors that have added real value to Maine's GDP in 2020 are posting for new jobs seeking HCTD related skills in technical areas developing products and/or services with high customer engagement.
5. **Community Engagement.** The HCTD program relies on a project-based learning model that will require a pipeline of real-world "problems to solve" to be built by direct collaboration and engagement with area businesses, nonprofits and community organizations with existing relationships with campus faculty and facilities. Existing networks of community engagement through e.g. ASAP Media Service will be leveraged to support expanded collaborations such as with the Maine Discovery Museum, individual K-12 instructors and school systems, and with Maine's entrepreneurial sector, through the Innovation Center and with the Maine Technology Institute.
6. **Campus Engagement.** Faculty proponents of the HCTD program have strong connections to many campus programs, facilities and services as well as vibrant networks of faculty researchers who currently actively seek and support opportunities to explore new technologies for conducting, analyzing and communicating cutting-edge research and finding novel ways to improve learning experiences for students. Coordinating with research hubs such as ASAP Media Service, which is a proponent of this proposal, would empower the HCTD program to facilitate/coordinate its student talent pool with a suite of UM undergraduate research opportunities. The HCTD would also seek on-campus project opportunities with non-academic and administrative services. Most importantly, the inherent interdisciplinarity of the program will bring students together in a synergistic way that traditional programs do not.
7. **Growth potential through rising prominence in attracting top-tier undergraduates, competitive graduate students and new faculty.** As the first of its kind in the State of Maine, the proposed HCTD program would provide students with related interests an alternative to the current need to leave the state to pursue them. Anecdotally, guidance counselors in various Maine school systems currently direct students to schools such as Northeastern University or the Worcester Polytechnic Institute to pursue a BS in a related field. UM would provide a lower-cost high-quality in-state alternative. An HCTD would also be an attractor to new research faculty, as gauged by a recent job search at SCIS, which found that all finalists had strong HCTD backgrounds and related research interests. An HCTD program at UM would focus attention and energy at SCIS and beyond on research areas intersecting with robotics, autonomous vehicles, AI, machine learning, green energy, biotechnology and assistive mobility—research areas to



which UM has made a strong commitment. Further, the HCTD would collaborate with a range of existing programs and offerings throughout the System without creating competition between campuses. Rather, by incorporating courses and programs from throughout the System into the HCTD curriculum (see the curriculum description below), students will access a pipeline to the program from offerings at any participating campus.

8. **Enrollment Sources.** Enrollment in the HCTD program is expected through two primary sources: New enrollees and Computer Science (CS) transfers (retention). New UM enrollees are anticipated, as evidenced anecdotally from a number of high-school guidance counselors from school systems throughout southern and mid-coast Maine. Findings suggest that a majority of high-school students interested in related careers, but who do not wish to pursue CS as a major, would remain in-state if there were a relevant degree program offered through the UMS. A large proportion of anticipated enrollees will come through retention of undergraduates who initially matriculate at UM as CS majors. Many students leaving CS have strong interest in obtaining a solid technical foundation and the ability but discover CS degree to be more narrowly focused on programming than satisfies these students' concomitant interests in 'making'. Over the past 10 years, the "Maker model" has become a field of interest in which the rigors of computer programming have been relaxed into a practical sense of 'coding' for specific, pragmatic, often real-world applications. On average annually, the number of first-year students majoring in CS and enrolling in core courses drops by about 30% during the first year. On average, about 53% of students graduate with a CS degree within 6 years. HCTD is an ideal catchment for these students, who will have already begun aspects of the program through CS but who would now be able to expand their focus to more quickly incorporate on-the-fly real-world creative problem solving as part of their core curriculum.
9. **Projected Growth.** We estimate the HCTD major to see initial growth from various sources:
  - Internal transfers of first-year students from the UM CS program: 10 per year.
  - Other internal university transfers: 5 per year.
  - UM First-Year Exploration Program: 5 per year.
  - Students directly applying to the program: UM Admissions currently identifies inquiries about technology-related non-engineering degrees as an area of high unmet need relative to current UM degree offerings. Admissions informally estimates up to three dozen students applying during initial launch and roll out, in response to a targeted marketing campaign to already identified STEM focussed school systems throughout Northeast (e.g. New England Innovation Academy, Marlborough, MA). Admissions considers its application estimates to be conservative, which appears supported given Burning Glass employment growth projections nationally of almost 50% from 2020 to 2030 (2020 base: 1,965,360 vs. 2030 projection: 2,925,800). We conservatively estimate initial direct enrollment at 15 students per year.

| Year | Internal Transfer | Direct Enrollment | Total Projected Enrollment |
|------|-------------------|-------------------|----------------------------|
|------|-------------------|-------------------|----------------------------|

|        |             |             |               |
|--------|-------------|-------------|---------------|
| Year 1 | 20 students | 15 students | 35 students   |
| Year 2 | 20 students | 15 students | 70 students   |
| Year 3 | 20 students | 15 students | 105 students  |
| Year 4 | 20 students | 15 students | 140 students  |
| Year 5 | 20 students | 15 students | 140 students* |

\*Assumes all Year 1 students graduate in four years.

#### 10. Program Resources.

- a. Personnel:
  - i. Dr. Nimesha Ranasinghe, Assistant Professor in the School of Computing and Information Science
  - ii. Dr. Nicholas Giudice, Professor of Spatial Computing
  - iii. Michael Scott, Lecturer of New Media
- b. No new equipment or additional space will be needed.

#### 11. Total Financial Considerations.

- a. One new faculty required
  - i. Tenure-track HCTD research faculty with a 2/2 teaching load.  
*Justification: 7 new HCTD courses are expected. Current faculty can cover 4 courses. Assuming a 2/1 teaching load, one new faculty will be needed to cover the remaining 3 new core courses.*
- b. No additional administrative and/or support costs required
- c. No new equipment required
- d. No other additional financial resources required

**12. Program Assessment and Evaluation.** Curriculum and program level learning outcomes assessment will be derived from an approved curriculum map (see Appendix) that will be used to establish metrics for course and program achievement relative to program learning objectives. To assess student success within the HCTD major, we will collect and analyze the following data on a yearly basis:

- a. Track retention and diversity (quantitative);
- b. Assess attainment of students learning objectives (quantitative);
- c. Survey current majors to assess program satisfaction and self-assessed growth;
- d. Survey program collaborators (both researchers within UMS and external private/public partners) to determine degree of satisfaction with student engagement and program interaction;
- e. Survey employers to understand whether the HCTD major is keeping current in providing the knowledge and skills needed in the workplace; and

- f. Survey program graduates, providing open-ended questions to encourage insight into changes in the field and assess professional impact of academic training.

### *HCTD Curriculum*

Human-Centered Technology Design is an approach to problem solving that puts humans (users) at the center of the design process. The process starts with building deep empathy for those being designed for, and is used to design both physical and digital products. After completing the program, students will have a thorough understanding of how to execute HCTD activities and methods and will have first experience to plan HCTD in a realistic environment. To be able to work in multidisciplinary teams, students are introduced to related topics in various fields, including psychology, computing and information technology, and entrepreneurship. The structure of the curriculum begins with courses with a view to specialization in later terms. Introductory courses provide an overview of human-centered design, followed by in-depth examinations of HCTD activities in the areas of prototyping, user research, usability evaluation, and usability engineering.

Students are introduced to fundamental theories and concepts of human-centered design, including interface design and evaluation, usability and universal design, multimodal interfaces (touch, gesture, natural language), virtual reality, and spatial displays. Exploring and refining desired behaviors and user experience, students learn methods, concepts, and techniques necessary to make human-centered design an integral part of developing effective interactions. User experience and interaction design, grounded in psychology, help students recognize the centrality of people's needs, and the context of use, frames product opportunities, so that they can skillfully propose useful, usable, and desirable (usually digital) solutions. Such knowledge and skills prepare students for work in active areas of research and development including bio-inspired design—using the human system as a model for good design and for exploring the role of collaborative intelligence in design, smart and connected systems for supporting human interactions and engagement.

The structure of the HCTD program provides consistent support for student success through repeated, progressive research and creative opportunities where students discover or invent effective paths to resolving artistic or analytical challenges that may be complicated by a competitive environment, opposing interests, and divergent or uncertain data and information. Students come to understand not only the technological transformations impacting interaction and communication, but also the technological, social and political changes that underlie the movement toward a digital society, informed by historical and critical perspectives.

The proposed Human-Centered Technology Design program is based on a review of dozens of well-established creative technology and game design programs and a separate review of as many undergraduate educational institutions deploying experiential learning throughout their curricula, integrating problem-based learning (PBL) at institutional, college, program and course levels.

- Students begin the HCTD program with classes that provide hands-on experiences in several areas of HCTD, promoting a DIY-DIWO culture. Experiential learning throughout the curriculum focuses open-ended exploration on the expressive and inventive potential of emerging technologies. All coursework supports a 'maker' culture and collaboration, working with interdisciplinary groups, cultivating appreciation and practical skills in project development and

management. Throughout the curriculum, students would stay engaged by working on projects connected to real-world challenges. These progressive undergraduate research opportunities culminate in either laboratory and/or co-op learning on real-world projects with collaborative partners through programs including the VEMI Lab, Maine Geospatial Institute, Multisensory Interactive Media Lab, and ASAP Media Service,<sup>1</sup> or through off-campus industry opportunities.

- The core curriculum is designed to cover a plethora of basic required skills, including problem-solving, computational thinking, wireframing, rapid prototyping, and communication skills. Students have flexibility to specialize in their identified pathway. These core skills will be essential to prepare students for real world problem solving and work in multidisciplinary teams in the future.
- HCTD students take the introductory Innovation Engineering course through the Foster Center for Innovation, where they begin developing an entrepreneurial mindset and learning the tools that are essential to realizing true and sustainable positive change.
- The academic culture of HCTD must be collaborative, classes being offered in dedicated spaces emphasizing cooperative exploration. Students have flexibility to choose projects that align with their interests; faculty would act as coaches, mentors and advisers, providing responsive, contextually informed instruction and helping student teams find the resources they need.
- Students may co-op at on-campus facilities or with companies throughout Maine, working on multi-semester projects in teams or cohorts on real-world research and development with UM research faculty, for the campus, community organizations or regional industrial partners.<sup>2</sup>

Our Project-Based Learning method further uses a tiered method of mentoring, where advanced-level undergraduates mentor early-year participants and graduate students mentor advanced-level undergraduates. Faculty facilitates mentoring throughout the project continuum. This Vertically Integrated Project (VIP) model is a natural fit for the HCTD program at UM.

#### **HCTD Program (Total 69 credits [72 with optional internship])**

18 credits - HCTD courses (6 courses – 3 credits each)

15 credits from HCTD designated electives

3 credits (Optional) - *Industry Internship (counts as one course from Entrepreneurship & Innovation pathway)*

11 credits - Psychology

6 credits - Communications

7 credits - Innovation Program

9 credits - Computer Science

3 credits - English

### **Bachelor of Science Degree in Human Centered Technology Design**

#### ***HCTD Course Descriptions***

<sup>1</sup> The curriculum of HCTD is inherently interdisciplinary. Students take a common set of classes that connect areas of HCTD and integrate math, science, humanities and social sciences.

<sup>2</sup> HCTD faculty work and teach together, bridging multiple disciplines. The School would bring together engineers, STEM scientists, arts and humanities faculty, and designers, working with entrepreneurs and social scientists.

**HCD 101 Explorations in Human Centered Design - 3 credits New Course\*\*\***

Introduces the core principles, methodologies, and applications of human-centered design practice. Areas of investigation include user research, ideation, interaction design, visualization, prototyping, and usability. The students will rapidly prototype and evaluate paper and software prototypes, and simulation and role play. This course emphasizes design as a creative problem-solving tool and engages with design from a broad perspective, thus enabling students to use fundamental design concepts effectively and compellingly in their work. This course also lays the foundation for the HCTD program, introducing possible future career paths and research opportunities.

**HCD 218 Introduction to User Centered Design 3 credits New Course\*\*\***

Explores the user-centered design paradigm from a broad perspective, with an emphasis on the importance of developing and applying design processes and strategies. Students learn to think like a user-centered designer and carry out activities that are key to user-centered design. This course will emphasize the roles of human cognition, development, memory, communication, and perception when designing interactive systems.

**HCD 251 Interactive Systems Design and Development - 3 credits New Course\*\*\***

Provides opportunities to identify and build interactive systems to solve problems using human-centered design principles and engineering. Students specify, design, develop and justify solutions based on user experience and technical design choices. They will utilize and develop necessary technical skills such as basic control systems using microcontrollers, sensors and actuators, and advanced concepts from wearable and ubiquitous computing domains to design, build, and evaluate interactive systems in various scenarios. Technical concepts will be introduced in a hands-on, project-based environment. The course will be structured as a series of independent explorations, each on a different prototyping methodology to highlight the importance of visual, auditory, haptics, and other media types (e.g., haptic sensing, haptic actuation). In addition, the course will bring the concepts of design thinking and user-driven prototypes, including rapid sketched paper prototypes, lo-fi monochromatic wireframes, and high-fidelity interactive mockups. Prerequisite: either COS 125 or COS 135 or EET 174.

**HCD 318 Advanced Projects in Human Centered Design - 3 credits New Course\*\*\***

Explores advanced topics in human-centered design. Students engage with and discuss an advanced topic and then apply it by researching, designing, and implementing a solution to a design challenge. Team-based investigations culminate in a project response to the challenge considering the overall consumer experience, involving the consumer in the design and production process, and iterative design process. Prerequisite: Either HCD 218 or NMD442.

Capstone Credits: 6

**Optional** Industry Internship (counts as one course from Entrepreneurship pillar)

**Communications 6 Credits**

CMJ 107 - Communication and the Environment Credits: 3

CMJ 370 - Visual Communication Credits: 3

**Innovation Engineering 7 Credits**

INV 121 - Fundamentals of Innovation Credits: 3

INV 282 - Advanced Innovation Skills Credits: 4

**English 3 Credits**

ENG 315/317 - Business and Technical Writing Credits: 3

**Psychology 11 credits**

PSY 241 - Statistics In Psychology Credits: 4

PSY 245 - Principles of Psychological Research Credits: 4

*And one of the following:*

PSY 350 - Cognition Credits: 3

PSY 361 - Sensation and Perception Credits: 3

**Computer Science 9 credits**

COS 121\*- Coding for Everyone Credits: 3 (or NMD105)

COS 125 - Intro to Problem Solving using Computer Programming Credits: 3

COS 135\*- Applied C Programming Credits: 3

COS 225 - Object Oriented Design & Data Structures Credits: 3

*\*One of these is required.*

**HCTD-Designated Elective Courses (15 credits)**

*See list on last page of proposal.*

**SUGGESTED FOUR-YEAR CURRICULUM Human-Centered Technology Design (HCTD) (\*\*\*) Designates new course)**

|            |  |
|------------|--|
| First-Year | <p><b><u>Conceptual Foundation</u></b></p> <p>Semester I (15 credits)</p> <p>HCD 101 Explorations in Human Centered Design - 3 credits New Course***</p> <p>CMJ 107 - 3 credits</p> <p>COS121 (Coding for Everyone) or COS135 - 3 credits</p> <p>Gen Ed - 3 credits</p> <p>Gen Ed - 3 credits or Eng 101</p> <p>Semester II (16 credits)</p> <p>COS125 (Introduction to programming) - 4 credits</p> <p>INV121 - 3 credits</p> <p>Electives - 3 credits</p> <p>Gen Ed - 3 credits</p> <p>Gen Ed - 3 credits or Eng 101</p> |
| Sophomore  | <p><b><u>Applying the foundation</u></b></p> <p>Semester I (16 credits)</p> <p>HCD251 Interactive Systems Design - 3 credits New Course***</p> <p>PSY241 - 4 credits</p> <p>COS225 - 3 credits</p> <p>Gen Ed - 3 credits</p> <p>Gen Ed - 3 Credits</p> <p>Semester II (17 credits)</p> <p>HCD 218 Introduction to User Centered Design 3 credits New Course***</p> <p>PSY250 - 4 credits</p> <p>INV282 - 4 credits</p> <p>HCTD Elective - 3 credits</p> <p>Gen Ed - 3 Credits</p>  |
| Junior     | <p><b><u>Advancing</u></b></p> <p>Semester I (15 credits)</p> <p>HCD 318 Advanced Projects in Human Centered Design - 3 credits New Course***</p> <p>CMJ 370 - 3 credits</p> <p>ENG 315 - 3 credits</p> <p>PSY350 - 3 credits</p> <p>HCTD elective- 3 credits</p> <p>Semester II (15 credits)</p> <p>HCTD Electives - 6 credits</p> <p>PSY361 - 3 credits</p> <p>Electives - 6 credits</p> <p><i>Semester III Internship - Variable credits (between junior and senior years)</i></p>                                      |
| Senior     | <p><b><u>Mastering - getting ready for the real-world</u></b></p> <p>Semester I (15 credits)</p> <p>HCD 498 Capstone I - 3 credits</p> <p>HCTD Elective - 3 credits</p> <p>Electives - 9 credits</p> <p>Semester II (15 credits)</p> <p>HCD 499 Capstone II - 3 credits</p> <p>HCTD Electives - 3 credits</p> <p>Electives - 9 credits</p>   |

HCTD-Designated Elective Courses

| Design  | Emerging Technology  | Programming  | Entrepreneurship & Innovation   |
|---|--|--|---|
| <ul style="list-style-type: none"> <li>• Design Concepts</li> <li>• UI/UX</li> <li>• Interaction design (IxD)</li> <li>• Product design</li> <li>• Industrial design</li> <li>• Graphic Design</li> <li>• Information Architecture</li> </ul> | <ul style="list-style-type: none"> <li>• Foundations of digital electronics</li> <li>• Embedded systems (microcontrollers, sensors, actuators)</li> <li>• AR/VR/MR</li> <li>• AI/ML</li> <li>• Game design and programming</li> <li>• Mobile apps</li> <li>• Internet-of-Things (IoT)</li> </ul> | <ul style="list-style-type: none"> <li>• Foundations in programming</li> <li>• Embedded systems</li> <li>• Data science</li> <li>• Data analytics</li> <li>• Full-stack</li> </ul> | <ul style="list-style-type: none"> <li>• Social</li> <li>• Ethics</li> <li>• Privacy</li> <li>• Innovation engineering</li> <li>• Project management</li> <li>• Leadership</li> <li>• Business and commercial acumen</li> </ul> |

| Design   | Emerging Tech  | Programming  | Entrepreneurship & Innovation                            |
|--|--|--|--|
| ART250<br>ART350<br>CMJ202<br>CMJ347<br>NMD342<br>NMD442<br>SIE515 | NMD342<br>NMD345<br>NMD445<br>COS312<br>COS412<br>COS417<br>SIE516<br>EET111<br>EET174 | COS412<br>COS420<br>COS435<br>COS465<br>NMD105<br>NMD211<br>BIS235 | INV471<br>INV480<br>COS490<br>INT400<br>NMD200<br>NMD306 |



|  |   |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|--|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| University of Maine  |   |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Undergraduate Curriculum Map   |   |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| School/College: SCIS/CLAS  |   |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Undergraduate Academic Program Title: Human-Centered Technology Design   |   |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Degree Awarded: BS   |   |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Purpose: To show how student learning outcomes in the courses/experiences make up the academic program's curriculum. |   |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Level  | The level scale represents a continuum from the beginning of the curriculum to the end of the student's experience in the academic program. |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|  | I = introduced; R = reinforced; M = mastered  |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Learning Outcome   | COS 121   | COS 125 | COS 135 | COS 225 | CMJ 107 | CMJ 370 | EET 174 | INV 121 | INV 282 | HCD 101 | HCD 218 | HCD 251 | HCD 318 | HCD 498 | HCD 499 | PSY 241 | PSY 245 | PSY 350 | PSY 361 |
| Core concepts of design and innovation   |   |         |         |         |         |         |         | I       | R       | I       |         |         |         | M       |         |         |         |         |         |
| Applying HCD concepts in project development   |   |         |         |         |         |         |         |         |         | I       | R       | R       | R       | M       | M       |         |         |         |         |
| Software prototyping   | I   | I       | R       | R       |         |         |         |         |         |         |         | I       | R       |         | M       |         |         |         |         |
| Hardware prototyping   |   |         |         |         |         |         | R       |         |         |         |         | I       | R       |         | M       |         |         |         |         |
| Human psychology and physiology as relates to interactions with tech- nological products and services                |   |         |         |         |         |         |         |         |         | I       | I       |         | R       | M       | M       |         | I-R     | I-R     | I-R     |
| Research method  |   |         |         |         |         |         |         |         |         |         | I       |         | R       | M       |         |         | I-R     |         |         |
| Experiment design  |   |         |         |         |         |         |         |         |         |         | I       | I       | R       | M       | M       |         |         |         |         |
| Soft skills (conveying an idea, presentation and writing skills)   |   |         |         |         | I       | R       |         |         |         |         |         |         |         | M       | M       |         |         |         |         |

Office of the Executive Vice  
President for Academic Affairs &  
Provost



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June 23, 2022

To: John C. Volin, Executive Vice President for Academic Affairs and Provost

From: Brian Olsen, Associate Provost for Student Success and Strategic Initiatives

Re: Approval of proposed BS in Human-Centered Technology Design

Dear Provost Volin,

The Undergraduate Program Curriculum Committee met on May 27 and, in an advisory capacity, endorsed the proposed BS degree in Human-Centered Technology Design submitted by the College of Liberal Arts and Sciences. A brief synopsis:

### **BS degree in Human-Centered Technology Design**

Human-Centered Technology Design (HCTD) is a fast-growing major that has appeared in engineering, gaming, HCI, arts, digital technology and communication programs at undergraduate and graduate levels in more than 75 U.S. colleges and universities over the last decade. HCTD focuses on what we can do with technology for specific purposes. Designers help produce products and services in a variety of fields and are sought by industries that increasingly rely on sophisticated visualization and simulation of advanced procedures. Interest in game design, for example, is an appealing and intuitive major that attracts increasing numbers of prospective students. With a median salary in Maine of \$92,000, HCTD graduates can expect to enter a competitive professional field in-state. Full-time remote work in HCTD fields is expected to continue increasing nationally for the foreseeable future, ensuring that a HCTD workforce pipeline offers UM students who desire to stay in Maine to live and work with a high number of high-quality career opportunities "at home." Furthermore, the Human-Centered technology design and innovation methodologies are being applied in building new commercially viable technology products and services, evident by recent advancements in innovation engineering, human-centered product development, entrepreneurship and startup cultures.

The success of this degree will be contingent on hiring one additional faculty line (described in 11.a: "financial considerations" in the proposal) and potentially rely on additional instructional support for some of the core courses in Psychology. The degree holds great promise, however, to assist us in meeting the enrollment and graduation goals for computer science laid out by UMS TRANSFORMS. The proposal received review by the College of Liberal Arts and Sciences Academic Council and was signed by Dean Emily Haddad on May 17. I am supportive of this proposed new major. Thank you for your consideration.

MAINE'S LAND GRANT, SEA GRANT AND SPACE GRANT UNIVERSITY  
WITH A REGIONAL CAMPUS IN MACHIAS

**Motion 2 – Regarding the College of Liberal Arts and Science’s Proposal for a New B.S. Degree Program in *Human-Centered Technology Design***  
**May 4, 2022**

**Background:**

Proposals for new degree programs at the University of Maine, and subsequent actions on those proposals, follow procedures detailed in *UM System BOT Policy 305.1, APL X-P.1 Academic Program Approval* (<https://www.maine.edu/students/office-of-the-vice-chancellor-of-academic-affairs/apl-x-p-1/>), and also procedures in “*The University of Maine 120-Day Process for Approval of New Academic Degree Programs*” (Chapter 2; revised Oct. 16, 2019, <https://umaine.edu/facultysenate/committees/pcrrc/>).

**Key steps are:**

- 1) The Unit or College produces a written description and rationale for the new program in 250 words or less (this is called a “Program Request”);
- 2) To go forward, that “Program Request” must be approved by the Provost, the UM System Vice Chancellor for Academic Affairs (VCAA) and the Chief Academic Officers Council (CAOC);
- 3) If approved, the sponsoring College or Unit prepares a “Full Program Proposal”, which is filed with: The Provost’s Office; The chair of the Undergraduate Program Curriculum Committee (UPCC), or, if a graduate program, the Associate Vice President for Graduate Studies for the Graduate Board (GB); and, The chair of the Program Creation and Reorganization Review Committee (PCRRC) of the Faculty Senate for review and recommendations;
- 4) The PCRRC distributes the “Full Program Proposal” to all members of the Faculty Senate for information and review;
- 5) The PCRRC schedules and hosts a PCRR Committee meeting to discuss the “Full Program Proposal” with the primary proponents of the proposal;
- 6) After #5, the PCRRC schedules and hosts a “Campus-wide Hearing” to gather further comments regarding any concerns by the university community;
- 7) The proposal, and a motion on that proposal either in support of it, or non-support of it, should be discussed by the Full Senate two weeks before a vote.
- 8) A official vote is to be taken by the Faculty Senate to report to the President the Senate’s recommendation either in support of, or not in support of, the creation of the new degree program.

**Motion:**

Having heard no objections to, or serious concerns with, the proposal at the Campus-wide Hearing on April 26, 2022, and having discussed the proposal at the Elected Senator’s Meeting on April 20, 2022, and with the members of the PCRRC (Program Creation and Reorganization Review Committee) of the University of Maine Faculty Senate being favorably inclined, the Faculty

Senate hereby moves to recommend to the President that the College of Liberal Arts and Science's Proposal for a New B.S. Degree Program in *Human-Centered Technology Design* go forward.



**Vice Chancellor for  
Academic Affairs  
15 Estabrooke Drive  
Orono, ME 04469**

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**[www.maine.edu](http://www.maine.edu)**

Date: December 2, 2021

To: Dr. Joan Ferrini-Mundy, President  
University of Maine and University of Maine at Machias

Dr. John Volin, Provost and Executive Vice President for Academic Affairs

From: Robert Placido, VCAA *RAP*  
The University of Maine System (UMS)

The University of Maine

University of Maine  
at Augusta

University of Maine  
at Farmington

University of Maine  
at Fort Kent

University of Maine  
at Machias

University of Maine  
at Presque Isle

University of  
Southern Maine

Regarding: Intent to Plan - UM New Undergraduate Major BS in Human Centered  
Technology Design

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The Chief Academic Officers Council (CAOC) reviewed the Intent to Plan submitted by the University of Maine for a new BS in Human Centered Technology Design on December 2, 2021. The CAOC was supportive. The VCAA supports and approves this intent to plan.

Please do not hesitate to let me know if you have any questions.

### **Human Centered Technology Design** **Proposed New Degree Summary: (Word Count: 250)**

The School of Computing and Information Sciences (SCIS) is requesting permission to plan a BS in Human-Centered Technology Design (HCTD). The proposed launch date is for Fall semester of 2023.

HCTD is a fast-growing field that has appeared in engineering, gaming, media, arts and communications programs in more than 75 U.S. colleges and universities over the last decade. *Interviews conducted with Maine high-school guidance support HCTD as filling the interest gap for college-bound high-schoolers between computer science and new media.* However, no college or university in Maine currently offers a major in HCTD.

Focusing on technology and design with a technical sensibility supporting human use, HCTD resides at the intersection of new media, computer science and spatial information science. The program would be a collaborative project-based learning curriculum throughout all four years. Inspired by existing resources in SCIS, an HCTD program would create new research learning opportunities and a new pathways-to-careers model for both the campus and the System.

A Burning Glass query by UM's Office of Institutional Research and Assessment reports that Maine institutions conferred 229 degrees in HCTD-related degrees this past year, while there were 1389 related job postings in Maine in the last 12 months. In New England this past year, 8,197 degrees in HCTD-related degrees were awarded, with 55,039 job postings. Nationally, there were 125,716 degrees in HCTD-related degrees conferred, with 1,099,212 related job postings. This analysis demonstrates a clear unmet need for HCTD graduates in all three geographical areas.

University of Maine System  
Board of Trustees

4

**AGENDA ITEM SUMMARY**

**NAME OF ITEM:** Unified Accreditation Update

**INITIATED BY:** David M. MacMahon, Chair

**BOARD INFORMATION:** X

**BOARD ACTION:**

**BOARD POLICY:**

N/A

**UNIFIED ACCREDITATION CONNECTION:**

**BACKGROUND:**

Interim Vice Chancellor of Academic Affairs Jeffrey St. John will update the Board on the 2022 New England Commission of Higher Education (NECHE) accreditation report.

12/22/2022

University of Maine System  
Board of Trustees

**AGENDA ITEM SUMMARY**

**NAME OF ITEM:** Chief Academic Officer (CAO) Update

**INITIATED BY:** David M. MacMahon, Chair

**BOARD INFORMATION:** X

**BOARD ACTION:**

**BOARD POLICY:**

**UNIFIED ACCREDITATION CONNECTION:**

N/A

**BACKGROUND:**

At the request of Academic and Student Affairs Committee members, the Chief Academic Officers of the University of Maine System institutions will give brief updates in these areas:

1. Retention efforts, including any efforts that are new in the current academic year; and
2. Projections for fall-to-spring retention (given in percentages).

12/22/2022



University of Maine System  
Board of Trustees

**AGENDA ITEM SUMMARY**

**NAME OF ITEM:** 2022-2023 Demographics, Enrollment, and Trends Update

**INITIATED BY:** David M. MacMahon, Chair

**BOARD INFORMATION:** X

**BOARD ACTION:**

**BOARD POLICY:**

N/A

**UNIFIED ACCREDITATION CONNECTION:**

N/A

**BACKGROUND:**

Interim Vice Chancellor for Academic Affairs Jeffrey St. John will provide brief updates on:

1. Demographic challenges facing the state, and the impact those challenges have had on enrollments and enrollment projections for the spring and fall 2023 semesters; and
2. National and state higher education trends.

12/22/2022