

## **Education Outcomes of College of Information Students**

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Submitted to: TJ Rainsford, iConsultancy Program Lead

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## 1. Executive Summary

From January to May 2025, this consulting team partnered with the iConsultancy Experiential Learning Program at the University of Maryland's College of Information to develop a White Paper, Course-to-Career Skills Explorer, and Career Skills Matrix aligned with the workforce development goals of the State of Maryland. The project aimed to bridge the gap between academic programs and real-world career opportunities by clarifying the technical and soft skills taught in the College's three undergraduate majors: Information Science, Technology and Information Design, and Social Data Science.

The project had three primary goals:

- Develop a skills and knowledge matrix for each undergraduate program based on learning outcomes and course content.
- Map those skills to high-demand job roles and industries, with a focus on Maryland's evolving workforce needs and identifying both traditional and non-traditional career paths.
- Create clear, engaging deliverables to support students, employers, and educators in understanding and leveraging the unique strengths of iSchool graduates.

The project unfolded over four phases: academic course analysis, labor market research, job-role alignment, and the development of visual tools. Research resources included Testudo course listings, job platforms like Handshake and LinkedIn, and state workforce data to identify in-demand roles across fields like health informatics, public sector IT, urban policy, and design.

Key findings include:

- Social Data Science students demonstrated the strongest technical skill set overall, particularly in data analysis, programming (Python, R, SQL), and research design—skills highly aligned with roles in analytics, policy, and civic tech.
- Information Science majors offered a well-balanced mix of technical and managerial competencies, including systems architecture, cybersecurity, and project management.
- Information Design students excelled in UX/UI, digital communication, and creative strategy, preparing them for roles in human-centered design and digital content.
- All three programs showed strong development of transferable soft skills, including critical thinking, teamwork, and adaptability, making iSchool students highly versatile across technical and non-technical job environments.

Deliverables included: A Career Skills Matrix matching key competencies to each iSchool major and relevant job roles. A Course-to-Career Skills Explorer (Google Sheet tool) that allows students to match UMD courses with job-relevant skills and roles. A final white paper and presentation detailing project findings and recommendations. A set of infographics and visualizations to support employer and student engagement with the data.

Recommendations include: Host the Course-to-Career Skills Explorer on the iConsultancy and iSchool websites to maximize student access. Develop and display infographics around campus to raise awareness of career pathways. Regularly update the skills matrix to reflect evolving market needs and emerging job roles.

This project reinforces the value of UMD's iSchool programs in preparing students for modern, high-impact careers. By making the link between curriculum and workforce needs more transparent, the Career Skills Matrix supports students in making informed academic and career decisions—while also helping employers recognize the value of iSchool talent.

## **2. Introduction**

The primary goal for this project was to develop a skill matrix that defines and structures key competencies across the three iSchool majors. Then, those competencies would be aligned with workforce demands in growing markets to represent the career qualifications of iSchool graduates.

This aim was the result of the iConsultancy's role in student development as well as its business needs. The capstone projects the iConsultancy creates are part of its overarching goal to prepare students for the workforce and get them hired. Students thus need to understand what they have learned and their workforce qualifications, which is why the iConsultancy wanted to collect and display that information. That information is also useful for businesses. iSchool students are valuable in the workforce, but the majors are all novel, so the iConsultancy wanted resources to give to businesses so they could recognize the value iSchool students provide. Finally, the iConsultancy is in need of a rapidly increasing number of clients to produce capstone projects for every iSchool student. Since iSchool students are the iConsultancies "workforce" in a way, resources are needed to demonstrate to businesses that the iConsultancy is a legitimate consulting firm that will produce high quality, ready to deploy deliverables.

To meet the iConsultancy's needs, we needed to conduct in depth research on both the College of Information and the job market in Maryland to identify jobs that are in demand and why iSchool graduates are qualified for them. We then needed to use that research to produce accessible and engaging tools and visuals that would show both students and businesses the value of an iSchool graduate.

## **3. Work division**

Due to the scope of the project, we divided our work into two parts. The first group was tasked with identifying growing career fields that iSchool students may be qualified for and the skills they demand, while our group focused on the skills taught in all three iSchool majors.

The three College of Information majors we examined are:

- Information Science (broad data, tech, information systems)

- Information Design (UX/UI, communication, visual strategy)
- Social Data Science (analytics, programming, policy impact)

## **4. Methodology**

The project was carried out in three distinct phases.

### **Phase 1: Academic Analysis**

We reviewed course syllabi, major requirements, and departmental learning outcomes to identify the specific skills taught in each program. We also conducted interviews with a College of Information career counselor and a member of the Info Advisory Council to gather additional information about job skills that weren't covered in course descriptions. This data became the foundation for our matrix of technical and soft skills, and which majors teach them.

### **Phase 2: Labor Market Research**

This phase was focused on labor market research. This research was mostly done by Career Skills Assessment 1. Our techniques included online research and content analysis to identify growing fields in Maryland, comparative analysis of employment trends using statistical tables, and qualitative interpretation of learning outcomes from academic programs.

### **Phase 3: Visualization & Feedback**

We used tools like Tableau, Canva, Google Sheets, and Microsoft Excel to collect, clean, and visualize data on job-relevant skills taught in the iSchool's undergraduate programs. Excel was used primarily for organizing and preparing the data, while Tableau and Canva were used to design dashboards and infographics that clearly present our key findings. These visualizations, which illustrate the distribution of technical, hard, and soft skills across the programs, are discussed in the next section.

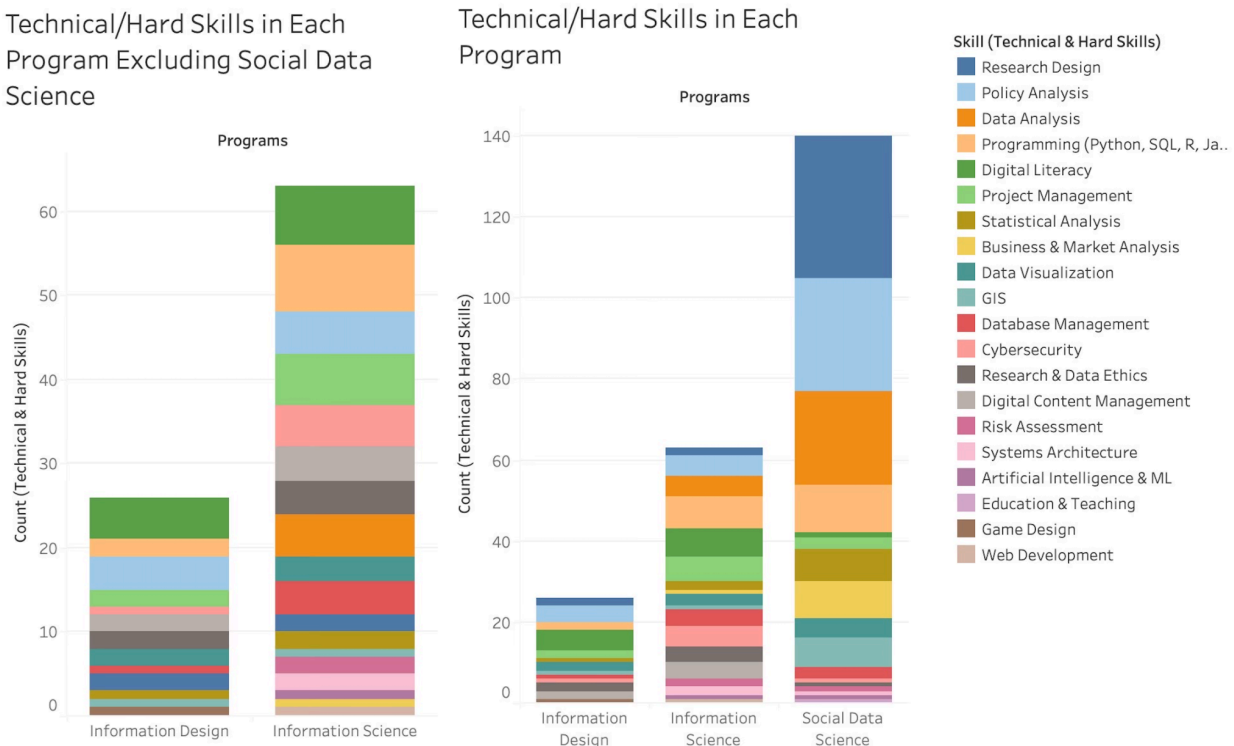
## **5. Findings & Deliverables**

Detailed ways to access each deliverable is linked in section 7. appendices.

### **White Paper**

This deliverable is a comprehensive report created for the iConsultancy, and serves as a business facing resource designed to inform employers about the key skills taught across iSchool majors and how they align with current job market demands. Included below are key findings of the white paper we produced that are of value to businesses and also show the main results of our research:

The Social Data Science major had the highest concentration of technical skills overall, with particularly strong representation in data analysis, programming (Python, SQL, R), statistical analysis, and research design. These students also showed strength in areas like research ethics and data visualization, which align with roles in data-heavy and socially impactful sectors.



Information Science majors had a broader balance of technical skills, including cybersecurity, systems architecture, project management, and business analysis. Meanwhile, Information Design students emphasized creative and technical tools like digital content management, UX-related design, and visual storytelling, often complemented by digital literacy and education-related competencies.

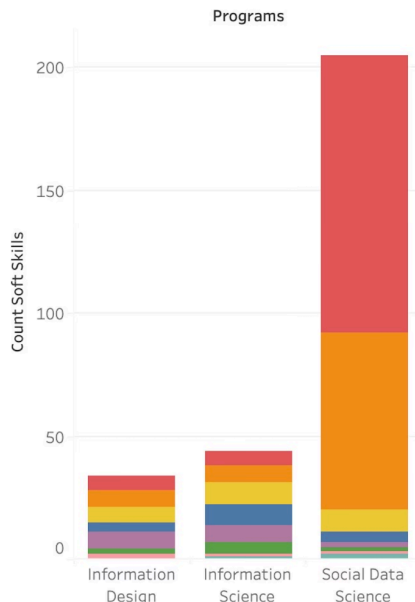
In terms of soft skills, Social Data Science students again showed the highest overall volume, especially in critical thinking, communication, and teamwork. However, both Information Design and Information Science students demonstrated well-rounded soft skill sets. Leadership, organization, adaptability, and time management were frequently observed across the board, suggesting that iSchool students are well-prepared not just technically, but interpersonally.

When we removed Social Data Science to examine the other two majors more closely, we saw more balance in both technical and soft skill representation. Information Design students leaned slightly more toward communication and problem-solving skills, while Information Science students showed consistency across leadership, adaptability, and critical thinking.

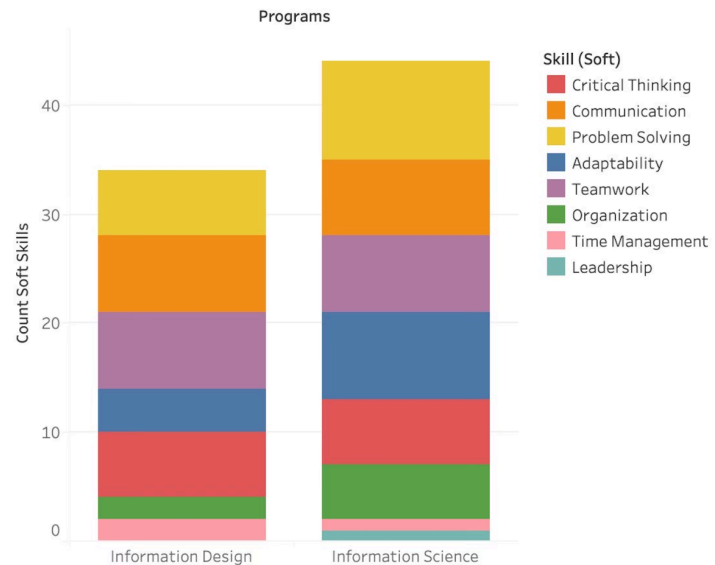
These findings suggest that while each program equips students with a specific skill profile, all iSchool majors foster a mix of technical knowledge and transferable soft skills that employers

seek. This reinforces the idea that iSchool students are workforce-ready, but also highlights the need to better communicate these strengths to employers unfamiliar with the nuances of each major.

Soft Skills in Each Program



Soft Skills in Each Program Excluding Social Data Science



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## **Career Skills Matrix**

This deliverable was an Excel Sheet aligning core job skills to each undergraduate program and aligning key job roles to each undergraduate program. This is a very simple and informative visual for businesses and students to look at to determine which majors teach what job skills and which majors match the increasing job roles identified in Maryland.

## **Course-to-Career Skill Explorer**

This deliverable was a Google Sheet for students to help them discover which classes teach which job skills and inform them of which classes will aid their career development towards job roles they are interested in. This is a very helpful tool for students to use to inform them of the variety of job roles available to them and which classes qualify them for those job roles.

## **6. Recommendations**

1. Add the Course-to-Career Skills Explorer to the iConsultancy website, and see if it is possible to also add it to the iSchool website.
  - a. The Course-to-Career Skills Explore is a resource that will heavily benefit students, but this won't be of any use if it can't be easily accessed. At a minimum, it should be incorporated into the iConsultancy website as a link to the Google Sheet, that way students can utilize it. However, a more lofty aim would be to take the data fuelling the spreadsheet and use it to make a version of the explorer that is built into the website, that way students can get all of their questions answered in one place.
2. Use the data collected to create infographics targeted towards students.
  - a. Due to time constraints, we were unable to produce any infographics that sell students on their own professional competence. As such, it would be worthwhile to create infographics and visuals that could be printed and hung, for example, in the halls of Hornbake. The deliverables we created can already help students understand their skills and potential career paths, but posters/advertisements might initially lead them to said deliverables, or help encourage students to investigate their futures further.
3. Continually refine and update the data as necessary.
  - a. While already functional, our dataset is not fully comprehensive, due to the nature of the data contained. The list of skills the iSchool teaches that we created can afford to be expanded, especially regarding soft skills, because it is hard to identify those professionally sought after skills without talking to industry professionals. While we did conduct interviews, it may be worthwhile to conduct more to identify any gaps in the list of skills we used to create our deliverables. Additionally, new professional skills are constantly in demand, the job market is regularly shifting, and the list of skills the iSchool teaches will continue to grow and change. As a result, even if the dataset is already perfect, regular maintenance will still be necessary if the deliverables are to remain relevant in

the long term.

## 7. Appendices

Career Skills Matrix:

<https://docs.google.com/spreadsheets/d/1aQz1ef-5HUPDbVD5giEVrcMty1S1hFzO/edit?gid=61696401#gid=61696401>

Course-to-Career Skills Explorer:

<https://docs.google.com/spreadsheets/d/1S8OjwEU1qmjl71tYDous6bxO5X1zq7GdZEh43BkzrFE/edit?gid=271980901#gid=271980901>

White Paper:

<https://docs.google.com/document/d/1Eq7U5n14thT9f0eN7MJ95ah5Leqt8jVsp7sjo8wRVaU/edit?tab=t.0#heading=h.lyj3k3iov79f>

JIRA Timeline:

