Computer-Related Majors at the University of Maryland, College Park and Shady Grove Campuses

This is a list of the University of Maryland's computer-related majors. Two majors have a Cybersecurity Specialization: Computer Science and Information Science, both specializations are completed by taking 300- and 400-level classes at UM after transfer. *Note - at this time, UM does not accept any NWIT courses from MC.*

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1. **Computer Science – Bachelor of Science** https://undergrad.cs.umd.edu/degree-requirements-cs-major
    Offered at the Main Campus – College Park only. This is a comprehensive Computer Science major – it has a **Cybersecurity specialization within the major to be completed in the junior and senior years after transfer**. the **UM Computer Science degree** requires these Montgomery College courses at the lower level: **CMSC 140 Intro to Programming**, **CMSC 203 Computer Science I, CMSC 204 Computer Science II, CMSC 207 Discrete Structures** and Math courses **MATH 181 Calculus I, MATH 182 Calculus II, and MATH 284 Linear Algebra** (select as an MC CS AA Program Elective). Admission to UM is highly selective for new students starting college Summer 2024 and after. See UM LEP Computer Science page for information.

    Students at MC typically complete the **MC AA degree in Computer Science** prior to transfer. The **Computer Science BS degree at UM is a Limited Enrollment Program (LEP)** with specific Gateway courses of CMSC 203, 204, and MATH 181, repeat rules and GPA requirements: lep.umd.edu/documents/computerscience.pdf

    Specializations within the Computer Science – Bachelor of Science degree – all courses for specializations are completed at the upper-level (junior and senior years) after transfer into the UM Computer Science major.

    1. *General Track*
    2. *Cybersecurity Specialization* (*See also Information Science below*)
    3. *Data Science Specialization* (*See also Data Science Specializations in Information Science and Social Data Science BS programs below*)
    4. **Quantum Information Specialization**
    5. **Machine Learning Specialization**

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2. **Information Science (InfoSci) – Bachelor of Science** https://ischool.umd.edu/academics/bachelors-programs/bachelor-of-science-in-information-science-college-park/ Offered at both the Main Campus and Shady Grove (Fall Entrance only @ USG). "Information Science teaches students skills in technical areas such as database design, information architecture, web/mobile development, data analytics, and cybersecurity alongside areas of the social sciences, leadership, and the humanities – addressing the growing and unique need for information professionals who understand complex social and organizational issues." See **Info Science Career Paths**

    - **Summary of MC Math and Computer Science courses for the Information Systems major.** Most students complete the **MC Information Sciences and Systems** **AA degree** prior to transfer. Courses include: MATH 150 Elementary Applied Calculus or MATH 165 Precalculus; CMSC 110 Computer Concepts* (see degree), CMSC 140 Computer Programming, CMSC 243 Systems Analysis and Design. Recommended Electives: CMSC 135 Scripting; CMSC 201 JAVA; CMSC 206 Advanced JAVA. Link to **MC to UM Transfer Agreement** showing MC courses to prepare to **transfer to Information Science, UM at Shady Grove**; these courses can also be taken for transfer to **Information Science** UM College Park Main Campus.

    The BS in Information Science at the Main Campus offers a **Cybersecurity & Privacy Specialization, note that all of these courses are taken *after transfer* to UM in the junior and senior year.**

    o *Cybersecurity and Privacy Specialization*. Students equip themselves with human-centered cybersecurity skills and perspectives, and prepare to launch careers in the cybersecurity field with particular emphasis on management, policy, and governance-related functions.
        - A total of 5 courses are required at UM to complete the **Cybersecurity Specialization** – 3 courses are required and 2 are self-selected: **Required:** Complete 3 Courses: **INST 364** Human-Centered Cybersecurity, **INST 365** Ethical Hacking, **INST 366** Privacy, Security, and Ethics for Big Data; **Additional**: Choose 2 Courses from: **INST 464** Decision-Making for Cybersecurity**, INST 466** Technology, Culture, and Society, **INST 467** Practical Hacking for Policy Making

    - **Other Information Science BS degree Specializations (Cognate Areas)** include: **Data Science Specialization (also offered at Shady Grove), Digital Curation Specialization, and Health Information.**

3. **Information Systems Robert H. Smith School of Business, Main Campus only**. This is a competitive major at UM – students must meet **Smith School LEP Requirements**. Minimum GPA is a 3.0; however, admitted students typically have an overall GPA of 3.5 or higher based on the applicant pool. "The Information Systems major focuses on system design and implementation skills including database and web design, analytical skills for both strategic planning of IT and performance evaluation, and the managerial plus organizational knowledge required to manage information systems and applications based on business and customer requirements." Students planning to pursue this major complete either an MC **AA in Business** or the MC **Information Sciences and Systems AA** including Program Electives of a calculus-based MATH 150 or 181, ACCT 221 & 222, ECON 201 & 202, and Statistics from BSAD 210 or MATH 117 to meet Smith School Business LEP requirements prior to transfer.

4. **Computer Engineering BS Degree** – College Park Campus only; offered through the **Clark School of Engineering**. Complete **MC's Computer Engineering AS degree.** This is a Limited Enrollment Program.

5. **Biocomputational Engineering BS Degree** Shady Grove campus only https://biocomp.umd.edu/ "In the biotech industry, biocomp engineers apply their knowledge of computer programming to analyze biological data sets and create new diagnostic technologies for the treatment and prevention of disease." Complete either the MC **General Engineering AS** or MC **General Studies STEM degree** to incorporate required courses from this **UM Shady Grove Biocomputational Engineering Advising Page.**

6. **Cyber-Physical Systems Engineering (CPSE) Bachelor of Science, Shady Grove Campus** offered by the Clark School of Engineering at the University of Maryland – "trains future engineers in both of these fields, with specializations in networks, cybersecurity, and machine learning. Meet with **UM CSPE Program Pre-Transfer Advising** to determine appropriate MC degree. See **Outline of Junior/Senior Course requirements**.

7. **Information Technology and Information Design – Bachelor of Arts,** College Park Main Campus (TID) **https://ischool.umd.edu/academics/bachelors-programs/bachelor-of-arts-in-technology-and-information-design-at-college-park/** "The TID degree teaches students to frame important problems at the intersection of people and information; to design solutions for those problems; and to implement solutions. Students participate in studio and laboratory classes in user-centered design, technology development, & problem-solving communication. Graduates may become designers, planners, technology consultants, project managers, and entrepreneurs, in fields as user experience, mobile development, healthcare, law, entertainment, policy, smart-city development, libraries, and archives."

   The BA in Technology and Information Design major at UM may require transferring prior to completing an Associate's degree because of the specialized INST courses required in the first two years. https://ischool.umd.edu/wp-content/uploads/Bachelor-of-Arts-in-Technology-and-Information-Design-GRADUATION-PLAN.pdf

   To prepare for transfer to the UM BA in Technology and Information Design major, students may consider finishing the **MC General Education Program** and two Electives prior to transfer while enrolled in either the MC **Information Science and Systems AA 109** or a **General Studies STEM 611B degree**: ENGL 101 (if needed), **English Foundation:** ENGL 102 or 103, **Math Foundation:** MATH 117**; Arts Distribution ARTD** – ARTT 102 Design (suggested by MC) or any other course; **Humanities Distribution HUMD** – any; **BSSD #1:** SOCY 105 Social Problems & Issues, **a second BSSD** (not SOCY); **Lab Science Dist.** – Any, **Non-Lab Science Dist.** – Any; **GEIR # 1** – COMM 108 or 112; **GEIR #2** – Arts or Hum or HLTH see Gen Ed List P. 1 GEIR; **Suggested electives:** CMSC 140 Intro to Programming; CMSC 206 Python Programming. **Choose courses from MC General Education Program Courses List.**

8. **Immersive Media Design** offers two degree paths for students to pursue: a **Bachelor of Arts in Emerging Creatives** or a **Bachelor of Science in Computing**. Work with UM Pretransfer Advising to determine appropriate MC degree depending on Bachelor's degree of interest.

9. *Social Data Science* **– Bachelor of Science***. Data Science courses paired with social science majors of:* • *African American Studies;* • *Anthropology;* • *Economics;* • *Geographical Sciences and GIS;* • *Government & Politics;* • *International Relations;* • *Psychology;* • *Public Health;* • *Sociology*. *All require CMSC 140 Intro to Programming; click on each area of interest for other requirements.* MC **General Studies SSAH degree** *recommended.*

   Please refer to this list of additional computer-related majors offered at UM: https://studentsuccess.umd.edu/computing-majors