
NSF SFS Info Session

Michigan Technological University



What is SFS?

- CyberCorps: Scholarship for Service (SFS) Program at Michigan Tech
 - A national program designed to recruit and train the next generation of information technology professionals, industrial control system security professionals, and security managers to meet the needs of the cybersecurity mission for Federal, State, local, and tribal governments.
 - One year of service in government required for each year of scholarship
 - National SFS website: <https://www.sfs.opm.gov/>



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SFS at Michigan Tech

- Michigan Technological University is a proud participant in the CyberCorps: Scholarship for Service (SFS) program through a multi-million dollar grant awarded by the National Science Foundation (NSF).
- Michigan Tech SFS Website: <https://www.mtu.edu/sfs/>



Scholarship Benefits

SFS scholars (scholarship recipients) shall receive all of the following:

- Full-time tuition and education related fees
- Stipend: \$25,000 per year for undergraduate students and \$34,000 per year for graduate students
- Professional development allowance (travel, professional certification etc.) up to \$6,000 per academic year
- Additional non-financial benefits
 - Community; mentoring; career opportunities...



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Obligations for Scholarship Recipient

- Work immediately following graduation for the **Federal** Government or a State, Local, or Tribal Government in a position related to cybersecurity for a period equal to the length of the scholarship
- Participate in government **internship** positions in the summers during the years of scholarship study
- Participate in other **SFS activities**, such as weekly individual meetings, monthly group meetings, cyber competitions, conferences and workshops
- Meet other **SFS requirements**, such as signing Service Agreement Forms and maintaining good academic standing.
- SFS scholars are responsible to apply for and obtain a position. Michigan Tech's SFS program will provide assistance to SFS scholars by helping identify employment opportunities.



Eligibility for Scholarship

- United States citizen or lawful permanent resident;
- Meet selection criteria for U.S. federal employment;
 - Internship placements and final job placements in government organizations typically require **high-level security clearances**.
 - Scholarship recipients are required to undergo the background investigation necessary to obtain such clearances. For reference purposes, you can review [the federal SF-86 form-Questionnaire for National Security Positions](#).
- Current or prospective full-time student pursuing cybersecurity degrees at Michigan Tech;
- Have at least a 3.0 undergraduate GPA;



NSF SFS Project Team



Yu Cai, PI
Professor,
Applied Computing



Jean Mayo, co-PI
Professor,
Computer Science



Todd O. Arney, co-PI
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Computer Science



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External Evaluator
Professor, Cognitive
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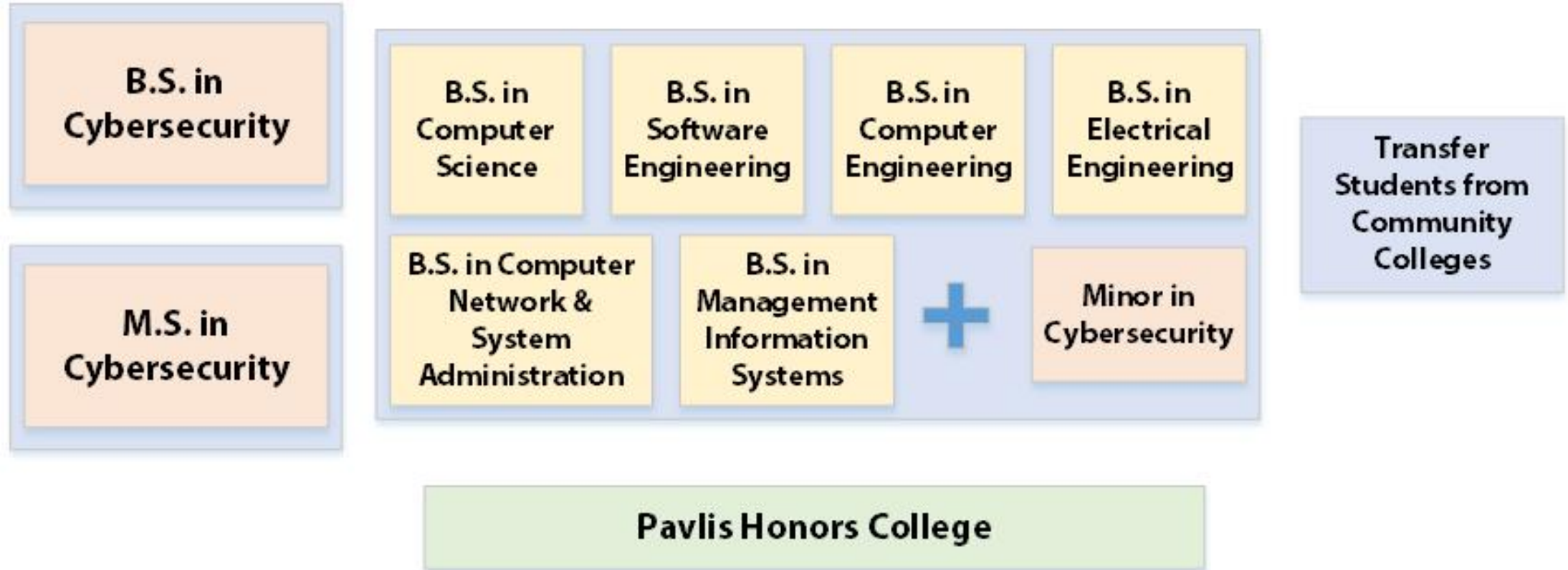


Laura K. Fiss
Senior Personnel
Pavlis Honors
College



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SFS Overview



Curriculum Tracks

- **Track 1) BS in Cybersecurity.**

Students will receive two-year support (junior + senior year) after applying and being selected as an SFS scholar in their sophomore year.

- **Track 2) BS in another participating major + a minor in Cybersecurity.**

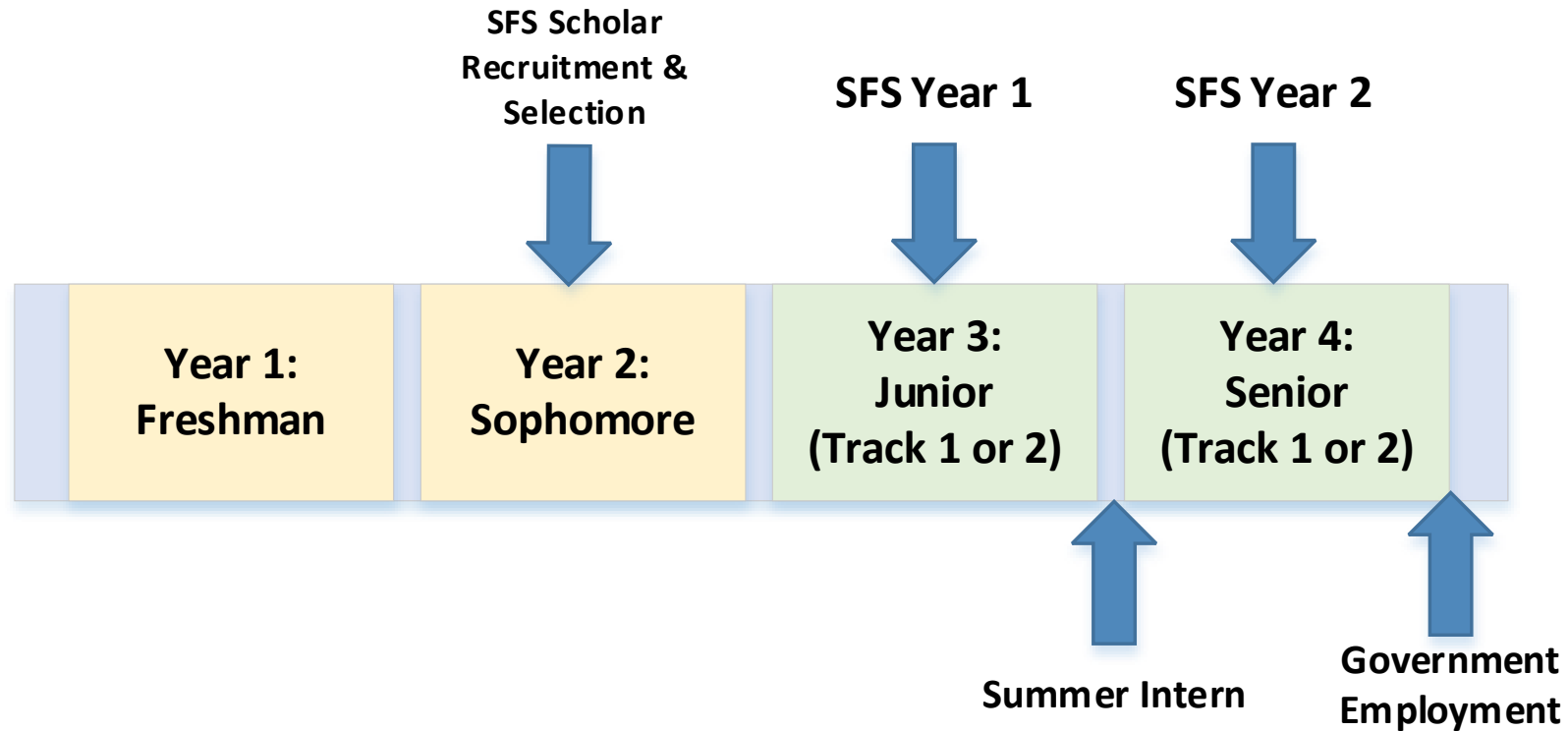
Students in this track will be encouraged to include a cybersecurity component in their capstone project.

Students will receive two-year scholarship support (junior + senior year) after applying and being selected as an SFS scholar in their sophomore year.

The minor in Cybersecurity requires 18 credit hours.



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- Track 1: BS in Cybersecurity (2 year support)
- Track 2: BS in Computing (CNSA, CS, SE, CpE, EE, MIS) + Minor in Cybersecurity (2 year support)



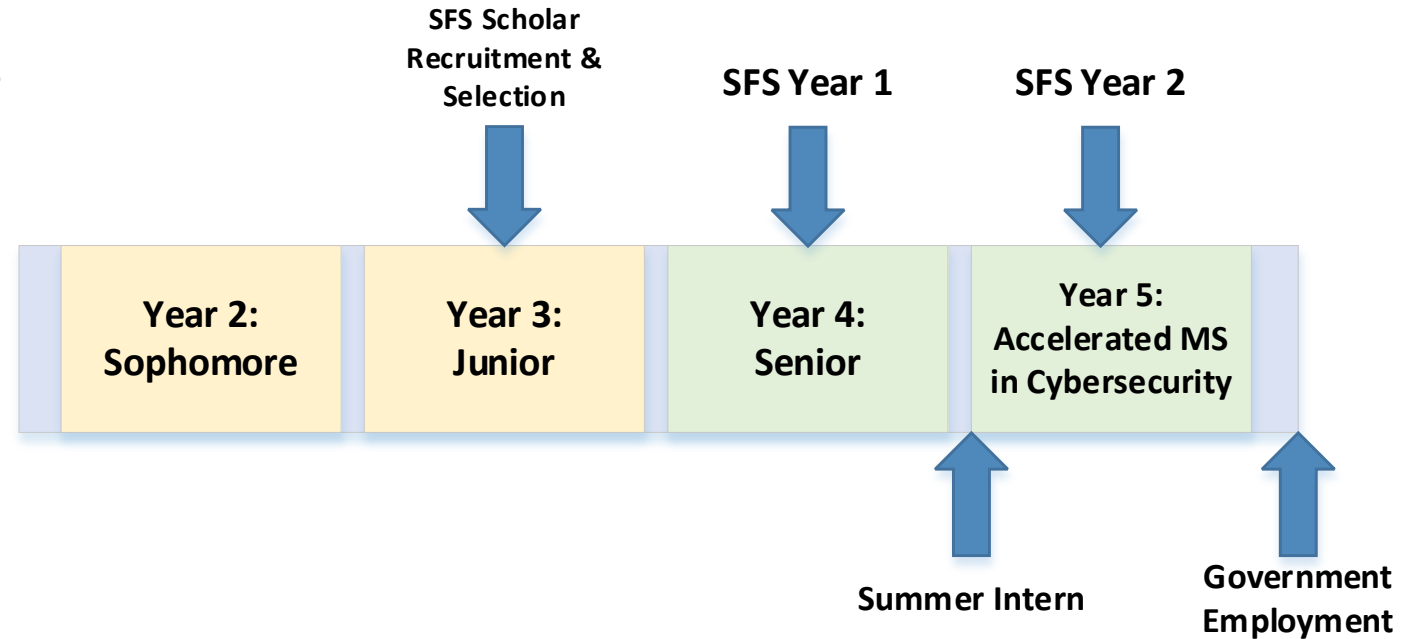
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Curriculum Tracks

- **Track 3) BS in a participating major + an accelerated MS in Cybersecurity.**

Students will receive two-year SFS scholarship support (senior year + one year MS) after applying and being selected in their junior year of undergraduate study.

- BS in Cybersecurity + MS in Cybersecurity can also be finished in 5 years



Track 3: BS (all participating degrees) + Accelerated MS in Cybersecurity (2 year support)

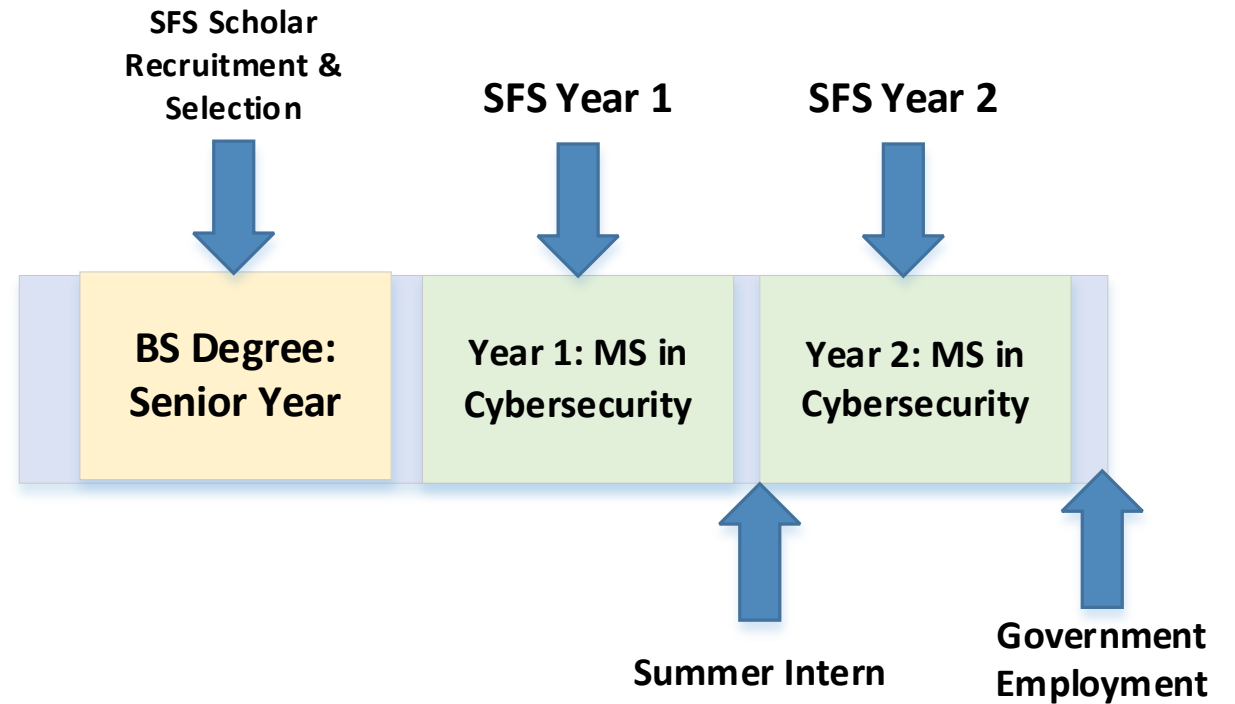


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Curriculum Tracks

- Track 4) Regular MS in Cybersecurity.

Students will receive two-year scholarship support (MS year one + year two) after applying and being selected as an SFS scholar in their senior year.



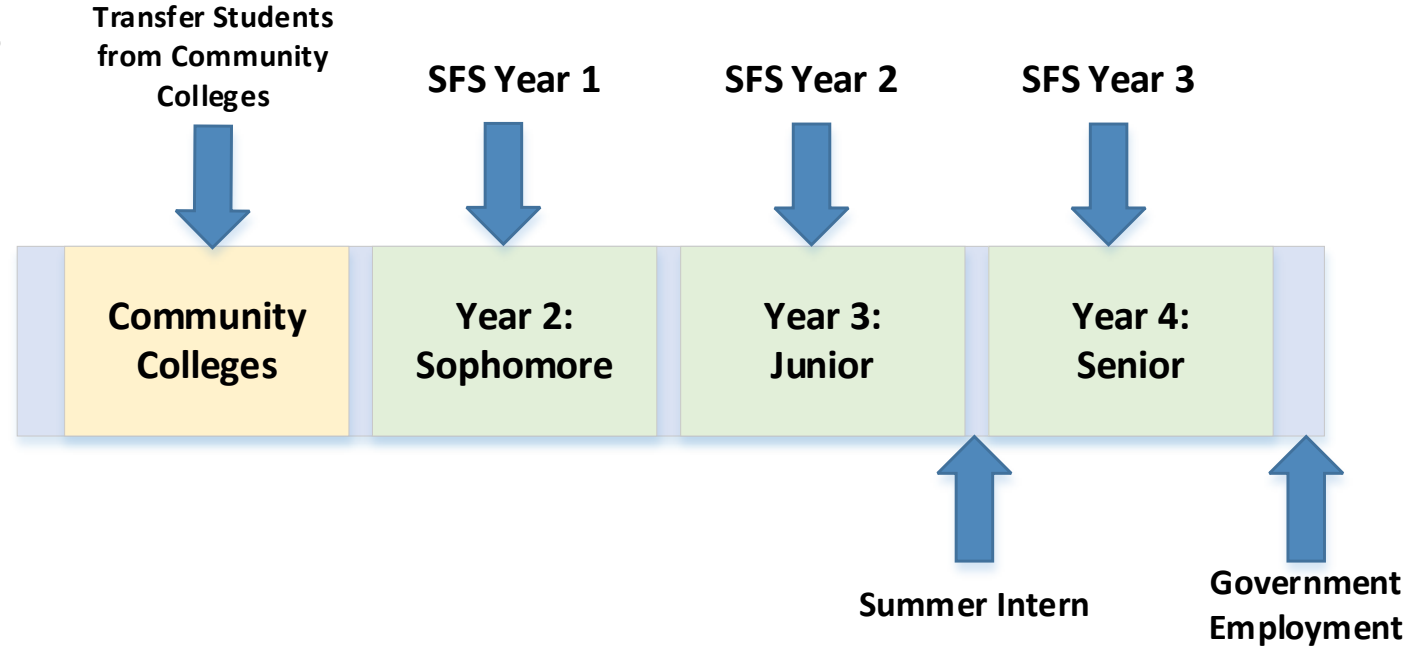
Track 4: Regular MS in Cybersecurity (2 year support)



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Curriculum Tracks

- **Track 5) Transfer students from Community Colleges** can enroll in Track 1 or Track 2. Three-year support (sophomore + junior + senior year) after applying and being selected during their last year at their community college. Most community college transfer students will require three years to complete the degrees after transfer.



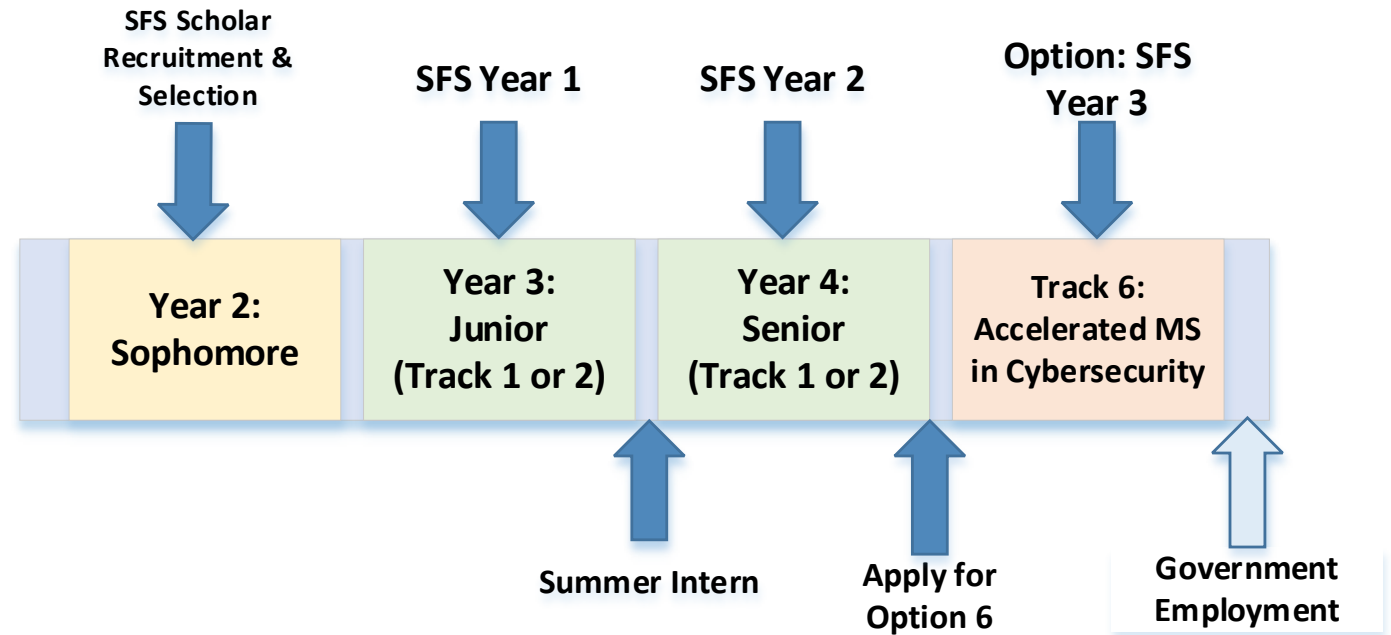
Track 5: Transfer students from community colleges (3 year support)



Curriculum Tracks

- **Track 6) Option for third-year support to pursue an accelerated MS in Cybersecurity.**

Students in Track 1 and Track 2 will have an option of extending to a third year to get an accelerated MS in Cybersecurity.



Track 6: Option of a third-year support for students in Track 1 and 2 (limited opportunities)



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How to Choose a Curriculum Track?

- If you are a sophomore
 - 2 year BS degree in cybersecurity or other computing degrees
 - With an option of third year support for accelerated MS in Cybersecurity
- If you are a junior
 - 2 year BS + accelerated MS in cybersecurity
- If you are a senior
 - 2 year MS in Cybersecurity
- If you are a freshman
 - Join the RedTeam and get yourself prepared



Candidate Selection

- A highly selective process and subject to grant funding availability
 - Four to five students each year for the next four years
- Initial assessment of submitted materials => In-person interview => Background check => Admission into the program => A lot of paperwork =>...
- SFS scholarship recipients are selected based on:
 - Academic performance and potential
 - Essay/video outlining the applicant's objectives as it relates to **cybersecurity** and a career in **government**
 - Resume
 - Letters of recommendation
 - Ability to obtain security clearance
 - Interview



Candidate Selection

- The most important goal for the program:
 - Ensure a 100% graduation rate and a 100% job placement rate.
- What makes you a good candidate for the SFS program?
 - Commitment to complete the SFS program
 - Commitment to government services
 - Commitment to cybersecurity jobs
 - Ability to get high-level security clearance
 - Satisfactory academic performance
 - Technical skills and soft skills (leadership, communication, team work...)



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Application Materials

- Online application form
- Proof of U.S. Citizenship or lawful permanent resident status
- A resume including list of academic recognitions, awards, honors and distinctions received
- Official transcript(s) from all of the colleges and universities attended
- Two letters of recommendation.
 - One letter should come from a faculty member at Michigan Tech, addressing the applicant's academic performance and potential for success. The second letter, preferably **not** from a Michigan Tech faculty member, should address the applicant's character and work ethic.
- A short essay (no more than 2000 words) or a short video (no more than 15 minutes) describing the applicant's:
 - goals and motivations to pursue a career in cybersecurity
 - commitment to the service obligation and understanding of government jobs
 - past achievements and experiences related to cybersecurity
 - leadership, teamwork, and communication skills



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Online Application

- Applicants should submit all of the above items through [the online application portal](#).
- Application Deadline: June 1, 2021



Mentoring Activities

- Each SFS scholar will be assigned a faculty mentor
 - All PI/co-PIs are faculty mentors
- Create a friendly learning community which encourages a give-and-take dynamic
 - SFS scholars, faculty mentors, external advisors, other Pavlis students, RedTeam students
- A list of mentoring activities
 - SFS Introduction Session
 - Personalized Curriculum Plan
 - One-on-one weekly meeting with the assigned mentor
 - Monthly group meetings and coffee chats
 - Professional development workshops



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Mentoring Activities

- A list of mentoring activities
 - Attending security conferences
 - Attending security competitions
 - GenCyber outreach activities
 - Undergraduate research
 - Graduate research



Pavlis Honors College (PHC)

- Founded in 2014, the PHC is home to unique experiential education programs and interdisciplinary initiatives
 - Designed not to add time or cost to graduation, the Honors Pathway Program's curriculum aligns well with the aims of the SFS program
 - The Honors Pathway Program allows students to design their own honors experience, creating a pathway that encourages reflection, deliberate choices, and leadership
 - Website: <https://www.mtu.edu/honors/>



Career Services

- For SFS Scholars
 - Student Professional Portfolios
 - Career Fairs and Internship
 - SFS job fairs: the best place to find jobs and internship
 - Michigan Tech job fairs
 - Career Planning Workshops
 - Connection with alumni
 - One-on-one advising

Speaker: Yu Cai



Undergraduate/Graduate Research

- Undergraduate and graduate SFS scholars are encouraged to work on research projects with their mentors
 - The research projects can be used as capstone design experience or master thesis/report for graduation
- Examples of past projects
 - Vulnerability Assessment of Dynamic Fleets of Drones (Advisor: Yu Cai)
 - Cyber-Physical System (CPS) Security (Advisor: Chee-Wooi Ten)
 - Access Control Visualization (Advisor: Jean Mayo)
 - Security of IoT devices



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Extracurricular Activities

- RedTeam: an on-campus student organization focused on cybersecurity
 - Over 30 student members; meets bi-weekly during the semester
 - Dr. Yu Cai and Dr. Bo Chen are the faculty advisors of the RedTeam
 - SFS scholars will be required to join the RedTeam and actively participate in RedTeam activities



Cybersecurity Competitions

Cybersecurity Competitions	When	Competition Result
National Cyber League (NCL)	Fall 2020	Two teams ranked in top 100 out of 957 teams (22/957, 67/957, respectively) 7 students rank in the top 100 out of 6011 participants
National Cyber League (NCL)	Spring 2020	Three teams ranked in top 100 out of 925 teams. The final Michigan Tech Cyber Power Ranking was #22, by Cyber Skyline based on the NCL performance
Regional Winter Wonderhack	Spring 2020	Hosted by Michigan Tech. 15 Michigan Tech teams (35 students) participated in the CTF competition
CS 4090-Cybersecurity Competitions	Spring 2020	A special topic course in which students learn competition skills and get involved in competition activities
OSINT CTF competition	Spring 2020	RedTeam ranked 13th out of 162 teams in this national 24-hour CTF competition
National Cyber League (NCL)	Fall 2019	RedTeam placed 8th out of 689 teams. The final Michigan Tech Cyber Power Ranking was #11

GenCyber, Summer Youth, and Other Programs

- GenCyber summer camps for K-12 teachers and students
 - Dr. Yu Cai is the camp director
 - SFS scholars will share their testimonials
- Summer Youth Program (SYP) camps on cybersecurity
 - Such as "Stop the Hackers" camp in 2018
- Women in Computer Science (WiCS)
 - Annual summer camp for high school girls
- Google workshops to encourage women in CS



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Professional Cybersecurity Certifications

- We encourage students to obtain cybersecurity certifications.
 - CS 4090, a special topic course on cybersecurity competitions can be used to encourage certifications.
 - RedTeam at Michigan Tech is a great group learning platform.
 - The certification cost will be covered by the professional development fee.



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Professional Cybersecurity Certifications

- Some professional cybersecurity certifications to consider
 - CompTIA Security+
 - Entry level
 - ISC2 CISSP
 - Gold standard, but requires 5 year working experience
 - Associate of ISC2 (by passing the exam)
 - Certified Ethical Hacker (CEH)
 - And many others



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We prepare students to create the future.





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