Bachelor of Science – Cyber Security
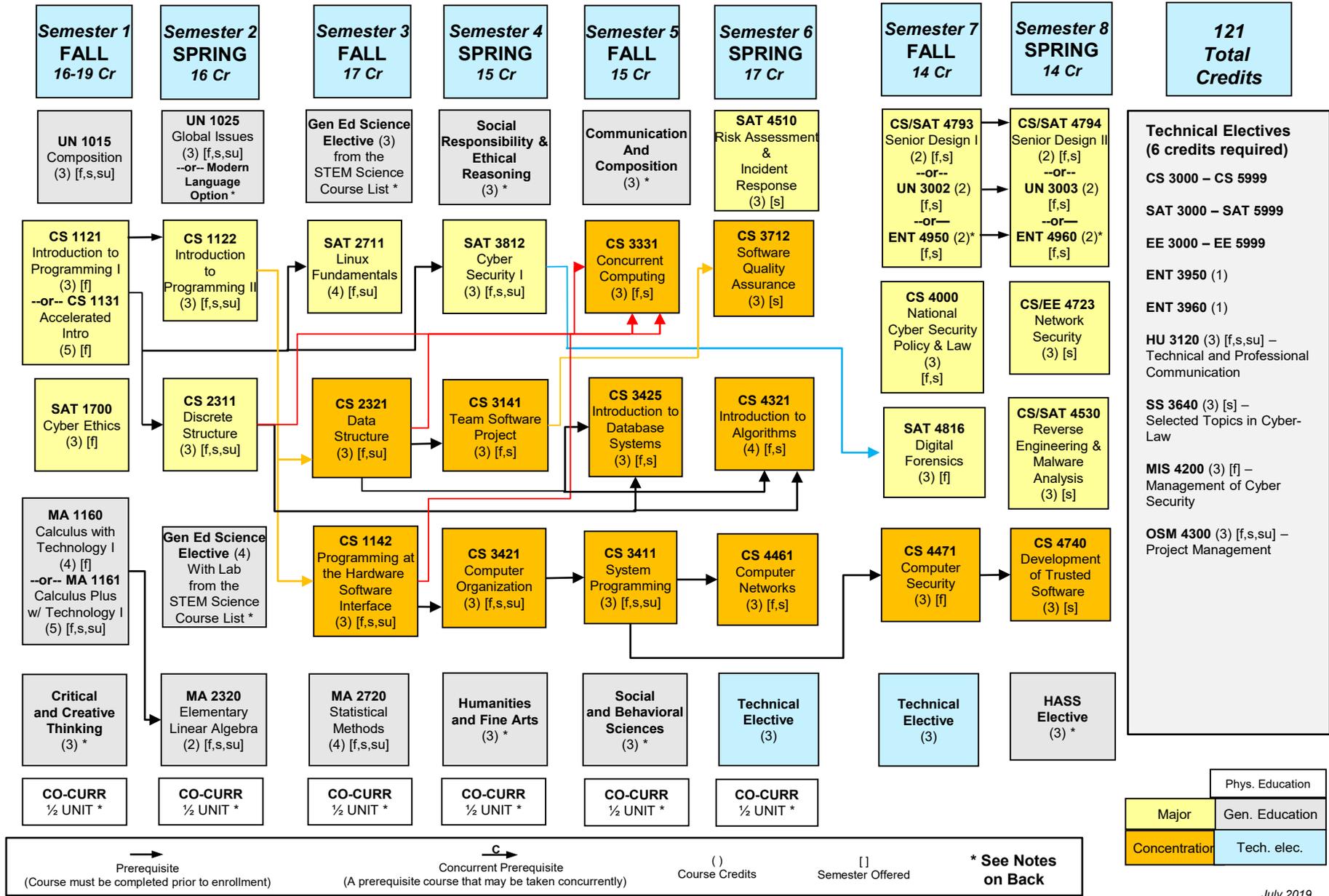## Concentration of Software Security
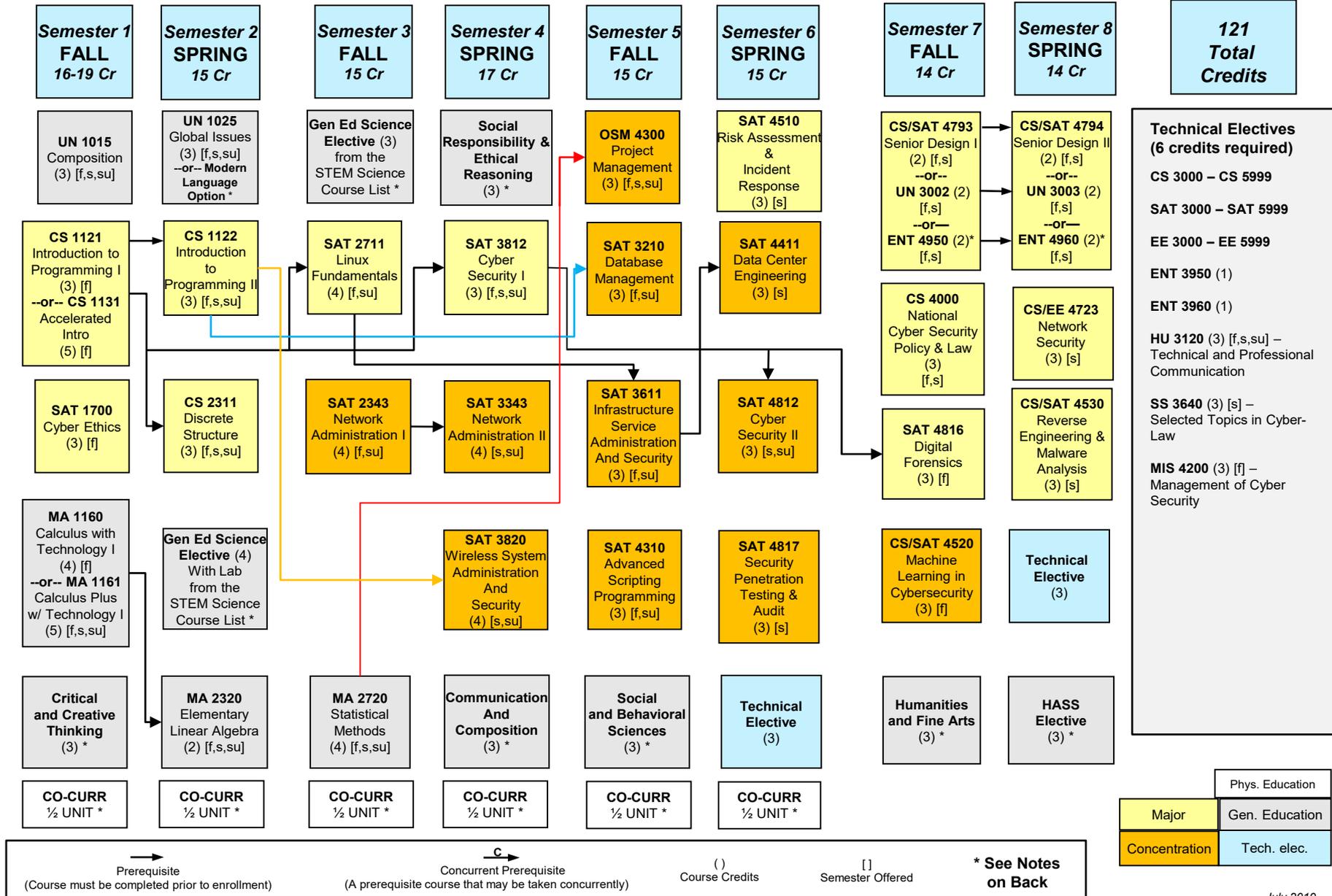*Academic Year 2019-20 – Recommended Course Sequence*

Semester 1 FALL 16-19 Cr	Semester 2 SPRING 16 Cr	Semester 3 FALL 17 Cr	Semester 4 SPRING 15 Cr	Semester 5 FALL 15 Cr	Semester 6 SPRING 17 Cr	Semester 7 FALL 14 Cr	Semester 8 SPRING 14 Cr	121 Total Credits
UN 1015 Composition (3) [f,s,su]	UN 1025 Global Issues (3) [f,s,su] --or-- Modern Language Option *	Gen Ed Science Elective (3) from the STEM Science Course List *	Social Responsibility & Ethical Reasoning (3) *	Communication And Composition (3) *	SAT 4510 Risk Assessment & Incident Response (3) [s]	CS/SAT 4793 Senior Design I (2) [f,s] --or-- UN 3002 (2) [f,s] --or-- ENT 4950 (2)* [f,s]	CS/SAT 4794 Senior Design II (2) [f,s] --or-- UN 3003 (2) [f,s] --or— ENT 4960 (2)* [f,s]	**Technical Electives (6 credits required)**
CS 1121 Introduction to Programming I (3) [f] --or-- CS 1131 Accelerated Intro (5) [f]	CS 1122 Introduction to Programming II (3) [f,s,su]	SAT 2711 Linux Fundamentals (4) [f,su]	SAT 3812 Cyber Security I (3) [f,s,su]	CS 3331 Concurrent Computing (3) [f,s]	CS 3712 Software Quality Assurance (3) [s]	CS 4000 National Cyber Security Policy & Law (3) [f,s]	CS/EE 4723 Network Security (3) [s]	CS 3000 – CS 5999
SAT 1700 Cyber Ethics (3) [f]	CS 2311 Discrete Structure (3) [f,s,su]	CS 2321 Data Structure (3) [f,su]	CS 3141 Team Software Project (3) [f,s]	CS 3425 Introduction to Database Systems (3) [f,s]	CS 4321 Introduction to Algorithms (4) [f,s]	SAT 4816 Digital Forensics (3) [f]	CS/SAT 4530 Reverse Engineering & Malware Analysis (3) [s]	SAT 3000 – SAT 5999 EE 3000 – EE 5999 ENT 3950 (1) ENT 3960 (1) HU 3120 (3) [f,s,su] – Technical and Professional Communication SS 3640 (3) [s] – Selected Topics in Cyber-Law MIS 4200 (3) [f] – Management of Cyber Security OSM 4300 (3) [f,s,su] – Project Management
MA 1160 Calculus with Technology I (4) [f] --or-- MA 1161 Calculus Plus w/ Technology I (5) [f,s,su]	Gen Ed Science Elective (4) With Lab from the STEM Science Course List *	CS 1142 Programming at the Hardware Software Interface (3) [f,s,su]	CS 3421 Computer Organization (3) [f,s,su]	CS 3411 System Programming (3) [f,s,su]	CS 4461 Computer Networks (3) [f,s]	CS 4471 Computer Security (3) [f]	CS 4740 Development of Trusted Software (3) [s]	
Critical and Creative Thinking (3) *	MA 2320 Elementary Linear Algebra (2) [f,s,su]	MA 2720 Statistical Methods (4) [f,s,su]	Humanities and Fine Arts (3) *	Social and Behavioral Sciences (3) *	Technical Elective (3)	Technical Elective (3)	HASS Elective (3) *	
CO-CURR ½ UNIT *	CO-CURR ½ UNIT *	CO-CURR ½ UNIT *	CO-CURR ½ UNIT *	CO-CURR ½ UNIT *	CO-CURR ½ UNIT *			

Legend:
- → Prerequisite (Course must be completed prior to enrollment)
- →c Concurrent Prerequisite (A prerequisite course that may be taken concurrently)
- ( ) Course Credits
- [ ] Semester Offered
- *** See Notes on Back**

	Phys. Education
Major	Gen. Education
Concentration	Tech. elec.

July 2019

Bachelor of Science – Cyber Security
Concentration of System and Network Security
Academic Year 2019-20 – Recommended Course Sequence

Semester 1 FALL 16-19 Cr	Semester 2 SPRING 15 Cr	Semester 3 FALL 15 Cr	Semester 4 SPRING 17 Cr	Semester 5 FALL 15 Cr	Semester 6 SPRING 15 Cr	Semester 7 FALL 14 Cr	Semester 8 SPRING 14 Cr	121 Total Credits
UN 1015 Composition (3) [f,s,su]	UN 1025 Global Issues (3) [f,s,su] --or-- Modern Language Option *	Gen Ed Science Elective (3) from the STEM Science Course List *	Social Responsibility & Ethical Reasoning (3) *	OSM 4300 Project Management (3) [f,s,su]	SAT 4510 Risk Assessment & Incident Response (3) [s]	CS/SAT 4793 Senior Design I (2) [f,s] --or-- UN 3002 (2) [f,s] --or— ENT 4950 (2)* [f,s]	CS/SAT 4794 Senior Design II (2) [f,s] --or-- UN 3003 (2) [f,s] --or— ENT 4960 (2)* [f,s]	**Technical Electives (6 credits required)** CS 3000 – CS 5999 SAT 3000 – SAT 5999 EE 3000 – EE 5999 ENT 3950 (1) ENT 3960 (1) HU 3120 (3) [f,s,su] – Technical and Professional Communication SS 3640 (3) [s] – Selected Topics in Cyber-Law MIS 4200 (3) [f] – Management of Cyber Security
CS 1121 Introduction to Programming I (3) [f] --or-- CS 1131 Accelerated Intro (5) [f]	CS 1122 Introduction to Programming II (3) [f,s,su]	SAT 2711 Linux Fundamentals (4) [f,su]	SAT 3812 Cyber Security I (3) [f,s,su]	SAT 3210 Database Management (3) [f,su]	SAT 4411 Data Center Engineering (3) [s]	CS 4000 National Cyber Security Policy & Law (3) [f,s]	CS/EE 4723 Network Security (3) [s]	
SAT 1700 Cyber Ethics (3) [f]	CS 2311 Discrete Structure (3) [f,s,su]	SAT 2343 Network Administration I (4) [f,su]	SAT 3343 Network Administration II (4) [s,su]	SAT 3611 Infrastructure Service Administration And Security (3) [f,su]	SAT 4812 Cyber Security II (3) [s,su]	SAT 4816 Digital Forensics (3) [f]	CS/SAT 4530 Reverse Engineering & Malware Analysis (3) [s]	
MA 1160 Calculus with Technology I (4) [f] --or-- MA 1161 Calculus Plus w/ Technology I (5) [f,s,su]	Gen Ed Science Elective (4) With Lab from the STEM Science Course List *	SAT 3820 Wireless System Administration And Security (4) [s,su]	SAT 4310 Advanced Scripting Programming (3) [f,su]	SAT 4817 Security Penetration Testing & Audit (3) [s]	CS/SAT 4520 Machine Learning in Cybersecurity (3) [f]	Technical Elective (3)		
Critical and Creative Thinking (3) *	MA 2320 Elementary Linear Algebra (2) [f,s,su]	MA 2720 Statistical Methods (4) [f,s,su]	Communication And Composition (3) *	Social and Behavioral Sciences (3) *	Technical Elective (3)	Humanities and Fine Arts (3) *	HASS Elective (3) *	
CO-CURR ½ UNIT *	CO-CURR ½ UNIT *	CO-CURR ½ UNIT *	CO-CURR ½ UNIT *	CO-CURR ½ UNIT *	CO-CURR ½ UNIT *			

		Phys. Education
Major		Gen. Education
Concentration		Tech. elec.

Prerequisite (Course must be completed prior to enrollment)
Concurrent Prerequisite (A prerequisite course that may be taken concurrently)
( ) Course Credits
[ ] Semester Offered
* See Notes on Back

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1. ***General Education Requirements:*** 24 total credits. Required courses: UN 1015-Composition (3 credits); UN 1025-Global Issues (3 credits); Critical and Creative Thinking (3 credits); Social Responsibility & Ethical Reasoning (3 credits); and 12 HASS credits. Approved lists are linked on the College of Computing's "Advising" web page. **https://www.mtu.edu/registrar/201920/core-and-hass-list-19-20v2.pdf**

2. ***UN 1025 Global Issues Language Option:*** 3 credits of 3000-level or higher modern language may be substituted directly for UN 1025. **Any students with previous language experience in Spanish, French, German, or Mandarin must take the Modern Language Online Placement Test.**

3. ***HASS (Humanities, Arts, & Social Sciences):*** 12 total credits that include a minimum of 3 credits each in: Communication/Composition, Humanities/Fine Arts, and Social & Behavioral Sciences. Approved lists are linked on the College of Computing's "Advising" web page. **https://www.mtu.edu/registrar/201920/core-and-hass-list-19-20v2.pdf Six (6) credits must be 3000 level or higher (does not include HU 3120). HU 3120 is not a HASS course for CNSA students, but still is a degree requirement.** No more than 3 credits may be used from the HASS Restricted List. All 3000-level or higher HASS courses require UN 1015 and UN 1025 as prerequisites.

4. ***Science Elective (STEM):*** **https://www.mtu.edu/registrar/pdfs/stem-requirements19-20.pdf**

5. ***Math:*** Math placement is based on ACT/SAT math score. Students have the option to take the ALEKS placement test in place of the ACT/SAT placement. For more information, see: **https://www.mtu.edu/math/undergraduate/placement/**

6. ***Free Electives:*** Any Michigan Tech course(s) or approved transfer course(s) that are 1000-level or above, and are not duplicated or equivalent courses.

7. ***Co-curricular Activities:*** Mainly physical education courses with some additions. Three units (or six half units) are required for graduation. These units will be included as earned hours and may be used to determine full-time enrollment status. These are in addition to the total credits required for the degree. A co-curricular list is linked on the College of Computing's "Advising" web page. These units are graded pass/fail and are not included in credit hours used for calculation of any grade point averages (cumulative or departmental).

8. ***Pre-requisite*** courses are noted by a plain arrow. The pre-requisite course must be successfully completed **prior** to taking the subsequent course.

9. ***Concurrent Pre-requisites*** are noted by a **'C'** by the arrow and may be taken at the same time, although it is not necessary to take these courses together if the pre-requisite course is completed first.

10. ***Co-requisite*** courses are courses that <u>must</u> be taken together in the same semester.

11. ***Transfer, Advanced Placement, or Study Abroad Courses*** are not included in credit hours used for GPA calculations. Transfer credit is awarded for Michigan Tech equivalent course work only if a grade of 'C' or better (2.00/4.00) or equivalent is earned at a transfer institution. Study abroad credit will be awarded by International Programs and Services based on passing a course according to equivalent international standards. Advanced Placement credit is awarded according to published AP Exam score standards.

This flow chart is not an official list of degree requirements. Adjustments may be required due to curriculum changes.

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