Bachelor of Science in Computer Science
Software Design & Development Track (effective 01/01/2020)

MAC 2311* Calculus I (4 credits)
MAC 2312* Calculus II (4 credits)
PHY 2048/2048L Physics w/Calculus I (5 credits)
PHY 2049/2049L Physics w/Calculus II (5 credits)
CDA 3102 Computer Architecture
COP 4510 Operating Systems
COP 2210* Programming I (4 credits)
CGS 1920 Introduction To Computing (1 credit)
ENC 3249* or ENC 3213* Professional & Technical Writing (GRW)

COT 3100* Discrete Structures
MAD 2104* Discrete Math

STA 3033 Probability & Statistics

All courses are 3 credits, except as noted.

CS Electives (7 courses): Must take at least one course from Foundations group and one from Systems group. Remaining five elective courses must be taken from these elective groups (most electives are 3 credits).

**Foundations**
- CAP 4506-Intro to Game Theory (Prereq: MAC2312)
- COP 4534-Algorithm Techniques (Prereq: COP3530)
- COP 4555-Programming Languages (Prereq: COP3530)
- COT 3541-Logic for CS (Prereq: COT3100 & COT3103)
- COT 3521-Intro to Computational Geometry (Prereq: COP3530)
- MAD 3305-Graph Theory (Prereq: COP2210, MAD2104)
- MAD 3401-Numerical Analysis (Prereq: COP2210, MAC2312)
- MAD 3512-Theory of Algorithms (Prereq: COP3530)
- MAD 4203-Combinatorics (Prereq: MAD2014, MAC2312)
- MTH 4302-Math Logic (Prereq: MAD3512)

**Systems**
- CAP 4453-Robot Vision (Prereq: COP3530, MAC2312)
- CDA 4625-Intro to Mobile Robotics (Prereq: COP3530, STA3033)
- CEN 4072-Software Testing
- COP 3337 Programming II
- COP 4338 Systems Programming
- CEN 4021 Software Engineering II
- CEN 4010 Senior Project
- CAP 4710-Computer Graphics (Prereq: COP3337, MAC2312)
- CAP 4710-Computer Graphics (Prereq: COP3337, MAC2312)
- CAP 4770-Intro to Data Mining (Prereq: COP3530, Co-req: COP4710)
- COP 4226-Advanced Windows Program (Prereq: COP3530)

**Applications**
- CAP 4104-Human Cmtr Interaction (Prereq: COP3337)
- CAP 4612-Introduction to Machine Learning (Prereq: COP3530, STA3033)
- CAP 4630-Artificial Intelligence (Prereq: COP3530)
- CAP 4641-Nat Lang Processing (Prereq: COP3530)
- CEN 4083-Cloud Computing (Prereq: CNT4713 and (CDA3102 or CDA4101))
- COP 4710-Intro to Parallel Computing (Prereq: COP4338 and (CDA3102 or CDA4101))
- COP 4720-Intro to Database Systems (Prereq: COP3530)
- COP 4722-Survey of Database Systems (Prereq: COP4710)
- CEN 4083-Cloud Computing (Prereq: CNT4713 and (CDA3102 or CDA4101))
- COP 4710-Intro to Parallel Computing (Prereq: COP4338 and (CDA3102 or CDA4101))
- COP 4720-Intro to Database Systems (Prereq: COP3530)
- COP 4722-Survey of Database Systems (Prereq: COP4710)
- CTS 4408-Database Administration (Prereq: COP4710)
- CEN 4083-Cloud Computing (Prereq: CNT4713 and (CDA3102 or CDA4101))

* Prerequisites:
  - ENC3249/ENC3213: UCC English requirements
  - MAC2311: MAC1147
  - COT3100 & MAD2104: MAC1105
  - COP2210: MAC1140 or higher level math course

A diamond indicates a co-requisite. The course closer to the diamond may be taken at the same time as the co-requisite. The co-requisite is a prerequisite for any course that requires the course closer to the diamond.

A direction line indicates a prerequisite. The course above must be completed before the course below can be taken.

Natural Science electives: lab not needed unless required by offering dept.