# Computer Engineering
## Technial Electives
## Degree Total: 3-19 credits

| Course Number | Course Title | Credits | Prerequisites | Terms |
|---|---|---|---|---|
| CS/IDEA 310H | Design Thinking Toolbox: Mixed Reality Design | 3 | CS214 with a C or higher or CS253 with a C or higher or IDEA210 | F, Even |
| CS 314 | Software Engineering | 3 | CS214 with a C or higher or CS253 with a C or higher | F, S |
| CS 320 | Algorithms--Theory and Practice | 3 | CS165 with a C or higher; CS220 with a C or higher;  MATH160 with a C or higher; MATH229 with a C or higher or DSCI369 with a C or higher or MATH369 with a C or higher | F, S |
| CS 345 | Machine Learning Foundations and Practice | 3 | CS220 with a C or higher; CS150B with a C or higher or CS152 with a C or higher or CS165 with a C or higher; MATH159 with a C or higher or MATH160 with a C or higher; ECE303/STAT 303 with a C or higher | F, S |
| CS 356 | Systems Security | 3 | CS214 with a C or higher or CS253 with a C or higher or CS370 with a C or higher | F, S |
| CS 370 | Operating Systems | 3 | CS165 with a C or higher; ECE251 with a C or higher | F, S |
| CS 4XX | Any CS course at the 400 level **except CS457 and CS470** | 4 | Varies - check course description for details | F, S, SS |
| CS 5XX | Any CS course at the 500 level | 4 | Varies - check course description for details | F, S |
| DSCI 475 | Topological Data Analysis | 2 | MATH369 or DSCI369 | S |
| ECE 340 | Electromagnetics for Computer Engineering | 3 | ECE202 with a C or higher; MATH161 with a C or higher | F |
| ECE 4XX | Any ECE course at the 400 level | 3-4 | Varies - check course description for details | F, S |
| ECE 495[1] | Independent Study | 1-3 | | F, S, SS |
| ECE 5XX | Any ECE course at the 500 level except **ECE532** | 3-4 | Varies - check course description for details | F, S |
| ENGR 478 | Applied Engineering Data Analytics | 3 | ECE102 | S |
| MATH 360 | Mathematics of Information Security | 3 | MATH161; MATH229 or DSCI369 or MATH369 | F |
| MATH 450 | Intro to Numerical Analysis I | 3 | CS150B or CS152 or CS163 or CS164 or CS165 or CS253 or MATH151;  MATH 261 | F |
| MATH 451 | Intro to Numerical Analysis II | 3 | CS150B or CS152 or CS163 or CS164 or CS165 or CS253 or MATH151; MATH340 or MATH345 | S |
| MATH 460 | Information and Coding Theory | 3 | MATH360 or MATH366; DSCI369 or MATH369 | S |
| MATH 463 | Post-Quantum Cryptography | 3 | MATH360 or MATH366 or MATH466; DSCI369 or MATH369 or MATH469 | S, Odd |
| MECH 564[2] | Fundamentals of Robot Mechanics & Controls | 3 | MECH 417 (will substitute ECE411 and ECE455 - must take both) | S |
| STAT 421 | Introduction to Stochastic Processes | 3 | MATH229 or MATH369; STAT420 (will substitute ECE303/STAT303 for STAT420) | S |

[1] A total of 6 credits of Independent Study may apply towards degree requirements. This includes credits awarded for ECE395 and ECE495 combined.

[2] Override rquired - Must have a minimum 3.0 gpa or higher or consent of instructor.