

CNC Manufacturing and 3D-Modeling Concentration (ETCA)

Certificate in Engineering Systems Technology (CERT_ETST)

Knight Campus, Warwick only

To enroll in this certificate program, students must have successfully completed the Introduction to CNC Manufacturing concentration (ETCI). See [Introduction to CNC Manufacturing Concentration](#) for more information.

Today modern manufacturing depends upon the use of computers, robots, CNC and 3D-printing technology and digital technology and PLCs. This program builds on the basic skills and knowledge developed in the Introduction to CNC Manufacturing certificate (ETCI). The certificate will increase CNC programming skills and introduce the concepts of rapid prototyping, digital direct manufacturing and the use of 3D-laser scanning and 3D-printing. The courses will make extensive use of 3D-modeling with SolidWorks, tool control with G and M codes and MasterCam. Students will also develop a basic understanding of digital systems and the programming of PLCs. The final course is a capstone course, requiring 140 hours of an industry practicum or internship.

The certificate can be completed in one spring semester, or one fall and one spring semester. The accelerated one-spring semester version requires attending classes four days a week. The combination of the two certificates, ETCI and ETCA, can be applied toward the Engineering Systems Technology A.S. degree without a loss of credit.

Note: Many courses require prerequisites, corequisites and/or testing. [See course descriptions for details.](#)

RECOMMENDED COURSE SEQUENCE (accelerated version)

- Spring semester: ETCN 2100, 2200, 2300, 2500; ETEE 1800

Certificate Requirements

COURSE NO.	COURSE TITLE	COURSE NOTES	CREDITS
ETEE 1800	Introduction to Digital Systems		3
ETCN 2300	3D-Modeling and Prototyping		3
ETCN 2100	Computer Aided Manufacturing	Seven-and-a-half week course	3
ETCN 2200	CNC Machining II	Seven-and-a-half week course	3
ETCN 2500	Computer Numerical Control (CNC) Practicum/Capstone		4
Total Certificate Requirements Credits			16
Total Program Credits			16