

Comparing Central Connecticut State University's technology education curriculum to requirements at other colleges

I compared our program to the bachelor's degree programs offered at the eleven closest U.S. colleges offering undergraduate degrees in technology education (I originally planned to include the ten closest, but since California University and Old Dominion are practically the same distance from CCSU, I included both).

colleges included				colleges excluded			
mi. from CCSU		mi. from CCSU					
Fitchburg State Coll. (MA)	100	SUNY / Oswego	295	<i>Master's only:</i> Hofstra (NY)			
Rhode Island College	106	U. Maryland - Eastern Shore	352	<i>New program, curriculum not yet posted:</i> NJ Institute of Tech/Rutgers			
City University of NY	112	Buffalo State College (NY)	409	<i>Program suspended:</i> U. Southern Maine			
College of St. Rose / HVCC	128	Old Dominion U. (VA)	473	<i>No longer offering TE:</i> Keene State (NH);			
College of New Jersey	172	California University of PA	473	Montclair State (NJ); Kean U. (NJ);			
Millersville U. of PA	278			James Madison (VA); Norfolk State (VA)			

In most respects, the **overall graduation requirements** of Central's program were in line with those of the other universities. The exception is that CCSU's Bachelor of Science degrees in education require a minimum of 130 credit hours; the next-highest requirement was 128 hours.

	credits required by type			total credits required
	technical	professional	general ed.	
maximum	48	51	59	130
CCSU	45	36	49	130
median	41	30	54	123
minimum	33	24	41	120

The **math and science requirements** of CCSU's program also fell between the extremes. Two programs require calculus—TCNJ, for instance, requires not only calculus, but three additional calculus-based courses— while two require no more than the minimum to graduate from their respective universities. CCSU is one of two programs to require students to take a statistics course. Given the focus on data-driven decision-making in today's public schools, this number seems likely to increase.

	math / science required (cr.)	level of math required
maximum	17	calculus
CCSU	12	trigonometry
median	12	
minimum	9	algebra

Professional-education requirements were also varied; the University of Maryland–Eastern Shore program requires 51 hours in education; CCSU requires the second-most, 36 hours. Most colleges, including CCSU, require 12 credit hours of student teaching. Technology education graduates from CCSU graduate with more professional-education coursework than all but one other program, yet take three credits less of TE-specific methods than average.

	credits in professional classes		credits of student teaching	total professional-education credits required
	taught within TE department	taught by other education departments		
maximum	18	27	12	51
CCSU	9	15	12	36
median	12	8	12	30
minimum	4	0	6	24

While these differences may seem substantial, all twelve of the programs reviewed here are currently accredited by NCATE (the National Council for Accreditation of Teacher Education), and each program is licensed by its respective state to prepare teachers.

Next, I classified the required, **lab-based technical** courses at the twelve universities based on their official catalog descriptions. This is a subjective process, but I tried to be consistent.

Several reasons account for the differences among programs, including

- The **level of certification** offered. Nine of these universities are in states which certify technology teachers for grades K-12; the programs at Fitchburg, Old Dominion, and the University of Maryland–Eastern Shore lead to secondary certification only.
- **Administration of the program.** Half of the programs are housed within schools or departments of education; the others are in schools of technology or engineering.

Even without these organizational differences, each of the programs would have a unique character. During the 1980s and 1990s, TE programs increasingly based their curricula on “systems” courses related to the major economic industries (construction, communication, etc.). In 1995, for example, systems courses accounted for half of the technical courses in CCSU’s program. Now, Central is one of four programs (the others are Fitchburg, Oswego, and the College of New Jersey) in which systems courses account for about a third of the technical course requirements.

In terms of newer course offerings, CCSU is one of seven programs requiring coursework in engineering materials. On the other hand, nine colleges require courses in energy systems (separate from transportation systems, electricity/electronics, or power mechanics classes) and three require bio-related technology. CCSU does not currently require either course.

Like most programs, Central no longer requires certain traditional courses. For example, of these twelve programs, only Oswego requires a course on internal-combustion engines; only Millersville requires a print-based graphic arts course; and only Oswego requires a plastics class.

Old Dominion, Millersville, and CCSU each specify 42 technical course credits (fourteen courses) required of technology education graduates. Six programs require students to select one, two, or three technical electives; CCSU does not have this requirement.

Overall, CCSU requires five more technical credits than does the average program. ♦ draft / P. Foster / May 2009

	n requiring	credits required			CCSU course
		minimum	CCSU	maximum	
design / drafting	12	6	9	10.5	115, 121, 221
electronics	10		3	6	223
power (engines)	1		0	3	
print media	1		0	3	
automation / robotics	4		3	3	417
engineering materials / princ.	7	3	6	6	150, 241
senior project	2		3	3	498
material processing tot.	10		6	1.5	
<i>fibrous</i>	3		3	3	215
<i>metallic</i>	4		3	3	216
<i>plastic</i>	1		0	3	
<i>combination</i>	7		0	4	
systems courses total	12	12	12	21	
<i>construction / arch.des.</i>	12	3	3	6	445
<i>transportation/control</i>	10		3	3	330
<i>energy</i>	9		0	3	
<i>communications / info</i>	11		3	6	310
<i>manufacturing</i>	9		0	6	
<i>bio-related</i>	3		0	3	
<i>general</i>	8		3	6	110
required tech electives	6		0	9	
lab / methods hybrid	2		3	3	155
total specified lab courses not incl. lab/method hybrids or electives		30	42	42	
total technical credits		33	45	48	

The Technology and Engineering Education program at Central Connecticut State University offers programs leading to K-12 teacher certification in Connecticut, including programs for college graduates. For more information, visit www.teched.ccsu.edu, call 860-832-1850, or write James DeLaura, chair, Technology and Engineering Education, CCSU, New Britain, CT 06050.