

## CIT Engineering III Curriculum Map

Month	Days	Description	Labs	Engineering Tech Standards
<b>Unit I - CTSO formation</b>				
Aug	1	CTSO officer elections and program of work decisions		6.3
	2	CTSO parliamentary procedures - making trail mix	x	6.3
	3	CTSO product development brainstorm	x	2.1, 2.2, 2.3, 2.4, 6.3
	4-5	CTSO prototype products	x	2.4, 2.5, 2.6, 2.7
	6	CTSO pitch product and determine cost of products		7.1
	7	CTSO begin sales planning, target goals and purchases with profits		1.2
	<b>Unit II - CTSO project proposal</b>			
Sept	1	CTSO brainstorm and project goal - CTSO chooses a project for the class to pursue. Create goals and evaluation tool for project (rubric).		1.4, 2.1, 2.2
	2	Brainstorm and research for chosen project		2.3, 2.4, 6.3
	3	Pitch idea solution and design project idea	x	2.4, 6.3
	4-10	Prototype development, testing, and reiterations	x	2.4, 2.5, 2.6, 2.7
	11-14	Testing and analysis of product solution	x	2.7, 2.8
	15	Evaluate project	x	2.7, 2.8, 6.1, 6.2, 6.3
	16	CTSO engineer interview		1.3
<b>Unit III - VEX Robotics</b>				
Oct	1	Introduce VEX robotics kits. Organization of kits and accounting for parts.		1.3
	2-4	Create clawbot from given directions	x	
		CTSO tour of NACET, ETM and NAU		1.3
	5	Present challenge #1 - brainstorm ideas to modify robot	x	2.1, 2.2, 2.3, 2.4
	6-7	Iterate, test, and problem solve robot to meet competition requirements and goals	x	2.4, 2.5, 2.6, 2.7
	8	Compete in challenge #1	x	2.7, 2.8
	9	Present challenge #2 - brainstorm ideas to modify robot	x	2.1, 2.2, 2.3, 2.4
	10-12	Iterate, test, and problem solve robot to meet competition requirements and goals	x	2.4, 2.5, 2.6, 2.7
	13	Compete in challenge #2	x	2.7, 2.8
	14	Code robot to move servos and motors autonomously	x	
	15	Practice coding robot	x	2.4, 2.5, 2.6, 2.7
	16	Present challenge #2 - brainstorm ideas to modify robot	x	2.1, 2.2, 2.3, 2.4
		CTSO SkillsUSA fall leadership conference		1.3, 1.4
17-21	Iterate, test, and problem solve robot to meet competition requirements and goals	x	2.4, 2.5, 2.6, 2.7	
22	Compete in challenge #2	x	2.7, 2.8	
<b>Unit IV - Marble Roller Coaster 2.0</b>				
	1	Introduce marble roller coaster 2.0 (criteria and constraints) - aesthetics is key!		2.1, 2.2, 2.3
	2	Brainstorm roller coaster supports and track. Propose ideas.		2.3, 2.4
	3-5	Prototype track development, test, analyze, iterate	x	2.4, 2.5, 2.6, 2.7

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	6	Evaluate track design	x	2.7, 2.8
	7	Brainstorm roller coaster obstacles/events. Propose ideas.	x	2.3, 2.4
Nov	8-10	Prototype obstacle/events, test, analyze, iterate	x	2.4, 2.5, 2.6, 2.7
	11	Evaluate obstacle/events	x	2.7, 2.8
	12	Brainstorm roller coaster lift mechanism. Propose ideas.	x	2.3, 2.4
	13-17	Prototype lift mechanism, test, analyze, iterate.	x	2.4, 2.5, 2.6, 2.7
	18	Evaluate lift mechanism	x	2.7, 2.8
		CTSO annual cardboard boat competition organizing and judging		
	19-20	Assemble entire roller coaster, test, analyze, iterate.	x	2.4, 2.5, 2.6, 2.7
	21	Evaluate roller coaster	x	2.7, 2.8
<b>Unit V - Mini Capstone</b>				
	1	Choose problem to solve. Brainstorm solutions		2.1, 2.2, 2.3, 2.4, 6.3
		CTSO sales and fundraising		
	2	Propose solution to problem to client. Create a project management timetable. Design idea.	x	2.4, 6.3, 7.1, 7.2, 7.3
	3	Research background and science concepts that underly the problem or solution.	x	2.3
Dec	4-11	Prototype, test, analyze, iterate solution.	x	2.4, 2.5, 2.6, 2.7, 2.8
	12	Present solution, research, and iterative process		6.3, 7.5
		CTSO social event #1		
<b>Unit VI - Capstone</b>				
Jan	1-2	Choose problem to solve. Brainstorm solutions		1.4
	3-5	Research problem, background, science and possible solutions		2.1, 2.2, 2.3
	6	Break down project into smaller units. Create a project management timeline (GANTT chart)		7.1, 7.2, 7.3
	7-10	Write a formal project proposal and present proposal to evaluator		6.1, 6.3
	11	Create evaluation tool for evaluation cycle #1	x	2.1, 2.2, 2.3, 7.4
	12-19	Prototype, test, analyze, iterate solutions to problem.	x	2.4, 2.5, 2.6, 2.7, 2.8, 5.2, 5.4, 5.6, 5.7
	20	Present solution, research, and iterative process		6.2, 6.3, 7.5, 7.6
Feb	21	Create evaluation tool for evaluation cycle #2	x	2.1, 2.2, 2.3, 7.4
	22-29	Prototype, test, analyze, iterate solutions to problem.	x	2.4, 2.5, 2.6, 2.7, 2.8, 5.2, 5.4, 5.6, 5.7
	30	Present solution, research, and iterative process		6.2, 6.3, 7.5, 7.6
		CTSO service project preparation STEM night at Sechrist Elementary School		
	31	Create evaluation tool for evaluation cycle #3	x	2.1, 2.2, 2.3, 7.4
March	32-39	Prototype, test, analyze, iterate solutions to problem.	x	2.4, 2.5, 2.6, 2.7, 2.8, 5.2, 5.4, 5.6, 5.7

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	40	Present solution, research, and iterative process		6.2, 6.3, 7.5, 7.6
		CTSO service project preparation STEM night at NAU Dome		
	41	Create evaluation tool for evaluation cycle #4	x	2.1, 2.2, 2.3, 7.4
	42-49	Prototype, test, analyze, iterate solutions to problem.	x	2.4, 2.5, 2.6, 2.7, 2.8, 5.2, 5.4, 5.6, 5.7
	50	Present solution, research, and iterative process		6.2, 6.3, 7.5, 7.6
	51	Create evaluation tool for evaluation cycle #5	x	2.1, 2.2, 2.3, 7.4
April	52-59	Prototype, test, analyze, iterate solutions to problem.	x	2.4, 2.5, 2.6, 2.7, 2.8, 5.2, 5.4, 5.6, 5.7
	60	Present solution, research, and iterative process		6.2, 6.3, 7.5, 7.6
	61	Create evaluation tool for evaluation cycle #6	x	2.1, 2.2, 2.3, 7.4
	61-69	Prototype, test, analyze, iterate solutions to problem.	x	2.4, 2.5, 2.6, 2.7, 2.8, 5.2, 5.4, 5.6, 5.7
	70	Present solution, research, and iterative process		6.2, 6.3, 7.5, 7.6
May	71-79	Prepare and present an overall presentation of entire project (mock presentation)		6.3, 7.5, 7.6
	80-85	Evaluate capstone by presenting to peers, teachers, and community partners		2.7, 2.8, 6.3, 7.5, 7.6
		CTSO social event #2		
	86	Celebrate CIT III completion - CIT Banquet		