KENT STATE UNIVERSITY

Roadmap: Applied Engineering – Liquid Crystal and Display Engineering – Bachelor of Science
[AT-BS-AENG-LCDE]
College of Applied Engineering, Sustainability and Technology
Catalog Year: 2013–2014

This roadmap is a recommended semester-by-semester plan of study for this major. However, courses and milestones designated as critical (in boldface and shaded areas) must be completed in the semester listed to ensure a timely graduation.

Course Subject and Title	Credit Hours	Upper Div.	Min. Grade	Major GPA	Important Notes
Semester One: [15 Credit Hours]					
MATH 12002 Analytic Geometry and Calculus I	**5**				**Fulfills Kent Core Mathematics and Critical Reasoning**
TECH 13580 Engineering Graphics I	**3**			■	
PHY 23101 General University Physics I	**5**				**Fulfills Kent Core Basic Sciences**
US 10097 Destination Kent State: First Year Experience	1				Not required for transfer students with 25 credits
TECH Electives (lower or upper division)	1				See note 2 on page 2
Semester Two: [15 Credit Hours]					
MATH 12003 Analytic Geometry and Calculus II	**5**				
TECH 21021 Survey of Electricity and Electronics	**4**			■	
PHY 23102 General University Physics II	**5**				**Fulfills Kent Core Additional**
TECH Electives (lower or upper division)	1				See note 2 on page 2
Semester Three: [14 Credit Hours]					
CHEM 10060 General Chemistry I	**4**				**Fulfills Kent Core Basic Sciences**
CHEM 10062 General Chemistry I Laboratory	**1**				**Fulfills Kent Core Basic Sciences**
TECH 20002 Materials and Processes	**3**			■	
TECH 10001 Information Technology	3			■	
Kent Core Requirement	3				See Kent Core Summary on page 2
Semester Four: [15 Credit Hours]					
LCDE 37410 Introduction to Displays	**3**	■		■	
ECON 22060 Principles of Microeconomics	3				Fulfills Kent Core Social Sciences
TECH 23581 Computer-Aided Engineering Graphics	3			■	
Kent Core Requirement	3				See Kent Core Summary on page 2
Kent Core Requirement	3				
Semester Five: [15 Credit Hours]					
LCDE 47410 Introduction to Display Materials	**3**	■		■	
LCDE 47450 Cleanroom Techniques and Liquid Crystal Device Fabrication	**3**	■		■	
TECH 33222 Digital Design for Computer Engineering	**3**	■		■	
COMM 15000 Introduction to Human Communication	3				Fulfills Kent Core Additional
ENG 20002 Introduction to Technical Writing	3			■	
Semester Six: [15 Credit Hours]					
LCDE 47560 Production of Flat Panel Displays: Manufacturing Science and Technology	**3**	■		■	
TECH 33031 Programmable Logic Controllers	**3**	■		■	
TECH 33363 Metallurgy and Material Science	**3**	■		■	
Kent Core Requirement	3				See Kent Core Summary on page 2
Kent Core Requirement	3				
Semester Seven: [14 Credit Hours]					
TECH 43080 Industrial and Environmental Safety	**3**	■		■	
TECH 33092 Cooperative Education-Professional Development *or* TECH Electives (lower or upper division)	2	■		■	TECH 33092 see note 1 on page 2, fulfills writing-intensive and experiential learning requirement; TECH Elective see note 2 on page 2
TECH 43550 Computer-Aided Manufacturing	3	■		■	
TECH 46330 Visual Basic Programming in Engineering Technology	3	■		■	
Kent Core Requirement	3				See Kent Core Summary on page 2
General Elective (lower or upper division)	2				

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Critical requirements are boldface in shaded areas

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Semester Eight: [16 Credit Hours]					
TECH 43700 Computer-Integrated Manufacturing	**3**	■		■	
TECH 31000 Cultural Dynamics of Technology	3	■		■	Fulfills writing-intensive and domestic diversity requirement; see note on page 2
TECH 33700 Quality Techniques	3	■		■	
TECH Electives (upper division)	3	■		■	
General Elective (lower or upper division)	4				Number of credits required depends on meeting minimum 121 credit hours and 39 upper-division credit hours

Graduation Requirements Summary

Minimum Total Hours	Minimum Upper-Division Hours	Minimum Kent Core Hours	Global / Domestic Diversity Course	Writing-Intensive	Experiential Learning	Minimum Major GPA	Overall GPA
121	39	36	Kent Core / TECH 31000	TECH 31000 or TECH 33092	Visit www.kent.edu/catalog/elr	2.250	2.000

Kent Core Summary

Kent Core Categories	Important Notes	Remaining Credit Hours
Composition (6-8 credit hours) *ENG 11002, 11011, 21011; HONR 10197, 10297*	Enrollment based on placement test	6-8
Mathematics and Critical Reasoning (3-5 credit hours)	Fulfilled in this major with MATH 12002	0
Humanities and Fine Arts (9 credit hours) *Minimum one course from humanities in Arts and Sciences and minimum one course from fine arts*	May fulfill global diversity requirement	9
Social Sciences (6 credit hours) *Must be selected from two curricular areas*	3 credits fulfilled in this major with ECON 22060 (second course cannot be ECON)	3
Basic Sciences (6-7 credit hours) *Must include one laboratory*	Fulfilled in this major with CHEM 10060, CHEM 10062 and PHY 23101	0
Additional (6 credit hours)	Fulfilled in this major with COMM 15000 and PHY 23102	0

Note 1: A minimum C grade must be earned in either TECH 31000 or TECH 33092 to fulfill the writing-intensive requirement.

Note 2: Four credits hours (each course comprising 1 or 2 credits) elective are required, with a minimum 2 credits upper division. These electives may be taken in any semester provided the total semester hours do not exceed 16. These electives may be satisfied by TECH 33092 Cooperative Education-Professional Development. While students are strongly encouraged to take at least one semester of cooperative education, this may not be possible; hence it is not required. Studies are strongly urged to talk to their professional advisor about the electives and ensuring the experiential learning requirement (ELR) is fulfilled.

Kent Core
Students must complete a minimum 36 credit hours of the Kent Core. Certain courses required in programs and in student's major field may also fulfill the Kent Core. Honors equivalents shall satisfy the Kent Core. None of the courses on the Kent Core list may be taken with a pass/fail grade. Visit www.kent.edu/catalog/kent-core for course list.

Diversity Course Requirement
Students must complete a two-course diversity requirement, consisting of one with a domestic (U.S.) focus and one with a global focus. One course must come from the Kent Core. The second course may be taken as a second Kent Core, within a major or minor, or as a general elective; or, with dean's approval, by completing one semester of study in another country. Visit www.kent.edu/catalog/diversity for course list.

Writing-Intensive Course Requirement
Students must complete a one-course writing-intensive requirement in their major and earn minimum C (2.000) grade. Visit www.kent.edu/catalog/wic for course list.

Experiential Learning Requirement
To provide students with direct engagement in learning experiences that promote academic relevance, meaning and an understanding of real-world issues, students must complete this requirement at Kent State, either as a for-credit course or as a non-credit, non-course experience approved by the appropriate faculty member. Visit www.kent.edu/catalog/elr for course list.

Upper-Division Requirement
Students must complete a minimum 39 upper-division (numbered 30000 to 49999) credit hours of coursework. Programs in the College of Arts and Sciences require a minimum of 42 hours of upper-division coursework.