

VoCATS Course Blueprints

Technology Education

8012 Principles of Technology II

*Public Schools of North Carolina
State Board of Education • Department of Public Instruction
Office of Instructional and Accountability Services
Division of Instructional Services*

*Raleigh, North Carolina
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Special thanks to the following educators who reviewed and approved this blueprint for technical content and appropriateness for industry:

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VoCATS Course Blueprint

A course blueprint is a document laying out the framework of the curriculum for a given course.

Shown on the blueprint are the units of instruction, the core competencies in each unit, and the specific objectives for each competency. The blueprint illustrates the recommended sequence of units and competencies and the weight or relative importance of the objective within the course or unit.

The blueprint is intended to be used by teachers in planning the course of work for the year, preparing daily lesson plans, and constructing instructionally valid assessments.

For additional information about this blueprint, contact program area staff. For additional information about the VoCATS Competency Achievement Tracking System, contact program area staff or VoCATS, Workforce Development, Division of Instructional Services, North Carolina Department of Public Instruction, 301 North Wilmington Street, Raleigh, North Carolina 27601-2825, 919/715-1674, email: rwelfare@dpi.state.nc.us.

Interpretation of Columns on VoCATS Course Blueprints

No.	Heading	Column information
1	Comp# Obj.#	Comp=Competency number (three digits); Obj.=Objective number (competency number plus two-digit objective number).
2	Unit Titles/ Competency and Objective Statements	Statements of unit titles, competencies per unit, and specific objectives per competency. Each competency statement or specific objective begins with an action verb and makes a complete sentence when combined with the stem "The student will be able to. . ." (The stem appears once in Column 2.) Outcome behavior in each competency/objective statement is denoted by the verb plus its object.
3	Time Hrs	Space for teachers to calculate time to be spent on each objective based on their individual school schedule and the students' performance on preassessments.
4	Course % Cognitive	A percentage indicates the relative importance or weight for cognitive learning of each objective within the total course. Information in Column 4 is used to plan the yearly calendar of work and as a test blueprint for assessments and postassessments. Column 4 plus Column 5 equals 100 percent..
5	Course % Perform	A percentage indicates the relative importance or weight for applied (performance) learning of each objective within a course. Information in Column 5 is used to plan the yearly calendar of work. Column 4 plus Column 5 equals 100 percent.
6	Type Behavior	Classification of outcome behavior in competency and objective statements. (C=Cognitive; P=Psychomotor; A=Affective)
7	Integrated Skill Area	Integrated Skills codes: A=Arts; C=Communications; H=Health/Safety; M=Math; SC=Science; SS=Social Studies.
8	Core Supp	Designation of the competencies and objectives as Core or Supplemental. Competencies and objectives designated Core must be included in the yearly calendar of work.

Activities and procedures within Workforce Development are governed by the philosophy of simple fairness to all. Therefore, the policy of Workforce Development is that all operations will be performed without regard to race, sex, color, national origin or handicap.

TECHNOLOGY EDUCATION
 COURSE BLUEPRINT for **8012 PRINCIPLES OF TECHNOLOGY II**
 (Recommended hours of instruction: 135-180)

Comp# Obj.#	Unit Titles/Competency and Objective Statements (the student will be able to:)	Time Hrs.	Course% Cognitive	Course% Perform	Type Behavior	Integrated Skill Area	Core Supp
1	2	3	4	5	6	7	8
A	FORCE TRANSFORMER		16%	8%			
001.00	Analyze and apply the concept of force transformers in linear mechanical systems.		4%	2%	C3P	SC M	Core
001.01	<i>Evaluate inputs and outputs of linear mechanical force transformers.</i>		4%		C3	SC M	Core
001.02	<i>Use laboratory equipment to solve linear mechanical force transformer problems.</i>			2%	C3P	SC M	Core
002.00	Analyze and apply the concept of force transformer in rotational mechanical systems.		4%	2%	C3P	SC M	Core
002.01	<i>Evaluate inputs and outputs of rotational mechanical force transformers.</i>		4%		C3	SC M	Core
002.02	<i>Use laboratory equipment to solve rotational mechanical force transformer problems.</i>			2%	C3P	SC M	Core
003.00	Analyze and apply the concept of force transformers in fluid systems.		4%	2%	C3P	SC M	Core
003.01	<i>Evaluate inputs and outputs of fluid force transformers.</i>		4%		C3	SC M	Core
003.02	<i>Use laboratory equipment to solve fluid force transformer problems.</i>			2%	C3P	SC M	Core
004.00	Analyze and apply the concept of force transformer in electricity systems.		4%	2%	C3P	SC M	Core
004.01	<i>Evaluate inputs and outputs of electrical force transformers.</i>		4%		C3	SC M	Core
004.02	<i>Use laboratory equipment to solve electrical force transformer problems.</i>			2%	C3P	SC M	Core
B	MOMENTUM		6%	4%			
005.00	Analyze and apply the concept of linear momentum.		3%	2%	C3P	SC M	Core
005.01	<i>Evaluate relationships between linear momentum and impulse.</i>		3%		C3	SC M	Core
005.02	<i>Use laboratory equipment to solve linear momentum and impulse problems.</i>			2%	C3P		Core
006.00	Analyze and apply the concept of angular momentum.		3%	2%	C3P	SC M	Core
006.01	<i>Evaluate relationships between angular momentum and impulse.</i>		3%		C3	SC M	Core
006.02	<i>Use laboratory equipment to solve angular momentum and impulse problems.</i>			2%	C3P	SC M	Core
1	2	3	4	5	6	7	8

Comp# Obj.#	Unit Titles/Competency and Objective Statements (the student will be able to:)	Time Hrs.	Course% Cognitive	Course% Perform	Type Behavior	Integrated Skill Area	Core Supp
C	WAVES AND VIBRATIONS		6%	4%			
007.00	Analyze and apply the concept involving the characteristics of waves.		3%	2%	C3P	SC M	Core
007.01	<i>Evaluate wave form characteristics.</i>		3%		C3	SC M	Core
007.02	<i>Use laboratory equipment to solve wave problems.</i>			2%	C3P	SC M	Core
008.00	Analyze and apply the concept involving the applications of waves and vibrations.		3%	2%	C3P	SC M	Core
008.01	<i>Evaluate the effects of waves and vibrations.</i>		3%		C3	SC M	Core
008.02	<i>Use laboratory equipment to solve wave application problems.</i>			2%	C3P	SC M	Core
D	ENERGY CONVERTORS		12%	8%			
009.00	Analyze and apply the concepts of energy conversions.		3%	2%	C3P	SC M	Core
009.01	<i>Evaluate mechanical energy conversion.</i>		3%		C3	SC M	Core
009.02	<i>Use laboratory equipment to solve mechanical energy conversion problems.</i>			2%	C3P	SC M	Core
010.00	Analyze and apply the concepts of energy conversion in fluid energy systems.		3%	2%	C3P	SC M	Core
010.01	<i>Evaluate fluid energy conversion.</i>		3%		C3	SC M	Core
010.02	<i>Use laboratory equipment to solve fluid energy conversion problems.</i>			2%	C3P	SC M	Core
011.00	Analyze and apply the concept of energy conversion in electrical systems.		3%	2%	C3P	SC M	Core
011.01	<i>Evaluate electrical energy conversion.</i>		3%		C3	SC M	Core
011.02	<i>Use laboratory equipment to solve electrical energy conversion problems.</i>			2%	C3P	SC M	Core
012.00	Analyze and apply the concepts of energy conversion in thermal energy systems.		3%	2%	C3P	SC M	Core
012.01	<i>Evaluate thermal energy conversion.</i>		3%		C3	SC M	Core
012.02	<i>Use laboratory equipment to solve thermal energy conversion problems.</i>			2%	C3P	SC M	Core
E	TRANSDUCERS		12%	8%			
013.00	Analyze and apply the concept of transducers in mechanical systems.		3%	2%	C3P	SC M	Core
013.01	<i>Evaluate the application of mechanical transducers.</i>		3%		C3	SC M	Core
013.02	<i>Use transducers to solve mechanical problems.</i>			2%	C3P	SC M	Core
014.00	Analyze and apply the concept of transducers in fluid systems.		3%	2%	C3P	SC M	Core
014.01	<i>Evaluate fluid transducers.</i>		3%		C3	SC M	Core
014.02	<i>Use transducers to solve fluid problems.</i>			2%	C3P	SC M	Core
1	2	3	4	5	6	7	8

Comp# Obj.#	Unit Titles/Competency and Objective Statements (the student will be able to:)	Time Hrs.	Course% Cognitive	Course% Perform	Type Behavior	Integrated Skill Area	Core Supp
015.00	Analyze and apply the concepts of transducers in electrical systems.		3%	2%	C3P	SC M	Core
015.01	<i>Evaluate electrical transducers.</i>		3%		C3	SC M	Core
015.02	<i>Use transducers to solve electrical problems.</i>			2%	C3P	SC M	Core
016.00	Analyze and apply the concept of transducers in thermal systems.		3%	2%	C3P	SC M	Core
016.01	<i>Evaluate thermal transducers.</i>		3%		C3	SC M	Core
016.02	<i>Use transducers to solve thermal problems.</i>			2%	C3P	SC M	Core
F	RADIATION, LIGHT AND OPTICS AND TIME CONSTANTS		8%	8%			
017.00	Analyze and apply the concept of radiation.		2%		C3	SC M	Core
017.01	<i>Explore the characteristics of electromagnetic radiation.</i>		1%		C3	SC M	Core
017.02	<i>Explore the characteristics of nuclear radiation.</i>		1%		C3	SC M	Core
018.00	Analyze and apply the concepts of light and optic systems.		4%		C3	SC M	Core
018.01	<i>Evaluate light reflection and refraction.</i>		1%		C3	SC M	Core
018.02	<i>Evaluate interference and diffraction.</i>		1%		C3	SC M	Core
018.03	<i>Evaluate the effects of laser light.</i>		1%		C3	SC M	Core
018.04	<i>Evaluate the effects of optical systems.</i>		1		C3	SC M	Core
019.00	Analyze and apply the concept of time constants		2%		C3P	SC M	Core
019.01	<i>Explore time constants in the mechanical and fluid energy systems.</i>		1%		C3	SC M	Core
019.02	<i>Explore time constants in the electrical and thermal energy systems.</i>		1%		C3	SC M	Core
020.00	Develop presentation on the concepts of radiation, light and optics, or time constants.			8%	C3P	SC M	Core
020.01	<i>Use laboratory equipment to solve problems in radiation, light and optics, or time constants.</i>			4%	C3P	SC M	Core
020.02	<i>Present lecture and demonstration on the concepts of radiation, light and optics, or time constants.</i>			4%	C3P	SC M	Core
	Course Total		60%	40%			