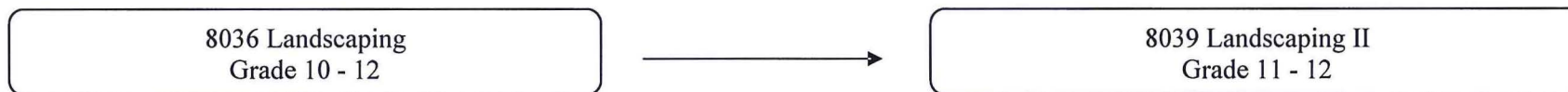# *AGRICULTURE*

Arrows denote completer sequences. Courses should be taken in sequential order.
Alternate courses may be used to satisfy VDOE graduation sequence requirements.
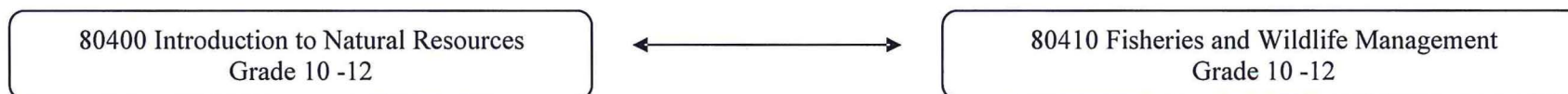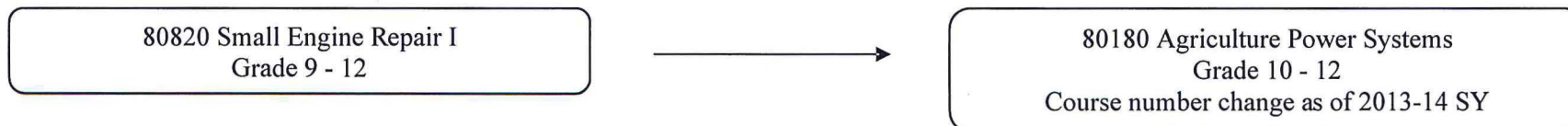Refer to cteresource.org for updated VDOE completer sequences.

HORTICULTURE

| 8034 Horticultural Science and Practices Grade 10 - 12 | → | 8035 Greenhouse Plant Production and Management Grade 11 - 12 |

LANDSCAPING

| 8036 Landscaping Grade 10 - 12 | → | 8039 Landscaping II Grade 11 - 12 |

NATURAL RESOURCES

| 80400 Introduction to Natural Resources Grade 10 -12 | ↔ | 80410 Fisheries and Wildlife Management Grade 10 -12 |

SMALL ENGINE REPAIR

| 80820 Small Engine Repair I Grade 9 - 12 | → | 80180 Agriculture Power Systems Grade 10 - 12 Course number change as of 2013-14 SY |

ANIMAL SCIENCE

| 80830 Small Animal Care Grade 9-12 | → | 80880 Veterinary Science Grade 10 - 12 |

WELDING

| 80190 Welding I *DE8019 Grade 11-12 This course can also be taught as T&I 8637 | → | *DE8095 Dual Enrolled Welding II Grade 11 - 12 Course number change as of 2013-14 SY |

COMPLETER SEQUENCE	The following alternate courses **may be substituted** for one of the courses in the completer sequence. For transfer students, other DOE courses may be available.
Horticulture	8007, 8036, 8038, 8039, 8055
Natural Resources	8007, 8008
Small Engine Repair	8008, 8019
Animal Science	8008, 8080

ALTERNATE COURSES

| 8007 Introduction to Plant Systems Grade 9 - 10 | 8008 Agricultural Mechanics and Basic Animal Science Grade 9 - 10 | 8038 Floriculture Grade 10 - 12 |

| 8055 Floral Production and Design Grade 10 - 12 | 8080 Equine Management and Production Grade 9 - 12 |

BUSINESS AND INFORMATION TECHNOLOGY

Arrows denote completer sequences. Courses should be taken in sequential order.

Alternate courses may be used to satisfy VDOE graduation sequence requirements.

Refer to cteresource.org for updated VDOE completer sequences.

ACCOUNTING

6320 Accounting Grade 9-12	→	6321 Advanced Accounting Grade 10-12

COMPUTER INFORMATION SYSTEMS

6612 Computer Information Systems Grade 10-12	→	6613 Advanced Computer Information Systems Grade 11-12

WEB DESIGN

6630 Web Design Grade 11-12	→	6631 Desktop Publishing Grade 11-12

PROGRAMMING

6640 Introduction to Interactive Programming Grade 11-12	→	6641 Advanced Programming Grade 11-12

COMPLETER SEQUENCE	The following alternate courses <u>may be substituted</u> for one of the courses in the completer sequence. For transfer students, other DOE courses may be available.
Accounting	6115, 6135, 6612, 6613, 6625, 6630, 6631
Computer Information Systems	6115, 6131, 6135, 6320, 6612, 6613, 6625, 6630, 6631, 6640, 6641, 6670
Web Design	6115, 6131, 6135, 6320, 6321, 6612, 6613, 6625, 6640, 6641, 6670
Programming	6115, 6612, 6613, 6630, 6631, 6640, 6670

ALTERNATE COURSES

6115 Principles of Business and Marketing
Grade 9-10

6131 Business Law
Grade 11-12

6135 Business Management
Grade 9-12

6640 Introduction to Interactive Programming
Grade 11-12

6670 Information Technology (IT) Fundamentals
Grade 9-10

6625 Word Processing
Grades 9-12

6120 Economics and Personal Finance
Grade 11-12
Starting with the class of 2014-15, this course will be required for graduation and may not be used to meet any other graduation requirement.
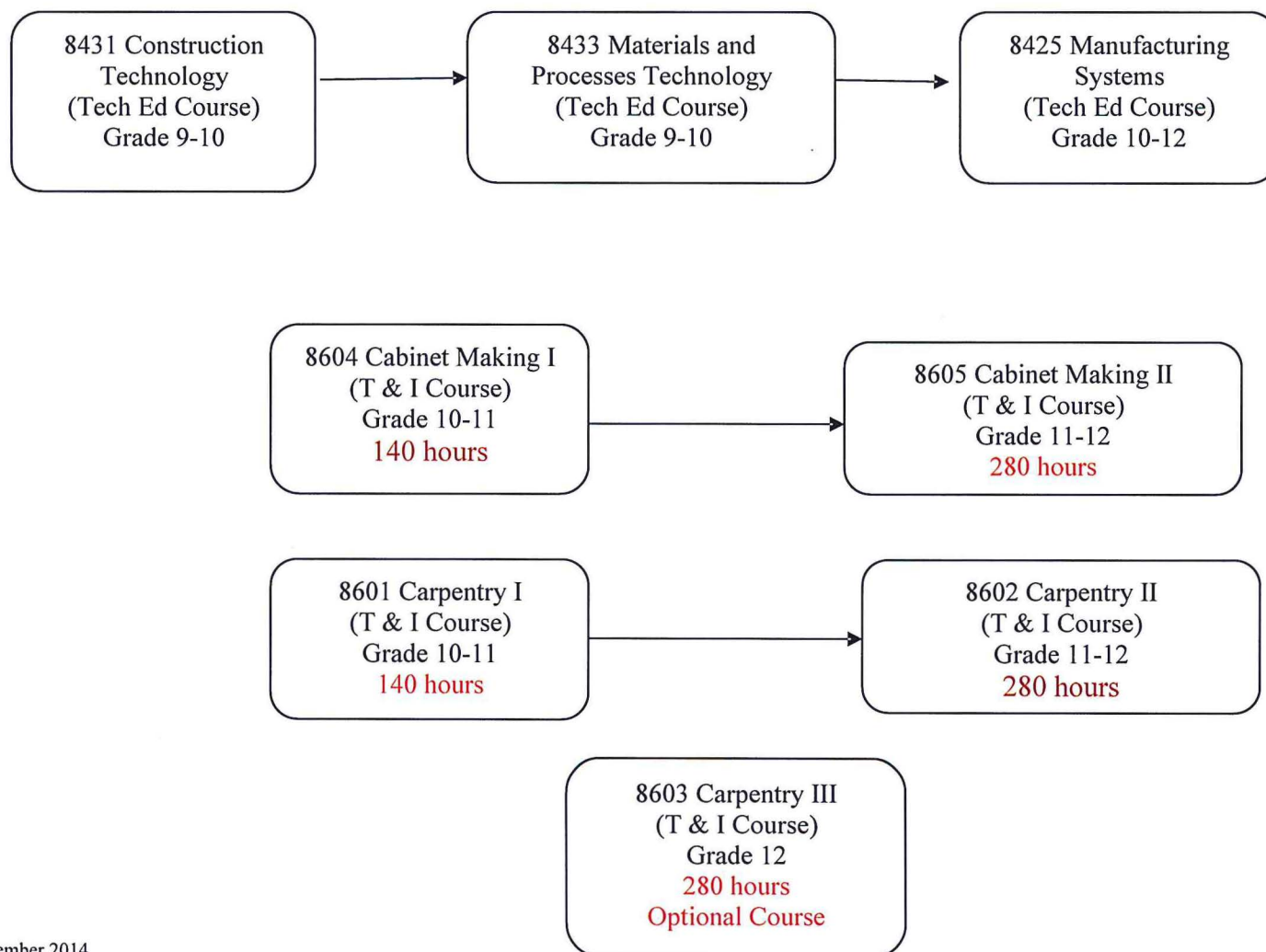
CABINETMAKING AND CARPENTRY

Technology Education and Trades and Industry

Arrows denote completer sequences. Courses should be taken in sequential order.
Refer to cteresource.org for updated VDOE completer sequences.

8431 Construction Technology (Tech Ed Course) Grade 9-10	→	8433 Materials and Processes Technology (Tech Ed Course) Grade 9-10	→	8425 Manufacturing Systems (Tech Ed Course) Grade 10-12

8604 Cabinet Making I (T & I Course) Grade 10-11 140 hours	→	8605 Cabinet Making II (T & I Course) Grade 11-12 280 hours

8601 Carpentry I (T & I Course) Grade 10-11 140 hours	→	8602 Carpentry II (T & I Course) Grade 11-12 280 hours

8603 Carpentry III
(T & I Course)
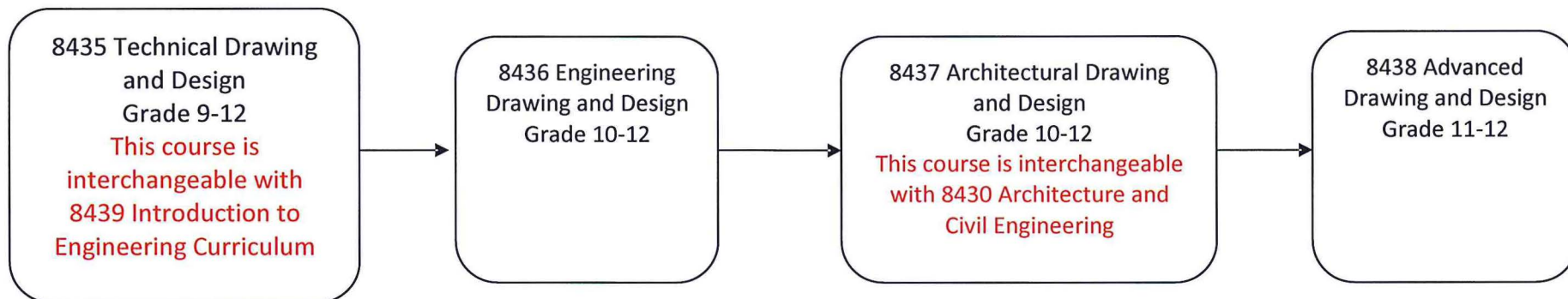Grade 12
280 hours
Optional Course

Updated November 2014

Engineering and Architecture
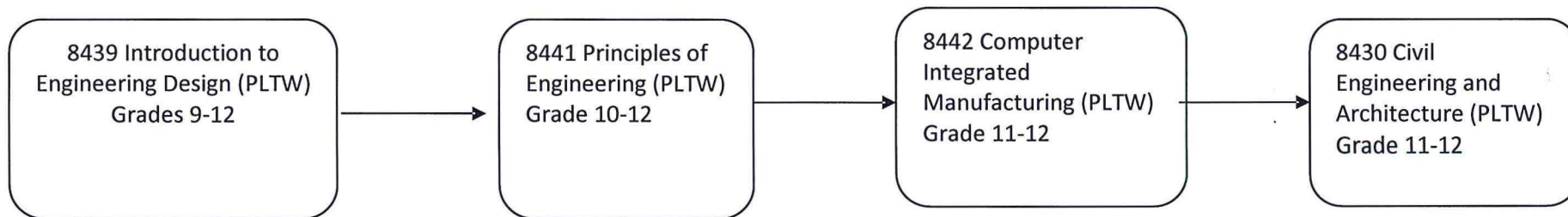## AHS, CHS, EMHS

Arrows denote completer sequences- two course minimum.
Courses offered as dual enrolled must be grade 11-12 only.
Refer to cteresource.org for updated VDOE completer sequences.

ENGINEERING AND ARCHITECTURE GRAPHICS

| 8435 Technical Drawing and Design Grade 9-12 This course is interchangeable with 8439 Introduction to Engineering Curriculum | → | 8436 Engineering Drawing and Design Grade 10-12 | → | 8437 Architectural Drawing and Design Grade 10-12 This course is interchangeable with 8430 Architecture and Civil Engineering | → | 8438 Advanced Drawing and Design Grade 11-12 |

PRE-ENGINEERING (PLTW)

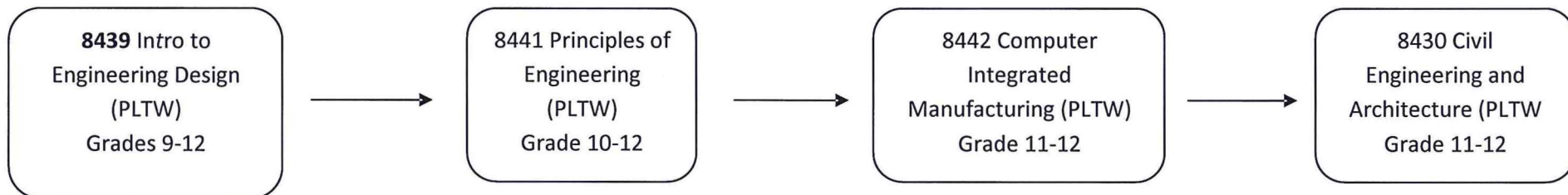| 8439 Introduction to Engineering Design (PLTW) Grades 9-12 | → | 8441 Principles of Engineering (PLTW) Grade 10-12 | → | 8442 Computer Integrated Manufacturing (PLTW) Grade 11-12 | → | 8430 Civil Engineering and Architecture (PLTW) Grade 11-12 |

Updated November 2014

Engineering Graphics and PLTW Engineering

BHS Only

NOTE: 8439 and 8530 cover the same curriculum and can be taught con-currently. The course number used for an individual student must match the sequence in which it will be completed, based on the student's individual career plan.
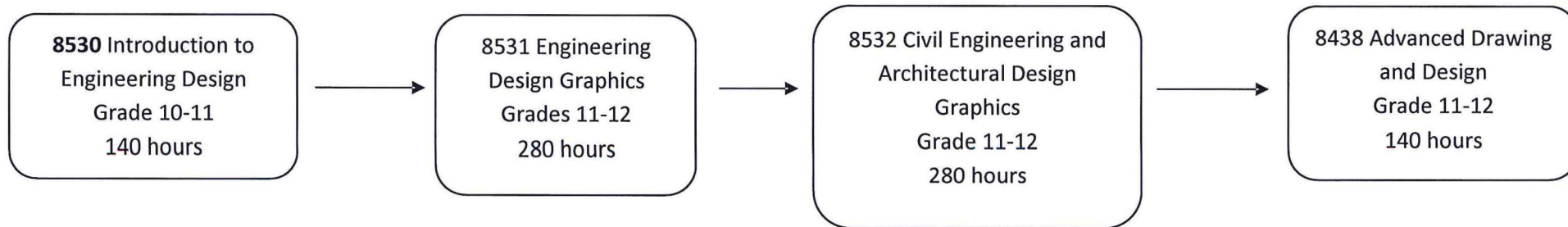
PRE-ENGINEERING (PLTW)

Arrows denote possible completer sequences- two course minimum. Courses are to be taken in grade level sequence.

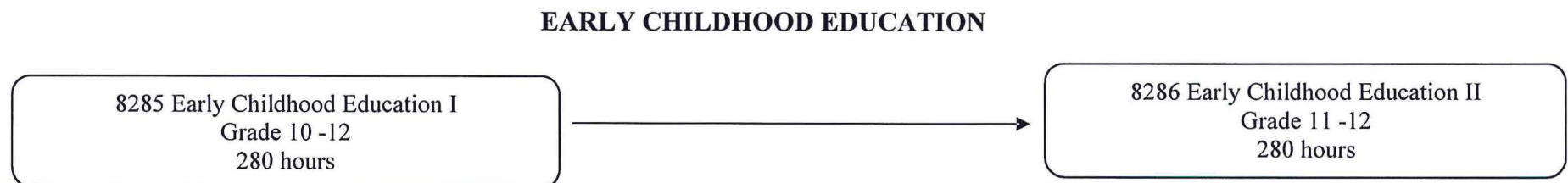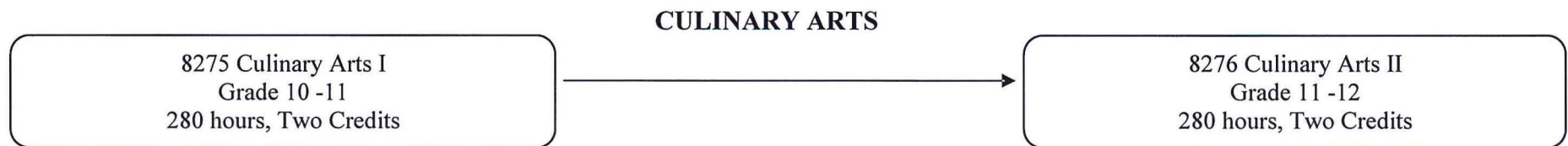| **8439** Intro to Engineering Design (PLTW) Grades 9-12 | → | 8441 Principles of Engineering (PLTW) Grade 10-12 | → | 8442 Computer Integrated Manufacturing (PLTW) Grade 11-12 | → | 8430 Civil Engineering and Architecture (PLTW Grade 11-12 |

ENGINEERING AND ARCHICTURAL GRAPHICS

Arrows denote possible completer sequences- two course minimum. Courses are to be taken in grade level sequence.

| **8530** Introduction to Engineering Design Grade 10-11 140 hours | → | 8531 Engineering Design Graphics Grades 11-12 280 hours | → | 8532 Civil Engineering and Architectural Design Graphics Grade 11-12 280 hours | → | 8438 Advanced Drawing and Design Grade 11-12 140 hours |

FAMILY AND CONSUMER SCIENCES

Arrows denote completer sequences. Courses should be taken in sequential order.

Alternate courses may be used to satisfy VDOE graduation sequence requirements.

Refer to cteresource.org for updated VDOE completer sequences.

CULINARY ARTS

8275 Culinary Arts I Grade 10 -11 280 hours, Two Credits	→	8276 Culinary Arts II Grade 11 -12 280 hours, Two Credits

EARLY CHILDHOOD EDUCATION

8285 Early Childhood Education I Grade 10 -12 280 hours	→	8286 Early Childhood Education II Grade 11 -12 280 hours

ALTERNATE COURSES

8219 Independent
Living
Grade 9 - 11

8225 Family Relations
Grade 9 - 12

8223/8228 Family Relations
/Nutrition and Wellness
Grade 9 - 12

8229 Nutrition and/
Wellness
Grade 9 - 12

8259 Introduction to
Hospitality, Tourism and
Recreation
Grade 9 - 12

8295 Interior Design I
Grade 10 - 12
280 hours

8234 Introduction to Early
Childhood Education
Grade 9 -12

8248 Introduction to
Design
Grade 9 - 12

8250 Introduction to Culinary Arts
Grade 9 -10
140 hours, One Credit

8279 Culinary Arts Specialization (Formerly Culinary
Arts III))
Grade 12
140 hours, One Credit

8255 Introduction to Interior Design
Grade 10 - 12

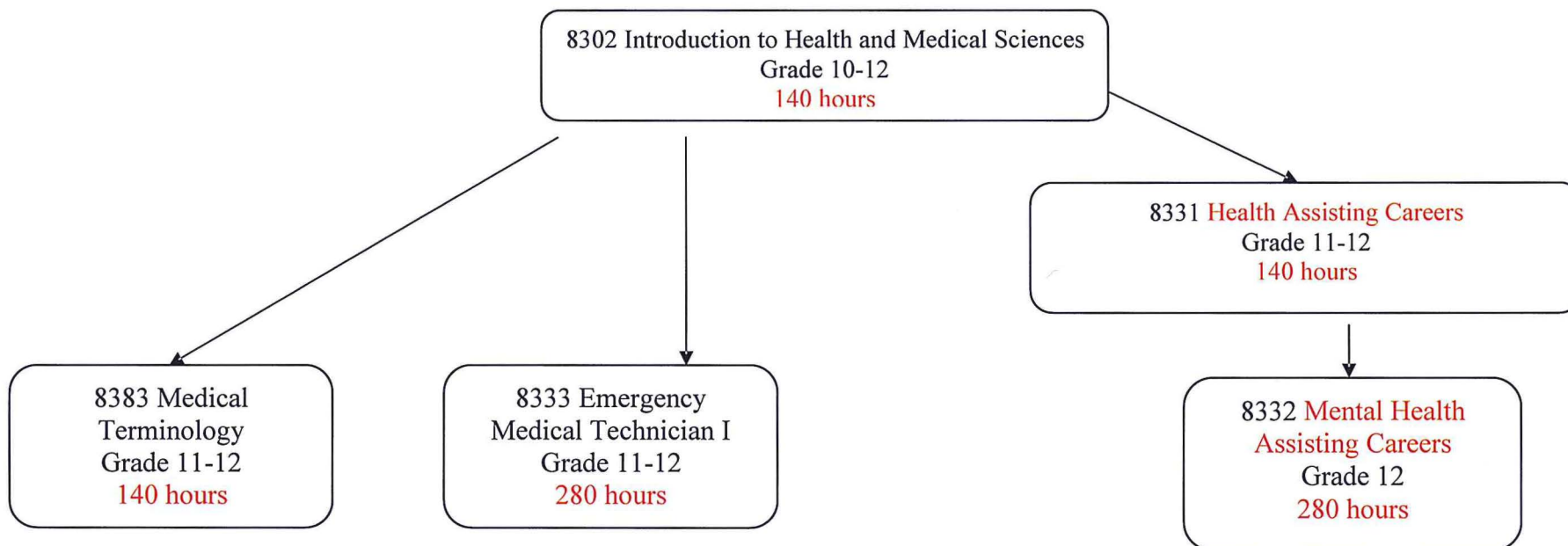| COMPLETER SEQUENCE	The following alternate courses may be substituted for one of the courses in the completer sequence. Any two course on the same line may be a sequence. Always check cteresource.org. Other DOE courses may be available may be available for transfer students.
Culinary Arts 8275, 8276	8279, 8250, 8229, 8219, 8229
Early Childhood Education 8285, 8286	8234, 8225, 8223/8228, 8229,
Family Relations 8225	8219, 8229, 8295, 8234
Independent Living 8219	8225, 8229, 8259, 8295, 8234, 8248, 8255
Nutrition and Wellness 8229	8219, 8225, 8259, 8234,
Introduction to Interior Design 8255	8219, 8225, 8295,

HEALTH AND MEDICAL SCIENCES

Arrows denote completer sequences- two course minimum.

Courses offered as dual enrolled must be grade 11-12 only.

Refer to cteresource.org for updated VDOE completer sequences.

HEALTH OCCUPATIONS

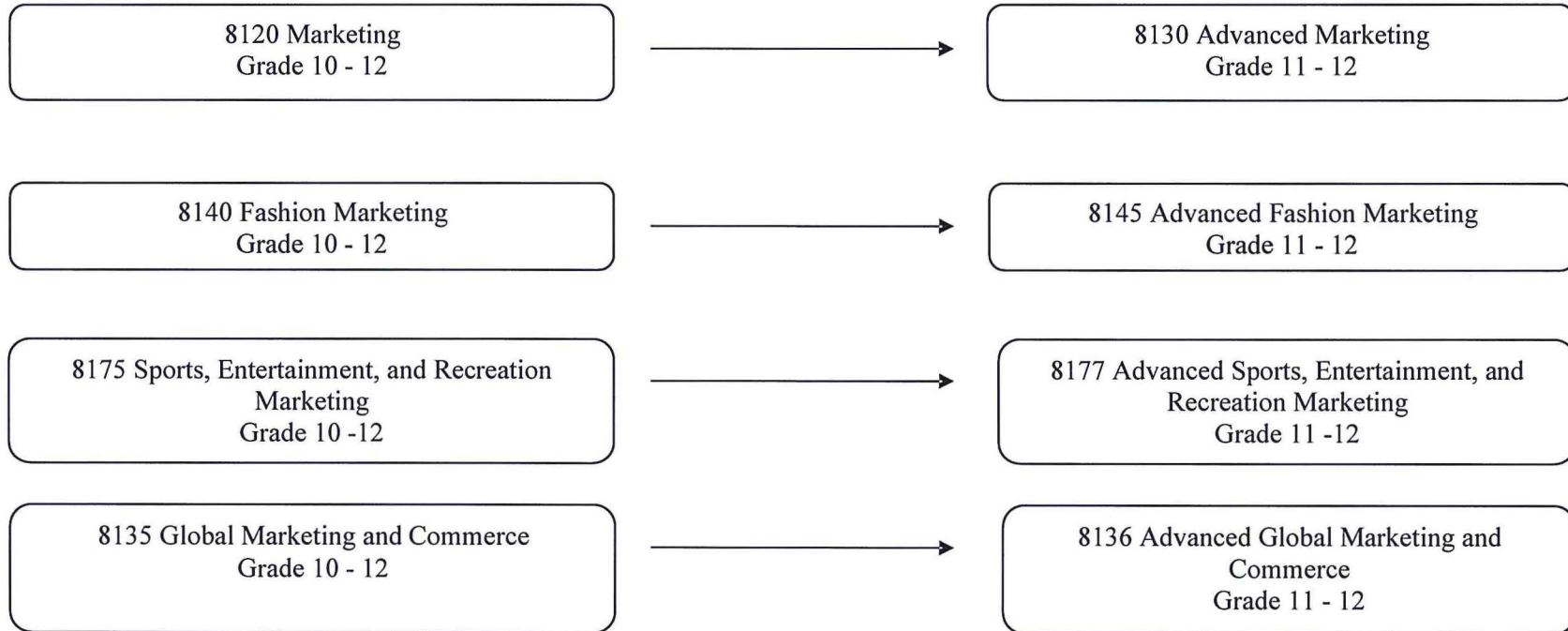8302 Introduction to Health and Medical Sciences
Grade 10-12
140 hours

8331 Health Assisting Careers
Grade 11-12
140 hours

8383 Medical Terminology
Grade 11-12
140 hours

8333 Emergency Medical Technician I
Grade 11-12
280 hours

8332 Mental Health Assisting Careers
Grade 12
280 hours

Updated November 2014

MARKETING

Arrows denote completer sequences. Courses should be taken in sequential order.
Alternate courses may be used to satisfy VDOE graduation sequence requirements.
Refer to cteresource.org for updated VDOE completer sequences.

8120 Marketing Grade 10 - 12	→	8130 Advanced Marketing Grade 11 - 12
8140 Fashion Marketing Grade 10 - 12	→	8145 Advanced Fashion Marketing Grade 11 - 12
8175 Sports, Entertainment, and Recreation Marketing Grade 10 -12	→	8177 Advanced Sports, Entertainment, and Recreation Marketing Grade 11 -12
8135 Global Marketing and Commerce Grade 10 - 12	→	8136 Advanced Global Marketing and Commerce Grade 11 - 12

COMPLETER SEQUENCE	The following alternate courses <u>may be substituted</u> for one of the courses in the completer sequence. For transfer students, other DOE courses may be available.
Marketing	8125, 8135, 8136, 8140, 8145, 8175, 8177
Fashion Marketing	8120, 8125, 8135, 8136
Sports, Entertainment, and Recreation Marketing	8120, 8125, 8135, 8136
Global Marketing and Commerce	8120, 8125, 8130, 8140, 8145, 8175, 8177

ALTERNATE COURSE

8125 Digital Marketing
Grade 11 - 12

Robotics TECHNOLOGY EDUCATION

Arrows denote completer sequences. Courses should be taken in sequential order.
Refer to cteresource.org for updated VDOE completer sequences.

ROBOTICS and MANUFACTURING

84210 Technology of Robotic Design Grade 9-11	→	84250 Manufacturing Systems Grade 9-12

FIRST ROBOTICS LEAGUE

Local Electives

NOT PART OF ANY CTE COMPLETER SEQUENCE

98281 or 84210 Robotics Experience I	98282 Robotics Experience II	98283 Robotics Experience III

Updated November 2014

Technology Education
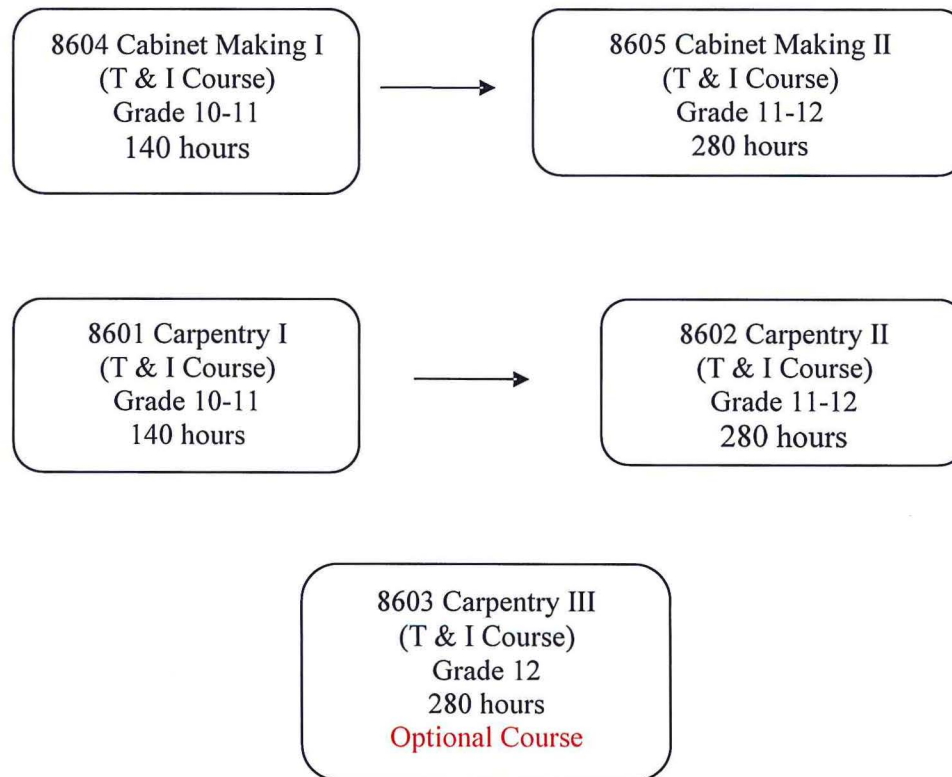
Arrows denote completer sequences. Courses should be taken in sequential order.
Refer to cteresource.org for updated VDOE completer sequences.

| 84210 Technology of Robotics Design Grade 9-11 | → | 8425 Manufacturing Systems Grade 10-12 |

| 8431 Construction Technology Grade 9-10 | → | 8433 Materials and Processes Technology Grade 9-10 | → | 8425 Manufacturing Systems Grade 10-12 |
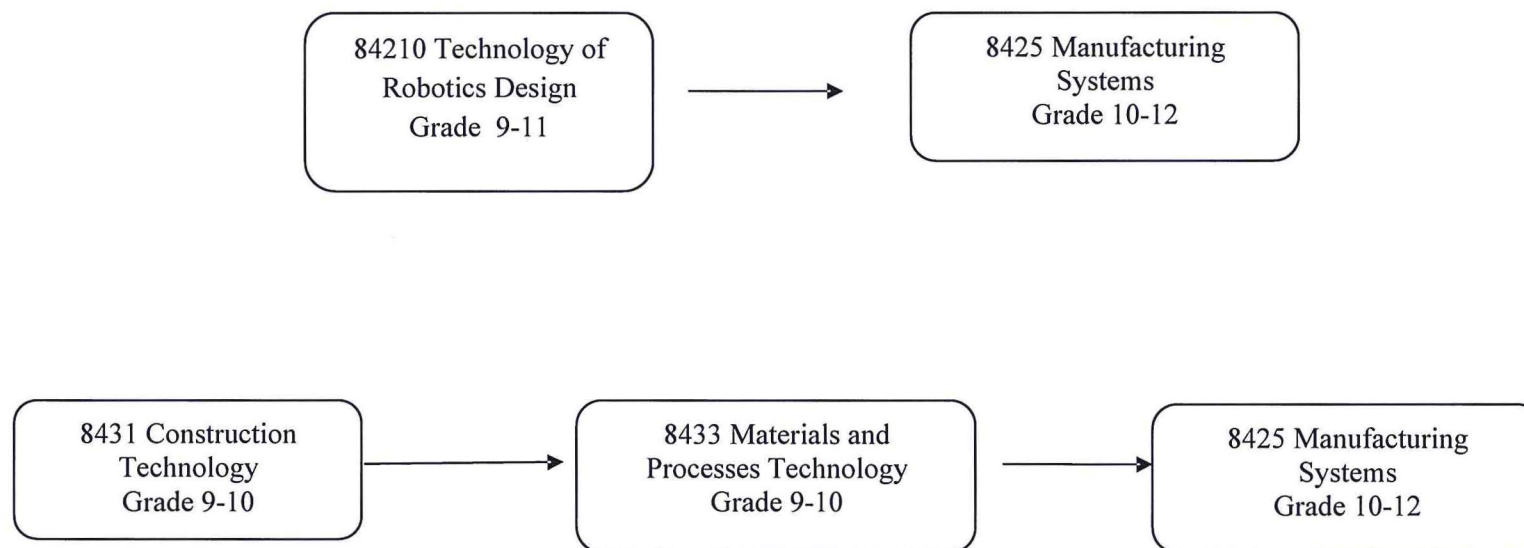
Any Two Coursed in this sequence constituent a Completer Sequence

CABINETMAKING AND CARPENTRY

Arrows denote completer sequences. Courses should be taken in sequential order.
Refer to cteresource.org for updated VDOE completer sequences.

8604 Cabinet Making I (T & I Course) Grade 10-11 140 hours	→	**8605 Cabinet Making II** (T & I Course) Grade 11-12 280 hours

8601 Carpentry I (T & I Course) Grade 10-11 140 hours	→	**8602 Carpentry II** (T & I Course) Grade 11-12 280 hours

8603 Carpentry III
(T & I Course)
Grade 12
280 hours
Optional Course

TRADE AND INDUSTRIAL

Any two courses connected by an arrow constitute a completer sequence. Courses should be taken in sequential order.
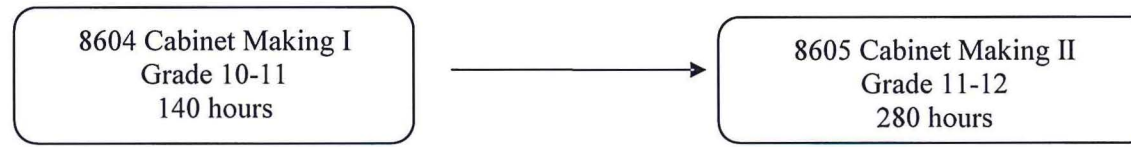Refer to cteresource.org for updated VDOE completer sequences.

ADVERTISING DESIGN

8570 Advertising Design I Grade 10-11	→	8571 Advertising Design II Grade 11-12

AUTOMOTIVE TECHNOLOGY

8506 Automotive Technology I Grade 10-11 140 hours	→	8507 Automotive Technology II Grade 11-12 280 hours	→	8508 Automotive Technology III Grade 12 280 hours

BUILDING TRADES

8515 Building Trades I Grade 10-11 140 hours	→	8516 Building Trades II Grade 11-12 280 hours

CABINET MAKING

| 8604 Cabinet Making I
Grade 10-11
140 hours | → | 8605 Cabinet Making II
Grade 11-12
280 hours |

CARPENTRY

| 8601 Carpentry I
Grade 10-11
140 hours | → | 8602 Carpentry II
Grade 11-12
280 hours | → | 8603 Carpentry III
Grade 12
280 hours |

CINEMA & PHOTOGRAPHIC PRODUCTION I

| 8607 Cinema and Photographic Production I
Grade 9-11
140 hours | → | 8608 Cinema and Photographic Production II
Grade 10-12
280 hours |
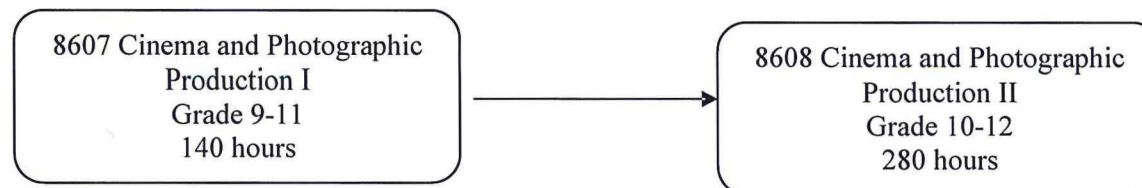
COMPUTER SYSTEMS TECHNOLOGY

8621 Computer Repair and Servicing
Grade 9-10
140 hours
This course is a recommended introductory course and is not part of the completer sequence.

8622 Computer Systems
Technology I
Grade 10-12
140 hours

8623 Computer Systems
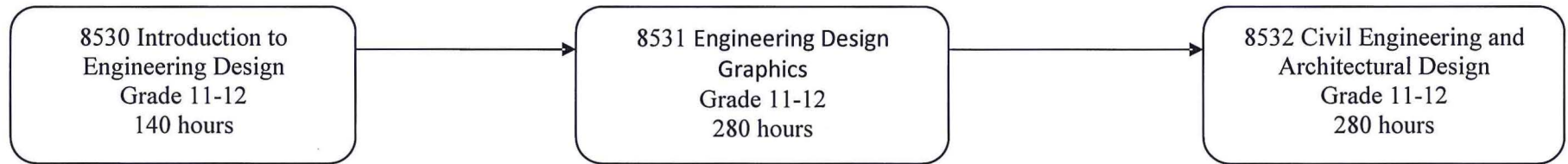Technology II
Grade 11-12
280 hours

COSMETOLOGY

8527 Cosmetology I
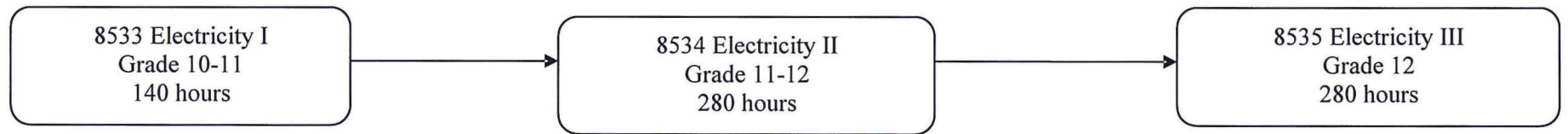Grade 10-11
280 hours

8528 Cosmetology II
Grade 11-12
280 hours

8546 Beauty Salon Assistant
140 hours
Required Course at BHS
A minimum of six credit hours are required for a
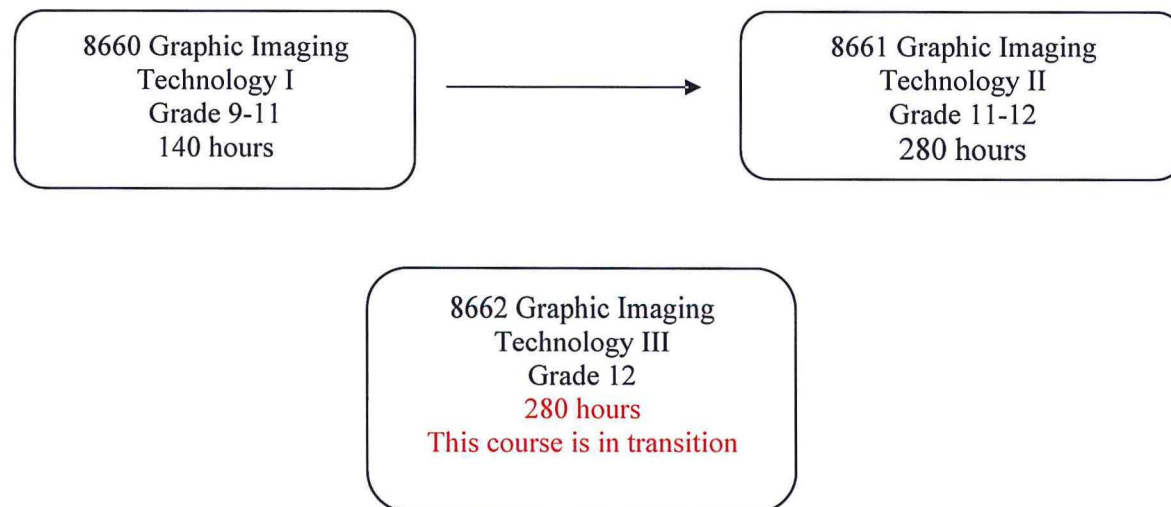completer sequence in Cosmetology

DRAFTING / PRE-ENGINEERING

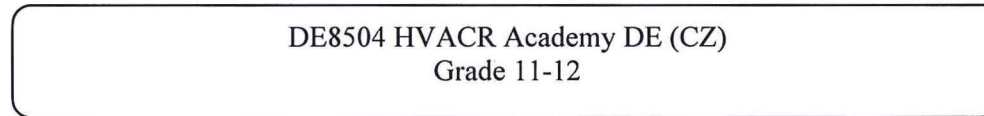| 8530 Introduction to Engineering Design Grade 11-12 140 hours	→	8531 Engineering Design Graphics Grade 11-12 280 hours	→	8532 Civil Engineering and Architectural Design Grade 11-12 280 hours

ELECTRICITY

8533 Electricity I Grade 10-11 140 hours	→	8534 Electricity II Grade 11-12 280 hours	→	8535 Electricity III Grade 12 280 hours

GRAPHIC IMAGING TECHNOLOGY

8660 Graphic Imaging Technology I Grade 9-11 140 hours	→	8661 Graphic Imaging Technology II Grade 11-12 280 hours

8662 Graphic Imaging
Technology III
Grade 12
280 hours
This course is in transition

HVAC ACADEMY

DE8504 HVACR Academy DE (CZ)
Grade 11-12

HVAC

8503 HVACR I Grade 10-11 140 hours	→	8504 HVACR II Grade 11-12 280 hours

PRECISION MACHINING TECHNOLOGY

8539 Precision Machining Technology I Grade 10-11 140 hours	→	8540 Precision Machining Technology II Grade 11-12 280 hours

MCPS Governor's STEM Academy

The Governor's STEM Academy is designed to promote student achievement and interest in STEM fields that are related to Advanced Manufacturing. Skill sets required for high demand STEM fields include Machining, Welding, Engineering, Robotics, and Information Technology.

Students who are interested in registering for the MCPS Governor's STEM Academy may do so by choosing a course from one of the following MCPS Fields of study:

Technical Drawing and Design
Engineering
Precision Machining
Welding
Computer Systems Technology
Computer Information Systems
Robotics
Manufacturing Systems

Register for a course marked as "Governor's STEM Academy Course" in your school's course catalogue. Requirements for completing the STEM Academy and earning a Governor's STEM Academy Seal will be explained to you in your career and technical course.

You may complete the career and technical course without participating in the Academy.

MCPS Governor's STEM Academy Pathways

STEM: Engineering and Technology (PLTW)
84390 Introduction to Engineering Design, DE
84410 Principles of Engineering, DE
84420 Computer Integrated Manufacturing, DE
8430 ARCHITECTURE AND CIVIL ENGINEERING

STEM Engineering and Technology (Technical Drawing and Design)
85300 ENGINEERING DESIGN GRAPHICS
85310 CIVIL ENGINEERING AND ARCHITECTURAL DESIGN GRAPHICS
85320 ADVANCED ENGINEERING DESIGN GRAPHICS
OR
84350 Technical Drawing and Design

84360 Engineering Drawing and Design, DE

84370 Architectural Drawing and Design)

84380 Advanced Drawing and Design, DE (optional)

STEM: Engineering and Technology

84210 Technology of Robotics Design

84250 Manufacturing Systems

Manufacturing: Production

85390 Precision Machining, DE

85400 Precision Machining II, DE

OR

80190 Welding I, DE

80191 Welding II, DE

Information Technology: Programming and Software Development (Computer Programming)

66400 Programming

66410 Advanced Programming

Information Technology: Information Support and Services

66120 Computer Information Systems, DE

66130 Advanced Computer Information Systems

Information Technology: Information Support Services

86220 Computer Systems Technology I

86230 Computer Systems Technology II

86210 Computer Maintenance (Optional)

66700 Information Technology Fundamentals

Information Technology: Web and Digital Communications

66300 Design, Multimedia, and Web Technologies

66310 Advanced Design, Multimedia, and Web Technologies

Information Technology: Network Systems

66500 Computer Network Software Operations I

66510 Computer Network Software Operations II

Manufacturing: Manufacturing Production Process Development

84250 Manufacturing Systems I

84330 Materials and Processes

Architecture and Construction: Construction

84310 Construction Technology

84330 Materials and Processes

86010 Carpentry I

86020 Carpentry II

86030 Carpentry III

86040 Cabinetmaking I

86050 Cabinetmaking II

Robotics (General Elective)

98281 Robotics I

98282 Robotics II

98283 Robotics III

Principals of Technology /Applied Physics (Pending Board Approval)

98110 Principals of Technology /Applied Physics I

98120 Principals of Technology / Applied Physics II