KY Valid Course List

HOW TO USE THIS DOCUMENT

This document contains a listing of course descriptions and parameters along with certifications that fit the parameters for a given course. The grade range and population information listed for each course are not absolute. Please choose the course that most closely represents the students in a given course.

EXAMPLE

John Q Middle School had 5th, 6th, and 7th grade students taking a Creative Art course. This course would be linked to course number **500711: Creative Art – Comprehensive**, which shows with a recommended grade range of 6th – 12th.

The courses listed in this document are not meant to replace the course titles and course numbers already in use at the school level. Schools will link their courses on the Infinite Campus "Course Master" tab OR in the "Course" tab to courses listed in this document.

Schools may have created courses that are very unique in order to meet students' needs. If a course does not meet the definition or content of one contained in this document, please use course number **909999: School Defined Course**, and code the correct content through the LEAD report.

CERTIFICATIONS

It is important to note that the certificates listed are the ones that fit ***ALL*** of the parameters for a specific course – there may be other certificates that can teach it with slightly more restrictive parameters.

It is very important to note that not all of the certificates listed under a specific course will meet the Highly Qualified Teacher standards as defined by The No Child Left Behind Act of 2001. Please refer to the Highly Qualified guidance documents located on the Education Professional Standards Board (EPSB) website at http://www.epsb.ky.gov/nclb.asp.

In addition to Highly Qualified considerations, please take note of the following information from ***The Kentucky Core Academic Standards*** with regard to middle school courses that are offered for high school credit.

High School Credit Earned in Middle School
It is expected that most students will earn these credits during their high school years. However, local school districts may offer these courses to middle level students if the following criteria are met:

- the content and the rigor of the course is the same as established in the *Kentucky Core Academic Standards*
- the students demonstrate mastery of the middle level content as specified in the *Kentucky Core Academic Standards*
- the district has criteria in place to make reasonable determination that the middle level student is capable of success in the high school course
- **the middle level course is taught by teachers with either secondary or middle level certification with appropriate content specialization**

Although middle level courses list the Provisional and Standard Elementary Certificates, Grades 1-8 as allowable under the parameters of these courses, they will not meet the above requirements for courses that are offered for high school credit.

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Please contact Robin Chandler, policy advisor for the Office of Next Generation Learners in KDE, at 502-564-2106 with any questions on content and curricula.

Please contact EPSB's Division of Certification at 502-564-4606 with any questions on credentials or permissions.

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Engineering and Technology Program Area
(210000)

The Engineering and Technology program is a study of technology, innovation, design, and engineering, which provides an opportunity for students to learn about the processes and knowledge related to technology that are needed to solve problems and extended human capabilities.

Engineering and Technology - Technology (210100)

Career Major: Technology courses derive content from the study of technology, innovation, design, and engineering, which provides an opportunity for students to learn about the processes and knowledge related to technology that are needed to solve problems and extend human capabilities. Any course not found under this career major/sub code may be found in another career major/sub code within this program area.

210101 - Invention and Innovation, Grades 6-8

Grade Level: 6 - 8
Credits:
Description: This course provides students with opportunities to apply the design process in the invention or innovation of a new product, process, or system, In this course, students will learn all about invention and innovation. They will have opportunities to study the history of invention and innovations, including their impact on society. They will learn about the core concepts of technology, and about the various approaches to solving problems, including engineering design and experimentation. Students will apply their creativity in the invention and innovation of new products, processes, or systems. Finally students learn about how various invention and innovations impact their lives. Students participate in engineering-design activities to understand how criteria, constraints, and processes affect design. Students are involved in activities where they learn about brainstorming, visualizing, modeling, constructing, testing, experimenting, and refining design. Students also develop skills in researching for information, communicating design information, and reporting results. This Course may be 6 to 18 weeks in duration.
Content: Engineering and Technology
Population: General

210102 - Invention and Innovation, Grades 9

Grade Level: 9 - 9
Credits: 1
Description: This course provides students with opportunities to apply the design process in the invention or innovation of a new product, process, or system, In this course, students will learn all about invention and innovation. They will have opportunities to study the history of invention and innovations, including their impact on society. They will learn about the core concepts of technology, and about the various approaches to solving problems, including engineering design and experimentation. Students will apply their creativity in the invention and innovation of new products, processes, or systems. Finally students learn about how various invention and innovations impact their lives. Students participate in engineering-design activities to understand how criteria, constraints, and processes affect design. Students are involved in activities where they learn about brainstorming, visualizing, modeling, constructing, testing, experimenting, and refining design. Students also develop skills in researching for information, communicating design information, and reporting results. This Course may be 6 to 18 weeks in duration.
Content: Engineering and Technology
Population: General

210103 - Technological Systems, Grades 6-8

Grade Level: 6 - 8
Credits:
Description: This course is intended to inform students how technological systems work together to solve problems and capture opportunities. A system can be as small as two components working together (technical system/device level) or can contain millions of interacting devices (use system/network level). We often break down the macro-systems into less complicated micro-systems in order to understand the entire system better. However, technology is becoming more integrated and systems are becoming more and more dependent upon each other than ever before. Electronic systems are interacting with natural (i.e. biological) systems as humans use more and more monitoring devices for medical reasons. Electrical systems are interacting with mechanical and fluid-power systems as manufacturing establishments become more and more automated. This course will give students general background on the different types of systems but will concentrate more on the connections between these systems. This course may be 6 to 18 weeks in duration.
Content: Engineering and Technology
Population: General

210104 - Technological Systems, Grade 9

Grade Level: 9 - 9
Credits: 1/2
Description: This course is intended to inform students how technological systems work together to solve problems and capture opportunities. A system can be as small as two components working together (technical system/device level) or can contain millions of interacting devices (use system/network level). We often break down the macro-systems into less complicated micro-systems in order to understand the entire system better. However, technology is becoming more integrated and systems are becoming more and more dependent upon each other than ever before. Electronic systems are interacting with natural (i.e. biological) systems as humans use more and more monitoring devices for medical reasons. Electrical systems are interacting with mechanical and fluid-power systems as manufacturing establishments become more and more automated. This course will give students general background on the different types of systems but will concentrate more on the connections between these systems. This course may be 6 to 18 weeks in duration.
Content: Engineering and Technology
Population: General

210105 - Special Technology Topics, Grades 6-8

Grade Level: 6 - 8
Credits: 0
Description: Special Technology Topics allows the teacher to develop a course for in-depth exploration of technological topics. This course will allow students to gain a more comprehensive knowledge of a particular technology topic or explore specialized technology careers. This can be accomplished in a laboratory environment through a variety of instructional strategies. Instruction can be enriched through participation in Kentucky Technology Student Association challenges and/or Project Lead the Way-Gateway to Technology program materials. This optional/additional course may be 6 to 18 weeks in duration and may be taught at any grade level as appropriate.
Content: Engineering and Technology
Population: General

210106 - Special Technology Topics

Grade Level: 9 - 9
Credits: 1/2
Description: Special Technology Topics allows the teacher to develop a course for in-depth exploration of technological topics. This course will allow students to gain a more comprehensive knowledge of a particular technology topic or explore specialized technology careers. This can be accomplished in a laboratory environment through a variety of instructional strategies. Instruction can be enriched through participation in Kentucky Technology Student Association challenges and/or Project Lead the Way-Gateway to Technology program materials. This optional/additional course may be 6 to 18 weeks in duration and may be taught at any grade level as appropriate.
Content: Engineering and Technology
Population: General

210107 - Foundations of Technology

Grade Level: 9 - 12
Credits: 1
Description: This course provides the "foundation" for students to understand and apply technological concepts and processes that are the cornerstone for the high school technology program. Group and individual activities engage students in creating ideas, developing innovations, and engineering practical solutions. Technology content, resources, and laboratory activities encourage student applications of Kentucky Core Content. This course will focus on the three dimensions of technological literacy: 1) knowledge, 2) ways of thinking and acting, and 3) technological capabilities. The goal being that students develop the characteristics of a technologically literate citizen. The course will employ teaching/learning strategies that enable students to build their understanding of new ideas. It is designed to engage students in exploring and deepening their understanding of "big ideas" regarding technology. This can be accomplished through modular or other instructional strategies. Instruction should be enriched through participation in Kentucky Technology Student Association challenges. This course may be 18 or 36 weeks in duration.
Content: Engineering and Technology
Population: General

210108 - Technological Design

Grade Level: 9 - 12
Credits: 1
Description: This course contributes to the development of each high school student's capability to understand how technology's development, control and use are based on design constraints and human wants and needs. The structure of the course challenges students to use technological design processes so that they can think, plan, design and create solutions to engineering and technological problems. Students are actively involved in the organized and integrated application of technological resources, engineering concepts, and scientific procedures. Students address the complexities of technology that stem from designing, developing, using and assessing technological systems. The goals of this course can be accomplished through various laboratory instructional strategies utilizing the seven contexts of technological literacy. Instruction should be enriched through the participation in Kentucky Technology Student Association challenges. This course may be 18 or 36 weeks in duration.
Content: Engineering and Technology
Population: General

210109 - Technological Issues and Impacts

Grade Level: 9 - 12
Credits: 1
Description: This course addresses the positive and negative impacts of technology and the intended and unintended results of its implementation. Students investigate and analyze critical historical and emerging issues affecting the creation, development, use and control of contemporary and future technology. Laboratory activates will allow students to propose and implement alternative solutions. Students will measure, quantify, assess, and communicate the impacts of these proposals and the issues that accompany them. The goals of this course can be accomplished through various classroom and laboratory instructional strategies. Instruction should be enriched through participation in Kentucky Technology Student Association challenges. This course may be 18 or 36 weeks in duration.
Content: Engineering and Technology
Population: General

210110 - Engineering Design (Capstone)

Grade Level: 9 - 12
Credits: 1
Description: Engineering scope, content, and professional practices are presented through practical applications in this capstone course. Students in engineering teams apply technology and Kentucky Core Content and skills to solve engineering design problems and create innovative designs. Students research, develop, test and analyze engineering designs using criteria such as design effectiveness, public safety, human factors and ethics. Instruction should be enriched through participation Kentucky technology Student Association challenges. This course may be 18-36 weeks in duration.
Content: Engineering and Technology
Population: General

210111 - Special Problems in Technology

Grade Level: 9 - 12
Credits: 1-4
Description: This independent-study course is designed to allow a high school student to study in-depth a technology topic or issue. The experience will enable the student to gain a more comprehensive knowledge of a particular technological context. A variety of instructional strategies using multiple resources, specialized laboratories, and collaboration with mentoring experts should be encouraged. Independent studies and/or internships could be utilized. Instruction should be enhanced through participation in Kentucky Technology Student Association challenges. This course may be 18 to 36 weeks in duration.
Content: Engineering and Technology
Population: General

210112 - Special Topics, Technology Education

Grade Level: 9 - 12
Credits: 1-4
Description: Special Technology Topics allows the teacher to develop a course for in-depth exploration of technological topics. This is a laboratory-based course designed to study a technological system or topic, and/or a recent technological advancement. This study should include how this advancement affects society and/or the environment. A culminating project integrating one or more of the seven contexts of technological literacy and the Kentucky Core Content is encouraged. It should include research, design, construction, analysis, writing, and presenting. Instruction should be enriched through participation in Kentucky Technology Student Association. This course may be 18 to 36 weeks in duration.
Content: Engineering and Technology
Population: General

210116 - Foundations of Energy

Grade Level: 9 - 12
Credits: 1
Description: This course provides an overview of renewable and nonrenewable energy resources reflecting how energy impacts the environment and the economy from regional, state, national and global perspectives. Extensive hands-on laboratory activities are vital components of the curriculum. This course can provide a basis for students working toward career pathways in energy such as Engineering/Technology, Construction and Manufacturing Technology.
Content: Engineering and Technology
Population: General

210117 - Advanced Design Applications

Grade Level: 11 - 12
Credits: 1
Description: This course consists of the first four units of the ProBase curriculum. These units are Manufacturing, Energy and Power, Construction and Transportation. The Manufacturing unit examines the advance that maintain manufacturing efficiency, how human consumption affects manufacturing, how manufacturing affects the standard of living of various peoples, and how processing and changing raw materials can produce more desirable products. The Construction unit examines a number of the factors influencing the design and construction of permanent and semi-permanent structures. The practice related to construction maintenance, alterations, and renovation, and the functions of the primary systems installed in those structures. The Energy and Power unit explores the relationship between energy and power system impact cultures, societies and the environment. It also offers an examination of how energy and power systems can be made more efficient and how they may be utilized in problem solving. The Transportation unit examines the complex networks of interconnected subsystems that each transportation system comprises and the roles of these components in the overall functional process of the system. It also analyzes the improvements and the impacts of transportation technologies on the environment, society, and culture. Each of the four units is approximately 9 weeks in length. If the course is scheduled for 18 weeks, only 2 units can be completed. Completion of all four units requires a 36 week course.
Content: Engineering and Technology
Population: General

210118 - Advanced Technological Applications

Grade Level: 11 - 12
Credits: 1
Description: This course consists of the first four units of the ProBase curriculum. These units are: Information Technology, Agriculture and Bio-Related Technologies, Medical and Entertainment/Recreation Technology. The Information Technologies unit examines how technology facilitates the gathering, manipulation, storage and transmission of data and how this data can be used to create useful products. It also provides students with opportunities for developing communication systems that can solve technological problems. The Agriculture and Biorelated Technologies unit explores how agriculture technologies provide increased crop yields and allow adaptation to changing and harsh environments, enabling the growth of plant and animals for various uses. It also offers an analysis of the various uses of biotechnology and the ethical considerations of those uses. The Medical Technologies unit provides and analysis of how medical technologies are used to increase the quality and length of human life, and require public debate. Students will also examine tools and devices used to repair and replace organs, prevent disease and rehabilitate the human body. The Entertainment/Recreation unit provides a study of technological entertainment and recreation systems, with an examination of the differences between these technologies, of how their use enhances human leisure-time performance and of the social, cultural and environmental implications of their usage. Each of the four units is approximately 9 weeks in length. If the course is scheduled for 18 weeks, only 2 units can be completed. Completion of all four units requires a 36 week course.
Content: Engineering and Technology
Population: General

210127 - Exploring Technology, Grades 6-8

Grade Level: 6 - 8
Credits:
Description: Students develop and understanding of the progression and scope of technology through exploratory experiences. In group and individual activates, student experience ways in which technological knowledge and processes contribute to effective design and solutions criteria, constraints, and processes affect designs. Brainstorming, visualizing, modeling, constructing, testing, and refining designs provide first hand opportunities for students to understand the uses and impacts of innovations. Students develop skills in communications design information and reporting results. Instructional design may utilize modular or other instructional strategies. Participation in Kentucky Technology Student Association will greatly enhance instruction. This course may be 6 to 18 weeks in duration.
Content: Engineering and Technology
Population: General

210128 - Exploring Technology, Grade 9

Grade Level: 9 - 9
Credits: 1/2
Description: Students develop an understanding of the progression and scope of technology through exploratory experiences. In group and individual activates, student experience ways in which technological knowledge and processes contribute to effective design and solutions to technological problems. Students participate in design activities to understand how criteria, constraints, and processes affect designs. Brainstorming, visualizing, modeling, constructing, testing, and refining designs provide first hand opportunities for students to understand the uses and impacts of innovations. Students develop skills in communications design information and reporting results. Instructional design may utilize modular or other instructional strategies. Participation in Kentucky Technology Student Association will greatly enhance instruction. This course may be 6 to 18 weeks in duration.
Content: Engineering and Technology
Population: General

210316 - Leadership Dynamics, Engineering and Technology

Grade Level: 9 - 12
Credits: 1/2-1
Description: This course is designed to assist students with developing skills needed to be successful leaders and responsible members of society. The student will develop personal attributes and social skills. Emphasis will be placed on interpersonal skills, team building communication, personal development and leadership. This course will include opportunities for students to apply their knowledge.
Content: Leadership Dynamics
Population: General

Engineering and Technology - Engineering
(219900)

Career Major: Engineering is a four year sequence of courses which, when combine with traditional mathematics and science courses in high school, introduces students to the scope, rigor and discipline of engineering. Any course not found under this career major/sub code may be found in another career major/sub code with in this program area.

219901 - Introduction to Engineering Design

Grade Level: 9 - 12
Credits: 1
Description: Students explore technology systems and engineering processes to find out how math, science, and technology help people.
Content: Pre-Engineering
Population: General

219902 - Principles of Engineering

Grade Level: 9 - 12
Credits: 1
Description: Using computer modeling software, students learn the design process. They solve design problems as they develop, create, and analyze product models.
Content: Pre-Engineering
Population: General

219903 - Digital Electronics

Grade Level: 9 - 12
Credits: 1
Description: Students use computer simulations to learn about the logic of electronics as they design, test, and actually construct circuits and devices.
Content: Pre-Engineering
Population: General

219904 - Computer Integrated Manufacturing

Grade Level: 9 - 12
Credits: 1
Description: Students learn concepts of robotics and automated manufacturing by creating three-dimensional designs with modeling software and producing models of their designs.
Content: Pre-Engineering
Population: General

219905 - Civil Engineering and Architecture

Grade Level: 9 - 12
Credits: 1
Description: Teams of students collaborate on the development of community -based building projects and conceptual design for project presentations.
Content: Pre-Engineering
Population: General

219906 - Engineering Design and Development (Capstone)

Grade Level: 9 - 12
Credits: 1
Description: Teams of students, guided by community mentors, work together to research, design, and construct solutions to engineering problems.
Content: Pre-Engineering
Population: General

219907 - Aerospace Engineering

Grade Level: 11 - 12
Credits: 1
Description: This course will introduce students to aerospace information systems, star sailing or astronautics rocketry, propulsion, and the physics of space science, space life sciences (BioSpace) that includes looking at habitat and crew systems with life support, and the biology of space science, principles of aeronautics, structures and materials, and systems engineering.
Content: Pre-Engineering
Population: General

219908 - Biotechnical Engineering

Grade Level: 11 - 12
Credits: 1
Description: This course includes experiences from the diverse fields of Bio-technology, Bio-engineering, Bio-medical engineering, and Bio-molecular engineering. Lessons engage students in engineering design problems that can be accomplished in a high school setting related to biomechanics, cardiovascular engineering, genetic engineering, agricultural biotechnology, tissue engineering, biomedical devices, human interface, bioprocess engineering, forensics, and bio-ethics.
Content: Pre-Engineering
Population: General

219917 - Special Topics, Engineering

Grade Level: 9 - 12
Credits: 1-4
Description: Special Technology topics allows the teacher to develop a course for in-depth exploration of technological topics. This is a laboratory-based course designed to study a technological system or topic, and/or a recent technological advancement. This study should include how this advancement affects society and/or the environment. A culminating project integrating one or more of the seven contexts of technological literacy and the Kentucky Core Content is encouraged. It should include research, design, construction, analysis, writing, and presenting. Instruction should be enriched through participation in Kentucky technology Student Association. This course may be 18 to 36 weeks in duration.
Content: Pre-Engineering
Population: General

219999 - Gateway to Engineering Grade 6-8 (Project Lead The Way)

Grade Level: 6 - 8
Credits:
Description: This course is "activity oriented" to show students how technology is used in engineering to solve everyday problems. The four instructional units excite and motivate students to use their imagination and teach them to be creative and innovative, while gaining the skills they need to develop, produce and use products and services.
Content: Pre-Engineering
Population: General