

A green, curved line representing a hill. On the hill, there are five black silhouettes of people walking from left to right. The first person is sitting on the ground, the second is walking, the third is walking, the fourth is walking, and the fifth is wearing a graduation cap.

## Indiana Department of Education

**Glenda Ritz, NBCT**  
Indiana Superintendent of Public Instruction

### MEMORANDUM

**TO:** State Board of Education

**FROM:** Jenny Berry, Director, College and Career Readiness

**DATE:** April 24, 2015

**SUBJECT:** Changes to Approved Course Titles and Descriptions

The Department of Education proposes the following changes to Indiana's state approved course titles, based on demand and feedback from Indiana's secondary education community, post-secondary/higher education, and business/industry partners. These changes expand the offerings available to schools, increase flexibility and clarity, facilitate alignment and sequencing of general/liberal arts courses and Career and Technical Education (CTE) courses, and increase accuracy of enrollment reports. Although most schools would implement these courses beginning in 2016-2017, they will be included in the 2015-2016 state approved course titles for use by those schools with the flexibility to implement them sooner.

#### Proposed changes to Indiana's state approved courses

**Computer Science I** (replaces Computer Programming I and Computer Science and Software Engineering PLTW)

*Computer Science I* introduces the structured techniques necessary for efficient solution of business-related computer programming logic problems and coding solutions into a high-level language. The fundamental concepts of programming are provided through explanations and effects of commands and hands-on utilization of lab equipment to produce correct and accurate outputs. Topics include program flowcharting, pseudo coding, and hierarchy charts as a means of solving problems. The course covers creating file layouts, print charts, program narratives, user documentation and system flowcharts for business problems; algorithm development and review, flowcharting, input/output techniques, looping, modules, selection structures, file handling, and control breaks and offers students an opportunity to apply skills in a laboratory environment. Prerequisite is Introduction to Computer Science.

*Rationale:* Several similar curricular programs and instructional materials have been developed and are becoming available for schools. This change to a vendor-neutral sequence of course titles supports local control of selection of curricular programs and instructional materials, and avoids the need for creating multiple vendor-specific course titles.

**Computer Science II: Programming** (formerly Computer Programming II)

*Computer Science II: Programming* explores and builds skills in programming and a basic understanding of the fundamentals of procedural program development using structured, modular concepts. Coursework emphasizes logical program design involving user-defined functions and standard structure elements. Discussions will include the role of data types, variables, structures, addressable memory locations, arrays and pointers and data file access methods. An emphasis on logical program design using a modular approach which involves task oriented program functions. Prerequisite is Computer Science I.

**Computer Science II: Databases** (new course)

*Computer Science II: Databases* introduces students to the basic concepts of databases including types of databases, general database environments, and the importance of data to the business world. Discussion with hands-on activities will include database design, normalization of tables, and development of tables, queries, reports, and applications. Students will be familiarized with the use of ANSI standard Structured Query Language. Discussions will include database administration and data maintenance. Students will be introduced to data concepts such as data warehousing, data mining, and BIG Data. Students will develop a business application using database software such as Microsoft Access. Students will be required to demonstrate skills such as team building, work ethic, communications, documentation, and adaptability. Prerequisite is Computer Science I.

**Computer Science II: Informatics** (new course)

*Computer Science II: Informatics* introduces the student to terminology, concepts, theory, and fundamental skills used to implement information systems and functions in a wide variety of applications from small businesses to large enterprise organizations. Topics include the history of and trends in computing, operating systems, security, cloud implementations and other concepts associated with applying the principles of good information management to the organization. Prerequisite is Computer Science I.

**Computer Science II: Special Topics** (new course)

*Computer Science II: Special Topics* is an extended experience designed to address the advancement and specialization of computer science careers allowing schools to provide a specialized course for a specific computer science workforce need in the school's region. It prepares students with the knowledge, skills and attitudes essential for working in the field of computer science. Course standards and curriculum must be tailored to the specific computer science specialization. Preparing students to advance in this career field and should also provide students with opportunities for certification or dual credit. Prerequisite is Computer Science I.

**Digital Applications and Responsibility** (formerly Information Communications and Technology)

*Digital Applications and Responsibility* prepares students to use technology in an effective and appropriate manner in school, in a job, or everyday life. Students develop skills related to word processing, spreadsheets, presentations, and communications software. Students learn what it means to be a good digital citizen and how to use technology, including social media, responsibly. Students expand their knowledge of how to use digital devices and software to build decision-making and problem-solving skills. Students should be provided with the opportunity to seek industry-recognized digital literacy certifications.

**Digital Citizenship** (will be moved to the elementary/middle school course titles)

*Digital Citizenship* will no longer be needed as a high school course because schools can offer two semesters of the computer applications course with the change to Digital Applications and Responsibility, which will be a one or two semester course. Elementary and middle schools have asked for a separate subject title in order to more accurately report their providing this instruction to their students.

**Quantitative Reasoning** (new course)

*Quantitative Reasoning* is a mathematics course focused on the study of numeracy, ratio and proportional reasoning, modeling, probabilistic reasoning to assess risk, and statistics. The Process Standards for Mathematics are applied throughout and, together with the content standards, prescribe that students experience mathematics as a coherent, useful, and logical subject. Students build knowledge of and confidence with basic mathematical/analytical concepts and operations required for problem solving, decision making, and economic productivity in real world applications and prepare for an increasingly information-based society in which the ability to use and critically evaluate information, especially numerical information, is essential. Technology, such as computers and graphing calculators, should be used frequently. This higher-level mathematics course is designed to align with college-level quantitative reasoning courses for dual secondary/college credit.

*Rationale:* Most of our state approved math courses, to be taken after Algebra II, are designed for students with interest in STEM careers and STEM related fields of study. A Quantitative Reasoning course would fulfill the need for a fourth year math course for students in non-STEM pathways. Many colleges, including Ivy Tech, ISU and USI, have added a quantitative reasoning course to degree requirements for multiple majors. The Quantitative Reasoning course will be aligned to these college courses so that dual credit can be given if the school has a dual credit agreement with the college or university.

**Algebra I Lab** (course title correction; formerly Algebra Enrichment)

*Rationale:* *Algebra I Lab* provides the additional time and instructional support some students need to succeed in *Algebra I*. Students who need additional time and instructional reinforcement enroll this class concurrently with *Algebra I* course so is a help course rather than an enrichment course. This change in course title clarifies the purpose of this course, which is to build and strengthen the student's foundation of knowledge and skills necessary for *Algebra I* and subsequent courses in mathematics.

**Integrated Mathematics I Lab** (course title correction; formerly Integrated Mathematics Enrichment)

*Rationale:* *Integrated Mathematics I Lab* provides the additional time and instructional support some students need to succeed in *Integrated Mathematics I*. Students who need additional time and instructional reinforcement enroll this class concurrently with *Integrated Mathematics I*, so it is a help course rather than an enrichment course. This change in course title clarifies the purpose of this course, which is to build and strengthen the student's foundation of knowledge and skills necessary for *Integrated Mathematics I* and subsequent courses in mathematics.