



— Teach —

I N D I A N A

Program Catalog 2020 - 2021

Graduate Courses

Undergraduate Courses

Conferences

Workshops

Welcome from the Program Director

Dear Indiana K-12 Educators,

STEM Teach is pleased that you are interested in participating in professional development opportunities for science, technology, engineering and math designed specifically for classroom teachers. As a current K-12 in-service teacher in Indiana, you are eligible to participate in STEM Teach offerings at no cost to you.

In this program guide, you will find descriptions of all of the offerings tentatively planned for six semesters to include Spring 2020 through Summer 2021, as well as the necessary information of how to apply, register and participate in STEM Teach.

What is STEM Teach?

STEM Teach is a partnership of CELL (Center of Excellence in Leadership of Learning) and ICI (Independent Colleges of Indiana) and has been awarded a fourth round of funding from the Indiana Commission for Higher Education through the state of Indiana. The primary focus of STEM Teach is to increase the number of dual-credit teachers in STEM fields, as well as provide learning opportunities to boost STEM instruction in grades K through 12.

STEM Teach offerings are from various independent and public higher education institutions at NO COST to schools or teachers. These offerings include:

- Graduate and undergraduate courses in content areas such as biology, chemistry, mathematics, physics, environmental science, psychology, agriculture, computer science and technology
- Regional workshops from higher education institutions designed specifically for K-12 teachers to enhance STEM instruction
- Scholarships to STEM-related educational conferences in Indiana

We hope that you find the offerings included in STEM Teach to be challenging, successful and rewarding experiences that will assist you with providing a high-quality STEM education to Hoosier students.

Please feel free to reach out to me with questions, or visit our website regularly for more information at www.stemteachindiana.org.

Sincerely,



Director of Strategic Initiatives

STEM Teach IV is a project of the Independent Colleges of Indiana (ICI) in partnership with the Center of Excellence in Leadership of Learning (CELL) at the University of Indianapolis. Through a state grant, it brings together a group of ICI member colleges and public institutions to offer STEM courses and workshops for in-service K-12 teachers in Indiana.

CELL | Center of Excellence
in Leadership of Learning
UNIVERSITY OF INDIANAPOLIS



INDEPENDENT COLLEGES
INDIANA

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Getting Started

Note: This is a working document and will change as course or workshop information is updated.

Applying to the Program

STEM Teach IV accepts applications from teachers who are interested in taking graduate or undergraduate classes, workshops or receiving scholarships to attend conferences. "Applying" to STEM Teach simply means teachers create an account in order to verify teaching status and allow permission to receive notifications regarding application and registration windows or future offerings. An account is required to access the STEM Teach online teacher portal and register for offerings.

The application must be completed in one sitting. It takes approximately 10 minutes to complete the application.

Steps to apply include:

1. Locate teaching license number and school administrator contact information.

Attention dual credit teachers: Please note that a letter from a school administrator must be included with an application and it must acknowledge the following:

- Teacher is applying to take courses, workshops, or attend conferences through STEM Teach IV
 - Statement of need indicating that the teacher needs to complete courses in "specified" content area for the school to continue offering dual credit courses (to students) OR statement of need indicating that teacher needs to complete courses in "specified" content area for the school to offer dual credit courses in the future (to students)
 - Name, title, and signature of administrator on school or district letterhead
2. Create an account in the online teacher portal <https://stemteach.azurewebsites.net/>
 3. Watch for an email from STEM Teach IV within a few weeks of the application. If the application was approved, instructions will be provided for registration based on priority status (dual credit teachers have

designated priority registration windows). For more detailed information about the application process visit the STEM Teach website at www.stemteachindiana.org.

Registering for Offerings

The online course catalog will be available during each registration window. Detailed course information is released prior to each semester via the course catalog on the STEM Teach website. Teachers should review course syllabi and workshop learning outcomes posted online prior to registering for each offering.

After reviewing the course offerings, teachers may log into the STEM Teach portal and register for courses, workshops, or conference scholarships during a registration window. Teachers may register for one course **and** one conference **OR** workshop per semester.

STEM Teach IV Timeline

Semester	STEM Teach Term	Offering Window
Spring 2020	Semester 1	January - May
Summer I & II	Semester 2 & 3	May - August
Fall 2020	Semester 4	September - December
Spring 2021	Semester 5	January - May
Summer I 2021	Semester 6	May - July
Summer II 2021 (If funds allow)	Semester 7	June - August

Preparing for Offerings

After teachers register for an offering, they will receive a confirmation email from STEM Teach verifying the registration. Once the registration window closes for a semester, STEM Teach will send registration lists to the higher education institution offering the course or workshop. A few weeks prior to the start of the class or workshop, the higher education institution will reach out to registrants to request any additional necessary information as well as provide directions for accessing the course or workshop.

Each higher education institution is responsible for providing textbooks or

materials to each participant for each offering. Some of these textbooks or materials are rentals and must be returned per the institution's instructions while others may be kept by the participant. Participants should work with the representative at the college or university to understand the materials or textbook policy for each offering.

Using the Program Catalog

This catalog is provided as a tool for teachers to view brief descriptions of offerings and plan out the courses, workshops or conference scholarship opportunities that they would like to participate in from Spring 2020 through Summer I 2021. Full course and workshop descriptions will be available in the online course catalog and through the teacher portal when registration opens for each semester.

It is important to note that as registration concludes for each semester, it may be necessary to cancel offerings due to low enrollment numbers or changes at the higher education institution providing the offering.

Staying Informed

STEM Teach IV will send out updates via email from time to time. Visit the homepage of the website to sign up for updates. www.stemteachindiana.org

Providing Feedback on an Offering

After teachers complete a course or workshop, they are invited via email to complete a survey. The survey is an invitation to provide anonymous feedback to STEM Teach regarding the overall program the higher education institution offering the course regarding the course and instructor.

Hearing from Previous Participants

STEM Teach asked previous participants what they would tell fellow teachers about the program. Some of the responses are included below:

"I would tell them it is a great program and very straight-forward and easy to follow. I've never had any issues and the questions I've had get answered very quickly. I would encourage them to enroll as this is a great opportunity to have graduate level classes for free as well as still provide the dual credit

opportunity to the high school students they teach."

"I would tell other teachers that they should take advantage of the very generous STEM Teach III program. The opportunity to earn graduate-level credits at no or reduced cost is exceeding rare and should be valued. I can't think of a reason why someone should not do it, within reason."

"It is a solid program and good opportunity to get teachers up to par for HLC requirements without asking of them anything more than time and dedication to their field. Being able to sharpen my skills and expand my credentials as an educator without needing to further my debt has been liberating."

"Enroll and embrace the challenge. Teachers need to understand that it is not going to be easy but enjoy the struggles and successes."

"The program is wonderful, I like the online aspect so that I can work on my own pace."

"The courses are challenging, but the online format, and the financial format make it worth it."

"This is an opportunity to widen knowledge base and there is no reason not to do it!"

"This course reminded me of the thinking process needed to perform upper level math. I intend to focus more on having my students think as opposed to simply being able to perform tasks."

Program Guidelines

Cancellation of Offerings

Minimum enrollments are needed for each offering. After registration is completed, STEM Teach will determine if there are enough registrants for each offering. In the event there are not enough teachers enrolled in an offering, STEM Teach will notify teachers of any cancellations for which they were registered.

Dropping an Offering

Teachers should give thoughtful consideration to registration and enrollment in this grant-funded opportunity. If a teacher is unable to complete a course or workshop, another teacher will have missed out on the opportunity to participate.

If a teacher needs to drop/withdraw from the course or workshop for emergency reasons, inform the instructor **and** STEM Teach IV as soon as possible. The instructor will inform the teacher if he/she needs to go through the institution's drop process.

If a teacher does not successfully complete the offering or withdraws from STEM Teach IV offerings, they may not have the opportunity to register for future courses or offerings through STEM Teach.

HLC Policies for Dual Credit Teachers

STEM Teach offers graduate courses to in-service teachers to complete the requirements from the Higher Learning Commission (HLC) for teaching dual credit courses. The HLC requires that all dual credit teachers have a master's degree in the specific content area in which they teach a dual credit course or a master's degree plus 18 graduate credit hours in the specific content area. For more information visit the HLC website at http://download.hlcommission.org/FacultyGuidelines_2016_OPB.pdf. Teachers must work with their school's primary dual credit provider prior to registering for a course to ensure that a course will count towards credentialing.

Frequently Asked Questions

HOW DO I BECOME ELIGIBLE TO PARTICIPATE IN STEM TEACH IV?

In order to be eligible for STEM Teach IV, teachers must apply via an online application to participate in this grant-funded opportunity.

WHO IS ELIGIBLE FOR COURSES, WORKSHOPS AND CONFERENCE SCHOLARSHIPS?

All applicants must be currently teaching in an Indiana school and may be required to submit a letter of verification from a school administrator.

MAY TEACHERS ENROLL DIRECTLY INTO COURSES OR WORKSHOPS AT ANY INSTITUTION THAT IS PARTICIPATING IN STEM TEACH?

No. Teachers must register for courses through the STEM Teach teacher portal to be eligible for this grant-funded opportunity.

WILL TEACHERS RECEIVE A DEGREE OR CERTIFICATE FROM STEM TEACH?

STEM Teach IV does not provide degrees or certificates; it provides opportunities to take graduate and undergraduate level courses as well as workshops at participating higher education institutions that may count toward degrees or certificates.

ARE THERE FEES OR CHARGES ASSOCIATED WITH TAKING STEM TEACH IV COURSES OR WORKSHOPS?

Tuition and book/materials fees are at no cost to eligible teachers who participate in STEM Teach IV.

HOW DO I PROVIDE FEEDBACK ON A COMPLETED COURSE OR WORKSHOP?

After completion, each teacher will receive an email with a link to a survey for feedback about the program, course, instructor, etc. Participation in surveys is strongly encouraged to continue improving the STEM Teach program.

Spring 2020 Graduate Courses

BIO 504 Genetics

Indiana Wesleyan University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: Integrates basic principles of genetics in eukaryotes and prokaryotes at the level of molecules, cells, and multi-cellular organisms including humans; also covered are Mendelian genetics, the molecular basis of gene function and mutation, transmission systems, population, and evolutionary genetics

Related Offerings:

BIO 504 Genetics (Spring 2020)

BIO 501 Biological Chemistry (Summer I 2020)

BIO 505 Human Physiology (Summer II 2020)

BIO 502 Cell Biology (Fall 2020)

BIO 503 Systems Biology (Late Fall 2020)

BIO 506 Microbiology (Spring 2021)

BIO 587 Bioinformatics

Indiana State University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: Fundamental review of the cellular and biomolecular basis of inheritance using a genome-scale perspective; description of emerging genomics technologies and techniques, basic bioinformatics methods and tool applications within the domains of medicine and biology

Related Offerings:

BIO 587 Bioinformatics (Spring 2020)

BIO 633 Adv Pathophysiology (Summer I 2020)

CHEM T 520 Organic Synthesis

Indiana University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: Major topics and themes in organic synthesis, stereoselective synthesis, medicinal chemistry, biosynthesis, bioinspired (or biomimetic) synthesis and polymer synthesis

Related Offerings:

CHEM T 520 Organic Synthesis (Spring 2020)

CHEM T 590 Chemistry Capstone (Summer I 2020)

Additional chemistry courses to be determined

IT 502 Introduction to Programming

Valparaiso University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite: Basic understanding of College Algebra

Topics: Introduction to programming (assumes no previous experience)

Sequential Offerings:

IT 502 Introduction to Programming (Spring 2020)

IT 510 Introduction to IT (Summer I 2020)

IT 533 Data Mining (Summer II 2020)

IT 632 Instructional Design in IT (Summer II 2020)

IT 600 Ethics in Information Technology (Fall 2020)

IT 560 Mobile Computing (Spring 2021)

IT 603 Information Management (Spring 2021)

IT 540 Web Programming (Summer I 2021)

Math 502 Abstract Algebra

Indiana Wesleyan University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: Study of algebraic structures and major theorems, group theory and ring theory, field theory, and Galois theory

Related Offerings:

Math 502 Abstract Algebra (Spring 2020)

Math 504 Real Analysis (Summer I 2020)

Math 501 Linear Algebra (Summer II 2020)

Math 505 Statistical Methods (Fall 2020)

Math 506 Modern Geometry (Late Fall 2020)

Math 503 Advanced Calculus (Spring 2021)

Math 511 Theory of Numbers

Indiana State University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite: MATH 320 with a C or better

Topics: Distribution of primes, divisibility, modular arithmetic, quadratic reciprocity, arithmetic functions and applications on Cryptography

Related Offerings:

Math 511 Theory of Numbers (Spring 2020)

Math 604 Euclidean Concepts of Geometry (Summer I 2020)

Math 541 Probability (Fall 2020)

Math 640 Graph Theory (Fall 2020)

Math 542 Mathematical Statistics (Spring 2021)

Math 512 Abstract Algebra (Summer I 2021)

PHYS 501 Mathematical Methods in Physics

Indiana Wesleyan University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: Develops a mathematical foundation to succeed in graduate level courses in classical mechanics, electrodynamics, thermodynamics/statistical physics, and modern and quantum physics

Sequential Offerings:

Physics 501 Mathematical Methods in Physics (Spring 2020)

Physics 502 Classical Mechanics (Summer I 2020)

Physics 503 Electromagnetism (Summer II 2020)

Physics 504 Intro to Quantum Mechanics (Fall 2020)

Physics 505 Quantum Mechanics II (Spring 2021)

Physics 506 Thermodynamics and Statistical Mechanics (Summer 2021)

Spring 2020

Undergraduate Courses

CS 151 Intro to Computer Science

Indiana State University

Undergraduate Credit Hours: 3

Format: Online

Teacher Level: Grade K-12

Prerequisite:

Topics: Explores core concepts that are foundational in computer science – including programming, use of computers for dealing with files and programs, how data is stored and number systems

Related Offerings:

ITSC 122 Computer Programming II (Python) (Summer I 2020)

CS 101 Fundamentals of Computing (Spring 2021)

ITSC 121 Computer Programming I – Python

Bethel University

Format: Online

Undergraduate Credit Hours: 3

Teacher Level: Grade K-12

Prerequisite: College Algebra

Topics: Introduction to computer application development using a high-level, object oriented, GUI based language – Python; problem solving methods, algorithms, controls structures, documentation, and debugging

Related Offerings:

ITSC 122 Computer Programming II (Python) (Summer I 2020)

CS 101 Fundamentals of Computing (Spring 2021)

Spring 2020 Conferences & Workshops

Conferences

HASTI Conference

The 49th Annual HASTI Conference, February 9 – 11, 2020, at the Wyndham – Indianapolis West offers approximately 130 sessions spanning three days along with an Exhibit Hall featuring leaders in the STEM industry.

Purdue STEM Conference

The fifth-annual Indiana STEM Education Conference, January 15, 2020, at Purdue University in West Lafayette, Indiana addressed the STEM education needs of K-12 teachers and schools.

Summer I 2020 Graduate Courses

BIO 501 Biological Chemistry

Indiana Wesleyan University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite: A bachelor's degree with a Biology major or must be state certified (in any state) to teach Biology at a secondary school level. Undergraduate coursework must include a "C" level or higher in Introductory Biology, Introductory Biology Lab, General Chemistry, and General Chemistry Lab.

Topics: Provides an intermediate understanding of chemical principles in biology and focuses on the study of proteins, carbohydrates, lipids, and nucleic acids in a biological context; enzymes, metabolism, and gene expression are also investigated

Related Offerings:

BIO 504 Genetics (Spring 2020)

BIO 501 Biological Chemistry (Summer I 2020)

BIO 505 Human Physiology (Summer II 2020)

BIO 502 Cell Biology (Fall 2020)

BIO 503 Systems Biology (Late Fall 2020)

BIO 506 Microbiology (Spring 2021)

BIO 633 Advanced Pathophysiology

Indiana State University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite: Human Physiology or General Physiology Course

Topics: The course builds on a basic understanding of pathophysiology, providing in-depth understanding of adaptation and alteration in cellular function, biorhythms, cardiovascular system, pulmonary system, neuroendocrine system, immune system, and musculoskeletal system. Alterations due to internal/external stressors and aging will be identified.

Related Offerings:

BIO 633 Adv Pathophysiology (Summer I 2020)

BIO 647 Exp Morphogenesis Vascular Plants (Spring 2021)

CHEM T 590 Chemistry Capstone

Indiana University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite: 9 graduate hours already completed in chemistry

Topics: An integration of knowledge and understanding from the literature that transcends subdisciplinary boundaries of chemistry

Related Offerings:

CHEM T 520 Organic Synthesis (Spring 2020)

CHEM T 590 Chemistry Capstone (Summer I 2020)

IT 510 Introduction to IT

Valparaiso University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite: None

Topics: Reviews the academic discipline of IT, including pervasive IT themes, IT history, organizational issues, and relationship of IT to other computing disciplines; also includes practicum to illustrate the nature of platforms and technologies currently employed in industry

Sequential Offerings:

IT 502 Introduction to Programming (Spring 2020)

IT 510 Introduction to IT (Summer I 2020)

IT 533 Data Mining (Summer II 2020)

IT 632 Instructional Design in IT (Summer II 2020)

IT 600 Ethics in Information Technology (Fall 2020)

IT 560 Mobile Computing (Spring 2021)

IT 603 Information Management (Spring 2021)

IT 540 Web Programming (Summer I 2021)

EHS 545 Environmental Ethics Practices

University of Saint Francis

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite: None

Topics: Covers the decision making in environmental moral judgments, the preservation of the national environment, development of a personal ethical system, ethical business practice, Franciscan values, business organization, and leadership. Concepts include problem resolution, basic legal proceedings, environmental case studies, and sustainability development

Related Offerings:

EHS 545 Environmental Ethics Practices (Summer I 2020)

EHS 530 Occupational Health (Summer II 2020)

EHS 515 Safety Compliance (Fall 2020)

EHS 555 Renewable Energy Innovations (Spring 2021)

HS 535 Environmental Law (Summer I 2021)

Math 504 Real Analysis

Indiana Wesleyan University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite: Undergraduate Real Analysis

Topics: A rigorous study of the real numbers and associated functions in order to deepen students' understanding of calculus and raise their ability to effectively formulate and communicate mathematics

Related Offerings:

Math 502 Abstract Algebra (Spring 2020)

Math 504 Real Analysis (Summer I 2020)

Math 501 Linear Algebra (Summer II 2020)

Math 505 Statistical Methods (Fall 2020)

Math 506 Modern Geometry (Late Fall 2020)

Math 503 Advanced Calculus (Spring 2021)

Math 604 Advanced Euclidean Geometry

Indiana State University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite: It is highly suggested that students have taken an undergraduate course in geometry

Topics: Includes advanced topics in geometry and explores topics in Euclidean geometry (including transformations), Ceva's theorem, Menelaus' theorem and related topics

Related Offerings:

Math 511 Theory of Numbers (Spring 2020)

Math 604 Euclidean Concepts of Geometry (Summer I 2020)

Math 541 Probability (Fall 2020)

Math 640 Graph Theory (Fall 2020)

Math 542 Mathematical Statistics (Spring 2021)

Math 512 Abstract Algebra (Summer I 2021)

PHYS 502 Classical Mechanics

Indiana Wesleyan University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite: Physics 501 Mathematical Methods in Physics or equivalent

Topics: Focuses on Newtonian (non-relativistic) mechanics and its Lagrangian formulation with applications to the motions of particles in three dimensions, systems of particles, gravitation and orbits, rigid body rotations and small vibrations

Sequential Offerings:

Physics 501 Mathematical Methods in Physics (Spring 2020)

Physics 502 Classical Mechanics (Summer I 2020)

Physics 503 Electromagnetism (Summer II 2020)

Physics 504 Intro to Quantum Mechanics (Fall 2020)

Physics 505 Quantum Mechanics II (Spring 2021)

Physics 506 Thermodynamics and Statistical Mechanics (Summer 2021)

PSY 501 Research Methods in Psychology

University of Saint Francis

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite: None

Topics: Basic methods of research and evaluation in the psychological sciences; an overview of research and evaluation designs (strengths and limitations), application of statistical methods, and data gathering techniques

Related Offerings:

PSY 501 Research Methods (Summer I 2020)

PSY 506 Social Psychology (Summer II 2020)

PSY 512 Theories of Personality (Fall 2020)

PSY 518 Cognitive Neuroscience (Spring 2021)

PSY 515 Abnormal Psychology (Summer I 2021)

Summer I 2020

Undergraduate Courses

ITSC 122 Computer Programming II – Python

Bethel University

Undergraduate Credit Hours: 3

Format: Online

Teacher Level: Grade K-12

Prerequisite: ITSC121 Programming I (Python)

Topics: A continuation of ITSC 121 with emphasis on creating classes, data integration and data structures, web programming and exception handling

Related Offerings:

CS 151 Intro to Computer Science (Spring 2020)

ITSC 121 Computer Programming I (Python) (Spring 2020)

CS 101 Fundamentals of Computing (Spring 2021)

Summer I 2020 Conferences & Workshops

Conferences (Visit www.stemteachindiana.org for updated information)

TBD

Workshops (Visit www.stemteachindiana.org for specific days and times)

BETHEL UNIVERSITY, MISHAWAKA, IN, ST. JOSEPH COUNTY

CS Bootcamp for K-5 Teachers

Format: Face-to-face format at Bethel University

Description: Prepares elementary teachers to incorporate the Indiana Computer Science Standards into their curriculum to include digital citizenship, data representation, programming, and sorting and searching

PGP Points: 6 Hours

Teacher Level: Grade K-5

Help! Integrating Computer Science Across the Curriculum

Format: Face-to-face format at Bethel University

Description: Designed to help teachers in other disciplines develop a plan for integrating CS standards across the curriculum

PGP Points: 6 Hours

Teacher Level: Grade K-8

Implementing 1-1 Technology

Format: Face-to-face format at Bethel University

Description: Designed to help elementary and middle school teachers with effective implementation of 1-1 technology

PGP Points: 6 Hours

Teacher Level: Grade K-8

HUNTINGTON UNIVERSITY, HUNTINGTON, IN, HUNTINGTON COUNTY

Effective STEM Integration

Format: Face-to-face at Huntington University

Description: Participants will reflect on effective ways to integrate STEM disciplines after considering both effective and ineffective examples

PGP Points: 6 Hours

Teacher Level: Grade K-5

Introduction to Programming Using Python

Format: Face-to-face at Huntington University

Description: Introduces data types and variables, control structures (sequencing, looping, branching) and modularity using functions

PGP Points: 12 Hours

Teacher Level: Grade 6-12

Introduction to Web Development

Format: Face-to-face at Huntington University

Description: Introduces web development using HTML and CSS; no prior coding experience needed

PGP Points: 6 Hours

Teacher Level: Grade 6-12

Middle Grade Statistics

Format: Face-to-face at Huntington University

Description: Participants will examine vertical articulation of data analysis standards and learn engaging ways to teach these standards

PGP Points: 12 Hours

Teacher Level: Grade 6-8

Using the R Software Package to Teach Math

Format: Face-to-face at Huntington University

Description: Participants will learn how to use R (a powerful and free software package) to enhance mathematics teaching

PGP Points: 6 Hours

Teacher Level: Grade 9-12

INDIANA STATE UNIVERSITY, TERRE HAUTE, IN, VIGO COUNTY

Teaching 6-8 Computer Science in Indiana

Format: Face-to-face at Indiana State University

Description: Brings educators up-to-date on computer science grade 6–8 standards in Indiana and builds skills and knowledge in content and pedagogy needed to meet the CS standards

PGP Points: 6 Hours

Teacher Level: Grade 6-8

Teaching K-5 Computer Science in Indiana

Format: Face-to-face at Indiana State University

Description: Brings educators up-to-date on computer science grade K-5 standards in Indiana and builds skills and knowledge in content and pedagogy needed to meet the CS standards

PGP Points: 6 Hours

Teacher Level: Grade K-5

Teaching Programming Intro

Format: Face-to-face at Indiana State University

Description: Builds basic programming skills which are needed in teaching different computing courses in high school; builds skills in developing assignments and assessing student work

PGP Points: 6 Hours

Teacher Level: Grade 6-12

Teaching Science as Inquiry

Format: Face-to-face at Indiana State University

Description: Develop the necessary knowledge and skills to implement inquiry-based, developmentally appropriate science lessons

PGP Points: 16 Hours

Teacher Level: Grade K-5

INDIANA WESLEYAN UNIVERSITY, MARION, IN, GRANT COUNTY

A Field Trip to the Particle Zoo

Format: Face-to-face at Indiana Wesleyan University

Description: So, what do you say when your son or daughter asks you about quarks because it was on the ACT exam? Can you follow superheros in a Marvel movie as they discuss the quantum realm or multiverse? When an image of a black hole shows up on your social media feed, will you be able to converse about it confidently? If not, this workshop is for you and anyone else who would like to catch up on some basic and more recent aspects of physics. By the end of the session, you will be able to discuss physics concepts with your kids, colleagues, or social media buddies with scientific confidence. Taught by an education professor experienced in teaching science to elementary teacher candidates.

PGP Points: 6 Hours

Teacher Level: K-12

OAKLAND CITY UNIVERSITY, OAKLAND CITY, IN, GIBSON COUNTY

Teaching of Chemistry for Elementary Educators

Format: Hybrid of online & face-to-face at Oakland City University

Description: Pre-workshop learning activities and interactive workshop to equip teachers with chemistry content knowledge, classroom materials, and fun hands-on experiments that they can replicate in their own classrooms; topics include matter, measurement, chemical and physical properties, atomic structure and periodicity, conservation of mass, chemical bonding, and acids and bases

PGP Points: 12 Hours

Teacher Level: Grade K-5

ROSE-HULMAN INSTITUTE OF TECHNOLOGY, TERRE HAUTE, IN, VIGO COUNTY

Sustainable/Alternative Energies Bootcamp

Format: Face-to-face at Rose-Hulman Institute of Technology

(Residential, overnight, week-long opportunity with housing provided on campus)

Description: Residential program for 4th – 12th Indiana teachers of science, mathematics, and technology / pre-engineering interested in learning content knowledge, pedagogy, and practical applications of sustainability / alternative energies; features site-visits to state-of-the-art energy producers, lectures by RHIT faculty experts, and hands-on laboratory experiments

Each participant will receive an iPad and a custom package of digital course materials featuring simulations, scientific visualizations, virtual labs, collaborative skills builders, process modelers, serious gaming, and access to live data.

Topics covered include current state of energy and production (including the U.S. power grid / distribution systems), solar technologies, geothermal, nuclear, hydro, biomass, wind, and other emerging sources, as well as social action and public policy for influencing conservation.

PGP Points: 45 hours

Teacher Level: 4 - 12

UNIVERSITY OF INDIANAPOLIS, INDIANAPOLIS, IN, MARION COUNTY

2X Crafting, Coding and Circuitry

Format: Face-to-face at University of Indianapolis Maker Space

Description: Focuses on the utilization of a maker space within a formal learning environment such as a school, library or museum to promote problem-solving, self-directed learning and collaborative work

PGP Points: 20 Hours

Teacher Level: Grade K-5

Making the Elementary Math Classroom Come Alive with PBL

Format: Face-to-face at University of Indianapolis

Description: Supports elementary teachers in designing project-based learning units to deeply engage students in elementary mathematics

PGP Points: 30 Hours

Teacher Level: Grade K-5

Making the Secondary Mathematics Classroom Come Alive with PBL

Format: Face-to-face at University of Indianapolis

Description: Supports secondary mathematics teachers in designing project-based learning units to deeply engage their students in secondary mathematics; explore the nuts and bolts of designing an effective PBL unit, while ensuring the Indiana Mathematical Process Standards are the cornerstones to the unit

PGP Points: 30 Hours

Teacher Level: Grade 6-12

Summer II 2020 Graduate Courses

BIO 505 Human Physiology

Indiana Wesleyan University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: Utilizes a systems approach in the exploration of the concept of homeostasis, or the ability of the body systems to work together to maintain internal stability

Related Offerings:

BIO 504 Genetics (Spring 2020)

BIO 501 Biological Chemistry (Summer I 2020)

BIO 505 Human Physiology (Summer II 2020)

BIO 502 Cell Biology (Fall 2020)

BIO 503 Systems Biology (Late Fall 2020)

BIO 506 Microbiology (Spring 2021)

IT 533 Data Mining

Valparaiso University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite: IT-502 Introduction to Programming

Topics: Provides a wide exposition of data mining techniques from several fields including machine learning, statistics, pattern recognition, artificial intelligence, and database systems

Sequential Offerings:

IT 502 Introduction to Programming (Spring 2020)

IT 510 Introduction to IT (Summer I 2020)

IT 533 Data Mining (Summer II 2020)

IT 632 Instructional Design in IT (Summer II 2020)

IT 600 Ethics in Information Technology (Fall 2020)

IT 560 Mobile Computing (Spring 2021)

IT 603 Information Management (Spring 2021)

IT 540 Web Programming (Summer I 2021)

IT 632 Instructional Design in IT

Valparaiso University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: Provides discussion and hands-on application of instructional design methodology; students will work individually and in teams to apply instructional design concepts to real-world situations in order to gain experience with designing instruction

Sequential Offerings:

IT 502 Introduction to Programming (Spring 2020)

IT 510 Introduction to IT (Summer I 2020)

IT 533 Data Mining (Summer II 2020)

IT 632 Instructional Design in IT (Summer II 2020)

IT 600 Ethics in Information Technology (Fall 2020)

IT 560 Mobile Computing (Spring 2021)

IT 603 Information Management (Spring 2021)

IT 540 Web Programming (Summer I 2021)

EHS 530 Occupational Health

University of St. Francis

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: TBD

Related Offerings:

EHS 545 Environmental Ethics Practices (Summer I 2020)

EHS 530 Occupational Health (Summer II 2020)

EHS 515 Safety Compliance (Fall 2020)

EHS 555 Renewable Energy Innovations (Spring 2021)

HS 535 Environmental Law (Summer I 2021)

Math 501 Linear Algebra

Indiana Wesleyan University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: Intermediate treatment of the theory and application of linear algebra; vector spaces, linear transformations, diagonalization, inner product spaces, Markov Chains, and canonical forms

Related Offerings:

Math 502 Abstract Algebra (Spring 2020)

Math 504 Real Analysis (Summer I 2020)

Math 501 Linear Algebra (Summer II 2020)

Math 505 Statistical Methods (Fall 2020)

Math 506 Modern Geometry (Late Fall 2020)

Math 503 Advanced Calculus (Spring 2021)

Math 590 Statistics for Decision Making

Valparaiso University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: TBD

PHYS 503 Electromagnetism

Indiana Wesleyan University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite: Physics 501 Mathematical Methods in Physics

Topics: Focuses on the development and application of the integral and differential forms of Maxwell's equations from phenomenological observations, culminating in the electromagnetic wave equations; discusses potential theory, static and dynamic electromagnetic field equations in vacuum and media, and electromagnetic waves with select applications

Sequential Offerings:

Physics 501 Mathematical Methods in Physics (Spring 2020)

Physics 502 Classical Mechanics (Summer I 2020)

Physics 503 Electromagnetism (Summer II 2020)

Physics 504 Intro to Quantum Mechanics (Fall 2020)

Physics 505 Quantum Mechanics II (Spring 2021)

Physics 506 Thermodynamics and Statistical Mechanics (Summer 2021)

PSY 506 Social Psychology

University of St. Francis

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: General principles of social psychology, including socialization of the individual, attitude formation, conformity, group identification, and group dynamics

Related Offerings:

PSY 501 Research Methods (Summer I 2020)

PSY 506 Social Psychology (Summer II 2020)

PSY 512 Theories of Personality (Fall 2020)

PSY 518 Cognitive Neuroscience (Spring 2021)

PSY 515 Abnormal Psychology (Summer I 2021)

Summer II 2020

Undergraduate Courses

BIO 274 Intro Microbiology & BIO 274L Intro Microbiology Lab

Indiana State University

Undergraduate Credit Hours: 3

Format: Online

Teacher Level: Grade K-12

Prerequisite:

Topics: TBD

Related Offerings:

BIO 251 Bioethics (Fall 2020)

Math 111 Basic Probability and Statistics

Bethel University

Undergraduate Credit Hours: 3

Format: Online

Teacher Level: Grade K-12

Prerequisite: None

Topics: TBD

Related Offerings:

Math 117 Quantitative Reasoning (Fall 2020)

Math 253 Statistics (Summer I 2020)

Summer II 2020 Conferences & Workshops

Conferences (Visit www.stemteachindiana.org for updated information)

TBD

Workshops (Visit www.stemteachindiana.org for specific days and times)

HUNTINGTON UNIVERSITY, HUNTINGTON, IN, HUNTINGTON COUNTY

Process Standards in Calculus

Format: Face-to-face at Huntington University

Description: Participants will learn to identify opportunities to emphasize the Indiana Process Standards when teaching introductory calculus, including the use of technological tools

PGP Points: 6 Hours

Teacher Level: Grade 9-12

OAKLAND CITY UNIVERSITY, OAKLAND CITY, IN, GIBSON COUNTY

Robotic U Phase I

Format: Face-to-face at Oakland City University

Description: Provides the scientific concepts and instructions to guide the students on how to build robots using robotic kits and participate in robotics competitions

PGP Points: 30 Hours

Teacher Level: Grade 6-9

Robotic U Phase II

Format: Face-to-face at Oakland City University

Description: Provides the scientific concepts and the instructions to guide high school students on how to build their own robots creating their own parts

PGP Points: 30 Hours

Teacher Level: Grade 10-12

The ABC of Robotics

Format: Face-to-face at Oakland City University

Description: Provides the basic scientific concepts of the mechanics of robotics and how to apply these concepts when building robots

PGP Points: 18 Hours

Teacher Level: Grade K-5

SAINT MARY'S COLLEGE, NOTRE DAME, IN, JOSEPH COUNTY

Putting the M in STEM

Format: Face-to-face at Saint Mary's College

Description: Discuss a range of practical activities that could be offered either as an integral part of their lessons or as activities for an after-school STEM club

PGP Points: 6 Hours

Teacher Level: Grade 6-8

Taking Mathematics Outside the Classroom

Format: Face-to-face at Saint Mary's College

Description: Learn about math trails and how they can be used to develop mathematical skills and developing a math circus; a range of hands-on activities for developing and practicing skills and knowledge

PGP Points: 6 Hours

Teacher Level: Grade K-12

Using Rich Mathematical Activities Part 2

Format: Face-to-face at Saint Mary's College

Description: Teachers will learn about math trails, how they are used, what makes a good question, health and safety issues involved when running a math trail, will undertake a math trail as a learner and then begin to develop their own trail

PGP Points: 6 Hours

Teacher Level: Grade K-12

Sequential Offerings: Using Rich Mathematical Activities Parts 1–5

Fall 2020 Graduate Courses

BIO 502 Cell Biology

Indiana Wesleyan University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: Develops a deeper insight into the complexities of cell structure, function, and cellular processes with a focus on biosynthesis, cell signaling, regulation of proteins, and cell cycle/apoptosis

Related Offerings:

BIO 504 Genetics (Spring 2020)

BIO 501 Biological Chemistry (Summer I 2020)

BIO 505 Human Physiology (Summer II 2020)

BIO 502 Cell Biology (Fall 2020)

BIO 503 Systems Biology (Late Fall 2020)

BIO 506 Microbiology (Spring 2021)

BIO 503 Systems Biology

Indiana Wesleyan University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: Investigates the major principles and concepts of biological systems, including the fundamentals of mathematical and physiological modeling, a detailed analysis of gene, protein, and metabolic systems, as well as the application of systems biology in health and medicine

Related Offerings:

BIO 504 Genetics (Spring 2020)

BIO 501 Biological Chemistry (Summer I 2020)

BIO 505 Human Physiology (Summer II 2020)

BIO 502 Cell Biology (Fall 2020)

BIO 503 Systems Biology (Late Fall 2020)

BIO 506 Microbiology (Spring 2021)

CPSC 507 Computer Programming

Saint Mary's College

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: TBD

IT 600 Ethics in Information Tech

Valparaiso University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: TBD

Sequential Offerings:

IT 502 Introduction to Programming (Spring 2020)

IT 510 Introduction to IT (Summer I 2020)

IT 533 Data Mining (Summer II 2020)

IT 632 Instructional Design in IT (Summer II 2020)

IT 600 Ethics in Information Technology (Fall 2020)

IT 560 Mobile Computing (Spring 2021)

IT 603 Information Management (Spring 2021)

IT 540 Web Programming (Summer I 2021)

EHS 515 Safety Compliance

St. Francis University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: TBD

Related Offerings:

EHS 545 Environmental Ethics Practices (Summer I 2020)

EHS 530 Occupational Health (Summer II 2020)

EHS 515 Safety Compliance (Fall 2020)

EHS 555 Renewable Energy Innovations (Spring 2021)

EHS 535 Environmental Law (Summer 2021)

Math 505 Statistical Methods I

Indiana Wesleyan University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: Presents a variety of statistical topics in the context of real world data; demonstrates the broad applicability of advanced statistical techniques

Related Offerings:

Math 502 Abstract Algebra (Spring 2020)

Math 504 Real Analysis (Summer I 2020)

Math 501 Linear Algebra (Summer II 2020)

Math 505 Statistical Methods (Fall 2020)

Math 506 Modern Geometry (Late Fall 2020)

Math 503 Advanced Calculus (Spring 2021)

Math 506 Modern Geometry

Indiana Wesleyan University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: Offers a critical presentation of the development and philosophical significance of non-Euclidean geometry

Related Offerings:

Math 502 Abstract Algebra (Spring 2020)

Math 504 Real Analysis (Summer I 2020)

Math 501 Linear Algebra (Summer II 2020)

Math 505 Statistical Methods (Fall 2020)

Math 506 Modern Geometry (Late Fall 2020)

Math 503 Advanced Calculus (Spring 2021)

Math 541 Probability

Indiana State University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: TBD

Related Offerings:

Math 511 Theory of Numbers (Spring 2020)

Math 604 Euclidean Concepts of Geometry (Summer I 2020)

Math 541 Probability (Fall 2020)

Math 640 Graph Theory (Fall 2020)

Math 542 Mathematical Statistics (Spring 2021)

Math 512 Abstract Algebra (Summer I 2021)

Math 640 Graph Theory

Indiana State University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: Basic concepts in graph theory, connectivity and network flows, chromatic graph theory, topological graph theory, and Ramsey theory

Related Offerings:

Math 511 Theory of Numbers (Spring 2020)

Math 604 Euclidean Concepts of Geometry (Summer I 2020)

Math 541 Probability (Fall 2020)

Math 640 Graph Theory (Fall 2020)

Math 542 Mathematical Statistics (Spring 2021)

Math 512 Abstract Algebra (Summer I 2021)

Math 527 Applied Linear Algebra

Saint Mary's College

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: TBD

Math 561 Real Analysis: Proving Calculus

Bethel University

Format: Face-to-Face

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: TBD

Related Offerings:

Math 561 Real Analysis: Proving Calculus (Fall 2020)

Math 552 Mathematical Statistics (Spring 2021)

PHYS 504 Intro to Quantum Mechanics

Indiana Wesleyan University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: Reviews special relativity and provides an introduction to quantum mechanics; covers applications in nuclear and particle physics and develops key aspects of quantum theory via various extensions of the Stern-Gerlach experiment

Sequential Offerings:

Physics 501 Mathematical Methods in Physics (Spring 2020)

Physics 502 Classical Mechanics (Summer I 2020)

Physics 503 Electromagnetism (Summer II 2020)

Physics 504 Intro to Quantum Mechanics (Fall 2020)

Physics 505 Quantum Mechanics II (Spring 2021)

Physics 506 Thermodynamics and Statistical Mechanics (Summer 2021)

PSY 512 Theories of Personality

St. Francis University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: Explores the psychological concept of personality and individual difference to include dimensions of personality, measurement and classification of personality types, factors impacting personality development, and major personality theories

Related Offerings:

PSY 501 Research Methods (Summer I 2020)

PSY 506 Social Psychology (Summer II 2020)

PSY 512 Theories of Personality (Fall 2020)

PSY 518 Cognitive Neuroscience (Spring 2021)

PSY 515 Abnormal Psychology (Summer I 2021)

Fall 2020

Undergraduate Courses

BIO 251 Bioethics

Saint Mary of the Woods College

Undergraduate Credit Hours: 3

Format: Online

Teacher Level: Grade K-12

Prerequisite:

Topics: TBD

Related Offerings:

BIO 274 Intro Microbiology & BIO 274L Intro Microbiology Lab (Summer II 2020)

Math 117 Quantitative Reasoning

Saint Mary of the Woods College

Undergraduate Credit Hours: 3

Format: Online

Teacher Level: Grade K-12

Prerequisite:

Topics: TBD

Related Offerings:

Math 253 Statistics (Summer I 2020)

Math 111 Basic Probability and Statistics (Summer II 2020)

Fall 2020 Conferences & Workshops

Conferences (Visit www.stemteachindiana.org for updated information)

TBD

Workshops (Visit www.stemteachindiana.org for specific days and times)

BETHEL UNIVERSITY, MISHAWAKA, IN, ST. JOSEPH COUNTY

CS Bootcamp for K-5 Teachers

Format: Face-to-face format at Bethel University

Description: Prepares elementary teachers to incorporate the Indiana Computer Science Standards into their curriculum to include digital citizenship, data representation, programming, and sorting and searching

PGP Points: 6 Hours

Teacher Level: Grade K-5

Help! Integrating Computer Science Across the Curriculum

Format: Face-to-face format at Bethel University

Description: Designed to help teachers in other disciplines develop a plan for integrating cs standards across the curriculum

PGP Points: 6 Hours

Teacher Level: Grade 6-8

INDIANA STATE UNIVERSITY, TERRE HAUTE, IN, VIGO COUNTY

Teaching 6-8 Computer Science in Indiana

Format: Face-to-face at Indiana State University

Description: Brings educators up-to-date on computer science grade 6–8 standards in Indiana and builds skills and knowledge in content and pedagogy needed to meet the CS standards

PGP Points: 6 Hours

Teacher Level: Grade 6-8

Teaching K-5 Computer Science in Indiana

Format: Face-to-face at Indiana State University

Description: Brings educators up-to-date on computer science grade K-5 standards in Indiana and builds skills and knowledge in content and pedagogy needed to meet the CS standards

PGP Points: 6 Hours

Teacher Level: Grade K-5

Teaching Programming Intro

Format: Face-to-face at Indiana State University

Description: Builds basic programming skills which are needed in teaching different computing courses in high school; builds skills in developing assignments and assessing student work

PGP Points: 6 Hours

Teacher Level: Grade 6-12

OAKLAND CITY UNIVERSITY, OAKLAND CITY, IN, GIBSON COUNTY

Robotic U Phase I

Format: Face-to-face at Oakland City University

Description: Provides the scientific concepts and instructions to guide the students on how to build robots using robotic kits and participate in robotics competitions

PGP Points: 30 Hours

Teacher Level: Grade 6-9

Robotic U Phase II

Format: Face-to-face at Oakland City University

Description: Provides the scientific concepts and the instructions to guide high school students on how to build their own robots creating their own parts

PGP Points: 30 Hours

Teacher Level: Grade 9-12

Teaching of Chemistry for Elementary Educators

Format: Hybrid of online & face-to-face at Oakland City University

Description: Pre-workshop learning activities and interactive workshop to equip teachers with chemistry content knowledge, classroom materials, and fun hands-on experiments that they can replicate in their own classrooms; topics include matter, measurement, chemical and physical properties, atomic structure and periodicity, conservation of mass, chemical bonding, and acids and bases

PGP Points: 12 Hours

Teacher Level: Grade K-5

The ABC of Robotics

Format: Face-to-face at Oakland City University

Description: Provides the basic scientific concepts of the mechanics of robotics and how to apply these concepts when building robots

PGP Points: 18 Hours

Teacher Level: Grade K-5

SAINT MARY'S COLLEGE, NOTRE DAME, IN, ST. JOSEPH COUNTY

Introduction to Microsoft Excel

Format: Face-to-face at Saint Mary's College

Description: Overview and demonstration of various Excel topics followed by hands-on practice and time to ask questions

PGP Points: 6 Hours

Using Rich Mathematical Activities Part 3

Format: Face-to-face at Saint Mary's College

Description: Teachers will learn about math trails, how they are used, what makes a good

question, health and safety issues involved when running a math trail; will undertake a math trail as a learner and then begin to develop their own trail

PGP Points: 6 Hours

Teacher Level: Grade K-12

Sequential Offerings: Using Rich Mathematical Activities Parts 1-5

TRINE UNIVERSITY, ANGOLA, IN, STEUBEN COUNTY

E-Learning Days

Format: Face-to-face at Trine University

Description: Rethinking, redesigning and even self-assessing the e-learning experiences we are creating for our students

PGP Points: 6 Hours (split into two three hour sessions over both days)

Teacher Level: Grade K-12

Google Certification L1

Format: Face-to-face at Trine University

Description: Prepares teachers to take the Google Certified Educator Level 01 Exam by exploring basic functions and creative uses of Google Suite for Education

PGP Points: 6 Hours

Teacher Level: Grade K-12

Spring 2021 Graduate Courses

BIO 506 Microbiology

Indiana Wesleyan University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: Examines the structure, physiology, and activities of pathogenic and non-pathogenic microorganisms with an emphasis placed on the interaction of microorganisms with each other, their hosts, and the environment

Related Offerings:

BIO 504 Genetics (Spring 2020)

BIO 501 Biological Chemistry (Summer I 2020)

BIO 505 Human Physiology (Summer II 2020)

BIO 502 Cell Biology (Fall 2020)

BIO 503 Systems Biology (Late Fall 2020)

BIO 506 Microbiology (Spring 2021)

IT 560 Mobile Computing

Valparaiso University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: TBD

Sequential Offerings:

IT 502 Introduction to Programming (Spring 2020)

IT 510 Introduction to IT (Summer I 2020)

IT 533 Data Mining (Summer II 2020)

IT 632 Instructional Design in IT (Summer II 2020)

IT 600 Ethics in Information Technology (Fall 2020)

IT 560 Mobile Computing (Spring 2021)

IT 603 Information Management (Spring 2021)

IT 540 Web Programming (Summer I 2021)

IT 603 Information Management

Valparaiso University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite: IT 502 Introduction to Programming

Topics: Builds a deeper understanding of how databases work, including the topics of database theory and architecture, data modeling, normalization, query languages, security, and web applications

Sequential Offerings:

IT 502 Introduction to Programming (Spring 2020)

IT 510 Introduction to IT (Summer I 2020)

IT 533 Data Mining (Summer II 2020)

IT 632 Instructional Design in IT (Summer II 2020)

IT 600 Ethics in Information Technology (Fall 2020)

IT 560 Mobile Computing (Spring 2021)

IT 603 Information Management (Spring 2021)

IT 540 Web Programming (Summer I 2021)

EHS 555 Renewable Energy Innovations

University of Saint Francis

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: TBD

Related Offerings:

EHS 545 Environmental Ethics Practices (Summer I 2020)

EHS 530 Occupational Health (Summer II 2020)

EHS 515 Safety Compliance (Fall 2020)

EHS 555 Renewable Energy Innovations (Spring 2021)

EHS 535 Environmental Law (Summer 2021)

Math 503 Advanced Calculus

Indiana Wesleyan University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite: None

Topics: An advanced multivariate treatment of calculus; includes advanced treatment of differentiation and integration as well as advanced topics including Fourier Series and special functions

Related Offerings:

Math 502 Abstract Algebra (Spring 2020)

Math 504 Real Analysis (Summer I 2020)

Math 501 Linear Algebra (Summer II 2020)

Math 505 Statistical Methods (Fall 2020)

Math 506 Modern Geometry (Late Fall 2020)

Math 503 Advanced Calculus (Spring 2021)

PHYS 505 Quantum Mechanics II

Indiana Wesleyan University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: Reviews more advanced topics in spin systems and the wave mechanics formulation of quantum mechanics; various problems in one and three dimensions, along with some introductory topics in quantum field theory will be covered

Sequential Offerings:

Physics 501 Mathematical Methods in Physics (Spring 2020)

Physics 502 Classical Mechanics (Summer I 2020)

Physics 503 Electromagnetism (Summer II 2020)

Physics 504 Intro to Quantum Mechanics (Fall 2020)

Physics 505 Quantum Mechanics II (Spring 2021)

Physics 506 Thermodynamics and Statistical Mechanics (Summer 2021)

Math 542 Mathematical Statistics

Indiana State University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: TBD

Related Offerings:

Math 511 Theory of Numbers (Spring 2020)

Math 604 Euclidean Concepts of Geometry (Summer I 2020)

Math 541 Probability (Fall 2020)

Math 640 Graph Theory (Fall 2020)

Math 542 Mathematical Statistics (Spring 2021)

Math 512 Abstract Algebra (Summer I 2021)

BIO 647 - Experimental Morphogenesis of Vascular Plants

Indiana State University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: A discussion-laboratory course with emphasis on modern experimental approaches to the study of reproductive processes and mechanisms, organization, floral morphology, embryology, and formation of fruits and seeds

Related Offerings:

BIO 633 Adv Pathophysiology (Summer I 2020)

BIO 647 Exp Morphogenesis Vascular Plants (Spring 2021)

Math 552 Mathematical Statistics

Bethel University

Format: Face-to-Face

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: TBD

Related Offerings:

Math 561 Real Analysis: Proving Calculus (Fall 2020)

Math 552 Mathematical Statistics (Spring 2021)

PSY 518 Cognitive Neuroscience

University of St. Francis

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: Focuses on the neurological basis of behavior including neuroanatomy, synaptic transmission, and basic sensory and motor processes, framed within a cognitive theoretical approach investigating memory, language, and other higher cognitive functions

Related Offerings:

PSY 501 Research Methods (Summer I 2020)

PSY 506 Social Psychology (Summer II 2020)

PSY 512 Theories of Personality (Fall 2020)

PSY 518 Cognitive Neuroscience (Spring 2021)

PSY 515 Abnormal Psychology (Summer I 2021)

Spring 2021 Undergraduate Courses

CS 101 Fundamentals of Computing

Indiana State University

Undergraduate Credit Hours: 3

Format: Online

Teacher Level: Grade K-12

Prerequisite:

Topics: TBD

Related Offerings:

CS 151 Intro to Computer Science (Spring 2020)

ITSC 121 Computer Programming I (Python) (Spring 2020)

ITSC 122 Computer Programming II (Python) (Summer I 2020)

Spring 2021 Conferences & Workshops

Conferences (Visit www.stemteachindiana.org for updated information)

TBD

Workshops (Visit www.stemteachindiana.org for specific days and times)

BETHEL UNIVERSITY, MISHAWAKA, IN, ST. JOSEPH COUNTY

CS Bootcamp for K-5 Teachers

Format: Face-to-face format at Bethel University

Description: Prepares elementary teachers to incorporate the Indiana Computer Science Standards into their curriculum to include digital citizenship, data representation, programming, and sorting and searching

PGP Points: 6 Hours

Teacher Level: Grade K-5

INDIANA STATE UNIVERSITY, TERRE HAUTE, IN, VIGO COUNTY

Teaching 6-8 Computer Science in Indiana

Format: Face-to-face at Indiana State University

Description: Brings educators up-to-date on computer science grade 6–8 standards in Indiana and builds skills and knowledge in content and pedagogy needed to meet the CS standards

PGP Points: 6 Hours

Teacher Level: Grade 6-8

Teaching K-5 Computer Science in Indiana

Format: Face-to-face at Indiana State University

Description: Brings educators up-to-date on computer science grade K-5 standards in Indiana and builds skills and knowledge in content and pedagogy needed to meet the CS standards

PGP Points: 6 Hours

Teacher Level: Grade K-5

Teaching Programming Intro

Format: Face-to-face at Indiana State University

Description: Builds basic programming skills which are needed in teaching different computing courses in high school; builds skills in developing assignments and assessing student work

PGP Points: 6 Hours

Teacher Level: Grade 6-12

OAKLAND CITY UNIVERSITY, OAKLAND CITY, IN, GIBSON COUNTY

Teaching of Chemistry for Elementary Educators

Format: Hybrid of online & face-to-face at Oakland City University

Description: Pre-workshop learning activities and interactive workshop to equip teachers with chemistry content knowledge, classroom materials, and fun hands-on experiments that they can replicate in their own classrooms; topics include matter, measurement, chemical and physical properties, atomic structure and periodicity, conservation of mass, chemical bonding, and acids and bases

PGP Points: 12 Hours

Teacher Level: Grade K-5

SAINT MARY'S COLLEGE, NOTRE DAME, IN, ST. JOSEPH COUNTY

Introduction to Microsoft Excel

Format: Face-to-face at Saint Mary's College

Description: Overview and demonstration of various Excel topics followed by hands-on practice and time to ask questions

PGP Points: 6 Hours

Teacher Level: K-12

Using Rich Mathematical Activities Part 4

Format: Face-to-face at Saint Mary's College

Description: Teachers will learn about math trails, how they are used, what makes a good question, health and safety issues involved when running a math trail; will undertake a math trail as a learner and then begin to develop their own trail

PGP Points: 6 Hours

Teacher Level: Grade K-12

Sequential Offerings: Using Rich Mathematical Activities Parts 1 – 5

TRINE UNIVERSITY, ANGOLA, IN, STEUBEN COUNTY

Google Certification L2

Format: Face-to-face at Trine University

Description: Prepares teachers to take the Google Certified Educator Level 02 Exam by exploring basic functions and creative uses of Google Suite for Education

PGP Points: 6

Teacher Level: K-12

Summer I 2021 Graduate Courses

IT 540 Web Programming

Valparaiso University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite: IT 500 or consent from instructor

Topics: An introduction to web technology covering a number of specific systems such as HTML, PHP, MySQL, javaScript, and XML; a laboratory component provides hands-on experience

Sequential Offerings:

IT 502 Introduction to Programming (Spring 2020)

IT 510 Introduction to IT (Summer I 2020)

IT 533 Data Mining (Summer II 2020)

IT 632 Instructional Design in IT (Summer II 2020)

IT 600 Ethics in Information Technology (Fall 2020)

IT 560 Mobile Computing (Spring 2021)

IT 603 Information Management (Spring 2021)

IT 540 Web Programming (Summer I 2021)

EHS 535 Environmental Law

University of Saint Francis

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: TBD

Related Offerings:

EHS 545 Environmental Ethics Practices (Summer I 2020)

EHS 530 Occupational Health (Summer II 2020)

EHS 515 Safety Compliance (Fall 2020)

EHS 555 Renewable Energy Innovations (Spring 2021)

EHS 535 Environmental Law (Summer 2021)

Math 512 Abstract Algebra

Indiana State University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: An introduction to groups, rings, and fields, including polynomial rings, divisibility, and unique factorization domains

Related Offerings:

Math 511 Theory of Numbers (Spring 2020)

Math 604 Euclidean Concepts of Geometry (Summer I 2020)

Math 541 Probability (Fall 2020)

Math 640 Graph Theory (Fall 2020)

Math 542 Mathematical Statistics (Spring 2021)

Math 512 Abstract Algebra (Summer I 2021)

PHYS 506 Thermodynamics and Statistical Mechanics

Indiana Wesleyan University

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: Develops the laws of thermodynamics from macroscopic observations and then demonstrates how they arise from the statistical, collective behavior of atoms and molecules

Sequential Offerings:

Physics 501 Mathematical Methods in Physics (Spring 2020)

Physics 502 Classical Mechanics (Summer I 2020)

Physics 503 Electromagnetism (Summer II 2020)

Physics 504 Intro to Quantum Mechanics (Fall 2020)

Physics 505 Quantum Mechanics II (Spring 2021)

Physics 506 Thermodynamics and Statistical Mechanics (Summer 2021)

PSY 515 Abnormal Psychology

University of St. Francis

Format: Online

Graduate Credit Hours: 3

Teacher Level: Grade 9-12

Prerequisite:

Topics: Focuses upon developing an understanding of individual, group, and cultural pathology including historical perspective, diagnostic classification, etiology, symptom manifestation, treatment approaches, and prevention

Related Offerings:

PSY 501 Research Methods (Summer I 2020)

PSY 506 Social Psychology (Summer II 2020)

PSY 512 Theories of Personality (Fall 2020)

PSY 518 Cognitive Neuroscience (Spring 2021)

PSY 515 Abnormal Psychology (Summer I 2021)

Summer I 2021 Undergraduate Courses

TBD

Summer I 2021 Conferences & Workshops

Conferences (Visit www.stemteachindiana.org for updated information)

TBD

Workshops (Visit www.stemteachindiana.org for specific days and times)

BETHEL UNIVERSITY, MISHAWAKA, IN, ST. JOSEPH COUNTY

CS Bootcamp for K-5 Teachers

Format: Face-to-face format at Bethel University

Description: Prepares elementary teachers to incorporate the Indiana Computer Science Standards into their curriculum to include digital citizenship, data representation, programming, and sorting and searching

PGP Points: 6 Hours

Teacher Level: Grade K-5

Help! Integrating Computer Science Across the Curriculum

Format: Face-to-face format at Bethel University

Description: Designed to help teachers in other disciplines develop a plan for integrating cs standards across the curriculum

PGP Points: 6 Hours

Teacher Level: Grade 6-8

Implementing 1-1 Technology

Format: Face-to-face format at Bethel University

Description: Designed to help elementary and middle school teachers with effective implementation of 1-1 technology

PGP Points: 6 Hours

Teacher Level: Grade K-8

BUTLER UNIVERSITY, INDIANAPOLIS, IN, MARION COUNTY

The Science of Wellness for Teachers

Format: Face-to-face format at Butler University

Description: Explores the importance of the science behind teacher wellness; explores beginning concepts of neuroscience and neuroanatomy; hands-on activities on the benefits of breath, teacher regulation, stress reduction and preventative wellness

PGP Points: 6 Hours

Teacher Level: Grade K-8

STEM Stories

Format: Face-to-face format at Butler University

Description: Explores science concepts and activities in connection with a wide variety of children's literature science biographies; teachers will engage in coding activities while learning about Ada Lovelace through elementary level children's books

PGP Points: 6 Hours

Teacher Level: Grade K-8

HUNTINGTON UNIVERSITY, HUNTINGTON, IN, HUNTINGTON COUNTY

Effective STEM Integration

Format: Face-to-face at Huntington University

Description: Participants will reflect on effective ways to integrate STEM disciplines after considering both effective and ineffective examples

PGP Points: 6 Hours

Teacher Level: Grade K-5

Integrating STEM & Language Arts

Format: Face-to-face at Huntington University

Description: Participants will develop a Project Based Learning unit that integrates science and language arts

PGP Points: 6 Hours

Teacher Level: Grade K-5

Integrating STEM & Special Needs in Elementary

Format: Face-to-face at Huntington University

Description: Explore the integration of STEM opportunities for exceptional learners at the elementary level

PGP Points: 6 Hours

Teacher Level: Grade K-5

Integrating STEM & Special Needs in Middle/High School

Format: Face-to-face at Huntington University

Description: Explore the integration of STEM opportunities within a special education self-contained setting and/or within a Life Skills program at the middle and/or high school level

PGP Points: 6 Hours

Teacher Level: Grade 6-12

Introduction to Programming Using Python

Format: Face-to-face at Huntington University

Description: Introduces data types and variables, control structures (sequencing, looping, branching) and modularity using functions

PGP Points: 12 Hours

Teacher Level: Grade 9-12

Introduction to Web Development

Format: Face-to-face at Huntington University

Description: Introduces web development using HTML and CSS; no prior coding experience needed

PGP Points: 6 Hours

Teacher Level: Grade 6-12

Using the R Software Package to Teach Math

Format: Face-to-face at Huntington University

Description: Participants will learn how to use R, a powerful and free software package, to enhance mathematics teaching

PGP Points: 6 Hours

Teacher Level: Grade 9-12

INDIANA STATE UNIVERSITY, TERRE HAUTE, IN, VIGO COUNTY

Teaching 6-8 Computer Science in Indiana

Format: Face-to-face at Indiana State University

Description: Brings educators up-to-date on computer science grade 6–8 standards in Indiana and builds skills and knowledge in content and pedagogy needed to meet the CS standards

PGP Points: 6 Hours

Teacher Level: Grade 6-8

Teaching K-5 Computer Science in Indiana

Format: Face-to-face at Indiana State University

Description: Brings educators up-to-date on computer science grade K-5 standards in Indiana and builds skills and knowledge in content and pedagogy needed to meet the CS standards

PGP Points: 6 Hours

Teacher Level: Grade K-5

Teaching Programming Intro

Format: Face-to-face at Indiana State University

Description: Builds basic programming skills which are needed in teaching different computing courses in high school; builds skills in developing assignments and assessing student work

PGP Points: 6 Hours

Teacher Level: Grade 6-12

Teaching Science as Inquiry

Format: Face-to-face at Indiana State University

Description: Designed to help elementary school teachers develop the necessary knowledge and skills so they can implement inquiry-based, developmentally appropriate science lessons

PGP Points: 16 Hours

Teacher Level: Grade K-5

INDIANA WESLEYAN UNIVERSITY, MARION IN, GRANT COUNTY

A Field Trip to the Particle Zoo

Format: Face-to-face at Indiana Wesleyan University

Description: So, what do you say when your son or daughter asks you about quarks because it was on the ACT exam? Can you follow superheros in a Marvel movie as they discuss the quantum realm or multiverse? When an image of a black hole shows up on your social media feed, will you be able to converse about it confidently? If not, this workshop is for you and anyone else who would like to catch up on some basic and more recent aspects of physics. By the end of the session, you will be able to discuss physics concepts with your kids, colleagues, or social media buddies with scientific confidence. Taught by an education professor experienced in teaching science to elementary teacher candidates.

PGP Points: 6 Hours

Teacher Level: K-12

OAKLAND CITY UNIVERSITY, OAKLAND CITY, IN, GIBSON COUNTY

Robotic U Phase I

Format: Face-to-face at Oakland City University

Description: Provides the scientific concepts and instructions to guide the students on how to build robots using robotic kits and participate in robotics competitions

PGP Points: 30 Hours

Teacher Level: Grade 6-9

Robotic U Phase II

Format: Face-to-face at Oakland City University

Description: Provides the scientific concepts and the instructions to guide high school students on how to build their own robots creating their own parts

PGP Points: 30 Hours

Teacher Level: Grade 10-12

Teaching of Chemistry for Elementary Educators

Format: Hybrid of online & face-to-face at Oakland City University

Description: Pre-workshop learning activities and interactive workshop to equip teachers with chemistry content knowledge, classroom materials, and fun hands-on experiments that they can replicate in their own classrooms; topics include matter, measurement, chemical and physical properties, atomic structure and periodicity, conservation of mass, chemical bonding, and acids and bases

PGP Points: 12 Hours

Teacher Level: Grade K-5

The ABC of Robotics

Format: Face-to-face at Oakland City University

Description: Provides the basic scientific concepts of the mechanics of robotics and how to apply these concepts when building robots

PGP Points: 18 Hours

Teacher Level: Grade K-5

SAINT MARY'S COLLEGE, NOTRE DAME, IN, ST. JOSEPH COUNTY

Introduction to Microsoft Excel

Format: Face-to-face at Saint Mary's College

Description: Overview and demonstration of various Excel topics followed by hands-on practice and time to ask questions

PGP Points: 6 Hours

Teacher Level: K-12

Putting the M in STEM

Format: Face-to-face at Saint Mary's College

Description: Discuss a range of practical activities that could be offered either as an integral part of their lessons or as activities for an after-school STEM club

PGP Points: 6 Hours

Teacher Level: Grade 6-8

Taking Mathematics Outside the Classroom

Face-to-face format at Saint Mary's College

Description: Learn about math trails and how they can be used to develop mathematical skills and developing a math circus; a range of hands-on activities for developing and practicing skills and knowledge

PGP Points: 6 Hours

Teacher Level: Grade K-12

Using Rich Mathematical Activities Part 5

Format: Face-to-face at Saint Mary's College

Description: Teachers will learn about math trails, how they are used, what makes a good question, health and safety issues involved when running a math trail, will undertake a math trail as a learner and then begin to develop their own trail

PGP Points: 6 Hours

Teacher Level: Grade K-12

Sequential Offerings: Using Rich Mathematical Activities Parts 1-5