STEM Teach INDIANA

Program Catalog 2022 - 2023

Graduate Courses
Graduate Degrees
Graduate Certificates
Conference Scholarships
Classroom STEM Kits

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 Winter/Spring 2022 through Summer 2023, 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 fifth round of funding from the Indiana Commission for Higher Education through the state of Indiana.

The primary concentration of funds will be for Indiana high school teachers who need graduate level courses in STEM discipline areas to meet the Higher Learning Commission (HLC) requirement for teaching dual credit courses by 2023. This opportunity includes:

- Online graduate courses from participating institutions offered in biology, chemistry, mathematics, physics, psychology, and technology/IT. Once 18 graduate credits are earned, STEM Teach V may also help to fund the completion of a master's degree.

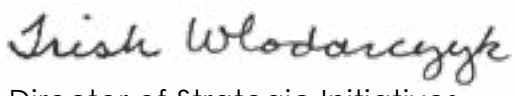
STEM Teach offerings are from various independent and public higher education institutions at NO COST to schools or teachers. These offerings include:

- Tuition and textbooks/materials to complete a master's or graduate certificate in STEM education from a participating higher education institution
- Scholarships for teachers to attend STEM-based conferences in Indiana
- Professional development and supplies to infuse STEM into daily classroom activities

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 V 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 graduate courses for in-service K-12 teachers in Indiana.

CELL Center of Excellence in Leadership of Learning
UNIVERSITY of INDIANAPOLIS

INDEPENDENT COLLEGES INDIANA

Table of Contents

WINTER/SPRING 2023

SUMMER 2023

Getting Started

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

Applying to the Program

STEM Teach V accepts applications from teachers who are interested in taking graduate classes 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 or attend conferences through STEM Teach
   - 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 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 full course descriptions 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 or conference scholarships during a registration window. Teachers may register for one course, one classroom kit, **and** one conference per semester/term.

STEM Teach V Timeline

Semesters	STEM Teach Term	Offering Window
Winter/Spring 2022	Full, WS I, WS II, WS III	January - May
Summer 2022	Full, SU I, SU II	May - August
Fall 2022	Full, FA I, FA II	September - December
Winter/Spring 2023	Full, WS I, WS II	January - May
Summer 2023	Full, SU I, SU II	May - August
Fall 2023 (If funds allow)	Full, FA I, FA II	September - December

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. A few weeks prior to the start of the course, the higher education institution will reach out to registrants to request any additional necessary information as well as provide directions for accessing the course.

Each higher education institution is responsible for providing required textbooks or materials to each participant for each course. 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 course.

Using the Program Catalog

This catalog is provided as a tool for teachers to view brief descriptions of offerings and plan out the courses or conference scholarship opportunities that they would like to participate in from Winter/ Spring 2022 through Summer II 2023. Full course 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.

Accessing My Account

After teachers are accepted in to the STEM Teach program, they may access their account through the STEM Teach portal at any time by logging in at https://stemteach.azurewebsites.net.

Updating or Changing Contact Information

If a participant's contact information has changed such as school and corporation name and address, home address, phone number, etc., please email Sarah Canada at canadasr@uindy.edu.

Viewing Class History

To view current or completed classes, click on Classes from the Students menu to view registration or drops for each class/semester.

Staying Informed

STEM Teach V 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 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 and to 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:

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

"The courses are offered and taught in a way that is conducive to a busy school schedule, and allows some flexibility as needed when schedules change. Content is very relevant to what I am teaching and provides enough educational background to help me teach topics better at the college level."

"I would encourage them to participate. The environment was encouraging and friendly. Everyone in the course was also a high school math teacher, so we were all having the same experience. The instructor was very understanding, and the classmates were very helpful."

"Being online, this format allows teachers to earn college credit from home, allowing work and home activities to continue as normal. Content from these courses has been very applicable to the dual credit course I teach...making me break down difficult concepts into manageable steps and make me more effective in helping students."

"The STEM Teach program is great and I would encourage others to participate because the courses are free, and the quality of the education is great."

Program Guidelines

Cancellation of Courses

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 a Course

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

If a teacher needs to drop/withdraw from the course for emergency reasons, inform the instructor **and** STEM Teach V 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 V 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?

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

WHO IS ELIGIBLE FOR COURSES AND CONFERENCE SCHOLARSHIPS?

All accepted 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 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 V does not provide degrees or certificates; it provides opportunities to take graduate level courses at participating higher education institutions that may count toward degrees or certificates. Information can be found in the course details of the Program Catalog and Online Catalog.

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

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

HOW DO I PROVIDE FEEDBACK ON A COMPLETED COURSE?

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.

WINTER/SPRING 2022

»Full Semester
»Winter/Spring I
»Winter/Spring II
»Winter/Spring III

BIOLOGY

BIOL 501 Biological Chemistry

Indiana Wesleyan University
Semester: Winter/Spring I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
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.

Description: This course 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:
BIOL 501 Biological Chemistry (Winter/Spring I 2022 & Winter/Spring I 2023)
BIOL 502 Cell Biology (Summer II 2022 & Winter/Spring II 2023)
BIOL 503 Systems Biology (Fall I 2022 & Summer I 2023)
BIOL 504 Genetics (Winter/Spring II 2022 & Summer II 2023)
BIOL 505 Human Physiology (Fall II 2022)
BIOL 506 Microbiology (Summer I 2022)

BIOL 504 Genetics

Indiana Wesleyan University
Semester: Winter/Spring II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
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.

Description: This course 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 as well as mutation, transmission systems, population, and evolutionary genetics. Subtopics also include the structure and function of chromosomes and genomes along with biological variation resulting from recombination, mutation, and selection.

Related Offerings:
BIOL 501 Biological Chemistry (Winter/Spring I 2022 & Winter/Spring I 2023)
BIOL 502 Cell Biology (Summer II 2022 & Winter/Spring II 2023)
BIOL 503 Systems Biology (Fall I 2022 & Summer I 2023)
BIOL 504 Genetics (Winter/Spring II 2022 & Summer II 2023)
BIOL 505 Human Physiology (Fall II 2022)
BIOL 506 Microbiology (Summer I 2022)

BIO 517 Cellular & Molecular Biology I

Indiana State University
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: At least one semester of undergraduate Organic Chemistry.

Description: This course provides a fundamental review of the molecular basis of the structure and function of the cell and its constituent organelles. It provides a description of emerging cell biology technologies and techniques, basic experimental and analytical approaches, and tools and applications within the domains of medicine and biology. Since this is an asynchronous online course, students are expected to access all materials electronically.

Related Offerings:
TBD

BIOL 57710 Emerging Infectious Diseases

Purdue University Fort Wayne
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: A course in molecular biology

Description: This course will introduce the molecular biology and epidemiology of several emerging infectious diseases affecting humans caused by viruses, bacteria, fungi and protozoa using recent, peer-reviewed scientific reviews as course material. Students completing this course will obtain a deeper understanding of the microbial agents that are currently causing several important diseases worldwide. The topics covered will focus on how the pathogens enter and spread within the human body and between persons, the host response to infection, clinical symptoms, diagnosis, treatment and prevention.

Related Offerings:
BIOL 54000 Biotechnology (Summer II 2022)
BIOL 54400 Principles of Virology (Summer I 2022)
BIOL 55110 Proteins: Structure and Function (Fall 2022)
BIOL 57710 Emerging Infectious Diseases (Winter/Spring 2022)

CHEMISTRY

CHEM T 510 Inorganic Chemistry

Indiana University
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: Some undergraduate chemistry coursework

Description: In this course, students will be introduced to fundamental concepts and theories and apply them to understand and explain the role of inorganic chemistry including descriptive chemistry, bonding in coordination chemistry, organometallic chemistry, special topics in inorganic chemistry and metal ions in a biological inorganic chemistry. In the last weeks of the semester, students will demonstrate their knowledge by analyzing and discussing research papers in these topics and presenting to their colleagues.

Related Offerings:
CHEM T 510 Inorganic Chemistry (Winter/Spring 2022 & Winter/Spring 2023)
CHEM T 530 Organic Spectroscopy (Fall 2022)
CHEM T 540 Physical Chemistry (Fall 2022)
CHEM T 550 Introductory Biochemistry (Summer 2022 & Summer 2023)
CHEM T 570 Nuclear Chemistry (Summer 2023)
CHEM T 580 Physical Biochemistry (Winter/Spring 2023)
CHEM T 590 Chemistry Capstone (Summer 2022 & Summer 2023)

MATH

MATH 546 Applied Statistics I

Saint Mary's College
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: There are no prerequisites for this course, though having had a single statistics course at any level may be beneficial.

Description: An introduction to the foundations and applications of statistics. Topics include basic concepts of data collection sampling and experimental design, descriptive analysis and graphical displays of data, probability concepts and expectations, normal and binomial distributions, sampling distributions and the Central Limit Theorem, confidence intervals and hypothesis testing, likelihood-based statistics, ANOVA, correlation and simple linear regression.

Related Offerings:
MATH 527 Applied Linear Algebra (Fall 2022)
MATH 546 Applied Statistics I (Winter/Spring 2022)

MATH 511 Numbers Theory – Theory of Numbers

Indiana State University
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: MATH 320 or equivalent with a C or better.

Description: Math 511 is an introductory course in number theory. Topics include properties of the integers, number theoretic functions, congruences, and applications.

Related Offerings:
MATH 511 Numbers Theory – Theory of Numbers (Winter/Spring 2022)
MATH 512 Abstract Algebra (Summer 2022)
MATH 541 Theory of Probability (Fall 2022)
MATH 542 Mathematical Statistics (Winter/Spring 2023)
MATH 605 Topics in Analysis: Advanced Calculus (Summer 2023)

MATH 605 Problem Solving in Mathematics

University of Southern Indiana
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: 24 hours of math, including calculus

Description: Theory and practice in mathematical problem-solving; exploration of a variety of techniques; and finding solutions to problems in arithmetic, algebra, geometry, and other mathematics for teachers of mathematics and curriculum supervisors.

Related Offerings:
MATH 603 Fundamental Concepts of Algebra (Winter/Spring 2023)
MATH 604 Fundamentals of Geometry (Fall 2023)
MATH 605 Problem Solving In Mathematics (Winter/Spring 2022)
MATH 611 Introduction to Analysis for Secondary Teachers (Summer II 2023)
MATH 621 Teaching Mathematics with Technology (Fall 2022)
STAT 638 Fundamental Models of Statistical Inference (Summer II 2022)

MATH 504 Real Analysis

Indiana Wesleyan University
Semester: Winter/Spring II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: Undergraduate Real Analysis

Description: This course offers 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. It reviews concepts of real-valued functions defined on the real line and proceeds to extend these results as applicable to complex valued functions and metric spaces. It also includes a rigorous examination of properties of some important special functions.

Related Offerings:
MATH 501 Linear Algebra (Summer II 2022 & Summer I 2023)
MATH 502 Abstract Algebra (Summer I 2022 & Summer II 2023)
MATH 503 Advanced Calculus (Winter/Spring I 2023)
MATH 504 Real Analysis (Winter/Spring II 2022 & Winter/Spring II 2023)
MATH 505 Statistical Methods I (Fall I 2022)
MATH 506 Modern Geometry (Fall II 2022)

PHYSICS

PHYS 501 Mathematical Methods in Physics

Indiana Wesleyan University
Semester: Winter/Spring I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: A bachelor's degree with a Physics major or must be state certified (in any state) to teach Physics at a secondary school level.

Description: This course develops a mathematical foundation to succeed in graduate level courses in classical mechanics, electrodynamics, thermodynamics/statistical physics, and modern and quantum physics. It encompasses algorithmic skills but aims higher to develop the ability to relate mathematics and phenomena as well as the ability to analyze solutions for limitations and prediction of behavior.

Related Offerings:
Physics 501 Mathematical Methods in Physics (Winter/Spring I 2022 & Fall I 2022)
Physics 502 Classical Mechanics (Winter/Spring II 2022 & Fall II 2022)
Physics 503 Electromagnetism (Winter/Spring I 2022 & Winter/Spring I 2023)
Physics 504 Intro to Quantum Mechanics (Winter/Spring II 2022 & Winter/Spring II 2023)
Physics 505 Quantum Mechanics II (Summer I 2022 & Summer I 2023)
Physics 506 Thermodynamics and Statistical Mechanics (Summer II 2022 & Summer II 2023)

PHYS 503 Electromagnetism

Indiana Wesleyan University
Semester: Winter/Spring I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: PHYS 501 or equivalent.

Description: This theoretical and problem-solving course 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. Topics include potential theory, static and dynamic electromagnetic field equations in vacuum and media, and electromagnetic waves with select applications.

Related Offerings:
Physics 501 Mathematical Methods in Physics (Winter/Spring I 2022 & Fall I 2022)
Physics 502 Classical Mechanics (Winter/Spring II 2022 & Fall II 2022)
Physics 503 Electromagnetism (Winter/Spring I 2022 & Winter/Spring I 2023)
Physics 504 Intro to Quantum Mechanics (Winter/Spring II 2022 & Winter/Spring II 2023)
Physics 505 Quantum Mechanics II (Summer I 2022 & Summer I 2023)
Physics 506 Thermodynamics and Statistical Mechanics (Summer II 2022 & Summer II 2023)

PHYS 502 Classical Mechanics

Indiana Wesleyan University
Semester: Winter/Spring II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: A bachelor's degree with a Physics major or must be state certified (in any state) to teach Physics at a secondary school level and PHYS 501 or equivalent.

Description: 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).

Related Offerings:
Physics 501 Mathematical Methods in Physics (Winter/Spring I 2022 & Fall I 2022)
Physics 502 Classical Mechanics (Winter/Spring II 2022 & Fall II 2022)
Physics 503 Electromagnetism (Winter/Spring I 2022 & Winter/Spring I 2023)
Physics 504 Intro to Quantum Mechanics (Winter/Spring II 2022 & Winter/Spring II 2023)
Physics 505 Quantum Mechanics II (Summer I 2022 & Summer I 2023)
Physics 506 Thermodynamics and Statistical Mechanics (Summer II 2022 & Summer II 2023)

PHYS 504 Quantum Mechanics I

Indiana Wesleyan University
Semester: Winter/Spring II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: PHYS 501 or equivalent (Also recommend PHYS 502 & PHYS 503 or equivalents)

Description: This course reviews special relativity and provides an introduction to quantum mechanics. It covers applications in nuclear and particle physics and develops key aspects of quantum theory via various extensions of the Stern-Gerlach experiment. The course emphasizes the matrix mechanics approach to quantum mechanics. Use of software applications for visualization and problem solving is a key aspect.

Related Offerings:
Physics 501 Mathematical Methods in Physics (Winter/Spring I 2022 & Fall I 2022)
Physics 502 Classical Mechanics (Winter/Spring II 2022 & Fall II 2022)
Physics 503 Electromagnetism (Winter/Spring I 2022 & Winter/Spring I 2023)
Physics 504 Intro to Quantum Mechanics (Winter/Spring II 2022 & Winter/Spring II 2023)
Physics 505 Quantum Mechanics II (Summer I 2022 & Summer I 2023)
Physics 506 Thermodynamics and Statistical Mechanics (Summer II 2022 & Summer II 2023)

PSYCHOLOGY

MPSY 5100 Multicultural Psychology

Indiana Tech
Semester: Winter/Spring II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: None

Description: This course surveys relevant theories, research, assessment and practice of multicultural psychology and the factors important to issues of cultural and individual differences.

Related Offerings:
MPYS 5050 Writing in Pscyhology (Winter/Spring I 2023)
MPSY 5100 Multicultural Psychology (Winter/Spring II 2022)
MPSY 5200 Lifespan Development (Winter/Spring III 2022 & Winter/Spring III 2023)
MPSY 5400 Advanced Counseling Theory (Summer I 2023)
MPSY 5600 Statistics for Behavioral Sciences-master's track only (Winter/Spring I 2023)
MPSY 6000 Psychopathology (Fall II 2022)
MPSY 6200 Advanced Social Psychology (Summer I 2022)
MPSY 6600 Research Methods in Pscyhology-Prerequisite is MPSY 5600 (Winter/Spring II 2023)
MPSY 6800 Advanced Biopsychology (Summer II 2022)

MPSY 5200 Lifespan Development

Indiana Tech
Semester: Winter/Spring III
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: None

Description: The focus of this course will be to survey the cognitive, psychological, moral, social, emotional, physical and spiritual development of humans throughout the lifespan from birth to death. A developmental framework for understanding issues that impact normal development will be studied.

Related Offerings:
MPYS 5050 Writing in Pscyhology (Winter/Spring I 2023)
MPSY 5100 Multicultural Psychology (Winter/Spring II 2022)
MPSY 5200 Lifespan Development (Winter/Spring III 2022 & Winter/Spring III 2023)
MPSY 5400 Advanced Counseling Theory (Summer I 2023)
MPSY 5600 Statistics for Behavioral Sciences-master's track only (Winter/Spring I 2023)
MPSY 6000 Psychopathology (Fall II 2022)
MPSY 6200 Advanced Social Psychology (Summer I 2022)
MPSY 6600 Research Methods in Pscyhology-Prerequisite is MPSY 5600 (Winter/Spring II 2023)
MPSY 6800 Advanced Biopsychology (Summer II 2022)

CPET 58100 Emerging Communications Technologies

Purdue University Fort Wayne
Semester: Full Semester
Format: Online
Graduate Credit Hours: 4
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: Foundations of communications (waived for graduate students). Students can request a consultation session if it is needed.

Description: An introduction to principles and practice with the concepts of the recent or upcoming digital communication systems and technologies. Topics include review of digital communication systems sections such as modulators and multiplexing; communication systems in Internet of Things; communication applications in connected cars; and digital communications in industrial applications.

Related Offerings:
CPET 56500 Mobile Computing Systems (Winter/Spring 2023)
CPET 58100 Cloud Computing Technology (Fall 2022)
CPET 58100 Emerging Communications Technologies (Winter/Spring 2022)
CPET 58100 Web Development Applications (Summer I 2022)

IT 53500 Global Supply Chain Management

Purdue University Northwest
Semester: Full Semester
Format:Online
Graduate Credit Hours: 3
Teacher Level: Grades K-12
Prerequisite: None

Description: This course is designed to provide students with an understanding of business processes and strategies needed to integrate logistical system management. The importance of good supply chain design, planning, operation and performance improvement in an organization is discussed.

Related Offerings:
TBD

INTEGRATING STEM IN K-12 CLASSROOMS

Coming in Summer 2022

CONFERENCES

Indiana STEM Education Conference

The seventh-annual Indiana STEM Education Conference will be hosted by Purdue University on Thursday, January 13, 2022 from 9 AM – 3:15 PM EST. The goal of the Indiana STEM Education Conference is to support K-12 STEM learning opportunities by sharing effective practices in teaching and learning. The 2022 conference will include in-person or virtual participation. In-person participation will take place at Purdue University.

HASTI Conference

The 50th Annual HASTI Conference, will be February 13 – 15, 2022 at the Marriott East – Indianapolis. It features over 100 sessions and workshops spanning three days along with an Exhibit Hall featuring leaders in the STEM industry.

NCTM Regional Conference & Exposition

NCTM is very excited to bring the NCTM 2022 Regional Conference & Exposition to the Indiana Convention Center March 16-18, 2022. Guided by the program theme "Refresh, Reflect, and Reconnect," NCTM will bring the math community together to network, exchange ideas and connect with professionals from across the country. The NCTM team is taking the necessary steps to ensure a fun and safe environment for all.

CLASSROOM KITS

Note: Teachers may register for one classroom kit, one conference, and one course per term.

DNA Necklace Classroom Kit

Format: Online Promotion from STEM Teach
Teacher Level: Grades 9-12

During the Winter/Spring II registration period, teachers may register for the chance to receive a DNA Necklace classroom kit. Once the Winter/Spring II registration period closes, one teacher is chosen at random to receive the classroom kit including professional development information.

Description: Students extract DNA by lysing their cheek cell sample, then watch as wispy white strands of their own DNA precipitate out of a solution containing ethanol. After transferring their DNA to plastic microcentrifuge tubes, students fashion the tubes into DNA pendant necklaces using colorful string. This is one easy lab activity that really gets your students talking about DNA and science! The classroom kit includes enough materials for 32 students and access to a digital teacher's manual.

Dot Creativity Kit and Robot Classroom Kit

Format: Online Promotion from STEM Teach
Teacher Level: Grades K-5

During the Winter/Spring II registration period, teachers may register for the chance to receive a Dot Creativity Kit and Robot classroom kit. Once the Winter/Spring II registration period closes, one teacher is chosen at random to receive the classroom kit including professional development information.

Description: The Dot Creativity Kit and Robot is designed for adventure, fun and learning in the classroom. The kit combines Do-it-Yourself projects with a quirky green robot and hundreds of self-guided coding challenges. Learn more about this kit at https://www.makewonder.com/robots/dot/.

Marble Maze Classroom Kit

Format: Online Promotion from STEM Teach
Teacher Level: Grades 6-8

During the Winter/Spring II registration period, teachers may register for the chance to receive a Marble Maze classroom kit. Once the Winter/Spring II registration period closes, one teacher is chosen at random to receive the classroom kit including professional development information.

Description: Students can design a maze that challenges friends' logic and skills. The kit includes easy-to-implement projects for classrooms that can be completed in 15 to 30 minutes. The classroom kit includes enough materials for 30 students.

SUMMER 2022

»Full Semester
»Summer I
»Summer II

BIOLOGY

BIOL 502 Cell Biology

Indiana Wesleyan University
Semester: Summer II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: A bachelor's degree with a Biology major or state certified to teach high school Biology

Description: Develop 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. Emphasis will be placed on how the dysfunction or disruptions in these cellular processes lead to disease of the organism.

Related Offerings:
BIOL 501 Biological Chemistry (Winter/Spring I 2022 & Winter/Spring I 2023)
BIOL 502 Cell Biology (Summer II 2022 & Winter/Spring II 2023)
BIOL 503 Systems Biology (Fall I 2022 & Summer I 2023)
BIOL 504 Genetics (Winter/Spring II 2022 & Summer II 2023)
BIOL 505 Human Physiology (Fall II 2022)
BIOL 506 Microbiology (Summer I 2022)

BIOL 506 Microbiology

Indiana Wesleyan University
Semester: Summer I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: A bachelor's degree with a Biology major or state certified to teach high school Biology.

Description: Examines the structure, physiology, and activities of pathogenic and non-pathogenic microorganisms. Emphasis is placed on the interaction of microorganisms with each other, their hosts, and the environment.

Related Offerings:
BIOL 501 Biological Chemistry (Winter/Spring I 2022 & Winter/Spring I 2023)
BIOL 502 Cell Biology (Summer II 2022 & Winter/Spring II 2023)
BIOL 503 Systems Biology (Fall I 2022 & Summer I 2023)
BIOL 504 Genetics (Winter/Spring II 2022 & Summer II 2023)
BIOL 505 Human Physiology (Fall II 2022)
BIOL 506 Microbiology (Summer I 2022)

BIOL 54000 Biotechnology

Purdue University Fort Wayne
Semester: Summer II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: A course in Genetics and a course in Cell Biology

Description: The first part of the course analyzes and describes the mechanisms that regulate the synthesis of DNA, RNA and proteins in organisms. Later, the course discusses biotechnological strategies that are used to manipulate DNA and RNA structure and function to affect gene expression and, consequently, protein synthesis. In the last part, the course is focused in understanding DNA, RNA and protein engineering based-techniques that are used in the production of pharmaceutical proteins, including enzymes, hormones and vaccines, as well as bioactive simple molecules, such as lipids and carbohydrates.

Related Offerings:
BIOL 54000 Biotechnology (Summer II 2022)
BIOL 54400 Principles of Virology (Summer I 2022)
BIOL 55110 Proteins: Structure and Function (Fall 2022)
BIOL 57710 Emerging Infectious Diseases (Winter/Spring 2022)

BIOL 54400 Principles of Virology

Purdue University Fort Wayne
Semester: Summer I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: A course in Genetics

Description: This is an intensive course focused on the molecular biology of viruses. Students will learn about the genetic and molecular structure of viruses, their replication and modes of infection. Viral RNA, DNA and protein synthesis will be discussed in detail. Intracellular trafficking, assembly and exit of viral particles will be studied. HIV pathogenesis and oncogenesis by viruses will get special emphasis along with vaccines and antiviral drugs. Molecular biological insights gained by study of viruses will be discussed in detail.

Related Offerings:
BIOL 54000 Biotechnology (Summer II 2022)
BIOL 54400 Principles of Virology (Summer I 2022)
BIOL 55110 Proteins: Structure and Function (Fall 2022)
BIOL 57710 Emerging Infectious Diseases (Winter/Spring 2022)

CHEMISTRY

CHEM T 550 Introductory Biochemistry

Indiana University
Semester: Summer
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: Some undergraduate chemistry coursework

Description: Topics include protein composition and structure, enzyme kinetics, catalytic and regulatory strategies, carbohydrates, nucleic acids, lipids and cell membranes, transducing and storing energy - metabolic cycles, responding to environmental changes.

Related Offerings:
CHEM T 510 Inorganic Chemistry (Winter/Spring 2022 & Winter/Spring 2023)
CHEM T 530 Organic Spectroscopy (Fall 2022)
CHEM T 540 Physical Chemistry (Fall 2022)
CHEM T 550 Introductory Biochemistry (Summer 2022 & Summer 2023)
CHEM T 570 Nuclear Chemistry (Summer 2023)
CHEM T 580 Physical Biochemistry (Winter/Spring 2023)
CHEM T 590 Chemistry Capstone (Summer 2022 & Summer 2023)

CHEM T 590 Chemistry Capstone (Prereq 9 grad hrs in chemistry) (Required for Graduate Certificate)

Indiana University
Semester: Summer
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: 9 graduate hours in chemistry

Description: The goal of this course is for students to be able to synthesize what they have learnt in previous coursework from two or more subdisciplines of chemistry (analytical, inorganic, organic, physical, biological) as well as what they learn from the chemical literature to develop a learning module that introduces novel concepts and applications to introductory chemistry students. Note: This course is required for the graduate certificate.

Related Offerings:
CHEM T 510 Inorganic Chemistry (Winter/Spring 2022 & Winter/Spring 2023)
CHEM T 530 Organic Spectroscopy (Fall 2022)
CHEM T 540 Physical Chemistry (Fall 2022)
CHEM T 550 Introductory Biochemistry (Summer 2022 & Summer 2023)
CHEM T 570 Nuclear Chemistry (Summer 2023)
CHEM T 580 Physical Biochemistry (Winter/Spring 2023)
CHEM T 590 Chemistry Capstone (Summer 2022 & Summer 2023)

MATH

MATH 501 Linear Algebra

Indiana Wesleyan University
Semester: Summer II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: Undergraduate Linear Algebra

Description: This course offers an intermediate treatment of the theory and application of linear algebra. Topics include vector spaces, linear transformations, diagonalization, inner product spaces, Markov Chains, and the Jordan canonical form. There is an emphasis on understanding and writing proofs.

Related Offerings:
MATH 501 Linear Algebra (Summer II 2022 & Summer I 2023)
MATH 502 Abstract Algebra (Summer I 2022 & Summer II 2023)
MATH 503 Advanced Calculus (Winter/Spring I 2023)
MATH 504 Real Analysis (Winter/Spring II 2022 & Winter/Spring II 2023)
MATH 505 Statistical Methods I (Fall I 2022)
MATH 506 Modern Geometry (Fall II 2022)

MATH 502 Abstract Algebra

Indiana Wesleyan University
Semester: Summer I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: A bachelor's degree with a mathematics major or state certification (in any state) to teach mathematics at the secondary school level.

Description: A study of algebraic structures and major theorems for these. Group theory and ring theory are reviewed and further developments are presented. An introduction to field theory and Galois theory is included.

Related Offerings:
MATH 501 Linear Algebra (Summer II 2022 & Summer I 2023)
MATH 502 Abstract Algebra (Summer I 2022 & Summer II 2023)
MATH 503 Advanced Calculus (Winter/Spring I 2023)
MATH 504 Real Analysis (Winter/Spring II 2022 & Winter/Spring II 2023)
MATH 505 Statistical Methods I (Fall I 2022)
MATH 506 Modern Geometry (Fall II 2022)

MATH 512 Abstract Algebra

Indiana State University
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: MATH 313 and MATH 320 or equivalent with a C or better.

Description: This course is an introduction to groups, rings, and fields, including polynomial rings, divisibility, and unique factorization domains.

Related Offerings:
MATH 511 Numbers Theory – Theory of Numbers (Winter/Spring 2022)
MATH 512 Abstract Algebra (Summer 2022)
MATH 541 Theory of Probability (Fall 2022)
MATH 542 Mathematical Statistics (Winter/Spring 2023)
MATH 605 Topics in Analysis: Advanced Calculus (Summer 2023)

STAT 638 Fundamental Models of Statistical Inference

University of Southern Indiana
Semester: Summer II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: At least an undergraduate minor in mathematics

Description: The study of probability models that form the basis of standard statistical techniques. Statistical techniques considered include inferences involving measures of central tendency and measures of variability, linear regression model estimation and goodness of fit hypothesis testing.

Related Offerings:
MATH 603 Fundamental Concepts of Algebra (Winter/Spring 2023)
MATH 604 Fundamentals of Geometry (Fall 2023)
MATH 605 Problem Solving In Mathematics (Winter/Spring 2022)
MATH 611 Introduction to Analysis for Secondary Teachers (Summer II 2023)
MATH 621 Teaching Mathematics with Technology (Fall 2022)
STAT 638 Fundamental Models of Statistical Inference (Summer II 2022)

PHYSICS

PHYS 505 Quantum Mechanics II

Indiana Wesleyan University
Semester: Summer I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: A bachelor's degree with a Physics major or be state certified (in any state) to teach Physics at a secondary school level and PHYS 504 or equivalent.

Description: Builds on the foundation laid in PHYE 504, considering more advanced topics in spin systems and continuing on to 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.

Related Offerings:
Physics 501 Mathematical Methods in Physics (Winter/Spring I 2022 & Fall I 2022)
Physics 502 Classical Mechanics (Winter/Spring II 2022 & Fall II 2022)
Physics 503 Electromagnetism (Winter/Spring I 2022 & Winter/Spring I 2023)
Physics 504 Intro to Quantum Mechanics (Winter/Spring II 2022 & Winter/Spring II 2023)
Physics 505 Quantum Mechanics II (Summer I 2022 & Summer I 2023)
Physics 506 Thermodynamics and Statistical Mechanics (Summer II 2022 & Summer II 2023)

PHYS 506 Thermodynamics and Statistical Mechanics

Indiana Wesleyan University
Semester: Summer II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: A bachelor's degree with a Physics major or be state certified (in any state) to teach Physics at a secondary school level and PHYS 501 or equivalent.

Description: The laws of thermodynamics from macroscopic observations and then demonstrates how they arise from the statistical, collective behavior of atoms and molecules; the statistical development encompasses classical systems (kinetic theory, transport phenomena, and ensemble theory) and quantum systems (systems of bosons and fermions).

Related Offerings:
Physics 501 Mathematical Methods in Physics (Winter/Spring I 2022 & Fall I 2022)
Physics 502 Classical Mechanics (Winter/Spring II 2022 & Fall II 2022)
Physics 503 Electromagnetism (Winter/Spring I 2022 & Winter/Spring I 2023)
Physics 504 Intro to Quantum Mechanics (Winter/Spring II 2022 & Winter/Spring II 2023)
Physics 505 Quantum Mechanics II (Summer I 2022 & Summer I 2023)
Physics 506 Thermodynamics and Statistical Mechanics (Summer II 2022 & Summer II 2023

PSYCHOLOGY

MPSY 6200 Advanced Social Psychology

Indiana Tech
Semester: Summer I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: None

Description: This course is designed to explore topics within social psychology in depth through the use of empirical journal articles as well as texts. Students will be provided an opportunity to develop deeper knowledge of many of the major studies within the field of social psychology. Students will be encouraged to form connections between course material and their own experiences as social psychology topics are issues that occur in our everyday lives.

Related Offerings:
MPYS 5050 Writing in Pscyhology (Winter/Spring I 2023)
MPSY 5100 Multicultural Psychology (Winter/Spring II 2022)
MPSY 5200 Lifespan Development (Winter/Spring III 2022 & Winter/Spring III 2023)
MPSY 5400 Advanced Counseling Theory (Summer I 2023)
MPSY 5600 Statistics for Behavioral Sciences-master's track only (Winter/Spring I 2023)
MPSY 6000 Psychopathology (Fall II 2022)
MPSY 6200 Advanced Social Psychology (Summer I 2022)
MPSY 6600 Research Methods in Pscyhology-Prerequisite is MPSY 5600 (Winter/Spring II 2023)
MPSY 6800 Advanced Biopsychology (Summer II 2022)

MPSY 6800 Advanced Biopsychology

Indiana Tech
Semester: Summer II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: None

Description: This course is designed to provide students with an in-depth study of normal and abnormal human behaviors from the perspective of brain functioning. A review of the foundational knowledge and examination of current research of the relationship between biological function of the brain and nervous system/neuroanatomy will be explored. Experience in report wiritng is needed.

Related Offerings:
MPYS 5050 Writing in Pscyhology (Winter/Spring I 2023)
MPSY 5100 Multicultural Psychology (Winter/Spring II 2022)
MPSY 5200 Lifespan Development (Winter/Spring III 2022 & Winter/Spring III 2023)
MPSY 5400 Advanced Counseling Theory (Summer I 2023)
MPSY 5600 Statistics for Behavioral Sciences-master's track only (Winter/Spring I 2023)
MPSY 6000 Psychopathology (Fall II 2022)
MPSY 6200 Advanced Social Psychology (Summer I 2022)
MPSY 6600 Research Methods in Pscyhology-Prerequisite is MPSY 5600 (Winter/Spring II 2023)
MPSY 6800 Advanced Biopsychology (Summer II 2022)

TECHNOLOGY

CPET 58100 Web Development Applications

Purdue University Fort Wayne
Semester: Summer I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: The prerequisite is waived for graduate students. Students can request for consultation session if it is needed.

Description: A study of essential knowledge and skills that an effective web administrator must know. Introduction to fundamental topics of web technologies, web-based systems, and web page design. Topics covered include Internet applications, web site development and publishing, information architecture, client and server-side programming, multimedia technologies and publishing, vulnerabilities, and web site implementation and maintenance.

Related Offerings:
CPET 56500 Mobile Computing Systems (Winter/Spring 2023)
CPET 58100 Cloud Computing Technology (Fall 2022)
CPET 58100 Emerging Communications Technologies (Winter/Spring 2022)
CPET 58100 Web Development Applications (Summer I 2022)

IT 510 Introduction to Information Technology

Valparaiso University
Semester: Summer I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: None

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

Related Offerings:
IT 510 Intro to Information Technology (Summer I 2022)
IT 533 Data Mining & Applications (Summer 2023)
IT 600 Ethics in Information Technology (Summer 2023)
IT 603 Information Management (Fall 2022)
IT 632 Instructional Design in Information Technology (Winter/Spring 2023)

EDUC 654 Designing and Implementing a STEM Project-Based Learning Unit

University of Indianapolis
Semester: Summer I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades K-12
Graduate Certificate Available: Yes
Master's Completion: Yes
Prerequisite: None

Description: Participants will design and implement a project-based learning unit in a STEM-related field to engage their elementary and secondary students in deeper learning. We explore the nuts and bolts of designing an effective PBL unit, while ensuring the Indiana Standards are the cornerstones to the unit. We investigate research-based practices of implementing high quality PBL. Participants will be introduced to the theory and practice of project-based learning (PBL).

Note: The four EDUC courses offered by University of Indianapolis through STEM Teach V (EDUC 654, EDUC 655, EDUC 656, & EDUC 653) can also be used to complete a master's degree for dual credit credentialing once 18 graduate credits are completed in a specific content area.

Related Offerings:
EDUC 654 Designing & Implementing a STEM PBL Unit (Summer I 2022 & Summer I 2023)
EDUC 655 STEM Methods (Summer II 2022 & Summer II 2023)
EDUC 656 Teacher Engineering Education: Universal Design for Learning (Fall I 2022)
EDUC 653 Integrating Tech into STEM (Winter/Spring 2023)

EDUC 655 STEM Methods

University of Indianapolis
Semester: Summer II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades K-12
Graduate Certificate Available: Yes
Master's Completion: Yes
Prerequisite: None

*There will be one synchronous session on July 13, 2022, 5PM to 7PM Eastern Time.

Description: STEM methods is a course designed to highlight elements of STEM and how to incorporate them into the classroom. After completing this STEM methods course, teachers will have a better understanding of creating a STEM culture in the classroom and have STEM activities in their toolbox to implement.

Note: The four EDUC courses offered by University of Indianapolis through STEM Teach V (EDUC 654, EDUC 655, EDUC 656, & EDUC 653) can also be used to complete a master's degree for dual credit credentialing once 18 graduate credits are completed in a specific content area.

Related Offerings:
EDUC 654 Designing & Implementing a STEM PBL Unit (Summer I 2022 & Summer I 2023)
EDUC 655 STEM Methods (Summer II 2022 & Summer II 2023)
EDUC 656 Teacher Engineering Education: Universal Design for Learning (Fall I 2022)
EDUC 653 Integrating Tech into STEM (Winter/Spring 2023)

CONFERENCES

MAKE! Creation Through Imagination

The Classroom and School Makerspace Expo will be hosted by the University of Indianapolis on Tuesday, May 17, 2022 from 8:00 AM – 5:00 PM EST.

Join STEM Teach Indiana and 1st Maker Space on May 17 for a hands-on conference all about makerspaces in K-8 classrooms.

- Learn to develop makerspace projects across all subject matters
- Explore how to coach students through the Engineering Design Process
- Gain tips for using math to reinforce grade level standards
- Discover strategies for infusing literacy and reading into STEM projects
- Gather resources for creating a sustainable maker movement in your school
- Plus much more!

UPDATE: Team registrations are SOLD OUT. Participants can still register as individuals but will not be eligible to receive the Maker Cart. Note: School teams of 4-5 may be eligible to receive a Teacher Geek Mobile Makerspace cart at no cost to the teacher or school.

Visit https://stemteachindiana.org/make/ to learn more about MAKE! and to register for the event.

CLASSROOM KITS

Note: Teachers may register for one classroom kit, one conference, and one course per term.

KEVA Brain Builders Classroom Kit

Format: Online Promotion from STEM Teach
Teacher Level: Grades K-5

During the Full Summer 2022 registration period, teachers may register for the chance to receive a KEVA Brain Builders classroom kit. Once the Full Summer registration period closes, one teacher is chosen at random to receive the classroom kit including professional development information.

Description: Translating 2D images into 3D reality is an essential STEM skill, and KEVA Brain Builders help children think in multiple dimensions through fun and interactive task cards. This classroom kit stimulates problem solving, creativity, and visual perception. The kit is stored in a small carrying case. 50 registrations for the drawing will be accepted. Kits will be mailed to teachers mid-May. Learn more about this kit at https://1stmakerspace.com/store/p/keva-brain-builders.

Wind Lift Classroom Kit

Format: Online Promotion from STEM Teach
Teacher Level: Grades 6-8

During the Full Summer 2022 registration period, teachers may register for the chance to receive a Wind Lift classroom kit. Once the Full Summer registration period closes, one teacher is chosen at random to receive the classroom kit including professional development information.

Description: Harness the power of the wind in this popular environmental engineering project by TeacherGeek. Kids will really construct an example Wind Lift to raise and lower a bucket, cycling through the engineering & design process to develop better solutions to lift heavier loads, or increase speed. Watch as they learn through doing, as concepts of wind power, energy, mechanical advantage, torque and work are grown through engaging labs and competitions. Blades can be made from raiding the recycling bin, 3-D printer creations or other found materials – your imagination is the limit. 50 registrations for the drawing will be accepted. Kits will be mailed to teachers mid-May. Learn more about this kit at https://1stmakerspace.com/store/p/wind-lift-activity.

Biochemistry Classroom Kit

Format: Online Promotion from STEM Teach
Teacher Level: Grades 9-12

During the Full Summer 2022 registration period, teachers may register for the chance to receive a Kemtec Science: Biochemistry I classroom kit. Once the Full Summer registration period closes, one teacher is chosen at random to receive the classroom kit including professional development information.

Description: This kit was designed to introduce students to the chemistry of living things and relate biochemistry to everyday life. Includes five basic biochemistry experiments in which students use chemical methods to test for proteins, carbohydrates and lipids, use Pepsin to digest protein and Ninhydrin to detect amino acids, test the activity of salivary amylase (both in vitro and in vivo), develop a technique for determining ascorbic acid concentration and use it to evaluate the vitamin C levels in substances, and determine of the alkalinity of acidity of foods. A great exploratory or introductory experience is gained by performing the test procedures. Ideal for students in biology, general science, or biochemistry courses. 50 registrations for the drawing will be accepted. Kits will be mailed to teachers mid-May. Learn more about this kit at https://stemfinity.com/products/kemtec-science-biochemistry-i?_pos=1&_sid=84ec861c1&_ss=r.

FALL 2022

»Full Semester
»Fall I
»Fall II

BIOLOGY

BIOL 503 Systems Biology

Indiana Wesleyan University
Semester: Fall I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
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.

Description: 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:
BIOL 501 Biological Chemistry (Winter/Spring I 2022 & Winter/Spring I 2023)
BIOL 502 Cell Biology (Summer II 2022 & Winter/Spring II 2023)
BIOL 503 Systems Biology (Fall I 2022 & Summer I 2023)
BIOL 504 Genetics (Winter/Spring II 2022 & Summer II 2023)
BIOL 505 Human Physiology (Fall II 2022)
BIOL 506 Microbiology (Summer I 2022)

BIOL 505 Human Physiology

Indiana Wesleyan University
Semester: Fall II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
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.

Description: This course 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:
BIOL 501 Biological Chemistry (Winter/Spring I 2022 & Winter/Spring I 2023)
BIOL 502 Cell Biology (Summer II 2022 & Winter/Spring II 2023)
BIOL 503 Systems Biology (Fall I 2022 & Summer I 2023)
BIOL 504 Genetics (Winter/Spring II 2022 & Summer II 2023)
BIOL 505 Human Physiology (Fall II 2022)
BIOL 506 Microbiology (Summer I 2022)

BIOL 55110 Proteins: Structure and Function

Purdue University Fort Wayne
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: BIOL 21800 Genetics And Molecular Biology or equivalent

Description: This course will explore the fascinating world of proteins which are the nanomachines that are indispensable to life because of their catalytic and structural functions. Students will learn the principles governing protein function and get an integrated view of proteins at the molecular, cellular and systemic level. Students will gain understanding of how enzymes work, how proteins make molecules move inside cells and transmit signals. Bioinformatics and molecular biological techniques used for studying proteins will also be taught.

Related Offerings:
BIOL 54000 Biotechnology (Summer II 2022)
BIOL 54400 Principles of Virology (Summer I 2022)
BIOL 55110 Proteins: Structure and Function (Fall 2022)
BIOL 57710 Emerging Infectious Diseases (Winter/Spring 2022)

CHEM T 530 Organic Spectroscopy

Indiana University
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite:

Description: Intended to give students a more complete picture of how spectroscopic methods (IR, UV, NMR, mass spectroscopy, and other methods) are used to elucidate the structure of complex organic molecules.

Related Offerings:
CHEM T 510 Inorganic Chemistry (Winter/Spring 2022 & Winter/Spring 2023)
CHEM T 530 Organic Spectroscopy (Fall 2022)
CHEM T 540 Physical Chemistry (Fall 2022)
CHEM T 550 Introductory Biochemistry (Summer 2022 & Summer 2023)
CHEM T 570 Nuclear Chemistry (Summer 2023)
CHEM T 580 Physical Biochemistry (Winter/Spring 2023)
CHEM T 590 Chemistry Capstone (Summer 2022 & Summer 2023)

CHEM T 540 Physical Chemistry

Indiana University
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite:

Description: This course will touch on all the fundamental areas of Physical Chemistry. Emphasis is placed on content that expands the students' knowledge in the key areas and relates to concepts that are likely to be taught in introductory chemistry courses.

Related Offerings:
CHEM T 510 Inorganic Chemistry (Winter/Spring 2022 & Winter/Spring 2023)
CHEM T 530 Organic Spectroscopy (Fall 2022)
CHEM T 540 Physical Chemistry (Fall 2022)
CHEM T 550 Introductory Biochemistry (Summer 2022 & Summer 2023)
CHEM T 570 Nuclear Chemistry (Summer 2023)
CHEM T 580 Physical Biochemistry (Winter/Spring 2023)
CHEM T 590 Chemistry Capstone (Summer 2022 & Summer 2023)

MATH 505 Statistical Methods I

Indiana Wesleyan University
Semester: Fall I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: A bachelor's degree with a Mathematics major or must be state certified (in any state) to teach Mathematics at a secondary school level.

Description: This course covers topics of probability, inferences for one and two sample means, inferences for more than two sample means, inferences for one and two sample proportions, multiple-comparison procedures, and nonparametric methods.

Related Offerings:
MATH 501 Linear Algebra (Summer II 2022 & Summer I 2023)
MATH 502 Abstract Algebra (Summer I 2022 & Summer II 2023)
MATH 503 Advanced Calculus (Winter/Spring I 2023)
MATH 504 Real Analysis (Winter/Spring II 2022 & Winter/Spring II 2023)
MATH 505 Statistical Methods I (Fall I 2022)
MATH 506 Modern Geometry (Fall II 2022)

MATH 506 Modern Geometry

Indiana Wesleyan University
Semester: Fall II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: A bachelor's degree with a Mathematics major or must be state certified (in any state) to teach Mathematics at a secondary school level.

Description: Thid course offers a critical presentation of the development and philosophical significance of non-Euclidean geometry. The goal of this course is to advance understanding of Euclidean and non-Euclidean geometries, through analytic methods and critical thinking.

Related Offerings:
MATH 501 Linear Algebra (Summer II 2022 & Summer I 2023)
MATH 502 Abstract Algebra (Summer I 2022 & Summer II 2023)
MATH 503 Advanced Calculus (Winter/Spring I 2023)
MATH 504 Real Analysis (Winter/Spring II 2022 & Winter/Spring II 2023)
MATH 505 Statistical Methods I (Fall I 2022)
MATH 506 Modern Geometry (Fall II 2022)

MATH 527 Applied Linear Algebra

Saint Mary's College
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: An undergraduate math or science degree. Additionally, a linear algebra class at the undergraduate level or some experience with the subject is preferred.

Description: Matrices, gaussian elimination, vector spaces, determinants, inner products, orthogonality, least squares solution, eigenvalue problems, Gram-Schmidt process, matrix decomposition/factorization, Jordan canonical forms, methods of dimension reduction such as singular value decomposition or principal component analysis, quadratic forms, pseudo-inverses, Markov processes, data/image processing, and other advanced topics pertinent to data analysis.

Related Offerings:
MATH 527 Applied Linear Algebra (Fall 2022)
MATH 546 Applied Statistics I (Winter/Spring 2022)

MATH 541 Theory of Probability

Indiana State University
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: MATH 231 and MATH 320 or equivalent with a C or better.

Description: The formulation of probability problems in a mathematical manner and the techniques for their solution.

Related Offerings:
MATH 511 Numbers Theory – Theory of Numbers (Winter/Spring 2022)
MATH 512 Abstract Algebra (Summer 2022)
MATH 541 Theory of Probability (Fall 2022)
MATH 542 Mathematical Statistics (Winter/Spring 2023)
MATH 605 Topics in Analysis: Advanced Calculus (Summer 2023)

MATH 621 Teaching Mathematics with Technology

University of Southern Indiana
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: None

Description: Prepares mathematics teachers to use technology to make instructional decisions and support students in solving mathematical problems in the secondary mathematics curriculum, including problems in geometry, algebra, functions, data analysis, probability, and calculus.

Related Offerings:
MATH 603 Fundamental Concepts of Algebra (Winter/Spring 2023)
MATH 604 Fundamentals of Geometry (Fall 2023)
MATH 605 Problem Solving In Mathematics (Winter/Spring 2022)
MATH 611 Introduction to Analysis for Secondary Teachers (Summer II 2023)
MATH 621 Teaching Mathematics with Technology (Fall 2022)
STAT 638 Fundamental Models of Statistical Inference (Summer II 2022)

PHYSICS

PHYS 501 Mathematical Methods in Physics

Indiana Wesleyan University
Semester: Fall I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: A bachelor's degree with a Physics major or must be state certified (in any state) to teach Physics at a secondary school level.

Description: This course develops a mathematical foundation to succeed in graduate level courses in classical mechanics, electrodynamics, thermodynamics/statistical physics, and modern and quantum physics. It encompasses algorithmic skills but aims higher to develop the ability to relate mathematics and phenomena as well as the ability to analyze solutions for limitations and prediction of behavior.

Related Offerings:
Physics 501 Mathematical Methods in Physics (Winter/Spring I 2022 & Fall I 2022)
Physics 502 Classical Mechanics (Winter/Spring II 2022 & Fall II 2022)
Physics 503 Electromagnetism (Winter/Spring I 2022 & Winter/Spring I 2023)
Physics 504 Intro to Quantum Mechanics (Winter/Spring II 2022 & Winter/Spring II 2023)
Physics 505 Quantum Mechanics II (Summer I 2022 & Summer I 2023)
Physics 506 Thermodynamics and Statistical Mechanics (Summer II 2022 & Summer II 2023)

PHYS 502 Classical Mechanics

Indiana Wesleyan University
Semester: Fall II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: A bachelor's degree with a Physics major or must be state certified (in any state) to teach Physics at a secondary school level and PHYS 501 or equivalent.

Description: 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).

Related Offerings:
Physics 501 Mathematical Methods in Physics (Winter/Spring I 2022 & Fall I 2022)
Physics 502 Classical Mechanics (Winter/Spring II 2022 & Fall II 2022)
Physics 503 Electromagnetism (Winter/Spring I 2022 & Winter/Spring I 2023)
Physics 504 Intro to Quantum Mechanics (Winter/Spring II 2022 & Winter/Spring II 2023)
Physics 505 Quantum Mechanics II (Summer I 2022 & Summer I 2023)
Physics 506 Thermodynamics and Statistical Mechanics (Summer II 2022 & Summer II 2023)

MPSY 6000 Psychopathology

Indiana Tech
Semester: Fall II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: None

Description: Examination of the issues and controversies related to the conceptualization and diagnosis of mental disorders. The etiology, onset, symptoms, clinical features and prognosis for mental disorders throughout the lifespan will be explored.

Related Offerings:
MPYS 5050 Writing in Pscyhology (Winter/Spring I 2023)
MPSY 5100 Multicultural Psychology (Winter/Spring II 2022)
MPSY 5200 Lifespan Development (Winter/Spring III 2022 & Winter/Spring III 2023)
MPSY 5400 Advanced Counseling Theory (Summer I 2023)
MPSY 5600 Statistics for Behavioral Sciences-master's track only (Winter/Spring I 2023)
MPSY 6000 Psychopathology (Fall II 2022)
MPSY 6200 Advanced Social Psychology (Summer I 2022)
MPSY 6600 Research Methods in Pscyhology-Prerequisite is MPSY 5600 (Winter/Spring II 2023)
MPSY 6800 Advanced Biopsychology (Summer II 2022)

TECHNOLOGY

CPET 58100 Cloud Computing Technology

Purdue University Fort Wayne
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: None

Description: Advanced study of technical and professional topics. Emphasis is on new developments relating to technical, operational, and training aspects of industry and technology education.

Related Offerings:
CPET 56500 Mobile Computing Systems (Winter/Spring 2023)
CPET 58100 Cloud Computing Technology (Fall 2022)
CPET 58100 Emerging Communications Technologies (Winter/Spring 2022)
CPET 58100 Web Development Applications (Summer I 2022)

IT 603 Information Management

Valparaiso University
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: IT 502

Description: 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. May be repeated more than once when topics differ.

Related Offerings:
IT 510 Intro to Information Technology (Summer I 2022)
IT 533 Data Mining & Applications (Summer 2023)
IT 600 Ethics in Information Technology (Summer 2023)
IT 603 Information Management (Fall 2022)
IT 632 Instructional Design in Information Technology (Winter/Spring 2023)

EDUC 656 STEM Engineering Universal Design for Learning

University of Indianapolis
Semester: Fall I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades K-12
Graduate Certificate Available: Yes
Master's Completion: Yes
Prerequisite: If you are seeking the STEM certificate, then completion of EDUC 654 and 655 is recommended.

EDUC 656 is an online synchronous course. This course will meet via Zoom each Thursday between September 15 – November 3, 2022 from 5:45 PM to 8:25 PM Eastern Time.

Description: This course is designed for K-12 teachers who seek to understand the need to build more engineering capacity in K-12 education, expand practice by integrating engineering principles & projects into content areas, and design experiences through an inclusive and accessible lens. Teachers will be introduced to multimodal composition and inclusive design to create more accessible books, games, and classroom materials. Modules are designed to enable teachers to flexibly apply the projects in their classrooms or other formal/informal contexts. The modules will range from the use of physical computing devices to the design of cranky cardboard contraptions. A service learning/community-based project will serve as a capstone experience.

Note: The four EDUC courses offered by University of Indianapolis through STEM Teach V (EDUC 654, EDUC 655, EDUC 656, & EDUC 653) can also be used to complete a master's degree for dual credit credentialing once 18 graduate credits are completed in a specific content area.

Related Offerings:
EDUC 654 Designing & Implementing a STEM PBL Unit (Summer I 2022 & Summer I 2023)
EDUC 655 STEM Methods (Summer II 2022 & Summer II 2023)
EDUC 656 Teacher Engineering Education: Universal Design for Learning (Fall I 2022)
EDUC 653 Integrating Tech into STEM (Winter/Spring 2023)

CLASSROOM KITS

Note: Teachers may register for one classroom kit, one conference, and one course per term.

Marble Maze Classroom Kit

Format: Online Promotion from STEM Teach
Teacher Level: Grades 1-4

During the Full Fall registration period, teachers may register for the chance to receive a Marble Maze classroom kit. Once the Full Fall registration period closes, one teacher is chosen at random to receive the classroom kit including professional development information.

Description: Students can design a maze that challenges friends' logic and skills. The kit includes easy-to-implement projects for classrooms that can be completed in 15 to 30 minutes. The classroom kit includes enough materials for 30 students.

3Doodler Create+ Essential Pen Set and 3Doodler Project Book Classroom Kit

Format: Online Promotion from STEM Teach
Teacher Level: Grades 5-8

During the Full Fall registration period, teachers may register for the chance to receive a 3Doodler Create+ Essential Pen Set and a 3Doodler Project Book classroom kit. Once the Full Fall registration period closes, one teacher is chosen at random to receive the classroom kit including professional development information.

Description: The 3Doodler Create+ is the latest version of the world's first 3D Printing Pen! Now with dual drive, the all new 3Doodler Create+ is re-engineered to give you an ultra smooth and enhanced Doodling experience.

The 3Doodler Project Book will guide you through the basics of how to use your 3Doodler 3D printing pen and take you on a journey all the way from beginner to master doodler!

DNA Necklace Classroom Kit

Format: Online Promotion from STEM Teach
Teacher Level: Grades 9-12

During the Full Fall registration period, teachers may register for the chance to receive a DNA Necklace classroom kit. Once the Full Fall registration period closes, one teacher is chosen at random to receive the classroom kit including professional development information.

Description: Students extract DNA by lysing their cheek cell sample, then watch as wispy white strands of their own DNA precipitate out of a solution containing ethanol. After transferring their DNA to plastic microcentrifuge tubes, students fashion the tubes into DNA pendant necklaces using colorful string. This is one easy lab activity that really gets your students talking about DNA and science! The classroom kit includes enough materials for 32 students and access to a digital teacher's manual.

Find out more about the kit here.

WINTER/SPRING 2023

»Full Semester
»Winter/Spring I
»Winter/Spring II

BIOLOGY

BIOL 501 Biological Chemistry

Indiana Wesleyan University
Semester: Winter/Spring I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
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.

Description: This course 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:
BIOL 501 Biological Chemistry (Winter/Spring I 2022 & Winter/Spring I 2023)
BIOL 502 Cell Biology (Summer II 2022 & Winter/Spring II 2023)
BIOL 503 Systems Biology (Fall I 2022 & Summer I 2023)
BIOL 504 Genetics (Winter/Spring II 2022 & Summer II 2023)
BIOL 505 Human Physiology (Fall II 2022)
BIOL 506 Microbiology (Summer I 2022)

BIOL 502 Cell Biology

Indiana Wesleyan University
Semester: Winter/Spring II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
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.

Description: Develop 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. Throughout the course emphasis will be placed on how the dysfunction or disruptions in these cellular processes lead to disease of the organism.

Related Offerings:
BIOL 501 Biological Chemistry (Winter/Spring I 2022 & Winter/Spring I 2023)
BIOL 502 Cell Biology (Summer II 2022 & Winter/Spring II 2023)
BIOL 503 Systems Biology (Fall I 2022 & Summer I 2023)
BIOL 504 Genetics (Winter/Spring II 2022 & Summer II 2023)
BIOL 505 Human Physiology (Fall II 2022)
BIOL 506 Microbiology (Summer I 2022)

CHEMISTRY

CHEM T 510 Inorganic Chemistry

Indiana University
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite:

Description: This course introduces fundamental concepts of inorganic chemistry including descriptive chemistry, bonding in coordination chemistry, organometallic chemistry, special topics in inorganic chemistry and biological inorganic chemistry.

Related Offerings:
CHEM T 510 Inorganic Chemistry (Winter/Spring 2022 & Winter/Spring 2023)
CHEM T 530 Organic Spectroscopy (Fall 2022)
CHEM T 540 Physical Chemistry (Fall 2022)
CHEM T 550 Introductory Biochemistry (Summer 2022 & Summer 2023)
CHEM T 570 Nuclear Chemistry (Summer 2023)
CHEM T 580 Physical Biochemistry (Winter/Spring 2023)
CHEM T 590 Chemistry Capstone (Summer 2022 & Summer 2023)

CHEM T 580 Physical Biochemistry

Indiana University
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite:

Description: An illustration of the physical principles underpinning the structure and dynamics of biomolecules, as well as experimental and computational methods used to study biochemical systems.

Related Offerings:
CHEM T 510 Inorganic Chemistry (Winter/Spring 2022 & Winter/Spring 2023)
CHEM T 530 Organic Spectroscopy (Fall 2022)
CHEM T 540 Physical Chemistry (Fall 2022)
CHEM T 550 Introductory Biochemistry (Summer 2022 & Summer 2023)
CHEM T 570 Nuclear Chemistry (Summer 2023)
CHEM T 580 Physical Biochemistry (Winter/Spring 2023)
CHEM T 590 Chemistry Capstone (Summer 2022 & Summer 2023)

MATH 503 Advanced Calculus

Indiana Wesleyan University
Semester: Winter/Spring I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: A bachelor's degree with a Mathematics major or must be state certified (in any state) to teach Mathematics at a secondary school level.

Description: An advanced multivariate treatment of calculus for the mature student of mathematics. Course content will include advanced treatment of differentiation and integration as well as advanced topics including Fourier Series and special functions.

Related Offerings:
MATH 501 Linear Algebra (Summer II 2022 & Summer I 2023)
MATH 502 Abstract Algebra (Summer I 2022 & Summer II 2023)
MATH 503 Advanced Calculus (Winter/Spring I 2023)
MATH 504 Real Analysis (Winter/Spring II 2022 & Winter/Spring II 2023)
MATH 505 Statistical Methods I (Fall I 2022)
MATH 506 Modern Geometry (Fall II 2022)

MATH 504 Real Analysis

Indiana Wesleyan University
Semester: Winter/Spring II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: A bachelor's degree with a Mathematics major or must be state certified (in any state) to teach Mathematics at a secondary school level and undergraduate Real Analysis.

Description: This course offers 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. It reviews concepts of real-valued functions defined on the real line and proceeds to extend these results as applicable to complex valued functions and metric spaces. It also includes a rigorous examination of properties of some important special functions.

Related Offerings:
MATH 501 Linear Algebra (Summer II 2022 & Summer I 2023)
MATH 502 Abstract Algebra (Summer I 2022 & Summer II 2023)
MATH 503 Advanced Calculus (Winter/Spring I 2023)
MATH 504 Real Analysis (Winter/Spring II 2022 & Winter/Spring II 2023)
MATH 505 Statistical Methods I (Fall I 2022)
MATH 506 Modern Geometry (Fall II 2022)

MATH 510 Applied Statistics

University of Indianapolis
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: An introductory course in statistics

Description: This course presents various statistical methods that are useful to students and professionals in the Life Sciences. Topics include estimation and hypothesis testing, analysis of variance and covariance, simple and multiple regression techniques, logistic regression, count data analysis, and nonparametric methods.

Related Offerings:
TBD

MATH 542 Mathematical Statistics

Indiana State University
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: MATH 441/MATH 541 or equivalent

Description: Topics include estimation, hypothesis testing, correlation and regression, statistical design, and nonparametric methods.

Related Offerings:
MATH 511 Numbers Theory – Theory of Numbers (Winter/Spring 2022)
MATH 512 Abstract Algebra (Summer 2022)
MATH 541 Theory of Probability (Fall 2022)
MATH 542 Mathematical Statistics (Winter/Spring 2023)
MATH 605 Topics in Analysis: Advanced Calculus (Summer 2023)

MATH 603 Fundamental Concepts of Algebra

University of Southern Indiana
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: TBD

Description: Topics include the conceptual framework of algebra, recent developments in algebraic theory and advanced topics in algebra for teachers and curriculum supervisors.

MATH 603 Fundamental Concepts of Algebra (Winter/Spring 2023)
MATH 604 Fundamentals of Geometry (Fall 2023)
MATH 605 Problem Solving In Mathematics (Winter/Spring 2022)
MATH 611 Introduction to Analysis for Secondary Teachers (Summer II 2023)
MATH 621 Teaching Mathematics with Technology (Fall 2022)
STAT 638 Fundamental Models of Statistical Inference (Summer II 2022)

PHYSICS

PHYS 503 Electromagnetism

Indiana Wesleyan University
Semester: Winter/Spring I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: A bachelor's degree with a Physics major or be state certified (in any state) to teach Physics at a secondary school level and PHYS 501 or equivalent.

Description: This theoretical and problem-solving course 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. Topics include potential theory, static and dynamic electromagnetic field equations in vacuum and media, and electromagnetic waves with select applications.

Related Offerings:
Physics 501 Mathematical Methods in Physics (Winter/Spring I 2022 & Fall I 2022)
Physics 502 Classical Mechanics (Winter/Spring II 2022 & Fall II 2022)
Physics 503 Electromagnetism (Winter/Spring I 2022 & Winter/Spring I 2023)
Physics 504 Intro to Quantum Mechanics (Winter/Spring II 2022 & Winter/Spring II 2023)
Physics 505 Quantum Mechanics II (Summer I 2022 & Summer I 2023)
Physics 506 Thermodynamics and Statistical Mechanics (Summer II 2022 & Summer II 2023)

PHYS 504 Quantum Mechanics I

Indiana Wesleyan University
Semester: Winter/Spring II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: A bachelor's degree with a physics major or be state certified (in any state) to teach Physics at a secondary school level PHYS 501 or equivalent (recommend PHYS 502, PHYS 503 or equivalents).

Description: This course reviews special relativity and provides an introduction to quantum mechanics. It covers applications in nuclear and particle physics and develops key aspects of quantum theory via various extensions of the Stern-Gerlach experiment. The course emphasizes the matrix mechanics approach to quantum mechanics. Use of software applications for visualization and problem solving is a key aspect.

Related Offerings:
Physics 501 Mathematical Methods in Physics (Winter/Spring I 2022 & Fall I 2022)
Physics 502 Classical Mechanics (Winter/Spring II 2022 & Fall II 2022)
Physics 503 Electromagnetism (Winter/Spring I 2022 & Winter/Spring I 2023)
Physics 504 Intro to Quantum Mechanics (Winter/Spring II 2022 & Winter/Spring II 2023)
Physics 505 Quantum Mechanics II (Summer I 2022 & Summer I 2023)
Physics 506 Thermodynamics and Statistical Mechanics (Summer II 2022 & Summer II 2023)

PSYCHOLOGY

MPSY 5050 Writing in Psychology

Indiana Tech
Semester: Winter/Spring I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: None

Description: The development of graduate level writing, reading, critical thinking and literature skills will be emphasized. The course will focus on how to interpret, synthesize, and draw conclusions about psychological research and create a coherent review of the literature. A review of American Psychological Association (APA) style documentation for experimental reports and literature reviews will also be covered.

Related Offerings:
MPYS 5050 Writing in Pscyhology (Winter/Spring I 2023)
MPSY 5100 Multicultural Psychology (Winter/Spring II 2022)
MPSY 5200 Lifespan Development (Winter/Spring III 2022 & Winter/Spring III 2023)
MPSY 5400 Advanced Counseling Theory (Summer I 2023)
MPSY 5600 Statistics for Behavioral Sciences-master's track only (Winter/Spring I 2023)
MPSY 6000 Psychopathology (Fall II 2022)
MPSY 6200 Advanced Social Psychology (Summer I 2022)
MPSY 6600 Research Methods in Pscyhology-Prerequisite is MPSY 5600 (Winter/Spring II 2023)
MPSY 6800 Advanced Biopsychology (Summer II 2022)

MPSY 5600 Statistics for Behavioral Sciences

Indiana Tech
Semester: Winter/Spring I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: Master's track only

Description: This course is a survey of the statistical techniques commonly used in psychological research including such topics as correlation, linear regression, t-tests, ANOVA and Chi Squares. Introduction to a computer-based statistical software package will be presented given the computation intensive nature of these techniques.

Related Offerings:
MPYS 5050 Writing in Pscyhology (Winter/Spring I 2023)
MPSY 5100 Multicultural Psychology (Winter/Spring II 2022)
MPSY 5200 Lifespan Development (Winter/Spring III 2022 & Winter/Spring III 2023)
MPSY 5400 Advanced Counseling Theory (Summer I 2023)
MPSY 5600 Statistics for Behavioral Sciences-master's track only (Winter/Spring I 2023)
MPSY 6000 Psychopathology (Fall II 2022)
MPSY 6200 Advanced Social Psychology (Summer I 2022)
MPSY 6600 Research Methods in Pscyhology-Prerequisite is MPSY 5600 (Winter/Spring II 2023)
MPSY 6800 Advanced Biopsychology (Summer II 2022)

PSYCHOLOGY

MPSY 6600 Research Methods in Psychology

Indiana Tech
Semester: Winter/Spring II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: MPSY 5600

Description: This course is an overview of the research methods and techniques used within the field of psyschology. The focus of the course will be on the evaluation of research methodology as well as the examination of the process invovled in designing a research project.

Related Offerings:
MPYS 5050 Writing in Pscyhology (Winter/Spring I 2023)
MPSY 5100 Multicultural Psychology (Winter/Spring II 2022)
MPSY 5200 Lifespan Development (Winter/Spring III 2022 & Winter/Spring III 2023)
MPSY 5400 Advanced Counseling Theory (Summer I 2023)
MPSY 5600 Statistics for Behavioral Sciences-master's track only (Winter/Spring I 2023)
MPSY 6000 Psychopathology (Fall II 2022)
MPSY 6200 Advanced Social Psychology (Summer I 2022)
MPSY 6600 Research Methods in Pscyhology-Prerequisite is MPSY 5600 (Winter/Spring II 2023)
MPSY 6800 Advanced Biopsychology (Summer II 2022)

MPSY 5200 Lifespan Development

Indiana Tech
Semester: Winter/Spring III
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: None

Description: The focus of this course will be to survey the cognitive, psychological, moral, social, emotional, physical and spiritual development of humans throughout the lifespan from birth to death. A developmental framework for understanding issues that impact normal development will be studied.

Related Offerings:
MPYS 5050 Writing in Pscyhology (Winter/Spring I 2023)
MPSY 5100 Multicultural Psychology (Winter/Spring II 2022)
MPSY 5200 Lifespan Development (Winter/Spring III 2022 & Winter/Spring III 2023)
MPSY 5400 Advanced Counseling Theory (Summer I 2023)
MPSY 5600 Statistics for Behavioral Sciences-master's track only (Winter/Spring I 2023)
MPSY 6000 Psychopathology (Fall II 2022)
MPSY 6200 Advanced Social Psychology (Summer I 2022)
MPSY 6600 Research Methods in Pscyhology-Prerequisite is MPSY 5600 (Winter/Spring II 2023)
MPSY 6800 Advanced Biopsychology (Summer II 2022)

CPET 56500 Mobile Computing Systems

Purdue University Fort Wayne
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: Must be familiar with basic concepts in operating systems and networks.

Description: An introduction of the system architecture, technologies, and applications of mobile computing. Topics covered include: mobile and wireless environment; mobile device technology; mobile computing architecture and protocols; mobile computing security; and applications in wireless and mobile computing, including distribution applications, mobile middle-ware, mobile information and database access, mobile multimedia, and remote execution. A combination of lectures, reading, presentation and reports, case studies, and group discussions is used. Must be familiar with basic concepts in operating systems and networks.

Related Offerings:
CPET 56500 Mobile Computing Systems (Winter/Spring 2023)
CPET 58100 Cloud Computing Technology (Fall 2022)
CPET 58100 Emerging Communications Technologies (Winter/Spring 2022)
CPET 58100 Web Development Applications (Summer I 2022)

IT 632 Instructional Design in Information Technology

Valparaiso University
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: None

Description: 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 designing instruction.

Related Offerings:
IT 510 Intro to Information Technology (Summer I 2022)
IT 533 Data Mining & Applications (Summer 2023)
IT 600 Ethics in Information Technology (Summer 2023)
IT 603 Information Management (Fall 2022)
IT 632 Instructional Design in Information Technology (Winter/Spring 2023)

EDUC 653 Integrating Tech into STEM

University of Indianapolis
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades K-12
Graduate Certificate Available: Yes
Master's Completion: Yes
Prerequisite: None

Description: Technology supports teachers in their efforts to empower and engage students. Modules are designed to help participants interact with different roles that technology plays in STEM education: 1) technology as educational/instructional technology, 2) technology as coding or computational thinking; and 3) content-specific technology as tools and practices used by science, mathematics, and engineering practitioners.

Note: The four EDUC courses offered by University of Indianapolis through STEM Teach V (EDUC 654, EDUC 655, EDUC 656, & EDUC 653) can also be used to complete a master's degree for dual credit credentialing once 18 graduate credits are completed in a specific content area.

Related Offerings:
EDUC 654 Designing & Implementing a STEM PBL Unit (Summer I 2022 & Summer I 2023)
EDUC 655 STEM Methods (Summer II 2022 & Summer II 2023)
EDUC 656 Teacher Engineering Education: Universal Design for Learning (Fall I 2022)
EDUC 653 Integrating Tech into STEM (Winter/Spring 2023)

CONFERENCES

Indiana STEM Education Conference

The eighth-annual Indiana STEM Education Conference will be hosted by Purdue University on Thursday, January 12, 2023 from 9 AM – 3:30 PM EST. The goal of the Indiana STEM Education Conference is to support K-12 STEM learning opportunities by sharing effective practices in teaching and learning. The 2023 conference will be in-person and will take place at Purdue University.

HASTI/ICTM Conference

Thel HASTI/ICTM Conference will be held February 12 – 14, 2023 at the Marriott East – Indianapolis. It features over 100 sessions and workshops spanning three days along with an Exhibit Hall featuring leaders in the STEM industry.

CLASSROOM KITS

Note: Teachers may register for one classroom kit, one conference, and one course per term.

3,2,1 Blast-Off Classroom Kit

Format: Online Promotion from STEM Teach
Teacher Level: Grades 6-8

During the Winter/Spring registration period, teachers may register for the chance to win a Blast Off classroom kit. Two teachers will be chosen at random to receive a kit. Fifty registrations for the drawing will be accepted. The kit is accompanied by a workshop recording on forces and energy that has become a standing-room-only event at NSTA conferences.

Description: The kit includes comprehensive teaching instructions and enough hands-on components for up to 10 students. (Safety glasses recommended.) Educational Innovations also offers memory-refresher videos that walk you through each of the demonstrations, so you'll be up to speed and ready to Blast Off in just minutes!

Arduino Drawing

Format: Online Promotion from STEM Teach
Teacher Level: Grades 8-12

During the Winter/Spring registration period, teachers may register for the chance to receive an Arduino classroom kit. Two kits are available to give away and only fifty registrations for the drawing will be accepted.

Description: Arduino is an open-source electronics platform based on easy-to-use hardware and software. It's intended for anyone making interactive projects.

Dot Creativity Kit

Format: Online Promotion from STEM Teach
Teacher Level: Grades 8-12

During the Winter/Spring registration period, teachers may register for the chance to receive a Dot Creativity Kit and Robot. Once the Winter/Spring registration period closes, two teacher will be chosen at random to receive the classroom kit including professional development information. Fifty registrations for the kit will be accepted.

The Dot Creativity Kit and Robot is designed for adventure, fun and learning in the classroom. The kit combines Do-it-Yourself projects with a quirky green robot and hundreds of self-guided coding challenges. We have 1 kit and robot to give away and only 50 registrations for the drawing will be accepted. Kits will be mailed to teachers in late January.

Learn more about this kit here.

SUMMER 2023

»Full Semester
»Summer I
»Summer II

BIOLOGY

BIOL 503 Systems Biology

Indiana Wesleyan University
Semester: Summer I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
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.

Description: 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:
BIOL 501 Biological Chemistry (Winter/Spring I 2022 & Winter/Spring I 2023)
BIOL 502 Cell Biology (Summer II 2022 & Winter/Spring II 2023)
BIOL 503 Systems Biology (Fall I 2022 & Summer I 2023)
BIOL 504 Genetics (Winter/Spring II 2022 & Summer II 2023)
BIOL 505 Human Physiology (Fall II 2022)
BIOL 506 Microbiology (Summer I 2022)

BIOL 504 Genetics

Indiana Wesleyan University
Semester: Summer II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
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.

Descriptions: Integrates basic principles of genetics in eukaryotes and prokaryotes at the level of molecules, cells, and multi-cellular organisms including humans; Mendelian genetics, the molecular basis of gene function as well as mutation, transmission systems, population, and evolutionary genetics. Subtopics also include the structure and function of chromosomes and genomes along with biological variation resulting from recombination, mutation, and selection.

Related Offerings:
BIOL 501 Biological Chemistry (Winter/Spring I 2022 & Winter/Spring I 2023)
BIOL 502 Cell Biology (Summer II 2022 & Winter/Spring II 2023)
BIOL 503 Systems Biology (Fall I 2022 & Summer I 2023)
BIOL 504 Genetics (Winter/Spring II 2022 & Summer II 2023)
BIOL 505 Human Physiology (Fall II 2022)
BIOL 506 Microbiology (Summer I 2022)

CHEMISTRY

CHEM T 550 Introductory Biochemistry

Indiana University
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: Some undergraduate chemistry coursework

Description: Protein composition and structure, Enzyme kinetics, catalytic and regulatory strategies, Carbohydrates, Nucleic acids, Lipids and cell membranes, Transducing and storing energy - metabolic cycles, Responding to environmental changes.

Related Offerings:
CHEM T 510 Inorganic Chemistry (Winter/Spring 2022 & Winter/Spring 2023)
CHEM T 530 Organic Spectroscopy (Fall 2022)
CHEM T 540 Physical Chemistry (Fall 2022)
CHEM T 550 Introductory Biochemistry (Summer 2022 & Summer 2023)
CHEM T 570 Nuclear Chemistry (Summer 2023)
CHEM T 580 Physical Biochemistry (Winter/Spring 2023)
CHEM T 590 Chemistry Capstone (Summer 2022 & Summer 2023)

CHEM T 570 Nuclear Chemistry

Indiana University
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: Some undergraduate chemistry coursework

Description: Nuclide types (origin, distribution), nuclide stability (quantum structure, binding energy), nuclear reactions (radioactive decay, fusion, fission), applications of nuclear phenomena (nuclear power plants, radioisotope dating, tracers, analytical techniques), and hazards (nuclear power plant accidents, biological effects of radiation).

Related Offerings:
CHEM T 510 Inorganic Chemistry (Winter/Spring 2022 & Winter/Spring 2023)
CHEM T 530 Organic Spectroscopy (Fall 2022)
CHEM T 540 Physical Chemistry (Fall 2022)
CHEM T 550 Introductory Biochemistry (Summer 2022 & Summer 2023)
CHEM T 570 Nuclear Chemistry (Summer 2023)
CHEM T 580 Physical Biochemistry (Winter/Spring 2023)
CHEM T 590 Chemistry Capstone (Summer 2022 & Summer 2023)

CHEM T 590 Chemistry Capstone (Prereq 9 grad hrs in Chemistry) (Required for Graduate Certificate)

Indiana University
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: 9 gradate hours in chemistry

Description: The goal of this course is for students to be able to synthesize what they have learnt in previous coursework from two or more subdisciplines of chemistry (analytical, inorganic, organic, physical, biological) as well as what they learn from the chemical literature to develop a learning module that introduces novel concepts and applications to introductory chemistry students. Note: This course is required for the graduate certificate.

Related Offerings:
CHEM T 510 Inorganic Chemistry (Winter/Spring 2022 &Winter/Spring 2023)
CHEM T 530 Organic Spectroscopy (Fall 2022)
CHEM T 540 Physical Chemistry (Fall 2022)
CHEM T 550 Introductory Biochemistry (Summer 2022 & Summer 2023)
CHEM T 570 Nuclear Chemistry (Summer 2023)
CHEM T 580 Physical Biochemistry (Winter Spring 2023)
CHEM T 590 Chemistry Capstone (Summer 2022 & Summer 2023)

MATH

MATH 501 Linear Algebra

Indiana Wesleyan University
Semester: Summer I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: Undergraduate Linear Algebra

Description: This course offers an intermediate treatment of the theory and application of linear algebra. Topics include vector spaces, linear transformations, diagonalization, inner product spaces, Markov Chains, and the Jordan canonical form. There is an emphasis on understanding and writing proofs.

Related Offerings:
MATH 501 Linear Algebra (Summer II 2022 & Summer I 2023)
MATH 502 Abstract Algebra (Summer I 2022 & Summer II 2023)
MATH 503 Advanced Calculus (Winter/Spring I 2023)
MATH 504 Real Analysis (Winter/Spring II 2022 & Winter/Spring II 2023)
MATH 505 Statistical Methods I (Fall I 2022)
MATH 506 Modern Geometry (Fall II 2022)

MATH 502 Abstract Algebra

Indiana Wesleyan University
Semester: Summer II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: A bachelor's degree with a mathematics major or state certification (in any state) to teach mathematics at the secondary school level.

Description: A study of algebraic structures and major theorems for these. Group theory and ring theory are reviewed and further developments are presented. An introduction to field theory and Galois theory is included.

Related Offerings:
MATH 501 Linear Algebra (Summer II 2022 & Summer I 2023)
MATH 502 Abstract Algebra (Summer I 2022 & Summer II 2023)
MATH 503 Advanced Calculus (Winter/Spring I 2023)
MATH 504 Real Analysis (Winter/Spring II 2022 & Winter/Spring II 2023)
MATH 505 Statistical Methods I (Fall I 2022)
MATH 506 Modern Geometry (Fall II 2022)

MATH 605 Topics in Analysis: Advanced Calculus

Indiana State University
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: Consent of Instructor.

Description: Topics in analysis not covered in standard analysis courses.

Related Offerings:
MATH 511 Numbers Theory – Theory of Numbers (Winter/Spring 2022)
MATH 512 Abstract Algebra (Summer 2022)
MATH 541 Theory of Probability (Fall 2022)
MATH 542 Mathematical Statistics (Winter/Spring 2023)
MATH 605 Topics in Analysis: Advanced Calculus (Summer 2023)

MATH 611 Introduction to Analysis for Secondary Teachers

University of Southern Indiana
Semester: Summer II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: At least an undergraduate minor in mathematics.

Description: A study of continuity, differentiability, and integrability of a function of a real variable particularly as these properties appear in the secondary school mathematics curriculum.

Related Offerings:
MATH 603 Fundamental Concepts of Algebra (Winter/Spring 2023)
MATH 604 Fundamentals of Geometry (Fall 2023)
MATH 605 Problem Solving In Mathematics (Winter/Spring 2022)
MATH 611 Introduction to Analysis for Secondary Teachers (Summer II 2023)
MATH 621 Teaching Mathematics with Technology (Fall 2022)
STAT 638 Fundamental Models of Statistical Inference (Summer II 2022)

PHYS 505 Quantum Mechanics II

Indiana Wesleyan University
Semester: Summer I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: A bachelor's degree with a Physics major or be state certified (in any state) to teach Physics at a secondary school level and PHYS 504 or equivalent.

Description: Builds on the foundation laid in PHYS 504, considering more advanced topics in spin systems and continuing on to 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.

Related Offerings:
Physics 501 Mathematical Methods in Physics (Winter/Spring I 2022 & Fall I 2022)
Physics 502 Classical Mechanics (Winter/Spring II 2022 & Fall II 2022)
Physics 503 Electromagnetism (Winter/Spring I 2022 & Winter/Spring I 2023)
Physics 504 Intro to Quantum Mechanics (Winter/Spring II 2022 & Winter/Spring II 2023)
Physics 505 Quantum Mechanics II (Summer I 2022 & Summer I 2023)
Physics 506 Thermodynamics and Statistical Mechanics (Summer II 2022 & Summer II 2023)

PHYS 506 Thermodynamics and Statistical Mechanics

Indiana Wesleyan University
Semester: Summer II
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: A bachelor's degree with a Physics major or be state certified (in any state) to teach Physics at a secondary school level and PHYS 501 or equivalent.

Description: The laws of thermodynamics from macroscopic observations and then demonstrates how they arise from the statistical, collective behavior of atoms and molecules; the statistical development encompasses classical systems (kinetic theory, transport phenomena, and ensemble theory) and quantum systems (systems of bosons and fermions).

Related Offerings:
Physics 501 Mathematical Methods in Physics (Winter/Spring I 2022 & Fall I 2022)
Physics 502 Classical Mechanics (Winter/Spring II 2022 & Fall II 2022)
Physics 503 Electromagnetism (Winter/Spring I 2022 & Winter/Spring I 2023)
Physics 504 Intro to Quantum Mechanics (Winter/Spring II 2022 & Winter/Spring II 2023)
Physics 505 Quantum Mechanics II (Summer I 2022 & Summer I 2023)
Physics 506 Thermodynamics and Statistical Mechanics (Summer II 2022 & Summer II 2023)

MPSY 5400 Advanced Counseling Theory

Indiana Tech
Semester: Summer I
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: No
Prerequisite: None

Description: This coure is intended to be an examination of the main forces of psychotherapy. Several major theories used to understand human thoughts, feelings and behaviors within the main forces of psychotherapy will be explored.

Related Offerings:
MPYS 5050 Writing in Pscyhology (Winter/Spring I 2023)
MPSY 5100 Multicultural Psychology (Winter/Spring II 2022)
MPSY 5200 Lifespan Development (Winter/Spring III 2022 & Winter/Spring III 2023)
MPSY 5400 Advanced Counseling Theory (Summer I 2023)
MPSY 5600 Statistics for Behavioral Sciences-master's track only (Winter/Spring I 2023)
MPSY 6000 Psychopathology (Fall II 2022)
MPSY 6200 Advanced Social Psychology (Summer I 2022)
MPSY 6600 Research Methods in Pscyhology-Prerequisite is MPSY 5600 (Winter/Spring II 2023)
MPSY 6800 Advanced Biopsychology (Summer II 2022)

IT 533 Data Mining & Applications

Valparaiso University
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: IT 502

Description: Data Mining is a broad area that integrates techniques from several fields including machine learning, statistics, pattern recognition, artificial intelligence, and database systems, for the analysis of large volumes of data. This course gives a wide exposition of these techniques and their software tools.

Related Offerings:
IT 510 Intro to Information Technology (Summer I 2022)
IT 533 Data Mining & Applications (Summer 2023)
IT 600 Ethics in Information Technology (Summer 2023)
IT 603 Information Management (Fall 2022)
IT 632 Instructional Design in Information Technology (Winter/Spring 2023)

IT 600: Ethics in Information Technology

Valparaiso University
Semester: Full Semester
Format: Online
Graduate Credit Hours: 3
Teacher Level: Grades 9-12
Graduate Certificate Available: Yes
Prerequisite: None

Description: Introduces students of information technology to concepts of Philosophy relative to Ethics, and applies those concepts to the field of information technology.

Related Offerings:
IT 510 Intro to Information Technology (Summer I 2022)
IT 533 Data Mining & Applications (Summer 2023)
IT 600 Ethics in Information Technology (Summer 2023)
IT 603 Information Management (Fall 2022)
IT 632 Instructional Design in Information Technology (Winter/Spring 2023)

End of Document - This page intentionally left blank