



2020 - 2021 CURRICULUM GUIDE

Available to students from LN and LC, the McKenzie Center for Innovation and Technology houses state-of-the-art equipment and materials in the classrooms and labs. The Center embraces postsecondary-ready competencies through rigorous academic programs and diverse technological courses. McKenzie prepares students for college and career opportunities post-secondary education at two and four-year colleges, military service, workplace entry, or advanced technical training in a variety of business, medical, and industrial fields. The low teacher-student ratio, nurturing environment, innovative technology, and broad array of career programs, focused and motivated students, dual-credited courses and national certifications are continually cited as advantages by McKenzie students.

“M” indicates the course is taught at the McKenzie Center for Innovation and Technology (MCIT).

BUSINESS EDUCATION PATHWAY

INTRODUCTION

Business and industry surveys indicate that economic survival in the 21st century will demand that students know and understand both fundamental and technical concepts of business as well as possess the ability to execute these concepts in nearly any setting. All persons regardless of age, gender, and career aspirations, can benefit from participating in business, marketing, and information technology education. These programs provide a foundation for success for **all students**.

Looking to the future, adjusting, and adapting as innovations emerge, the business, marketing and information technology education curriculum has changed dramatically over the years and now parallels the practices being implemented in business/industry both at home and abroad. As the explosion of technology began impacting businesses in an unprecedented manner, business, marketing, and information technology education quickly adjusted the curriculum to follow suit. When American businesses began to expand their frontiers to include global transactions, business, marketing, and information technology education began incorporating international content into the curriculum. Business, marketing, and information technology education has never been a static, stationary discipline; rather, it is an emerging, expanding, and challenging field.

The mission of Business, Marketing, and Information Technology Education in Indiana is to work cooperatively with business/industry to prepare all individuals to live and work as productive citizens in a changing global society by providing essential business, marketing, and information technology experiences, education, and training. These experiences should actively engage students using instructional strategies that rely on the use of technology and practices that reflect current and emerging business/industry procedures.

PREPARING FOR COLLEGE & CAREERS**5394MF****Fall Semester only - paired with Intro to Business 4518MS Spring Only**

Preparing for College and Careers addresses the knowledge, skills, and behaviors all students need to be prepared for success in college, career, and life. The focus of the course is the impact of today's choices on tomorrow's possibilities. Topics to be addressed include twenty-first century life and career skills; higher order thinking, communication, leadership, and management processes; exploration of personal aptitudes, interests, values, and goals; examining multiple life roles and responsibilities as individuals and family members; planning and building employability skills; transferring school skills to life and work; and managing personal resources. This course includes reviewing the 16 national career clusters and Indiana's College and Career Pathways, in-depth investigation of one or more pathways, reviewing graduation plans, developing career plans, and developing personal and career portfolios. A project based approach, including computer and technology applications, cooperative ventures between school and community, simulations, and real life experiences, is recommended.

- Recommended Grade Level: Grade 9
- Recommended Prerequisites: None
- Credits: 1 credit; Semester: 1 Fall Only Paired w/ Intro to Business 4518MS
- Counts as a Directed Elective or Elective for all diplomas

INTRODUCTION TO BUSINESS**4518MS****Spring Semester only - paired with Preparing for College & Careers 5394MF**

Introduction to the business world including local, national and International. This course will cover business management, entrepreneurship, marketing fundamentals, and business ethics and law. This course develops business vocabulary and provides an overview of business and the role that business plays in economic, social and political environments.

- Recommended Grade Level: Grade 9 or 10
- Recommended Prerequisites: None
- Credits: 1 credit; Semester: 1 Spring Only Paired w/ Preparing For College & Careers 5394MF
- Counts as a Directed Elective or Elective for all diplomas

PRINCIPLES OF MARKETING/MKTG 101 (IT) ****5914MF – 5914MS**

Principles of Marketing provides a basic introduction to the scope and importance of marketing in the global economy. Emphasis is placed on oral and written communications, mathematical applications, problem solving, and critical thinking skills as they relate to sport event industries, their economic impact and products; advertising/promotion/selling, distribution, financing, marketing-information management, pricing, and product/service management.

- Recommended Grade level: Grade 11-12
- Recommended Prerequisites: None
- Credits: 2 semester course, 1 credit each semester, total of 2 credits
- Weighted Course (1.0)
- Counts as a Directed Elective or Elective for all diplomas
- Course Aligned with postsecondary courses for Dual Credit through Ivy Tech

PRINCIPLES OF BUSINESS MANAGEMENT/BUSN 101 (IT) ****4562MF – 4562MS**

Principles of Business Management focuses on the roles and responsibilities of managers as well as opportunities and challenges of ethically managing a business in the free-enterprise system. Students will attain an understanding of management, team building, leadership, problem-solving steps and processes that contribute to the achievement of organizational goals. The management of human and financial resources is emphasized.

- Recommended Grade Level: Grade 11 – 12
- Recommended Prerequisite: Introduction to Business
- Credits: 2 semester course, 1 credit each semester, total of 2 credits
- Weighted Course (1.0)
- Counts as a Directed Elective or Elective for all diplomas
- Course Aligned with postsecondary courses for Dual Credit through Ivy Tech

PRINCIPLES OF BUSINESS MANAGEMENT/BUS X100 (IU) ****4562KF – 4562KS**

Business administration from the standpoint of the manager of a business firm operating in the contemporary economic, political, and social environment. ACP Bus X100 Business Administration: Introduction

- Recommended Grade Level: Grade 11 – 12
- Recommended Prerequisite: Introduction to Business
- Credits: 2 semester course, 1 credit each semester, total of 2 credits
- Weighted Course (1.0)
- Counts as a Directed Elective or Elective for all diplomas
- Course Aligned with postsecondary courses for Dual Credit through IU Kelly School of Business

MERCHANDISING: /TAM-155 (ISU) ****5962MF – 5962MS**

Fashion Merchandising is a specialized marketing course providing instruction of marketing practices that support the sale of products to retail consumers. Emphasis is placed on oral and written communications, problem solving and critical thinking skills as they relate to product design, selling, pricing, distribution, retail promotion, visual merchandising, retail cycles, retail theories, and career opportunities in the retail industry. This course focuses on Fashion Merchandising, sporting goods, or electronics.

- Recommended Grade Level: 11-12
- Required Prerequisites: Principles of Marketing
- Credits: 1 credit per semester, 2 semester course
- Weighted Course (1.0)
- Counts as a Directed Elective or Elective for all diplomas
- Course Aligned with postsecondary courses for Dual Credit through Indiana State University

INTRODUCTION TO ACCOUNTING ****4524MF – 4524MS**

Accounting introduces the language of business using Generally Accepted Accounting Principles (GAAP) and procedures for proprietorships and partnerships using double-entry accounting. Emphasis is placed on accounting principles as they relate to both manual and automated financial systems. This course involves understanding, analyzing, and recording business transactions and preparing, analyzing, and interpreting financial reports as a basis for decision making.

- Recommended Grade Level: 10-11
- Recommended Prerequisite: none
- Credits: 2 semester course, 2 semesters required, 1 credit per semester, 2 credits maximum
- Counts as a Directed Elective or Elective for all diplomas

ADVANCED ACCOUNTING I: ADV BUS CC/ACCT 100 (VU) ****4522AF – 4522AS**

Accounting introduces the language of business using Generally Accepted Accounting Principles (GAAP) and procedures for proprietorships and partnerships using double-entry accounting. Emphasis is placed on accounting principles as they relate to both manual and automated financial systems. This course involves understanding, analyzing, and recording business transactions and preparing, analyzing, and interpreting financial reports as a basis for decision making.

- Recommended Grade Level: 11-12
- Required Prerequisite: Introduction to Accounting
- Credits: 1 credit per semester, 2 semester course
- Weighted Course (1.0)
- Counts as a Directed Elective or Elective for all diplomas
- Course Aligned with postsecondary courses for Dual Credit through Vincennes University

ENTREPRENEURSHIP & NEW VENTURES/ENTR 101 (IT) ****5966MF – 5966MS**

Entrepreneurship and New Ventures Capstone introduces entrepreneurship, and develop the skills and tools critical for starting and succeeding in a new venture. The entrepreneurial process of opportunity recognition, innovation, value proposition, competitive advantage, venture concept, feasibility analysis, and “go to” market strategies will be explored through mini-case studies of successful and unsuccessful entrepreneurial start-ups. Additionally, topics of government and legal restrictions, intellectual property, franchising location, basic business accounting, raising startup funding, sales and revenue forecasting, 103 Indiana Department of Education High School Course Titles and Descriptions and business plan development will be presented through extensive use of word processing, spreadsheet and presentation software.

- Recommended Grade Level: 12
- Required Prerequisite: a minimum of 4 credits from the Business or Marketing cluster
- Credits: 1 credit per semester, 2 semesters course
- Weighted Course (1.0)
- Counts as a Directed Elective or Elective for all diplomas
- Course Aligned with postsecondary courses for Dual Credit through Ivy Tech

MARKETING IN HOSPITALITY AND TOURISM**5982MF – 5982MS**

This course is a specialized marketing course that develops students understanding of marketing in the hospitality, travel, and tourism industry. Students gain experience marketing-information management, pricing, product/service management, promotion, and selling in the hospitality, travel and tourism industry.

- Recommended Grade Level: Grade 11-12
- Required Prerequisite: Principles of Marketing
- Credits: 1 credit per semester, 2 semesters course
- Weighted Course (1.0)
- Counts as a Directed Elective or Elective for all diplomas

SPORTS AND ENTERTAINMENT MARKETING**5984MF – 5984MS**

Sports and Entertainment Marketing is a specialized marketing course that develops student understanding of the sport/event industries, their economic impact, and products; distribution systems and strategies; pricing considerations; product/service management, and promotion. Students acquire an understanding and appreciation for planning. Throughout the course, students are presented problem-solving situations for which they must apply academic and critical-thinking skills. Participation in cooperative education is an optional instructional method, giving students the opportunity to apply newly acquired marketing skills in the workplace.

- Recommended Grade Level: Grade 11-12
- Required Prerequisite: Principles of Marketing
- Credits: 1 credit per semester, 2 semesters course
- Weighted Course (1.0)
- Counts as a Directed Elective or Elective for all diplomas

BANKING AND INVESTMENT CAPSTONE**5258MF – 5258MS**

Banking and Investment Capstone addresses the need of schools in areas that have workforce demand in the finance industry. It analyzes and synthesizes high-level skills needed for a multitude of career in the banking and investment industry. Students learn banking, investments, and other finance fundamentals and applications related to financial institutions, business and personal financial services, investment and securities, risk management products, and corporate finance. The course provides students with work based learning experiences to acquire and apply knowledge and skills in one or more careers in the industry

- Recommended Grade Level: Grade 12
- Required Prerequisite: Introduction to Accounting & Advanced Accounting
- Credits: 1 credit per semester, 2 semesters course
- Counts as a Directed Elective or Elective for all diplomas

ADMINISTRATIVE AND OFFICE MANAGEMENT

5268MF – 5268MS

Administrative and Office Management prepares students to plan, organize, direct, and control the functions and processes of a firm or organization and to perform business-related functions. Students are provided opportunities to develop attitudes and apply skills and knowledge in the areas of business administration, management, and finance. Individual experiences will be based upon the student's career and educational goals.

- Recommended Grade Level: Grade 12
- Required Prerequisite: Principles of Business Management or Principles of Marketing
- Credits: 1 credit per semester, 2 semesters course
- Weighted Course (1.0)
- Counts as a Directed Elective or Elective for all diplomas

STRATEGIC MARKETING/MKTG 230 (IT) **

5918MF – 5918MS

Strategic Marketing builds upon the foundations of marketing and applies the functions of marketing at an advanced level. Students will study the basic principles of consumer behavior and examine the application of theories from psychology, social psychology, and economics. The relationship between consumer behavior and marketing activities will be reviewed. **Must be paired with Work Based Learning**

- Grade Level: 12
- Credits: 1 per semester; 2 semester course; total of 2 credits
- Weighted Course (1.0)
- Recommended Prerequisite: Principles of Business Management or Principles of Marketing
- Counts as a Directed Elective or Elective for all diplomas
- Course Aligned with postsecondary courses for Dual Credit through Ivy Tech

WORK BASE LEARNING (WBL)

5974MF – 5974MS

Applied Work-based Learning Capstone is an instructional strategy that can be implemented as a standalone course or a component of any CTE course that prepares students for college and career. This strategy builds individual students' skills and knowledge within the area of interest. A standards based training plan is developed by the student, teacher, and workplace mentor to guide the student's Work based learning experiences and assist in evaluating progress and performance, whether WBL is a standalone course or a component of a discipline-specific CTE course. **Must be paired with Strategic Marketing**
The student must provide his/her own transportation to and from job situations and be willing to work a minimum of fifteen hours per week.

- Grade Level: 12
- Credits: 1 - 3 credits per semester; 2 semester course; maximum of 6 credits
 - 5974MA (1 Block)
 - 5974MB (2 Blocks)
 - 5974MC (3 blocks)

AUTO SERVICE TECHNOLOGY PATHWAY

Students taking the automotive program will learn and practice skills needed to enter in to the automotive field. Students that successfully complete the first year and who meet the criteria outlined by AYES and the AYES Business & Industry Council of the automotive program may qualify for a summer internship. In the second year the student who successfully completes the summer internship will return to school in the fall to three weeks of classroom/lab instruction. Then they will return to the automotive facility that the student interned at for three more weeks of on-the-job training for the last two blocks of each day. This continues the entire second year. This prepares students for entry-level service technicians, parts personnel and service advisors. Students meeting the qualifications set by the colleges (IVY Tech Community College, Vincennes University and other private post-secondary schools) we partner with may receive **dual college credit**.

INTRODUCTION TO TRANSPORTATION

4798MF – 4798MS

This course will help students learn fundamental principles in modes of land, sea, air, and space transportation including basic mechanical skills and processes involved in transportation of people, cargo and goods. Student will gain and apply knowledge and skills in the safe application, design, production, and assessment of products, services and systems as it relates to the transportation industries. Content of this course includes student study of how transportation impacts individuals, society, and environment. This course allows students to reinforce, apply and transfer their academic knowledge and skills to a variety of interesting and relevant transportation related activities, problems and settings.

- Grade Level: 10
- Credits: 1 credit per semester (one semester class offered in fall or spring)
- Counts as a Directed Elective or Elective for all diplomas

AUTOMOTIVE SERVICE TECHNOLOGY I/AUTI 100 & 141 (IT) **

5510MF – 5510MS

Automotive Services Technology I is a one-year course that encompasses the sub topics of the NATEF/ ASE identified areas of Steering & Suspension and Braking Systems. This one-year course offering may be structured in a series of two topics per year offered in any combination of instructional strategies of semester based or yearlong instruction. Additional areas of manual transmissions and differentials, 155 Indiana Department of Education High School Course Titles and Descriptions automatic transmissions, air conditioning, and engine repair should be covered as time permits. This one-year offering must meet the NATEF program certifications for the two primary areas offered in this course. This course provides the opportunity for dual credit for students who meet post-secondary requirements for earning dual credit and successfully complete the dual credit requirements of this course. Mathematical skills will be reinforced through precision measuring activities as well as cost estimation and calculation activities. Scientific principles taught and reinforced in this course include the study of viscosity, friction, thermal expansion, and compound solutions. Written and oral skills will also be emphasized to help students communicate with customers, colleagues, and supervisors.

- Recommended Grade Level: 11-12
- Credits: 2-block class—2 credits per semester; 2 semester course; total of 4 credits
- Weighted Course (1.0)
- Recommended Prerequisites: Introduction to Transportation
- Counts as a Directed Elective or Elective for all diplomas
- Course Aligned with postsecondary courses for Dual Credit through Ivy Tech

AUTOMOTIVE SERVICE TECHNOLOGY II/AUTI 111 (IT) **

5546MF – 5546MS

Automotive Services Technology II is a one year course that encompasses the sub topics of the NATEF/ASE identified areas of Electrical Systems and Engine Performance. This one year course offering may be structured in a series of two topics per year offered in any combination of instructional strategies of semester based or yearlong instruction. Additional areas of manual transmissions /differentials, automatic transmissions, air conditioning, and engine repair should be covered as time permits. This one year offering must meet the NATEF program certifications for the two primary areas offered in this course. Mathematical skills will be reinforced through precision measuring activities and cost estimation/calculation activities. Scientific principles taught and reinforced in this course include the study of viscosity, friction, thermal expansion, and compound solutions. Written and oral skills will also be emphasized to help students communicate with customers, colleagues, and supervisors.

- Recommended Grade Level: 12
- Credits: 2-block class—2 credits per semester; 2 semester course; total of 4 credits
- Weighted Course (1.0)
- Required Prerequisites: Auto Service Technology I
- Counts as a Directed Elective or Elective for all diplomas
- Course Aligned with postsecondary courses for Dual Credit through Ivy Tech

COLLISION REPAIR TECHNOLOGY PATHWAY

Over the course of 4 semesters: *First semester:* safety, metal repair power tools, and fillers. *Second semester:* MIG welding, Non-structural analyst, *Third semester:* computerized estimating, paint surface prep, and single stage topcoats. *Fourth semester:* introduction to custom painting and airbrushing, frame pulling, measuring and structural analysis, and senior projects. This prepares students for entry-level collision repair technicians, parts personnel and service advisors. Students must meet the qualifications set by the colleges. Tours of the facility or student shadowing experiences are available and encouraged upon request. Skilled collision repair technicians are highly paid and in demand. This experience can lead to shop ownership, management of an independent shop or a new car dealership. Students meeting the qualifications set by the colleges (IVY Tech Community College, Vincennes University and other private post-secondary schools) we partner with may receive **dual college credit**.

INTRODUCTION TO TRANSPORTATION

4798MF – 4798MS

This course will help students learn fundamental principles in modes of land, sea, air, and space transportation including basic mechanical skills and processes involved in transportation of people, cargo and goods. Student will gain and apply knowledge and skills in the safe application, design, production, and assessment of products, services and systems as it relates to the transportation industries. Content of this course includes student study of how transportation impacts individuals, society, and environment. This course allows students to reinforce, apply and transfer their academic knowledge and skills to a variety of interesting and relevant transportation related activities, problems and settings.

- Grade Level: 10
- Credits: 1 credit per semester (one semester class offered in fall or spring)
- Counts as a Directed Elective or Elective for all diplomas

AUTO COLLISION REPAIR I/AUTO 105 BODY 100 & 100L (VU) **

5514MF – 5514MS

Automotive Collision Repair Technology I includes classroom and laboratory experiences in all phases of the body repair process. Students will examine the characteristics of body metals including the installation of moldings, ornaments, and fasteners with an emphasis on sheet metal analysis and safety. Course coverage also includes instruction in personal and environmental safety practices as related to OSHA and other regulatory agencies. Additional instruction is given in the course on measurement principles and automotive fasteners. Instruction should also emphasize computerized frame diagnosis, color-mixing, and estimation of repair costs.

- Recommended Grade Level: 11-12
- Credits: 2-block class—2 credits per semester; 2 semester course; total of 4 credits
- Weighted Course (1.0)
- Recommended Prerequisites: Introduction to Transportation
- REQUIREMENTS: Each student should have coveralls and safety shoes for lab work
- Counts as a Directed Elective or Elective for all diplomas
- Course Aligned with postsecondary courses for Dual Credit through Vincennes University

AUTO COLLISION REPAIR II/BODY 150, 150L, 290 & WELD 185 (VU) **

5544MF – 5544MS

Automotive Collision Repair Technology II introduces concepts in automotive painting with an emphasis on the handling of materials and equipment in modern automotive technologies. Instruction should build on concepts learned in Automotive Collision Repair Technology I. Additional academic skills taught in this course include precision measurement and mathematical calibrations as well as scientific principles related to adhesive compounds, color- mixing, abrasive materials, metallurgy, and composite materials.

- Recommended Grade Level: 12
- Credits: 3-block class—3 credits per semester; 2 semester course; total of 6 credits
- Weighted Course (1.0)
- Required Prerequisites: Auto Service Technology 1
- REQUIREMENTS: Each student should have coveralls and safety shoes for lab work
- Counts as a Directed Elective or Elective for all diplomas
- Course Aligned with postsecondary courses for Dual Credit through Vincennes University

CONSTRUCTION TECHNOLOGY PATHWAY

INTRODUCTION TO CONSTRUCTION

4792MF – 4792MS

Introduction to Construction is a course that will offer hands-on activities and real world experiences related to the skills essential in residential, commercial and civil building construction. During the course students will be introduced to the history and traditions of construction trades. The student will also learn and apply knowledge of the care and safe use of hand and power tools as related to each trade. In addition, students are introduced to blueprint reading, applied math, basic tools and equipment, and safety. Students will demonstrate building construction techniques, including concrete and masonry, framing, electrical, plumbing, dry walling, HVAC, and painting as developed locally in accordance with available space and technologies. Students learn how architectural ideas are converted into projects and how projects are managed during a construction project in this course. Students study construction technology topics such as preparing a site, doing earthwork, setting footings and foundations, building the superstructure, enclosing the structure, installing systems, finishing the structure, and completing the site. Students also investigate topics related to the purchasing and maintenance of structures, special purpose facilities, green construction and construction careers.

- Recommended Grade Level: 10
- Credits: 1 semester course (Offered in fall or spring)
- Counts as a Directed Elective or Elective for all diplomas

CONSTRUCTION TRADES I/BCTI 100 (IT) **

5580MF – 5580MS

Construction Trades I classroom and laboratory experiences involve the formation, installation, maintenance, and repair of buildings, homes, and other structures. A history of construction, future trends and career options, reading technical drawings and transforming those drawings into physical structures are covered. The relationship of views and details, interpretation of dimension, transposing scale, tolerance, electrical symbols, sections, materials list, architectural plans, geometric construction, three dimensional drawing techniques, and sketching will be presented as well as elementary aspects of residential design and site work. Areas of emphasis will include print reading and drawing, room schedules and plot plans. Students will examine the design and construction of floor and wall systems and develop layout and floor construction skills. Blueprints and other professional planning documents will also be covered. Students will develop an understanding and interpretation of the Indiana Residential Code for one and two- family dwellings and safety practices including Occupational Safety and Health Administration Safety and Health Standards for the construction industry.

- Recommended Grade Level: 11 - 12 (10th by Instructors approval)
- Credits: 2-Block course; 2 semesters; 4 total credits
- Weighted Course (1.0)
- Recommended Prerequisites: Introduction to Construction
- Counts as a Directed Elective or Elective for all diplomas
- Course Aligned with postsecondary courses for Dual Credit through Ivy Tech

CONSTRUCTION TRADES II/BCTI 101 & 102 (IT) **

5578MF – 5578MS

Construction Trades II builds on the formation, installation, maintenance, and repair skills learned in Construction Trades I. Information on materials, occupations, and professional organizations within the industry will be covered. Students will develop basic knowledge, skills, and awareness of interior trim and the installation of drywall, moldings, interior doors, kitchen cabinets, and baseboard moldings. Students will also develop exterior finishing competencies. The course includes instruction on the installation of cornices, windows, doors and various types of sidings currently used in industry. Studies will also focus on the design and construction of roof systems and the use of framing squares for traditional rafter and truss roofing.

- Recommended Grade Level: 12
- Credits: 2-Block course; 2 semesters; 4 total credits
- Weighted Course (1.0)
- Required Prerequisites: Construction Trades 1
- Counts as a Directed Elective or Elective for all diplomas
- Course Aligned with postsecondary courses for Dual Credit through Ivy Tech

COSMETOLOGY/BARBERING PATHWAY

COSMETOLOGY

A two-year course designed to prepare students to meet the requirements to take the Indiana State Cosmetology Board for professional licensing. This includes 1500 clock hours of combined theory and hands on instruction. First-year students will learn the basic fundamentals skills of haircutting, styling, skin care, make-up and basic nail care. Second-year students will learn advance techniques. They will explore the latest trends and techniques in haircutting, coloring, chemical texturizing. They will also learn the professional skills necessary to be success in a salon setting.

COSMETOLOGY I/COSM 100 & 150 (VU) **

5802MF – 5802MS

Cosmetology I offers an introduction to cosmetology with an emphasis on basic practical skills and theories including roller control, quick styling, shampooing, hair coloring, permanent waving, facials, manicuring, business and personal ethics, bacteriology, and sanitation. In the second semester greater emphasis is placed on the application and development of these skills. The State of Indiana requires a total of 1500 hours of instruction for licensure.

- Grade Level: 11
- Recommended Prerequisites: Commitment to the 2-year program
- Credits: 4-block class—4 credits per semester; 2 semester course; total of 8 credits
- Weighted Course (1.0)
- REQUIREMENT: \$200 non-refundable equipment fee
- Counts as Directed Elective or Elective for all diplomas
- Course Aligned with postsecondary courses for Dual Credit through Vincennes University

COSMETOLOGY II/COSM 200 & 250 (VU) **

5806MF – 5802MS

Cosmetology II builds on concepts learned in Cosmetology I with an emphasis on the development of advanced skills in styling, hair coloring, permanent waving, facials and manicuring. Students will also study anatomy and physiology, professionalism, and salon management in relation to cosmetology.

- Grade Level: 12
- Recommended Prerequisites: Successful completion of Cosmetology 1
- Credits: 4-block class—4 credits per semester; 2 semester course; total of 8 credits
- Weighted Course (1.0)
- Requirement: \$265 non-refundable equipment fee
- Counts as Directed Elective or Elective for all diplomas
- Course Aligned with postsecondary courses for Dual Credit through Vincennes University

BARBERING

A two-year course designed for students to complete 1,500 hours of combined theory and intensive laboratory applications required for the State of Indiana Barbering License. This course provides an introduction to the barbering profession with an emphasis on basic practical skills and theories including the history of barbering, life skills, professional image, basics of chemistry and electricity, business skills, and the practice of barbering. When students successfully follow the prescribed curriculum and complete laboratory hours, they may take the State of Indiana board exam for Barbering and obtain a license to work in a shop. **Additional fees are required for the purchase of a barbering kit and smock. All students must wear black shoes. The cost of the required student fee is \$325 for 1st year and \$70 for 2nd year Non-refundable.**

BARBERING I

5802BF – 5802BS

- Grade Level: Grade 11
- Recommended Prerequisite: Staff Recommendation, Parent Meeting with MCIT Administration & Barbering Instructor
- Credits: Credits: 3-block class—3 credits per semester; 2 semester course; total of 6 credits
- Counts as Directed Elective or Elective for all diplomas

BARBERING II

5806BF – 5806BS

- Grade Level: Grade 12
- Recommended Prerequisites: Successful completion of Barbering I
- Credits: 3-block class—3 credits per semester; 2 semester course; total of 6 credits
- Counts as Directed Elective or Elective for all diplomas
-

CRIMINAL JUSTICE PATHWAY

CRIMINAL JUSTICE I

5822MF – 5822MS

Criminal Justice I Introduces specialized classroom and practical experiences related to public safety occupations such as law enforcement, loss prevention services, and homeland security. This course provides an introduction to the purposes, functions, and history of the three primary parts of the criminal justice system as well as an introduction to the investigative process. Oral and written communication skills should be reinforced through activities that model public relations and crime prevention efforts as well as the preparation of police reports.

- Recommended Grade Level: 11-12
- Credits: 2-block class—2 credits per semester; 2 semester course; total of 4 credits
- Counts as a Directed Elective or Elective for all diplomas

CRIMINAL JUSTICE II

5824MF – 5824MS

Criminal Justice II introduces students to concepts and practices in traffic control as well as forensic investigation at crime scenes. Students will have opportunities to use mathematical skills in crash reconstruction and analysis activities requiring measurements and performance of speed/acceleration calculations. Additional activities simulating criminal investigations will be used to teach scientific knowledge related to anatomy, biology, and chemistry as well as collection of evidence, developing and questioning suspects, and protecting the integrity of physical evidence found at the scene and while in transit to a forensic science laboratory. Procedures for the use and control of informants, inquiries keyed to basic leads, and other information gathering activities and chain of custody procedures will also be reviewed. Current trends in criminal justice and law enforcement will also be covered.

- Recommended Grade Level: 11-12
- Recommended Prerequisites: Criminal Justice I
- Credits: 2-block class—2 credits per semester; 2 semester course; total of 4 credits
- Counts as a Directed Elective or Elective for all diplomas

CULINARY ARTS & HOSPITALITY PATHWAY

INTRODUCTION TO CULINARY ARTS & HOSPITALITY

5438MF – 5438MS

Introduction to Culinary Arts and Hospitality is recommended for all students regardless of their career cluster or pathway, in order to build basic culinary arts knowledge and skills. It is especially appropriate for students with an interest in careers related to Hospitality, Tourism, and Culinary Arts. A project-based approach that utilizes higher order thinking, communication, leadership, and management processes is recommended. Topics include basic culinary skills in the foodservice industry, safety and sanitation, nutrition, customer relations and career investigation. Students are able to explore this industry and examine their own career goals in light of their findings. Laboratory experiences that emphasize industry practices and develop basic skills are required components of this course.

- Recommended Grade Level: 9-10
- Credits: 2 semester course, 1 credit per semester, 2 credits total
- Recommended Prerequisites: Nutrition and Wellness, Advanced Nutrition and Wellness
- Counts as a Directed Elective or Elective for all diplomas

CULINARY ARTS & HOSPITALITY I/REST 100, 120 & 155 (VU) **

5440F – 5440S

Culinary Arts and Hospitality I prepares students for occupations and higher education programs of study related to the entire spectrum of careers in the hospitality industry. This course builds a foundation that prepares students to enter the Advanced Culinary Arts or Advanced Hospitality courses. Major topics include: introduction to the hospitality industry; food safety and personal hygiene; sanitation and safety; regulations, procedures, and emergencies; basic culinary skills; culinary math; and food preparation techniques and applications; principles of purchasing, storage, preparation, and service of food and food products; ; apply basic principles of sanitation and safety in order to maintain safe and healthy food service and hospitality environments; use and maintain related tools and equipment; and apply management principles in food service or hospitality operations. Intensive laboratory experiences with commercial applications are a required component of this course of study. Student laboratory experiences may be either school-based or "on-the-job" or a combination of the two. Work-based experiences in the food industry are strongly encouraged. A standards-based plan guides the students' laboratory experiences

- Recommended Grade Level: 11-12
- Credits: 2-block class—2 credits per semester; 2 semester course; total of 4 credits
- Weighted Course (1.0)
- Recommended Prerequisites: Nutrition & Wellness, Introduction to Culinary Arts
- Counts as a Directed Elective or Elective for all diplomas
- Course Aligned with postsecondary courses for Dual Credit through Vincennes University

CULINARY ARTS AND HOSPITALITY II/CULN 110 (VU) ****5346MF – 5346MS**

Culinary Arts and Hospitality II: Culinary Arts prepares students for occupations and higher education programs of study related to the entire spectrum of careers in the food industry, including (but not limited to) food production and services; food science, dietetics, and nutrition; and baking and pastry arts. Major topics for this advanced course include: basic baking theory and skills, introduction to breads, introduction to pastry arts, nutrition, nutrition accommodations and adaptations, cost control and purchasing, and current marketing and trends. Instruction and intensive laboratory experiences include commercial applications of principles of nutrition, aesthetic, and sanitary selection; purchasing, storage, preparation, and service of food and food products; using and maintaining related tools and equipment; baking and pastry arts skills; managing operations in food service, food science, or hospitality establishments; providing for the dietary needs of persons with special requirements; and related research, development, and testing. Intensive laboratory experiences with commercial applications are a required component of this course of study. Student laboratory experiences may be either school-based or "on-the-job" or a combination of the two. Advanced Culinary Arts builds upon skills and techniques learned in Culinary Arts and Hospitality Management, which must be successfully completed before enrolling in this advanced course. Work-based experiences in the food industry are strongly encouraged. A standards-based plan guides the students' laboratory and Work-based experiences.

- Recommended Grade Level: 12
- Required Prerequisites: Culinary Arts 1
- Credits: 3-block class, 3 credits per semester; 2 semester course; total of 6 credits
- Weighted Course (1.0)
- Counts as a Directed Elective or Elective for all diplomas
- Course Aligned with postsecondary courses for Dual Credit through Vincennes University

EARLY CHILDHOOD PATHWAY**EARLY CHILDHOOD EDUCATION I****5412MF – 5412MS**

Early Childhood Education prepares students for employment in early childhood education and related careers that involve working with children from birth to 8 years (3rd grade) and provides the foundations for study in higher education that leads to early childhood education and other child-related careers. A project-based approach that utilizes higher order thinking, communication, leadership, and management processes is recommended in order to integrate the study of suggested topics. Major course topics include: career paths in early childhood education; promoting child development and learning; building family and community relationships; observing, documenting, and assessing to support young children and families; using developmentally effective approaches; using content knowledge to build meaningful curriculum, and becoming an early childhood education professional. The course provides an overview of the history, theory, and foundations of early childhood education as well as exposure to types of 108 Indiana Department of Education High School Course Titles and Descriptions programs, curricula, and services available to young children. Students examine basic principles of child development, importance of family, licensing, and elements of quality care of young children. The course addresses planning and guiding developmentally appropriate activities for young children in various childcare settings; developmentally appropriate practices of guidance and discipline; application of basic health, safety, and nutrition principles when working with children; overview of management and operation of licensed child care facilities or educational settings; child care regulations and licensing requirements; and employability skills. Intensive experiences in one or more early childhood settings, resumes, and career portfolios are required components. A standards-based plan for each student guides the laboratory/field experiences. Students are monitored in their laboratory/field experiences by the Early Childhood Education teacher. Student laboratory/field experiences may be either school-based or "on-the-job" in community-based early childhood education centers or in a combination of the two.

- Recommended Grade Level: 11 - 12
- Recommended Prerequisite: Nutrition and Wellness, Child Development, and Advanced Child Development
- Credits: 2 semester course, 2 blocks per semester, 2 semesters required, 6 credits maximum
- Counts as a Directed Elective or Elective for all diplomas

PC NETWORKING & SUPPORT PATHWAY

INFORMATION TECHNOLOGY SUPPORT I/CMET 140 (VU) **

5230MF – 5230MS

Information Technology Support allows students to explore how computers work. Students learn the functionality of hardware and software components as well as suggested best practices in maintenance and safety issues. Through hands-on activities and labs, students learn how to assemble and configure a computer, install operating systems and software, and troubleshoot hardware and software problems.

- Recommended Grade Level: 10-11
- Credits: 2-Block course; 2 semesters; total of 4 credits
- Weighted Course (1.0)
- Recommended Prerequisites: Digital Applications and Responsibility; Introduction to Computer Science
- Course Aligned with postsecondary courses for Dual Credit through Vincennes University

NETWORKING I/CPNS 170 (VU)**

5234MF – 5234MS

Networking I introduces students to local and wide area networks, home networking, networking standards using the IEEE/OSI Model, network protocols, transmission media and network architecture/ topologies. Security and data integrity are introduced and emphasized throughout this course, which offers students the critical information needed to successfully move into a role as an IT professional supporting networked computers. Concepts covered will include TCP/IP client administration, planning a network topology, configuring the TCP/IP protocol, managing network clients, configuring routers and hubs, as well as creating a wireless LAN.

- Recommended Grade Level: 11-12
- Credits: 2-Block course; 2 semesters; total of 4 credits
- Weighted Course (1.0)
- Recommended Prerequisites: Information Technology Support I
- This course qualifies for the academic honors diploma
- Course Aligned with postsecondary courses for Dual Credit through Vincennes University

NETWORKING II: INFRASTRUCTURE /CPNS 101 & 102 (VU) **

4588MF – 4588MS

The OSI and TCP/IP functions and services are examined in detail. Students will learn how a router addresses remote networks and determines the best path to those networks, employing static and dynamic routing techniques.

- Recommended Grade Level: 12
- Required Prerequisites: Networking I (CompTIA Network Cert.)
- Credits: 1 Block course 2 semester; 2 credits; total of 2 credits
- Weighted Course (1.0)
- Course Aligned with postsecondary courses for Dual Credit through Vincennes University

NETWORKING II: SERVERS AND SECURITY**

5257MF – 5257MS

Networking II: Servers focuses on the software skills needed to manage a network. Students will learn and practice the skills necessary to perform in the role of a network administrator. They will be able to accomplish fundamental network management tasks on a server such as set up of computer network services, create users and appropriate login scripts, develop groups, set the server remotely, set up security, backup/restore the server and setup/maintain clients.

- Recommended Grade Level: 12
- Required Prerequisite: Networking I
- Credits: 1 credit per semester; 2 semesters; total of 2 credits
- Weighted Course (1.0)
- Counts as a Directed Elective or Elective for all diplomas

INTERACTIVE MEDIA PATHWAY

GRAPHIC DESIGN & LAYOUT/VISC 102 (IT) **

5550MF – 550MS

Graphic Design and Layout includes organized learning experiences that incorporate a variety of visual art techniques as they relate to the design and execution of layouts and illustrations for advertising, displays, promotional materials, and instructional manuals. Instruction also covers advertising theory and preparation of copy, lettering, posters, and artwork in addition to incorporation of photographic images. Communication skills will be emphasized through the study of effective methods used to design commercial products that impart information and ideas. Advanced instruction might also include experiences in various printing processes as well as activities in designing product packaging and commercial displays or exhibits.

- Recommended Grade Level: 11-12
- Credits: 2-Block course; 2 semesters; total of 4 credits
- Weighted Course (1.0)
- Recommended Prerequisites: Computer Illustration and Graphics
- Course Aligned with postsecondary courses for Dual Credit through Ivy Tech
- Counts as a Directed Elective or Elective for all diplomas

INTERACTIVE MEDIA/VISC 105 & 115 (IT) **

5232MF – 5232MS

Interactive Media prepares students for careers in business and industry working with interactive media products and services which includes the entertainment industries. This course emphasizes the development of digitally-generated or computer-enhanced products using multimedia technologies. Students will develop an understanding of professional business practices including the importance of ethics, communication skills, and knowledge of the “virtual workplace.”

- Recommended Grade Level: 11-12
- Credits: 2-Block course; 2 semesters; total of 4 credits
- Weighted Course (1.0)
- Recommended Prerequisites: Digital Applications and Responsibility
- Course Aligned with postsecondary courses for Dual Credit through Ivy Tech
- Counts as a Directed Elective or Elective for all diplomas

JOBS FOR AMERICA’S GRADUATES (JAG)

JAG I

0522JF – 0522JS

JAG is a state-based, national non-profit organization dedicated to helping high school students of promise who have experienced challenging or traumatic life experiences achieve success through graduation. JAG is a resiliency-building workforce preparation program that helps students learn in-demand employability skills and provides a bridge to post-secondary education and career advancement opportunities.

- Grade Level: 11
- Recommended Prerequisites: None
- Credits: 1 credit per semester, 2 semester course

JAG II

0532JF – 0532JS

Designed to help students of promise graduate from high school and make a successful transition to postsecondary education and/or meaningful employment.

- Grade Level: 12
- Recommended Prerequisites: Successful completion of JAG 1
- Credits: 1 credit per semester, 2 semester course

COMPUTER SCIENCE PATHWAY

DIGITAL APPLICATIONS AND RESPONSIBILITY

4528MF – 4528MS

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

- Recommended Grade: 9 – 12
- Credits: 1 credit per semester (fall semester only)
- Counts as a Directed Elective or Elective for all diplomas

INTRODUCTION TO COMPUTER SCIENCE

4803MF – 4803MS

Introduction to Computer Science allows students to explore the world of computer science. Students will gain a broad understanding of the areas composing computer science. Additionally, there is a focus on the areas of computer programming, gaming/mobile development, and artificial intelligence/robotics.

- Recommended Grade: 9 – 10
- Credits: 1 credit per semester (spring semester only)
- Counts as a Directed Elective or Elective for all diplomas

COMPUTER SCIENCE I **

4801MF – 4801MS

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

- Recommended Grade Level: 10-12
- Recommended Prerequisites: Introduction to Computer Science
- Credits: 1 credit per semester; 2 semesters
- Counts as a Directed Elective or Elective for all diplomas

COMPUTER SCIENCE II: PROGRAMMING**

5236MF – 5236MS

Computer Science II explores and builds skills in programming and a basic understanding of the fundamentals of procedural program development using structured, modular concepts. 67 Indiana Department of Education High School Course Titles and Descriptions Coursework emphasizes logical program design involving user-defined functions and standard structure elements. Discussions will include the role of data types, variables, structures, addressable memory locations, arrays and pointers, and data file access methods. An emphasis on logical program design using a modular approach, which involves task-oriented program functions.

- Recommended Grade: 11-12
- Required Prerequisite: Computer Science I
- Credits: 1 credit per semester; 2 semesters; 2 total credits
- Weighted Course (1.0)
- Required Prerequisites: Computer Science I
- Counts as a Directed Elective or Elective for all diplomas

COMPUTER SCIENCE III: VIDEO GAMING APPS

5252MF – 5252MS

Video Gaming and Apps is MCIT's innovative course, which will allow students to create fully developed video games. Using Unity 3D, we will make two video games over the course of the year. Students will work to develop a storyline, create the 3D models and textures, and program the levels before publishing our games. Team-taught, students will have the time and resources to design and create assets and code games. FPS, 3rd person, 2D, RPG, all game types will be explored.

- Recommended Grade Level: 12
- Required Prerequisites: Computer Science I
- Credits: 2-Block course; 2 semesters; 4 total credits

COMPUTER SCIENCE III: CYBERSECURITY CAPSTONE

5253MF – 5253MS

Computer Science III: Cybersecurity introduces the secure software development process including designing secure applications, writing secure code designed to withstand various 69 Indiana Department of Education High School Course Titles and Descriptions types of attacks, and security testing and auditing. It focuses on the security issues a developer faces, common security vulnerabilities and flaws, and security threats. The course explains security principles, strategies, coding techniques, and tools that can help make software fault tolerant and resistant to attacks. Students will write and analyze code that demonstrates specific security development techniques. Students will also learn about cryptography as an indispensable resource for implementing security in real-world applications. Students will learn the foundations of cryptography using simple mathematical probability. Information theory, computational complexity, number theory, and algebraic approaches will be covered. Schools may use the PLTW curriculum to meet the standards for this course. Schools using the curriculum and are part of the Project Lead the Way network must follow all training and data collection requirements.

- Recommended Grade Level: 11-12
- Required Prerequisites: Computer Science I
- Recommended Prerequisites: Computer Science II
- Credits: 2 semester course, 2 semesters required, 1-3 credits per semester, 6 credits maximum
- Counts as a Directed Elective or Elective for all diplomas

HEALTH SCIENCES PATHWAY

INTRODUCTION OF HEALTH SCIENCE CAREERS

5272MF – 5272MS

Introduction to Health Science Careers is an exploratory course designed to provide students with an opportunity to investigate all aspects of the health science industry. Students will receive an introduction to healthcare systems and examine a variety of pathways in health science, and reflect on their own knowledge, skills and interests, to begin to narrow the areas within health science they want to continue exploring, in preparation for further study in Health Science I

- Recommended Grade Level: 10
- Recommended Prerequisites: Preparing for College and Careers
- Credits: 1 credit per semester; 2 semesters
- Counts as a Directed Elective or Elective for all diplomas

MEDICAL TERMINOLOGY

5274MF – 5274MS

Medical Terminology prepares students with language skills necessary for effective, independent use of health and medical reference materials. It includes the study of health and medical abbreviations, symbols, and Greek and Latin word part meanings, all taught within the context of body systems. This course builds skills in pronunciation, spelling, and defining new words encountered in verbal and written information in the healthcare industry. Students have the opportunity to acquire essential skills for accurate and logical communication, and interpretation of medical records. Emphasis is on forming a foundation of a medical vocabulary including; appropriate and accurate meaning, spelling, and pronunciation of medical terms, and abbreviations, signs, and symbols.

- Recommended Grade Level: 11 – 12
- Credits: 1 credit per semester; 2 semesters
- Counts as a Directed Elective or Elective for all diplomas

HEALTH SCIENCE EDUCATION I/HLHS 100 (IT) **

5282MF – 5282MS

Health Science Education I is a course designed to provide a foundation of skills development to specific health careers including; patient care, nursing care, dental care, animal care, medical laboratory, and public health. Students will also receive an introduction to healthcare systems, anatomy, physiology, and medical terminology. Laboratory experiences with industry applications are organized and planned around the activities associated with the student's career objectives. Job seeking and job maintenance skills, personal management skills, self-analysis to aid in career selection and completion of the application process for admission into a post-secondary program of their choice are also included in this course. Participation in HOSA encourages the development of leadership, communication and career related skills, and opportunities for community service.

- Recommended Grade Level: 11
- Recommended Prerequisites: Introduction to Health Science Careers
- Credits: 2-Block course; 2 semesters; 4 total credits
- Weighted Course (1.0)
- Course Aligned with postsecondary courses for Dual Credit through Ivy Tech

HEALTH SCIENCE EDUCATION II/HLHS 107 (IT) ****5284MF – 5284MS**

Health Science Education II: Nursing is an extended laboratory experience designed to provide students with the opportunity to assume the role of nurse assistant. Students have the opportunity to learn, and then to practice those technical skills previously learned in the classroom at qualified clinical sites while under the direction of licensed nurses. These sites may include extended care facilities, hospitals and home health agencies. Throughout the course, students will focus on learning about the healthcare system and employment opportunities at a variety of entry levels of the healthcare field; an overview of the healthcare delivery systems, healthcare teams and legal and ethical considerations; and obtaining the knowledge, skills and attitudes essential for providing basic care in a variety of healthcare settings. Additionally, students will build their essential job related skills such as providing appropriate personal care to patients; reporting necessary information to nursing staff; operating and monitoring medical equipment; teaching and assisting patients and families with the management of their illness or injury; and performing general health screenings. This course provides students with the knowledge, attitudes, and skills needed to make the transition from high school, to post-secondary opportunities, and to work in a variety of health science careers. Students are encouraged to focus on self-analysis to aid in their career selection. Job seeking and job maintenance skills, personal management skills, and completion of the application process for admission into a post-secondary program are also areas of focus.

- Recommended Grade Level: 12
- Credits: 3-Block course; 2 semesters; 6 total credits
- Weighted Course (1.0)
- Recommended Prerequisites: Health Science Education I
- Course Aligned with postsecondary courses for Dual Credit through Ivy Tech

BIOMEDICAL SCIENCES PATHWAY- PROJECT LEAD THE WAY (PLTW)**PRINCIPLES OF BIOMEDICAL SCIENCES (PBS)****5218MF – 5218MS**

Principles of Biomedical Sciences provides an introduction to this field through “hands-on” projects and problems. Student work involves the study of human medicine, research processes and an introduction to bioinformatics. Students investigate the human body systems and various health conditions including heart disease, diabetes, hypercholesterolemia, and infectious diseases. A theme through the course is to determine the factors that led to the death of a fictional person. After determining the factors responsible for the death, the students investigate lifestyle choices and medical treatments that might have prolonged the person’s life. Key biological concepts included in the curriculum are: homeostasis, metabolism, inheritance of traits, feedback systems, and defense against disease. Engineering principles such as the design process, feedback loops, fluid dynamics, and the relationship of structure to function will be included where appropriate. The course is designed to provide an overview of all courses in the Biomedical Sciences program and to lay the scientific foundation necessary for student success in the subsequent courses. This is a Core 40 science course, but it does not replace Biology I.

- Recommend Grade Level: 9
- Required Prerequisite: Biology I or concurrent enrollment in Biology I is required
- Credits: 1 credit per semester, 2 semester course
- Weighted Course (.5)

HUMAN BODY SYSTEMS (HBS)**5216MF – 5216MS**

Human Body Systems is a course designed to engage students in the study of basic human physiology and the care and maintenance required to support the complex systems. Using a focus on human health, students will employ a variety of monitors to examine body systems (respiratory, circulatory, and nervous) at rest and under stress, and observe the interactions between the various body systems. Students will use appropriate software to design and build systems to monitor body functions. NOTE: This course aligns with the PLTW Human Body Systems curriculum.

- Recommended Grade level: 10
- Required Prerequisite: Principles of Biomedical Sciences
- Credits: 1 credit per semester, 2 Semester course
- Weighted Course (.5)
- Fulfills a science requirement for all diplomas

MEDICAL INTERVENTIONS (MI)**5217MF – 5217MS**

Medical Interventions is a course that studies medical practices including interventions to support humans in treating disease and maintaining health. Using a project-based learning approach, students will investigate various medical interventions that extend and improve the quality of life, including gene therapy, pharmacology, surgery, prosthetics, rehabilitation, and supportive care. Students will also study the design and development of various interventions. Lessons will cover the history of organ transplants and gene therapy with additional readings from current scientific literature addressing cutting edge developments.

- Recommended Grade Level: 11
- Required Prerequisites: Principles of Biomedical Sciences; Human Body Systems or Anatomy and Physiology
- Credits: 1 credit per semester, 2 Semester course
- Weighted Course (1.0)
- Fulfills a science requirement for all diplomas

BIOMEDICAL INNOVATIONS/BIOT 107 & BIOL 105 (IT) ****5219MF – 5219MS**

Biomedical Innovation is a capstone course designed to give students the opportunity to design innovative solutions for the health challenges of the 21st Century as they work through progressively challenging open-ended problems, addressing topics such as clinical medicine, physiology, biomedical engineering, and public health. Students have the opportunity to work on an independent project and may work with a mentor or advisor from a healthcare or post-secondary industry. Throughout the course, students are expected to present their work to an adult audience that may include representatives from the local business and healthcare community. NOTE: This course aligns with the PLTW Biomedical Innovations curriculum.

- Recommended Grade Level: 12
- Credits: 1 credit per semester, 2 Semester course
- Required Prerequisite: Principles of Biomedical Sciences, Human Body Systems or Anatomy & Physiology, and Medical Interventions
- Weighted Course (1.0)
- Course Aligned with postsecondary courses for Dual Credit through Ivy Tech
- Counts as a Directed Elective or Elective for all diplomas

ENGINEERING PATHWAY - PROJECT LEAD THE WAY (PLTW)

Project Lead the Way (PLTW)'s curriculum makes math and science relevant for students. By engaging in hands-on, real-world projects, students understand how the skills they are learning in the classroom can be applied in everyday life. This approach is called activities-based learning, project-based learning, and problem-based learning.

PROGRESSION OF PLTW COURSES

9th Grade – IED *or* POE by Placement and 8th Grade PLTW Teacher recommendation

10th Grade – IED, POE, (DE, CIMS or CEA) by Teacher Recommendation

11th Grade – POE, DE, CIMS, CEA, AE, ES or EDD

12th Grade – POE, DE, CIMS, CEA, AE, ES or EDD

INTRODUCTION TO ENGINEERING DESIGN/DESN 101 (IT) ****4802MF – 4802MS**

Introduction to Engineering Design is a fundamental pre-engineering course where students become familiar with the engineering design process. Students work both individually and in teams to design solutions to a variety of problems using industry standard sketches and current 3D design and modeling software to represent and communicate solutions. Students apply their knowledge through hands-on projects and document their work with the use of an engineering notebook. Students begin with completing structured activities and move to solving open-ended projects and problems that require them to develop planning, documentation, communication, and other professional skills. Ethical issues related to professional practice and product development are also presented.

- Recommended Grade Level: 9
- Credits: 1 credit per semester, 2 Semester course
- Weighted Course (.5)
- Course Aligned with postsecondary courses for Dual Credit through Ivy Tech

PRINCIPLES OF ENGINEERING/DESN 104 (IT) ****5644MF – 5644MS**

Principles of Engineering is a course that focuses on the process of applying engineering, technological, scientific and mathematical principles in the design, production, and operation of products, structures, and systems. This is a hands-on course designed to provide students interested in engineering careers to explore experiences related to specialized fields such as civil, mechanical, and materials engineering. Students will engage in research, development, planning, design, production, and project management to simulate a career in engineering. The topics of ethics and the impacts of engineering decisions are also addressed. Classroom activities are organized to allow students to work in teams and use modern technological processes, computers, CAD software, and production systems in developing and presenting solutions to engineering problems

- Recommended Grade: 10 - 11
- Required Prerequisites: Introduction to Engineering Design
- Credits: 1 credit per semester, 2 Semester course
- Weighted Course (1.0)
- Fulfills a science course requirement for all diplomas

COMPUTER INTEGRATED MANUFACTURING/ADMF 116 (IT) ****4810MF – 4810MS**

Computer Integrated Manufacturing is a course that applies principles of rapid prototyping, robotics, and automation. This course builds upon the computer solid modeling skills developed in Introduction of Engineering Design. Students will use computer controlled rapid prototyping and CNC equipment to solve problems by constructing actual models of their three-dimensional designs. Students will also be introduced to the fundamentals of robotics and how this equipment is used in an automated manufacturing environment. Students will evaluate their design solutions using various techniques of 144 Indiana Department of Education High School Course Titles and Descriptions analysis and make appropriate modifications before producing their prototypes.

- Recommended Grade Level: 11-12
- Required Prerequisites: Introduction to Engineering Design and Principles of Engineering
- Credits 1 credit per semester, 2 Semester course
- Weighted Course (1.0)
- Course Aligned with postsecondary courses for Dual Credit through Ivy Tech
- Counts as a Directed Elective or Elective for all diplomas

ADVANCED MANUFACTURING II (CIM II)**5606MF – 5606MS**

Advanced Manufacturing II builds on classroom and lab experiences students experienced in Advanced Manufacturing I. Domains include safety and impact, drafting principles, manufacturing programming, CAD/CAM and CNC technologies, automation and robotics, and careers in advanced manufacturing. Hands-on projects and team activities will allow students to apply learning on the latest industry technologies. Students continue this course with the goal of being a skilled machine operator, repair technician, or management at any company that produces goods and services using advanced manufacturing techniques. Work-based learning experiences and industry partnerships are highly encouraged for an authentic industry experience.

- Recommended Grade Level: 12
- Required Prerequisites Computer Integrated Manufacturing
- Credits: 2 semester course, 2 semesters required
- Counts as a Directed Elective or Elective for all diplomas

CIVIL ENGINEERING AND ARCHITECTURE/DESN 105 (IT) ****5650MF – 5650MS**

Civil Engineering and Architecture introduces students to the fundamental design and development aspects of civil engineering and architectural planning activities. Application and design principles will be used in conjunction with mathematical and scientific knowledge. Computer software programs should allow students opportunities to design, simulate, and evaluate the construction of buildings and communities. During the planning and design phases, instructional emphasis should be placed on related transportation, water resource, and environmental issues. Activities should include the preparation of cost estimates as well as a review of regulatory procedures that would affect the project design.

- Recommended Grade Level: 11-12
- Required Prerequisite: Introduction to Engineering Design and Principles of Engineering
- Credits 1 credit per semester, 2 Semester course
- Weighted Course (1.0)
- Counts as a Directed Elective or Elective for all diplomas
- Course Aligned with postsecondary courses for Dual Credit through Ivy Tech

DIGITAL ELECTRONICS/EECT 112 (IT)****5538MF – 5538MS**

Digital Electronics is a course of study in applied digital logic that encompasses the design and application of electronic circuits and devices found in video games, watches, calculators, digital cameras, and thousands of other devices. Instruction includes the application of engineering and scientific principles as well as the use of Boolean algebra to solve design problems. Using computer software that reflects current industry standards, activities should provide opportunities for students to design, construct, test, and analyze simple and complex digital circuitry software will be used to develop and evaluate the product design. This course engages students in critical thinking and problem-solving skills, time management and teamwork skills.

- Recommended Grade Level: 11-12
- Required Prerequisite: Introduction to Engineering Design and Principles of Engineering
- Credits 1 credit per semester, 2 Semester course
- Weighted Course (1.0)
- Counts as a Directed Elective or Elective for all diplomas
- Course Aligned with postsecondary courses for Dual Credit through Ivy Tech

AEROSPACE ENGINEERING (AE)**5518MF – 5518S**

Aerospace Engineering should provide students with the fundamental knowledge and experience to apply mathematical, scientific, and engineering principles to the design, development, and evolution of aircraft, space vehicles and their operating systems. Emphasis should include investigation and research 143 Indiana Department of Education High School Course Titles and Descriptions on flight characteristics, analysis of aerodynamic design, and impact of this technology on the environment. Classroom instruction should provide creative thinking and problem-solving activities using software that allows students to design, test, and evaluate a variety of air and space vehicles, their systems, and launching, guidance and control procedures.

- Recommended Grade Level: 11-12
- Required Prerequisite: Introduction to engineering Design or Principles of Engineering
- Credits 1 credit per semester, 2 Semester course
- Weighted Course (1.0)
- Counts as a Directed Elective or Elective for all diplomas

ENVIRONMENTAL SUSTAINABILITY (ES)**4818MF – 4818MS**

Environmental Sustainability is a specialization course that builds upon prior knowledge learned in previous engineering and science courses. Students investigate and design solutions in response to current challenges such as providing the world with clean and abundant drinking water, an adequate food supply, and renewable energy. Students are introduced to environmental issues and use the engineering design process to design, build, and test potential solutions. This course engages critical thinking and problem-solving skills as students apply and extend their knowledge through designing experiments, managing projects, conducting research, and creating presentations to communicate solutions.

- Recommended Grade Level: 11-12
- Required Prerequisites: Introduction to Engineering Design, Principles of Engineering
- Credits 1 credit per semester, 2 Semester course
- Weighted Course (1.0)
- Fulfills a science course requirement for all diplomas
- Counts as a Directed Elective or Elective for all diplomas

ENGINEERING DESIGN AND DEVELOPMENT (EDD)**5698MF – 5698MS**

Engineering Design and Development is an engineering research course in which students work in teams to research, design, test, and construct a solution to an open-ended engineering problem. The product development life cycle and a design process are used to guide the team to reach a solution to the problem. The team and/or individuals communicate(s) their solution to a panel of stakeholders at the conclusion of the course. As the capstone course in the Engineering Pathway, EDD engages students in critical thinking, problem-solving, time management, and teamwork skills.

- Recommended Grade Level: 12
- Required Prerequisite: Introduction to Engineering Design, Principles of Engineering Design, and one pre-engineering specialty course
- Credits 1 credit per semester, 2 Semester course
- Weighted Course (1.0)
- Counts as a Directed Elective or Elective for all diplomas

CTE PILOT COURSE: FOUNDATIONS OF TECHNOLOGY (FOT)**5239MF – 5239MS**

Prepares students to understand and apply technological concepts and processes in manufacturing, construction, transportation, communication, and engineering. Emphasis is placed on using modern technologies and developing skills for pathways and careers related to manufacturing, transportation, construction, precision machining, industrial maintenance, engineering technology, and robotics. Group and individual activities engage students in hands-on projects.

- Recommended Grade Level: 9 -10
- Recommended Prerequisites: None
- Credits: 1 credit per semester, 2 semester course

JUNIOR RESERVE OFFICER TRAINING CORPS (J-ROTC)**JR ROTC: CIVIL AIR PATROL (CAP)****0516MF – 0516MS**

This course is designed to develop: (1) citizenship and patriotism, (2) self-discipline, (3) physical fitness, (4) reliance and leadership, and (5) the skills used in decision making, communications, and problem-solving. The course content and experiences enable the students to understand the role of the military in support of national objectives and to become familiar with basic military knowledge, gender equity issues, benefits, and requirements. Topics to be included in the course are: (1) military history, (2) ROTC in the military, (3) substance abuse, (4) map reading, (5) marksmanship and firearm safety, (6) military drill, (7) field activities, (8) reserve components, and (9) first aid and hygiene. Opportunities are provided to explore the qualities and traits of courage, self-sacrifice, and integrity. Junior Reserve Officer Training Corps programs must be approved by and meet the requirements of the appropriate military organization.

- Recommended Grade Level: 10-12
- Recommended Prerequisites: None
- Credits: 1 credit per semester, 2 semester course
- Counts as an Elective for all diplomas

ADDITIONAL INFORMATION ON MCIT CLUBS AND PROGRAMS**ROBOTICS** — F.I.R.S.T Robotics and VEX Robotics<https://www.firstinspires.org/robotics/frc>

Grades 9-12, local and national competitions

CAP — Civil Air Patrol<https://www.qocivilairpatrol.com/>

Aerospace Education, CADET programs, Emergency Services, Civilian Air Force Cadets

FBLA – Future Business Leaders of America<https://www.fbla-pbl.org/>

Local and national competitions

HOSA - Future Health Professionals<http://www.hosa.org/>

Biomedical Sciences and Health Sciences students. HOSA is a national student organization whose mission is to promote career opportunities in the health care industry.

DECA - Distributive Education Clubs of America (Marketing and Business)www.deca.org/

Provides members and advisors with development activities through local and national competitions

ACE Mentoring - Architecture, Construction and Engineering<https://acementor.org/>

Engage, excite and enlighten high school students to pursue careers in architecture, engineering and construction through mentoring.

NTHS - National Technical Honor Society

<https://nths.org/>

Encourages higher scholastic achievement, cultivates a desire for personal excellence, and helps top students find success in the workplace.

Skills USA - All Career and Technical students compete locally and nationally in skills and leadership.

<https://www.skillsusa.org/>

JAG - *Jobs for Americas Graduates*

<http://www.jag.org/>

Women in Technology - Female interested in technology are mentored by IUPUI women in engineering students.

Car Club - Auto Service and Collision Repair students integrating into some automotive projects