AL ITTIHAD PRIVATE SCHOOL - AL MAMZAR

ELECTIVE COURSES ORIENTATION JUNE 2019

Design and Technology

English

Art

Science

Math

Humanities

COURSE SELECTION

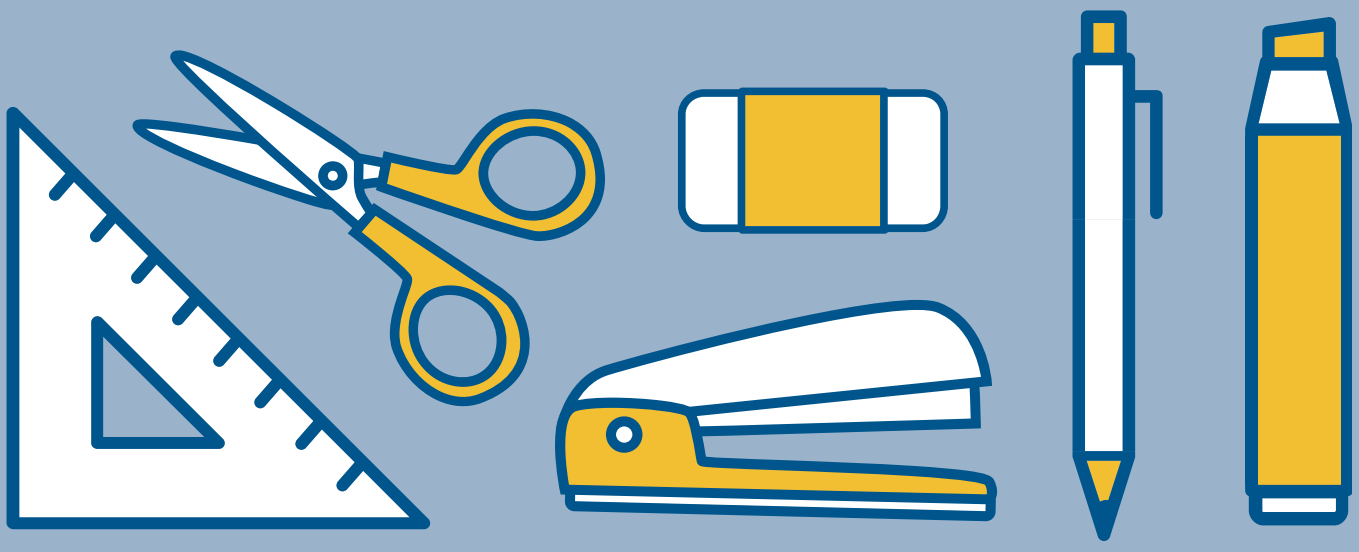
MAKE PRODUCTIVE CHOICES.

WHY ELECTIVES MATTER?

To Develop Interests and Abilities
To Learn About the World
To Throw Some Fun into a Busy Schedule
And Finally, To Be Prepared

Visit www.ipsmamzar.com for our full list of classes.
For inquiries call : 04 296 6314 Ex: 246/260
email : shireen.abdelrazek@ipsmamzar.com

" We Cannot Always Build The Future For Our Youth, But We Can Build Our Youth For The Future"



AL ITTIHAD PRIVATE SCHOOL -
AL MAMZAR

ELECTIVES COURSE SELECTION

(Grade 9)

(Grade 9)

ELECTIVE OPTIONS:

Pool 1

Design and Technology:
Robotics (Science Experiment) (0.5 credit)

Robotics (Science Experiments) presents a series of lab exercises that teach non-science majors the effective use of the scientific method. Students will employ a robotics theme for these exercises, as robotics problems provide a compelling framework for the use of the scientific method in problem-solving. The course includes types of scientific experiments that are useful in this regard, and demonstrates how these types of experiments support the types of problem-solving essential for completing robotics tasks. Our approach is influenced by previous results in robotics education, computational use of the scientific method, and active learning techniques. Resources used include but are not limited to the EV3 Lego Mindstorms.

Prerequisites: None

English:
Public Speaking (0.5 credit)

This is an elective which focuses on effective public speaking techniques, including verbal and nonverbal communication skills. The course teaches students how to organize and present information in oral speeches and presentations, how to deliver their ideas in a clear, concise, audience-appropriate manner, and how to incorporate appropriate visuals and other media into their oral presentations. This course also equips students with the essential skill of listening to a speech critically and fairly, preparing them to become consumers of information and argument.

Prerequisite: None

(Grade 9)

ELECTIVE OPTIONS:

Pool 2

English:
Drama (0.5 credit)

Students choosing the Drama elective are expected to demonstrate proficiency in characterization, diction, memorization, and concentration. They will be asked to study and deliver monologues and scene work from modern sources as well as Shakespearean sonnets and plays. Theory tests, class practices and live performances are required as part of students' grade.

Prerequisites: None

Art:
Visual Art (0.5 credit)

Visual Arts is an introductory course that covers basic painting techniques with an emphasis on classic and contemporary applications of acrylic media. Topics include the use of composition, color, texture, form and value through still life, landscape, and abstract. Students are required to submit project-based work as part of their grade.

Prerequisites: None

AL ITTIHAD PRIVATE SCHOOL -
AL MAMZAR

ELECTIVES COURSE SELECTION

(Grade 10)

(Grade 10)

ELECTIVE OPTIONS:

Pool 1

Design and Technology: Electronic Design (0.5 credit)

Electronics Design is a project-based elective course, where students explore aspects of electronics, circuitry, programming and processes of design. Students learn about these aspects through researching, designing, and using 2D and 3D Computer Aided Design (CAD) software, testing and designing circuitry using breadboards, and utilizing and programming electronics such as Arduinos and Makey-Makey's.

Prerequisites: None

Design and Technology: Artificial intelligence (AI) (0.5 credit)

This one-semester course is focused on the history, applications, and innovations of artificial intelligence. Students will learn about intelligence agents, problem solving using search algorithms, knowledge representation, and reasoning in artificial intelligence. Students will also learn about the basic concepts of machine learning and natural language processing (NLP). Students will also learn about expert systems, computer vision and robotics. AI studies how to realize the intelligent human behaviors on a computer or robot. The ultimate goal of AI is to make a computer or robot learn, plan, and solve problems autonomously. Machine learning discuses algorithms that can automatically adapt to changing environments by learning from past observations, it also includes the theory behind probabilistic reasoning systems. The AI course tutorials will be implemented using the Physical Computing tools (NAO Robot, Python and Choreograph software).

Prerequisite: None

Design and Technology: Animation (0.5 credit)

After going through this course, students will be able to create 3D animation clip and characters and storyboards for basic animation production. Students will also discover the difference between the keyframes and the in-between frames, create keyframe-based animation, learn animation principles, Timing and Spacing, Stretch and Squash, anticipation and apply animation principles to create different types of motion. This course gives students a working knowledge of the animation techniques necessary to design animation sequences. Tutorials of this course will be applied using Blender, Adobe Flash and Adobe After effects.

Prerequisites: None

Grade 10)

ELECTIVE OPTIONS:

Pool 2

Humanities:
Business 1 (0.5 credit)

The purpose of this course is to introduce students to the major aspects of the business world. The course starts with an overview, introducing the global economy and the private enterprise system and continues to cover how resources are used, entrepreneurship, management, finance, international business, and civil law. The topics discussed will also include how the government and laws affect the business world, ethics, and diversity in business, and consumerism. Students should come away from class with a basic understanding of the business world as well as skills that will help them on their way to succeed in obtaining a career in the future and competing in the 21st century workplace.

Prerequisites: None

English:
Research Writing (0.5 credit)

Research Writing is an advanced course in academic writing. Students are required to write extended essays and APA research papers based on documented research. The course will also focus on information literacy, specifically students' ability to access, evaluate, and use information effectively to complete a variety of written assignments. Students will gain additional practice in critical reading and thinking and writing for professional and academic purposes. Students' research papers will be evaluated through a grading rubric.

Prerequisites: None

Science:
Fundamentals to Physics (0.5 credit)

Fundamentals in Physics is an Algebra-based, introductory physics course to prepare the students for AP Physics/College physics. Students explore concepts like Circular Motion, Gravity, Rotational Mechanics, Waves (Mechanical, Electromagnetic), and Optics. Students cultivate their understanding of Physics through classroom study, in-class activity, and hands-on, inquiry-based laboratory work.

Prerequisite: Successful Completion of Grade 9 Motion and Energy or Physical Science

AL ITTIHAD PRIVATE SCHOOL -
AL MAMZAR

ELECTIVES COURSE SELECTION

(Grade 11)

(Grade 11)

ELECTIVE OPTIONS:

Pool 1

Design and Technology:
Advanced Robotics (0.5 credit)

In Advanced Robotics course, students will be exposed to the fundamentals of Robotics Mechanical systems: Theory, Methods and Algorithms. This course builds on the basic and fundamental Robotics skills. Through the use of Tetrix Robotics Systems, Ev3 Component set, and Pulse controller, the students will build and control robots. Students become familiar with advanced computer science concepts as they build on programming language, which is utilized to manipulate a robot along with its various sensors. Once the program is written and starts running on a computer, it will interface with the robot to make it achieve the desired outcome. The course includes in-class robotic projects, where student teams will design and program a robot to solve various challenges.

Prerequisites: None

Humanities:
Business 2 (0.5 credit)

Throughout this course, students will learn about different entrepreneurs and career options in the business world. The major units covered in the course include: careers in business, owning and operating a business, marketing, advertising, economics, banking services and credit, accounting, the role of the consumer in the marketplace, technology in the marketplace, and international business. Students should come away from class with a basic understanding of the business world as well as skills that will help them on their way to succeed in obtaining a career in the future and competing in the 21st century workplace.

Prerequisite: None

Science:
Forensic Science (0.5 credit)

Forensic Science is a high-school elective course designed to provide students with hands-on experiences in various aspects of a criminal investigation. Science content and Engineering, Technology, and the Application of Science objectives are integrated as students ask questions and define problems, develop and use models, plan and conduct investigations, analyze and interpret data, construct explanations and design solutions as they consider crime scenes, evidence, and protocol. Safety instruction is integrated in all activities, and students will implement safe procedures and practices when manipulating equipment, materials, organisms, and models.

Prerequisite: Successful Completion of Grade 9 Biology and Grade 10 Chemistry

Grade 11)

ELECTIVE OPTIONS:

Pool 2

Science:
Anatomy (1 credit)

Human Anatomy is a course that provides a working knowledge of the parts of the human body (anatomy) and how these parts function (physiology). Laboratory experiences provide student learning in the following topics: histology, endocrine system, nervous system, immune system (specific and non-specific), cardiovascular system, excretory system. The topics relate the major body systems together, how the body systems work together to provide homeostasis, body functions in the healthy and diseased states; blood typing and muscle action. Students will focus on the main idea that form is related to function. Throughout the course, students will be given opportunities to develop scientific - process skills and laboratory techniques. Demonstrations, lab activities, videos and dissections will be used to supplement classroom lecture and discussion. This course is a preparation for advanced biological studies, biomedical nursing, and other science-based careers.

Prerequisite: Successful Completion of Grade 9 Biology and Grade 10 Chemistry

Math:
Pre-Calculus (1 credit)

Pre-Calculus further develops the concepts learned in Algebra II preparing students for the transition into calculus; the course reviews the foundations of Algebra, geometry, and functions, and serves as a preparatory course for calculus and AP calculus. The course focuses on the mastery of critical skills and exposure to new skills necessary for success in subsequent math courses. The course includes linear, quadratic, exponential, logarithmic, radical, polynomial, and rational functions; systems of equations; and conic sections, trigonometric ratios and functions; inverse trigonometric functions; applications of trigonometry, including vectors and laws of cosine and sine; polar functions and notation; and arithmetic of complex numbers.

Prerequisites: The Completion of Algebra 1, Geometry

Grade 11)

ELECTIVE OPTIONS:

Humanities:
Accounting 1 (1 credit)

Accounting first-year course is a comprehensive course designed to bring the real world of accounting into the classroom. Students will have the opportunity to use real-world accounting software, real-world source documents, real-world financial statements, and real-world multimedia. Accounting is the language of business, which is the process of recording, classifying, and summarizing financial information. Financial understanding of assets, liabilities, owner's equity, revenues, and expenses are covered in this course for a Service Business in addition to the financial papers (journals, ledgers, balance sheets, income statements, worksheets, and trial balances). The prime objective of this course is to introduce students to the double-entry system of accounting for Sole Proprietorship form of business by using real-world applications and connections, to help students develop personal and professional skills for school ,university, and work. To find success in accounting, students in this course will learn about the world of business and accounting ,basic accounting cycle for a sole proprietorship ,financial statements for a sole proprietorship, in addition to cash control and banking activities.

Prerequisites: None

Design and Technology:
DT Product Design (1 credit)

In Design and Technology (Product Design) course, students will have the opportunity to learn about doing user research, defining a design challenge, generating ideas, developing concepts, and testing. Students will learn about the different types of manufacturing systems used to create the everyday-products we depend on. Autodesk Fusion 360 is the software that will be used in the tutorial sessions to turn students' ideas into complete 3D designs ready for manufacturing. Autodesk Fusion 360 combines organic shapes modelling, mechanical design, and manufacturing in one comprehensive package. Students will learn how to sculpt their ideas, model parts and assemblies, create drawings and renderings, and prepare for manufacturing on a CNC machine or 3D printer.

Prerequisites: None

AL ITTIHAD PRIVATE SCHOOL -
AL MAMZAR

ELECTIVES COURSE SELECTION

(Grade 12)

(Grade 12)

ELECTIVE OPTIONS:

Pool 1

Math:
Business Math (1 credit)

A business-math class prepares students to think logically and critically about finances, both for the home and in their professional life. Mathematical skills needed to understand, analyze, and solve mathematical problems encountered in business and finance, and in investment decision making are emphasized in this course. Students who are interested in pursuing a degree in marketing, accounting, finance or business administration are usually required to complete a business math course.

Prerequisites: preferably the completion of Algebra 1, Geometry

Math:
Calculus (1 credit)

In this course, continuity, limits, the derivative for Algebraic, trigonometric, logarithmic, exponential, and inverse functions are emphasized, in addition to optimization, related rates, critical points, absolute extrema, and curve sketching. Furthermore, students study integration by substitution, definite integrals, area under curve, and area between two curves. Finally, students discuss and solve applications to physics, engineering and social sciences.
Prerequisites: Algebra 1, Geometry , Algebra 2

Math:
AP Calculus AB (1.25 credits)

This course develops students' understanding of the concepts of calculus and provides experience with its methods and applications. The course emphasizes a multi-representational approach to calculus, with concepts, results, and problems being expressed graphically, numerically, analytically, and verbally. Students should be familiar with the meaning of the derivative in terms of a rate of change and linear approximation, and be able to use derivatives to solve a variety of problems. Similarly, students should be able to understand the meaning of the definite integral, both as a limit of Riemann sums and as the net accumulation of change, and should be able to use integrals to solve a variety of problems. This course is designed for students intending to major in Engineering, Sciences, Business, Economics, or Natural and Social Sciences. Topics include: 1. linear, polynomial, exponential, logarithmic, and trigonometric functions 2. limits and continuity 3. differentiation -curve sketching, related rates, and optimization 4. integration -area under a curve, area between curves, integration by parts, the fundamental theorem of calculus, and numerical integration 5. differential equations 6. Creating mathematical models for data using regression 7. applications to engineering, physics, business and economics such as compound interest and marginal analysis 8. applications to natural, life, and social sciences such as population growth and half-life.

Prerequisites: The completion of Algebra 2, Pre-Calculus

(Grade 12)

ELECTIVE OPTIONS:

Pool 2

Science:
Physics 2 (1 credit)

In this course, basic physical concepts and their applications to everyday activities (toys, sports, and light) are emphasized through a variety of lab activities and problems. Skills taught in class include problem solving strategies, lab techniques, technical writing (lab reports), and graphical analysis of data. Physical concepts basic to all fields of science and critical thinking skills that can be utilized in any college major are introduced. Topics include Kinematics, Forces, Energy, Momentum, Electricity, Magnetism, Circuits, and Atomic Physics. This course is recommended for all students planning to attend college.
Prerequisites: Completion of Grade 11 Physics course

Physics Science:
Biology 2 (1 credit)

Biology is the "Study of Life"; it involves the study of living organisms from single-celled organisms to multiple-celled plants, animals and humans. This course involves the study of living things and is undertaken at a variety of levels of organization. Through the study of this topic, students will appreciate that despite the great diversity of body systems, there is a fundamental unity with regard to their coordination in work. Topics include science process mitosis and cytokinesis, meiosis, genetics and biochemistry, nervous system, digestive system. Biology 2 is a lab-based college prep course that focuses on the major concepts of life science, methods of science, and inquiry-based learning.
Prerequisites: Successful completion of Grade 10 Biology

Design and Technology:
Computing Essentials (1 credit)

This rigorous course promotes deep learning of computational content, develops computational thinking skills and engages students in the creative aspects of computer science field. The resources used in this course will mainly be online(https://connect.mheducation.com), further handouts and extra readings will be provided by the teacher. This course will define the foundation of information and computation, programming languages , algorithm analysis and development, networking , database and computer graphics.
Prerequisites: None

(Grade 12)

ELECTIVE OPTIONS:

Humanities:
Personal Finance (1 credit)

The goal of the Personal Finance course is to help students become financially accountable and hard-working society members. This course focuses on the development of practical methods for organizing financial information and developing achievable and worthwhile financial goals. Personal Finance students will experience real-world scenarios and use strategies covered in the course to help them make sound financial decisions. To reach that end, this course develops students understanding and skills in such areas as money management, budgeting, financial goal attainment, the wise use of credit, simulate use of checking and saving accounts, insurance, investments, and consumer rights and responsibilities. This will create a solid root for a foundational understanding for making informed personal financial decisions and apply the knowledge learned to financial situations encountered later in life.

Prerequisites: None

(Grade 12)

ELECTIVE OPTIONS:

Pool 3

Design and Technology:
Innovation and Digital Leadership (0.5 credit)

In this course, students will understand how Information Technology (IT) plays a vital role in driving innovation in today's digital world, and Business Process Management. Students will be exposed to the new technologies, such as mobile and real-time technologies, the Internet of Things, big data analytics, and social media which seems to accelerate the speed of business innovation and transformation that represents important triggers of innovation ,and how the incorporation of IT into business processes allows organizations to be innovative and competitive.
Prerequisites: None

Humanities:
Entrepreneurship (0.5 credit)

The Entrepreneurship course acquaints students with the knowledge and skills necessary to own and operate their own businesses. Topics from several fields will form the course content. Economics, marketing, human relationships, labor laws, legal rights and responsibilities, financing, accounting and communication skills will all be covered. This course will also allow the students to operate a "small business" of their creation and track their progress throughout the entire process. Theory tests and project-based assignments are parts of the students' grade.
Prerequisites: Preferably the completion of Business courses

Art:
Art Portfolio Development (0.5 credit)

The course provides the students with an opportunity to present their work through a personal portfolio. During the course, students will refine a body of design work and publish their portfolio in both print (optional) and web formats using INDESIGN software. This course is highly recommended for students who want to pursue a major/career in architecture, fine arts, and interior design.
Prerequisites: None

(Grade 12)

ELECTIVE OPTIONS:

Pool 4

Humanities:
Accounting 2 (1 credit)

This is a comprehensive course designed to bring the real world of accounting into the classroom. Students will have the opportunity to use real-world accounting software, real-world source documents, real-world financial statements, and real-world multimedia. Financial understanding of assets, liabilities, owner's equity, revenues, and expenses are covered for a Merchandising Business. Financial papers (journals, ledgers, balance sheets, income statements, worksheets, and trial balances) are also covered. The prime objective of this course is to introduce students to the double-entry system of accounting for Corporate and Partnership forms of business enterprises by using real-world applications and connections, to help students develop personal and professional skills for school and work. To find success in accounting, students will learn the accounting for a merchandising business, financial statements for a corporation, plant assets depreciations, accounting for inventory control in addition to other accounting topics.
Prerequisites: Preferably the completion of Accounting 1

Design and Technology:
DT Engineering Design (1credit)

This course is technical in nature emphasizing the development of mobile application and programming Electrical Circuits by Python programming. Students will develop, program and publish apps for mobile devices such as smart phones and tablets. In addition, students will learn physical coding using thepi-topplatform (Python Programming) which enable the students to test and design circuits using the breadboard and Raspberry Pi. Students will learn the valuable skills of creativity, collaboration, and communication as they create something incredibly real. Several programing projects will be completed as part of students' final grade. This course is highly recommended for anyone considering majoring in engineering or computer science in college.
Prerequisites: None

Science:
Chemistry 2 (1 credit)

Chemistry is the study of the composition, properties, and reactivity of matter. This course continues the study of the fundamental principles and laws of chemistry. Topics include but are not limited to: -Chemical equilibrium, Redox reactions, Acid Base Titrations and pH, Electrochemistry, Thermodynamics, Introduction to Nuclear Chemistry, and Organic Chemistry. Upon completion, students should be able to demonstrate an understanding of chemical concepts as needed to pursue further study in chemistry and related professional fields. Laboratory experiments reinforce the basic principles discussed in lecture as well as provide practical examples.
Prerequisites: Successful completion of Grade 10 Chemistry