France Eduational Curriculum Alignment

The presentations offered by The Educated Choices Program provide support for teaching and learning of the following standards:

Dance, High School		Environment and Modern Agriculture	Healthful Eating
Program Architecture	Expected by the end of high school: The expectations of the end of high school correspond to solid achievements for the high school student engaged in dance specialty teaching and guarantee favorable conditions for its future training course. They are four in number: ● Engage bodily and publicly by exploring the relationship to oneself, the relationship to the other, the relationship to the environment ● Carry out a singular, personal choreographic work according to research practice ● Carry out an analysis of the movement, the work, the artist, the dance, by situating them in their various contexts ● Account for their achievements and their potential, and be able to value any advantages. Skills: ● To achieve the expectations by the end of high school, the student builds skills through experiences as a dancer, choreographer,		✔

	spectator, critic, researcher.		
	● The situations of learning and/or related evaluation are always contextualized with regard to these different postures of the student.		
	● They require on the student's part, from beginning to end, the mobilization of three registers of resources		
	○ creation		
	○ analysis		
	○ restitution.		
	● They are the result of progressive and distributed learning during the two years of training.		
	● Their degree of acquisition must be revealed in the specific context of the assessments set up during the training course.		
	Create		
	● Mobilize the body in dance according to different expressive or aesthetic registers.		
	● Revisit, in action, the artistic approaches identified in the studied works.		
	● Create a choreographic object by bringing into play one or more composition processes.		
	Analyze		
	● Sensitively receive a choreographic proposal.		
	● Describe and analyze images of the dancing body from observing different media.		
	● Observe a work according to various axes of reading to identify its constituent elements and situate it in context.		
	Return		
	● Present and interpret a choreographic composition.		
	● Report on the student's own dance experience, in writing and orally.		
	● Discuss or debate the art of dance, in writing and orally.		

Economics and Social Sciences, High School		Environment and Modern Agriculture	Healthful Eating

Economic science	The curriculum defines what students should have acquired by the end of the year:
	
	• Students must be able to define and illustrate the concepts the curriculum contains.
	• They must be able to make effective use of quantitative data and graphical representations
	• They must be able to exploit statistical documents to support the
	• They must demonstrate rigor of their reasoning
	
	Students will understand:
	• One of the basic questions of economics is:
	  ○ "What is an efficient allocation of scarce resources?"
	• The basic questions of sociology are:
	  ○ "How do we explain society?"
	  ○ "How do we explain social behavior?"
	• The basic question of political science is:
	  ○ "How is political power conquered and exercised? ".
	• Students will understand that these disciplines carry out surveys and use data and models (representations simplified from reality).
	• Students will use examples, understand the distinction between causality and correlation and know how to highlight a link of causality.
	Students will:
	• Learn how we create and measure wealth.
		✔	✔

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	- Know now how to illustrate the diversity of producers - Companies - Administrations - Social economy - Solidarity economy - Know the distinction between market and non-market production. - Know that production results from the combination of work, capital, technology and natural resources. - Know the main indicators of companies' wealth creation (turnover, added value, profit). - Know that the GDP corresponds to the sum of the values added. - Know that economic growth is the change in GDP - Know the major global trends for several centuries. - Know that the GDP is a global indicator that does not account for income inequality. - Know the main ecological limits of growth. Students will: - Know how market prices are formed - Know how to illustrate the notion of market with examples - Understand that in a simple market model of goods and services, the demand decreases with the price and the supply grows with price - be able to illustrate the above - Understand how the price is set and adjusted in a simple market model - Be able to create a graph with demand and supply curves that identify the equilibrium price and the equilibrium quantity. - Use an example, understand the effects on the balance of the establishment of a tax or subsidy.		

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| Sociology and political science | How do we become social actors?
● Know that socialization is a process
● Be able to illustrate the plurality of instances of socialization and know the specific roles of different groups in the socialization process of children and young people including:
  ○ the family
  ○ the school
  ○ the media
  ○ the peer group
● Know how to illustrate the differentiated nature of the processes of socialization according to social background, gender.
How is political life organized?
● Know the main specificities of political power.
● Know the main political institutions (role and composition) of the Fifth Republic and the principle of separation of powers (executive, legislative, judicial).
● Understand how voting methods (proportional, majority) determine the political representation and political life structure.
● Understand that political life is based on the contribution of different actors (political parties, organized civil society,media).
What are the relationships between diploma, employment and salary?
● Understand that pursuing studies is an investment in human capital and that its profitability can be assessed in terms of expected salary, access to employment and realization of their capabilities.
● Know that the lack of qualification is a cause of unemployment. Understand that the salary is determined by the level of training.
● Know that at the same level of diploma, the salary can vary depending on various factors
  ○ experience acquired
  ○ type of business | ✔ | ✔ |

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	○ gender. ● Understand that the chances of access to training graduates are socially differentiated.	

Economy Program - tech path, specialist courses, High School	Environment and Modern Agriculture	Healthful Eating

Theme 1:
What are the major economic issues and their current issues?
	The student is able to:
	● Identify the economic actors and their functions
	● Distinguish the nature of goods and services
	● Describe economic choices using the fundamental concepts and principles of economic reasoning (opportunity cost, utility, rationality, preferences, maximization)
	● Analyze what is meant by individual rationality
	● Explain the notion of marginal utility
	● Define the different functions of money.
	
	I.1. Economic agents economic and different types of goods and services
	
	Different economic agents and their main functions
	Different types of goods and services.
	● Economic constraints
	  ○ income
	  ○ time
	  ○ space
		✔	✔

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	○ information
	● Arbitration between different activities and economic choices
	
	I.2. The decisions of consumers and producers
	● Preferences and economic choices
	● The costs of opportunity
	● Individual references
	● Rationality and individual utility
	● Maximization and reasoning "to margin "
	  ○ rarity
	  ○ value
	  ○ marginal utility
	● The production, resources and factors of production.
	● Equalization between marginal cost and marginal revenue.
	
	I.3. The economic trades
	● The specialization of producers and country trade
	● The different functions of change
	● Economic elementary circuit		

Theme 2: How is wealth created and distributed?	The student is able to: ● Identify the different factors of production (input) that will generate a output ● Identify the difference between an input (investment in research and development for example), and an output (patent or new innovative product) ● Define the notions of productivity and productivity gain ● Analyze the evolution of productivity gains ● Calculate the added value in simple cases ● Distinguish income according to its origin	✔	✔

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- Understand that an individual or a group of individuals can be remunerated because of the individual's, or group's, work, knowledge, diplomas, qualifications and detention of capital (savings, housing, business) and that, therefore, his income will be mixed
- Analyze the sharing of added value from a graph.

II.1. The combination of production factors
- The factors of primary and secondary production
  - work
  - capital
  - natural resources
  - information
- Human capital
- The substitution or complementarity of production factors relative to others within the production function
- The role of investment in the accumulation of factors
- Overall productivity factors, and gains of productivity.

II.2. The measurement of production and extensions
- The economic aggregates
  - the added value and gross domestic product (GDP)
  - production and merchant
- Indicators complementary to GDP
  - Index of human development (HDI), etc.
  - national statistics and national accounting
  - GDP calculation

II.3. The dynamics of revenue distribution
- Primary revenues
  - income

	○ work ○ income capital ○ mixed income ● The sharing of value added between the different economic officers ● Gross value added by institutional sector ● Tax on the revenue ● Mandatory withdrawals		
Theme 3: How do households decide to allocate their income?	The student must be able to ● Identify the determinants of consumption ● Analyze changes in the structure of household consumption (in value and in volume) ● Identify the determinants of savings ● Show the link between savings, income and wealth ● Calculate and interpret the average and marginal propensities to consume and save ● Interpret a statistical table of income and wealth distributions III.1. Arbitration between consumption and savings ● The determinants of savings and consumption ● The propensity to consume. ● The savings rate. ● The patrimony. III.2. The purchase power of households ● The price index at the consumption ● The basket of goods The long term evolution of purchase power III.3. The structure of household consumption ● Composition of household expenses	✔	✔

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	• Budget coefficients • Relative prices compared to goods and services.		
Theme 4: What methods of financing economic activity?	The student is able to: • Identify the different financing situations of economic agents • Identify and compare the various methods of financing production growth • Characterize the different financing circuits • Characterize and understand the role of banks in the financing of the economic activity • Analyze the different functions of financial markets • Understand the role of central banks (and in particular the Central Bank European Union) in relation to the banking system. IV. 1. The situation of economic officers • Agents with financing needs and agents with capacities of funding IV. 2. The terms of funding economic activity • Self-financing • Loans • Direct funding and the financial market • Financial securities • Indirect funding and banks • Financial assets	✔	✔
Theme 5: Are the markets for goods and services competitive?	The student is able to: • Define a "relevant market" • Identify the participants in a market • Calculate a degree of market concentration and characterize the structure of different forms of concentration	✔	✔

- competition
- oligopoly
- monopoly
- Determine pricing in a competitive market
- Calculate and interpret a price-demand elasticity in simple examples
- Analyze the pricing strategies of companies according to cost structure and market concentration
- Determine whether a change in prices is accompanied by a change in product characteristics
- Calculate an average cost and a marginal cost of production with simple example and interpret the results

V.1. Degree of competition according to markets
- Supply and demand
- Equilibrium price
- Price-demand elasticity
- Cross elasticity
- Marginal cost
- Competition, oligopoly, monopoly, cartel
- Imperfect competition
- Entry barriers
- Substitutable products, complementary products.
- The index of concentration on a market

V.2. The strategies to exceed competitive intensity
- Innovation
- Differentiation of some products
- Monopoly
- Oligopoly.

Engineering, innovation and sustainable development- tech path, specialist courses, High School	Environment and Modern Agriculture	Healthful Eating

O7 – Experiment and make prototypes or models.	CO7.1.
	● Realize and validate a prototype or a model obtained in response to all or part of the initial specifications.
	CO7.2.
	● Implement a validation scenario that must include a protocol for tests, measurements and/or observations on the prototype or the model, interpret the results and qualify the product.
	CO7.3.
	● Experiment on
	  ○ works or simplified and instrumented physical models to study the use or behavior of a real structure or that of constituent elements and validate technical choices.
	  ○ energy storage, production, transformation and recovery processes to help design a power chain.
	  ○ all or part of a power chain associated with its management system in the objective of improving its energy performance and optimizing its operation.
	CO7.4.
	● Realize and validate a prototype or a model obtained in response to all or part of the initial specifications.
	CO7.5.
	● Implement a validation scenario that must include a protocol for tests, measurements and/or observations of the prototype or model,
		✔	

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	interpret the results and qualify the product. CO7.6. - Experiment on - works or simplified and instrumented physical models to study the use or behavior of a real structure or that of constituent elements and validate technical choices - energy storage, production, transformation and recovery processes to help design a power chain - all or part of a power chain associated with its management system with the objective of improving its energy performance and optimizing its operation - production methods for characterizing the transformation parameters of the material and consequences of the definition and obtaining of parts - measure the performance of a component or a subset of a product - material means of acquisition, processing, storage and restitution of information to help design an information channel - hardware and software architectures in response to a problem posed		
O1 - Characterize products or constituents favoring use of a rational point of sustainable development view.	CO1.1. - Justify the choices of hardware and/or software structures of a product, identify the flows implemented in an approach to sustainable development. CO1.2. - Justify the choice of a solution according to ergonomic constraints and design.	✔	

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	CO1.3. ● Justify the constructive solutions of a product with regard to the environmental performance and estimate their impact on overall efficiency.		
O2 - Identify the influential development of product elements.	CO2.1. ● Decode the specifications of a product and participate, if necessary, in its modification. CO2.2. ● Evaluate the competitiveness of a product from a technical and an economic point of view	✔	
O3 - Analyze the functional organization and structure of a product.	CO3.1. ● Identify and characterize the functions and constituents of a product as well as its inputs/outputs CO3.2. ● Identify and characterize the hardware and/or software layout of a product. CO3.3. ● Identify and characterize the temporal functioning of a product or a process. CO3.4. ● Identify and characterize technical solutions.	✔	
O4 - Communicate an idea, a principle or a technical solution, a project, including in a foreign language.	CO4.1. ● Describe an idea, a principle, a solution, a project using suitable representation tools. CO4.2. ● Describe the operation of a product in using the most relevant description tool.	✔	

	CO4.3. ● Present, in a well-argued manner, the approaches, results and understanding in a foreign language.		

O5 –
Imagine a solution, respond to a need.
	CO5.1.
	● Get involved in a group project process.
	CO5.2.
	● Identify and justify a technical problem based on the global analysis of a product (matter – energy – information approach).
	CO5.3.
	● Highlight the constituents of a product from relevant diagrams.
	CO5.4.
	● Plan a project (Gantt chart, critical path) using the appropriate tools and taking into account technical and economic data.
	CO5.5.
	● Propose solutions to a technical problem
	   ○ identified by participating creative approaches
	   ○ choose and justify the chosen solution.
	CO5.6.
	● Participate in a design study of a product in a sustainable development process.
	CO5.7.
	● Define the material structure and the constitution of a product according to the expected technical, economic and environmental characteristics.
	CO5.8. Design
	● Propose and choose constructive solutions that meet the constraints and expectations of a construction.
	● Propose and choose implementation procedures for a construction project and organize the terms of its implementation.
		✔	

	- Define (or modify) the structure, choice of constituents and operating parameters of an energy chain in order to meet specifications or its development. - Define (or modify), configure and program the management system of an energy chain in order to meet specifications and improve energy performance. - Using a digital modeler, define the shapes and dimensions of a part of a product based on functional constraints, its manufacturing process and its material. - Using a digital modeler, define the modifications of a mechanical sub-assembly based on functional constraints. - Propose/choose the architecture of a software and hardware solution with regard to the definition of a product. - Research and write the operating algorithm to program the software response relating to the treatment of a problem.		
O6 – Prepare a simulation and exploit the results for predicting a functioning, valid performance or a solution	CO6.1. - Explain elements of a proposed multiphysics modeling relating to the behavior of all or part of a product. CO6.2. - Identify and set internal and external variables and parameters useful for a simulation involving multiphysics modeling. CO6.3. - Evaluate a gap between the behavior of reality and the results provided by the model according to the proposed parameters - conclude on the validity of the model. CO6.4. - For a given function, choose a behavior model from observations or measurements made on the product.	✔	

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	CO6.5. ● Interpret the results of a simulation and draw conclusions on the solution's performance. ● Simulate the use or structural, thermal, acoustic behavior, etc. of all or part of a building. ● Simulate processes to validate a means of production. ● Simulate the energy (electrical, mechanical, thermal, light, etc.) of all or part of a product knowing the useful characteristics and the external and internal parameters. ● Simulate the power chain management. ● Simulate mechanical subassembly to obtain the characteristics of an input/output law of a mechanical subassembly or to observe the behavior under loads of an assembly. ● Simulate processes to validate the shapes and dimensions of a part. ● Simulate informational behavior involving one or more constituents hardware and/or simple software processing of an information chain.		

Engineering Sciences, High School		Environment and Modern Agriculture	Healthful Eating
1.Create innovative products 2.Innovate	-Skills developed -Associated knowledge -Class Students will be able to: ● Break with the existing ● Improve what already exists Elements of the history of innovations and products ● Develop a comprehensive approach of innovation; Agile methods ● Design approach, contributions and limits;Technology watch ● Imagine an original solution, appropriate and aesthetic mind maps ● Use methods of brainstorming, analogies, diversion of use ● Use scenarios and user experiences; Interface and interaction design Ergonomic elements Students will be able to: ● Represent a solution original ● Use graphic digital tools Volume modeler Students will be able to: ● Materialize a solution ● Virtually implement rapid prototyping tools;T-command prototyping ● Evaluate a solution	✔	

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	● Perform, measure and test of all or part of the innovative solution ● Prove continuous improvement		
Analyze existing products to understand their complexity	-Skills developed -Associated knowledge -Class Students will be able to: ● Analyze the need ● Organize material organization and function of a product by an engineering approach Structural Systems-engineering tools: diagrams functions, definition of requirements and associated criteria, use cases, analysis Students will be able to: ● Characterize the power and the energy needed to operate a product or of a system ● Identify exchanges of energy on a diagram Physical quantities (mechanical, electrical, thermal, etc.) mobilized by the operation of a product; Effort and flow quantities related to the nature of the processes Returns and losses Students will be able to: ● Analyze the reversibility of a chain element	✔	✔

| | Direction of power transmissions; Energy storage; Reversibility/irreversibility of the constituents of a power chain

Students will be able to:
• Analyze the processing of information; Algorithm, program; Computer language; Notions of artificial intelligence
• Analyze the behavior of a object from description with discrete events State diagram
• Analyze and characterize the exchange of information from system with a network of communication

Client/Server architecture, cloud; Architecture of communication networks baud rate/speed

Students will be able to:
• Analyze the principles of modulation and demodulation; digital internet of things; Notions of modulation-demodulation of signals numerical in amplitude, in frequency
• Analyze the main protocols for a network of communications and media materials

Protocols, frames, encapsulation; Wired and wireless support 1

Students will be able to:
• Analyze the behavior of a servo system; Regulated linear servo systems permanent: structures by direct chain or looped, disturbance, comparator, corrector proportional, precision (static error)
• Analyze loads applied to a work or a structure; Dead load, working load
• Analyze results of experimentation and simulation | | |

	Physical laws associated with operation of a product; Qualitative and quantitative description of physical quantities characteristic of the operation of a product		
	Performance criteria		
	Students will be able to:		
	• Quantify gaps in performance between values; expected values measured and the values obtained by simulation		
	• Compare absolute or relative performance differences, and possible interpretations		
	• Explain errors and precision of experimental measurements or simulated		
	Data processing: tables, graphs, mean values, standard deviations, uncertainty of measure; Relevant choice of one or more criteria for comparison		
	Students will be able to:		
	• Research and suggest causes of deviations from performance observed		
	• Analyze performance gaps		
	• Validate established models to describe the behavior of an object		
Model products to predict their performance Model and Solve	-Skills developed -Associated knowledge -Class Propose and justify assumptions or simplification in view of a modeling; Simplifying assumptions	✔	

	Plane modeling 1 Students will be able to: ● Characterize the quantities, physical inputs/outputs of a multi-physics model reflecting the transmission of powerful force magnitude, flow magnitude Energy; Instantaneous power, average reversibility of the power chain Students will be able to: ● Associate a model with components of a powerful chain ● Perfect sources of flow and effort ● Perfect switch ● Model associated with elementary components transformation, modulation, conversion or energy storage ● Translate behavior expected or observed from an object Sequential behavior; Algorithmic structures (variables, functions, sequential, iterative, repetitive structures, conditional) State diagram Students will be able to: ● Translate an algorithm into a executable program; T programming language ● Model in a shape, graph a structure, a mechanism or circuit, electrical circuit, kinematic diagram ● Graph links and mechanical actions ● Model the movements ● Model actions mechanical, trajectories and movement, bindings		

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| | Kinematic and mechanical action torsors transmitted, by contact or remotely, relative movement/actions reciprocity associated mechanics

Students will be able to:
• Characterize the exchanges of information
• Compare natures and characteristics of signals, data, communication media
• Analyze protocol, frame, maximum flow, useful flow
• Associate a model with a servo system, concept of servo system: input setpoint, output quantity, disturbance, error, proportional corrector
• Use the laws and relationships between the force and flux magnitudes for developing a model of knowledge; Systems knowledge model
• Determine the flow quantities (current) and effort (voltage) in an electrical circuit

Kirchhoff's Laws; Laws of behavior 1

Students will be able to:
• Determine actions mechanical (unknown statics of links or action external mechanical) leading to the static equilibrium of a mechanism, structure or of a structure
Analyze fundamental principle of statics

Friction model – Coulomb's law Tale

Students will be able to:
• Determine the sizes geometric and kinematic of a mechanism
• Process linear positions, velocities and accelerations and angular in vector form | | |

	Velocity field; Composition of the speeds in the case of an open chain Input/output law of a mechanism in the case of a closed chain (geometric closure) Students will be able to: ● Determine the flux quantity (linear or angular velocity) when the mechanical actions are imposed ● Explain fundamental principle of dynamics; Solid in rotation around a fixed axis whose center of gravity is on the axis of rotation; Notion of inertia and equivalent inertia; Solid in rectilinear translation ● Determine the magnitude effort (force or torque) when the desired movement is imposed ● Quantify the performance of a real or imagined object solving the equations that describe how it works theoretical; Analytical and numerical resolution methods Tale		
Validate the performance of a product through experimentation and numerical simulations Experiment and Simulate	-Skills developed -Associated knowledge -Class Students will be able to: ● Predict the order of magnitude of the measurement Range of measuring devices and sensors 1 ● Identify measurement errors ● Conduct tests safely protocol-based security provided Experimental device connection rule measurement and sensors ● Propose and justify a protocol experimental	✔	

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	Instrument all or part of a product to measure the performance Sensors, components of a chain acquisition; Configuration of an acquisition chain microcontroller board Students will be able to: ● Implement a communication between so-called objects smart; Configuration parameters of a T network ● Note the sizes of characteristics of a protocol communication ● Signal characteristics ● Communicate protocol, frame, maximum flow, useful flow ● Modify influential parameters and the control program in to optimize performance of the product ● Iterative process of improving T-performance ● Implement a simulation digital from a model multi-physics to qualify and quantify the performance of a real or imagined object Simulation parameters: duration, increment temporal, choice of quantities displayed, scales adapted to the amplitude and dynamics of simulated quantities ● Validate a numerical model of the simulated object; differences between simulated performance and measured ● Validate limits of a Tale model		
Getting informed, choosing, producing information to communicate within a team or with external contributors COMMUNICATE	-Skills developed -Associated knowledge -Class Students will be able to: ● Present a protocol, a approach, a solution in response to a need ● Present and formalize an idea; functional diagrams, schematics, T-sketches	✔	✔

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	- Report results; Table, graph, slideshow, map - Collect and extract data - Compare, process, organize and synthesize information relevant ENT, search engines, internet, blog, database, technical files 1 - Document a program in computer science - Develop tutorials, establish remote communication Audio / Video Editing 1 Students will be able to: - Work collaboratively - Find an expert third party - Collaborate live or on a platform, via a space of shared files; Shared and storage spaces, ENT 1 - Adapt your communication to target audience and select the information to transmit - Script a document according to the targeted audience; Media, multimedia tools, office tools, mind map, system engineering diagram, schematic, sketch, prototype - Communicate in a convincing way; Placement of the voice, quality of expression, Tale time management	

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