

(This content is the outline, they may have some change.)

## Learning Content

### EP-M.2

#### EN22101 Foundation English 3

Study foundation English about different types of media, directions, requests, advices, explanations, fables, poems, sentences, statements, non-text information, news and information, activity scenarios, needs, help, opinions, routines, experiences, surrounding environment, language and culture, social manners, festivals, special days, traditions, cultures, similarities and differences of sentences, punctuations, word order, sentence structures, knowledge connection, information, facts, role-play situations, basic tools, various knowledge and information from media and learning resources. Use skills and process for establishing conceptualization, thoughtfulness and discretion, awareness, learning and understanding process, analytical process, reading process, work process, language process, process for creating practicability and attitude to create knowledge and understanding, communicative ability, thinking ability, problem-solving ability, life-skill ability, and ability to use technology with morality, ethics, disciplines, responsibility, economy, generosity, honesty, and positive attitude towards language learning

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## Learning Content

### EP-M.2

#### EN20215 Supplemental English 15

Study foundation English about different types of media, directions, requests, advices, explanations, fables, poems, sentences, statements, non-text information, news and information, activity scenarios, needs, help, opinions, routines, experiences, surrounding environment, language and culture, social manners, festivals, special days, traditions, cultures, similarities and differences of sentences, punctuations, word order, sentence structures, knowledge connection, information, facts, role play situations, basic tools, various knowledge and information from media and learning resources. Use language process, process for establishing knowledge and understanding, and attitudes, analytical process, practical process, work process, and process for establishing conceptualization to create communicative ability, thinking ability, problem-solving ability, life-skill ability, and ability to use technology with disciplines, diligence, efforts, love of being Thai, self-sufficiency, love of reading, and positive attitude toward language learning.

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## Learning Content

### EP-M.2

#### EN22102 Foundation English 4

Study foundation English about different types of media, directions, requests, advices, explanations, fables, poems, sentences, statements, non-text information, news and information, activity scenarios, needs, help, opinions, routines, experiences, surrounding environment, language and culture, social manners, festivals, special days, traditions, cultures, similarities and differences of sentences, punctuations, word order, sentence structures, knowledge connection, information, facts, role-play situations, basic tools, various knowledge and information from media and learning resources. Use skills and process for establishing conceptualization, thoughtfulness and discretion, awareness, learning and understanding process, analytical process, reading process, work process, language process, process for creating practicability and attitude to create knowledge and understanding, communicative ability, thinking ability, problem-solving ability, life-skill ability, and ability to use technology with morality, ethics, disciplines, responsibility, economy, generosity, honesty, and positive attitude towards language learning.

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## Learning Content

### EP-M.2

#### EN20216 Supplemental English 16

Study foundation English about different types of media, directions, requests, advices, explanations, fables, poems, sentences, statements, non-text information, news and information, activity scenarios, needs, help, opinions, routines, experiences, surrounding environment, language and culture, social manners, festivals, special days, traditions, cultures, similarities and differences of sentences, punctuations, word order, sentence structures, knowledge connection, information, facts, role play situations, basic tools, various knowledge and information from media and learning resources. Use language processing, process of establishing knowledge and understanding, process analysis, process skills practice, work process, process of establishing attitudes and conceptualization process to create communicative ability, living skills ability, thinking ability, and problem-solving ability along with creating disciplines, diligence, endeavor, love of being Thai, self-sufficiency, honesty, public mind, nationality, religiosity, loyalty, and positive attitude toward language learning.

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## Learning Content

### EP-M.2

#### HP22101 Foundation Health Studies 3

Study physical, mental, emotional, social, and intellectual changes in adolescents, factors affecting physical, mental, emotional, social, and intellectual growth and development, genetics, environment, nurture, factors affecting sexual attitudes, family, culture, friends, media, problems and effects from having sex in school age, sexual transmitted diseases, AIDS, and unwanted pregnancy, importance of gender equality and proper demeanor, sexual problems, guidelines for solving sexual problems. Use process of establishing knowledge and understanding, practical skills, problem-solving skills, decision making skills, and value to create knowledge, understanding, and apply the knowledge to real-life situations with honesty and studiousness.

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## **Learning Content**

### **EP-M.2**

#### **HP22102 Foundation Physical Education 3**

Study about mechanical and kinesthetic skills in playing sports, changes in physical, mental, emotional, social and intellectual respects resulting from regularly doing physical exercise, comparison of aptitudes and individual differences to create guidelines for self-development. Discipline, observation of rules, application of movement patterns in sports in daily life. Use various methods to establish knowledge and understanding, analytical skills, and skill mastering.

## **Learning Content**

### **EP-M.2**

#### **HP22103 Foundation Health Studies 4**

Study about choosing health care service, effects of technology on health, medical advancements affecting health, balance between physical and mental health, self-practiced methods for emotional and stress management, criteria for physical fitness, physical fitness development, methods, factors, sources for helping and rehabilitating drug-addicted persons, avoidance for risky behaviors and situations, conspiring, quarreling, getting into sin places, motor racing on the street, and etc., life skills for protecting oneself (denial skills, negotiation skills, and etc.) and avoiding critical situations leading to dangers. Use process of establishing knowledge and understanding, practical skills, awareness, and problem-solving skills create knowledge, understanding, and apply the knowledge to real-life situations with honesty and studiousness.

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## Learning Content

### EP-M.2

#### **HP22104 Foundation Physical Education 4**

Study about changes in physical, mental, emotional, social and intellectual respects resulting from regularly doing physical exercise, comparison of aptitudes and individual differences to create guidelines for self-development. Integrate in lesson value of honesty and eagerness to learn. Properly plan to play sports, possess discipline, observe rules, apply sports skill in daily life. Use various methods to establish knowledge and understanding, analytical skills, and skill mastering

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## Learning Content

### EP-M.2

#### **MA22101 Foundation Mathematics 3**

Study foundation mathematics on the topics of ratio and percentage (percent), measurement, pie graphs, geometric transformations, and congruence. Use mathematical skills, problem-solving, reasoning, mathematical communication and implication, presentation, mathematical knowledge linking, and linking mathematical knowledge to other fields of knowledge. Possess the desired characteristics including 1) Love for their country, their King, and faith in their religion, 2) Be honest and upright 3) Possess discipline 4) Eager to learn 5) Be self-sufficient 6) Dedicated to work 7) Proud to be Thai 8) Have a sense of public consciousness.

## Learning Content

### EP-M.2

#### **MA20203 Universal Mathematics 3**

Study foundation mathematics on the topics of Fractions, Rational Numbers, Algebraic Expressions, Linear and Quadratic Equations, Algebraic Fractions. Use mathematical skills and processes which are problem-solving, reasoning, mathematical communication and implication, presentation, mathematical knowledge linking, and creativity with responsibility, disciplines, systematic and accurate working, self-confidence, positive attitude towards mathematics, honesty, and effort.



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## Learning Content

### EP-M.2

#### MA22102 Foundation Mathematics 4

Study fundamental knowledge of mathematics about **Pythagorean theorem; statistics; surface area and volumes; development on the basics of geometry, and geometric transformations by using** mathematical process skills. The course is **aimed for** students to have the abilities in problem solving, reasoning, communication, mathematical representations and presentation, connection of various mathematical concepts, connection of mathematical knowledge with other fields of study and creating initiatives. The students will **also** be equipped with the following desired characteristics: having love for the nation, religion and the king, having honesty and integrity, having avidity for learning, having value for self-sufficiency, demonstrating dedication to work, being proud to be Thai, and having public-mindedness. The course will, in addition, increase **the 21st century learning skill** in arithmetic.

## Learning Content

### EP-M.2

#### MA20204 Universal Mathematics 4

Study foundation mathematics on the topics of **Ratio Proportion and Variations, Exponents, Real Numbers, Angle Properties of Polygons, Congruence of Triangles**. Use mathematical skills and processes which are problem-solving, reasoning, mathematical communication and implication, presentation, mathematical knowledge linking, and creativity with responsibility, disciplines, systematic and accurate working, and self-confidence, positive attitude towards mathematics, honesty, and effort.

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## Learning Content

### EP-M.2

#### **OT22101 Foundation Occupational Works 3**

Study about meaning, benefits and importance of living and family. Learn the working process for housework, beverage and service, agricultural work, tray garden, handmade work from leftover material, and business. Discuss and analyze about career path, career choices that suit students' knowledge, aptitude and interest.

Use the learning process to create knowledge and understanding, managerial skills, and team working skill that is significant for success in work. Use technology properly to support work.

Integrated in learning the desired characteristics 1) Love for their country, their King, and faith in their religion, 2) Be honest and upright 3) Possess discipline 4) Eager to learn 5) Be self-sufficient 6) Dedicated to work 7) Proud to be Thai, and 8) Have a sense of public consciousness.

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## Learning Content

### EP-M.2

#### OT22103 Foundation Occupational Works 4

Students will study the following topics: stages of work, meaning, benefits and importance of living and family, housework, agricultural work, maintenance and repair work, craft work, and business. Students will be also able to discuss ways to search for jobs, analyze guidelines for entering employment, and assess alternatives for taking up occupations in keeping with students' knowledge, aptitudes and interests.

Students will practice skills related to living and family: selecting clothes for different occasions, cooking food for set menu, repairing household items, and creating package from natural materials. In the learning process, students will apply knowledge and understanding development process, managerial skill, working system and people skills in order to accomplish work successfully. (Process skills)

The objectives of the course are for students to gain knowledge and understanding about living and family, housework, agricultural work, maintenance and repair work, craft work, and business work and to be able to use technology in work properly. Students will be also able to discuss ways to search for jobs, analyze guidelines for entering employment, and assess alternatives for taking up occupations in keeping with students' knowledge, aptitudes and interests. (Competencies)

The following set of characteristics will be formed in students: love for nation, religion and the king; honesty and integrity; self-discipline; avidity for learning; philosophy for self-sufficiency; commitment to work, pride to be Thai and public-mindedness. (Characteristics)  
Not yet added - 21st Century Learning Skills/Local Wisdoms/Thai Wisdoms, Self-sufficiency Philosophy, School Focus

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## Learning Content

### EP-M.2

#### SC22103 Technology and Computational Science

Students will study the following topics: technology trends in the future, impact of technology, appropriate use of technology, structure of a robot, use of program to control a robot, controlling function of robot parts, problem-solving in simulation, STEM project, designing STEM project, computational thinking, components of computational thinking, drawing a flowchart of components in the computational thinking, solving problem by using computational thinking process, designing an algorithm to solve problem with the use of computational thinking, design and programming, creating piece of work, developing variables, creating functions, design and application by using Scratch, working functions of computer system, components of a computer, use of computer, using technology safely, and responsibility for the use of technology and intellectual property.

Students will practice the process skills to make a decision, assemble a robot and to use technology in programming. They will develop abilities in problem solving and practice solving problem in simulation. Students will learn to select appropriate tools and materials, use computational thinking in solving problem, communicate work, design an algorithm for work, develop their work from the design, summarize the concept and be able to use technology safely.

The course is aimed for students to gain knowledge and understanding in the subject area together with competencies in designing, thinking, problem solving and using technology.

In addition, students are expected to have the following set of characteristics: honesty and integrity, discipline, avidity for learning and dedication to work.

The course will also enhance the 21st century learning skills including the following: critical thinking; problem solving; acceptance and understanding in change; computer, information technology and communication; collaboration, teamwork, and leadership; creativity and innovation; data and information communication, and media literacy.

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## Learning Content

### EP-M.2

#### SC20253 Computer for Education 3

Students will study about the following: meaning, formats, and components of multimedia; methods and steps to design multimedia, selecting the right program for creating work, basic knowledge and understanding about types of audio file, image file, and video file; production plan; using program to record, edit and present work; using appropriate sound effects or techniques to create work.

Students will use the learning process to develop their knowledge, understanding, and practicing skills by searching for information from internet, explaining and solving problems found by using technological process or other methods and summarizing the contents learned.

The objective is for students to develop their knowledge, understanding, and practicing skills as well as to enhance thinking process skill, problem-solving process skill and technological skill.

The following set of characteristics will also be formed: honesty and integrity, avidity for learning, and dedication to work.

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## Learning Content

### EP-M.2

#### SC20254 Computer for Education 4

Students will study about meaning, formats and components of movie; method and steps to design the multimedia work in the movie format; selecting the right program to creating work; basic knowledge about video editing program; inserting pictures, sound and words; exporting file, designing and printing cover for CD or DVD box; saving file on CD or DVD.

Students will use the learning process to develop their knowledge, understanding, and practicing skills by searching for information from internet, explaining and solving problems found by using technological process or other methods and summarizing the contents learned.

The objective is for students to develop their knowledge, understanding, and practicing skills as well as to enhance thinking process skill, problem-solving process skill and technological skill.

The following set of characteristics will also be formed: honesty and integrity, avidity for learning, and dedication to work.

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## Learning Content

### EP-M.2

#### SC22101 Foundation Science 3

Students will study the fundamental science in the following topics: structure and functions of the respiratory system, the excretory system, the circulatory system, the nervous system and the reproduction system; the mixture separation methods – crystallization, simple distillation, paper chromatography, dry evaporation, and solvent extraction, application of substance separation methods in everyday life, effects of solute and solvent, effects of temperature on solubility of a substance, the amount of solute in a solution in concentration units expressed in percentage; finding the resultant force of several forces acting on an object together in the same direction, the resultant force acting on stationary object or an object moving with constant velocity, motion of an object compared with a reference point, amounts relative with motion of object, force acting on liquid from all directions, pressure of liquid, frictional force, the principle of moments and application, a force acting on an object in the magnetic field, electric field and gravitational field, formation process, properties and the application.

Students will use the scientific process and scientific mind to explore knowledge. They will solve problems by posing specific questions or setting important variables for investigation and study investigation techniques. Students will select a reliable and safe method to test both qualitatively and quantitatively with the use of appropriate materials and tools to collect data. In the process, students will organize qualitative and quantitative data, analyze and assess the relevance of evidences against the conclusion which either supports or disagrees with the hypothesis and identify errors of data collection. Then, students will construct the model or pattern to explain or present the results. They will also learn to set the questions which can lead to further related investigation or learn to use the knowledge gained in new situation. The explanation about concepts, process or outcome of the project should be presented in the way that is understandable to others.

In the investigation process, students will record and explain the observation and learn to search for additional knowledge from a variety of reliable sources. They will also learn to accept changes of the knowledge they have discovered when new information and evidences

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are introduced or disagree with present knowledge. Students will exhibit work, write report, and/or explain to make others understand about concepts, process and outcome of the project or work.

Overall, students will use skills to explain, make an informed judgement, classify data, convey the meaning of data, set hypothesis, identify and control variables, set the operational definition of a variable, experiment, interpret the data and make a conclusion.

The course is aimed for students to learn science with the correct process, to gain knowledge about scientific process and apply it for self-studying. Accordingly, students will be able to think critically, be decisive, solve problem and communicate effectively. They will develop the scientific mind, gain appropriate morals, ethics and social values and link the knowledge learned for the use in everyday life situation.

The following characteristics will additionally be enhanced: love for nation, the religion and the king, honesty, self-discipline, avidity for learning, self-sufficiency, dedication to work, pride in Thai-ness, public-mindedness and qualifications of an AC gentleman.



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## Learning Content

### EP-M.2

#### SC20203 Universal Science 3

Study foundation science on the topics of the study of structures and operations of various human and animal body systems, change of substance status, atomic particle model, molecule, and ion. Change of substance properties when reacted with chemicals, write chemical equations of different chemical reactions and apply knowledge learned.

Use the process of establishing knowledge and understanding, scientific process, and skills which are observation, data exploration, experiment, making judgments from data, data implication, classification, data interpretation and drawing conclusion, analysis, explanation, and discussion to create knowledge, and understanding and apply the knowledge to real-life situations with honesty, efforts, and proper principles.

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## Learning Content

### EP-M.2

#### SC22102 Foundation Science 4

Study the following topics: work and power caused from a force done on an object; factors affecting kinetic energy and gravitational potential energy; energy transformation; energy transformation and transfer based on the Law of Conservation of Energy; working principles and uses of simple machines; impact from the use of fossil fuels; results of using fossil fuels; presenting ways for using fossil fuels; advantages and limitations of different types of alternative energy; guidelines for using appropriate alternative energy in the local area; the internal structure of the Earth based on its chemical components; the weathering process, erosion, and deposition; examples of the effects from such processes that contribute to changes of the Earth's crust; soil horizon and soil formation process; factors causing soil to have different characteristics and properties; some properties of soil; ideas to make use of the soil from its properties; factors and formation process of sources of surface water and groundwater; use of water and ideas on how to use water sustainably in the student's local area; formation process and impact of flood; coastal erosion landslide, sinkhole, and subsidence.

Students will use the scientific process and scientific mind to search for knowledge and to solve problems by posing specific questions or setting key variables to investigate problems by using different methods. Students will select techniques that are safe and reliable to test both qualitatively and quantitatively by using proper material and equipment. They will also learn to organize qualitative and quantitative data, analyze and assess relevance of evidence against conclusions that either support or disagree with hypothesis, identify anomalies of data collected, and develop the model or pattern to explain or demonstrate the outcome of the investigation. Students will pose questions that can lead to the investigation of other related topics and apply knowledge gained in new situation or to explain ideas, process and results of projects or pieces of work in a comprehensible way. The contents of this course also include the activities for students to record and explain their observation and investigation, to search for knowledge from various sources of information to support the reliability of information. By this means, the students will learn to accept changes in knowledge explored when there is new

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additional data or evidence either backing up or disagreeing with former information. To show the project, students will write the report and/or explain about concepts, process, and results of their projects or pieces of work in a comprehensible way. Overall, students will use skills to explain, make an informed judgement, classify types of data, present the meaning of data, set hypothesis, specify and control variables, articulate operational definition of the variables, interpret the data and make a conclusion.

The course is aimed for students to gain accurate scientific knowledge, and learn the scientific process from self-regulated and inquiry-based method. Students will be able to think critically, and learn to be decisive. They will learn to think, solve problems and communicate their ideas effectively. The scientific mind, morality, ethics, and values will be formed. Students will eventually be able to relate and apply knowledge learned in their everyday situations. In addition, students will be equipped with the following characteristics: love for the nation, religion and the king, honesty and integrity, self-discipline, avidity for learning, self-sufficiency, dedication and commitment to work, pride of Thai-ness, public-mindedness, and the qualities of an AC gentleman.

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## Learning Content

### EP-M.2

#### SC20204 Universal Science 4

Study foundation science on the topics of motion of light, light reflection and refraction, force and resultant force acting on objects, resultant force, equilibrium of force, Newton's first law of motion, friction, particle model of matter, formation of sound, motion of sound, human's hearing, its use and noise pollution.

Use the process of establishing knowledge and understanding, scientific process, and skills which are observation, data exploration, experiment, making judgments from data, data implication, classification, data interpretation and drawing conclusion, analysis, explanation, and discussion to create knowledge, and understanding and apply the knowledge to real-life situations with honesty, efforts, and proper principles.