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ABSTRACT

This guide furnishes a detailed account of the basic characteristics of the Vietnamese "regular" high school curriculum and system. The regular high school is one of the three main kinds of high schools in Vietnam. Knowing the exact content of the subjects that students took in Viet-Nam will help teachers and administrators in placing Vietnamese high school students and in formulating the new concepts and skills that these students will need to acquire. The regular high school has a seven-year program which is divided into two cycles; the first cycle includes grades 6-9 and the second, grades 10-12. The subjects studied in the first cycle are Vietnamese, history, geography, civic education, foreign languages, physics, chemistry, mathematics, natural sciences, physical education, drawing, handicraft, home economics (for girls), and music. In the second cycle students must choose one of the following sections for specialization: (A) experimental sciences, (B) mathematics, (C) modern literature, and (D) classical literature. The curriculum for the second cycle consists of Vietnamese, history, geography, civic education, philosophy, first foreign languages, second foreign languages, classical languages, physics, chemistry, mathematics, natural sciences and physical education. Only Section D takes classical languages and does not take second foreign languages. No section studies Vietnamese in grade 12. (CFM)

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Indochinese Refugee Education Guides

#2

INTERMEDIATE/SECONDARY EDUCATION SERIES: Detailed Content of the Vietnamese Secondary Curriculum

In a former Bulletin, we tried to give some general information on Curricula in Việt-Nam (see Indochinese Refugee Education Guides, General Information Series #3: Education in Việt-Nam: Fundamental Principles and Curricular). The purpose of this material was to give school administrators a quick guide for early student placement in September 1975. We have now developed a new detailed guide focusing on secondary curriculum, which includes all concepts and experiences with which the Ministry of Education of the Republic of Việt-Nam would like to have equipped high school graduates.

Before studying the content of the curriculum, one should be aware of the nature of the Vietnamese high school. There were three main kinds of high schools in Việt-Nam: vocational, comprehensive, and regular. This guide is only concerned with regular high schools.

The aim of the regular high school was to provide students with experiences wide enough so that they could attend universities in many fields. Students went to high school for seven years, starting with grade 6. The seven-year period was divided into 2 cycles: the first cycle includes four years (grades 6, 7, 8, 9); the second cycle included three years (grades 10, 11, 12). In the second cycle, students could choose one of four sections: Section A: experimental sciences; Section B: mathematics; Section C: modern literature; and Section D: classical literature. Students graduating from Sections A and B could attend teachers' training colleges (Đai Học Sư Phạm), medical schools, dental schools, pharmacy schools, nursing schools, science universities (Đại Học Khoa Học), and technical-vocational universities. Those who majored in modern literature (Section C) preferred to attend teachers' training colleges, liberal arts colleges (Đai Học Văn Khoa), law schools, business schools, etc. The classical literature graduates (Section D) attended liberal arts colleges.

Students of the same section and grade studied in the same classroom throughout the year. Teachers moved from one classroom to another, carrying with them whatever teaching aids they needed. Each week, students took from

25 to 28 hours of classwork. Teaching methods centered mainly around lectures and memorization, question-answer sessions, and homework. Some lab work, panel discussions, and field trips were conducted in the larger city schools, however most Vietnamese high school students did not have the opportunity to do "experimental learning" such as lab work.

The impact of war was tremendous on the whole educational system, especially on the high school level. Good teachers were drafted into the armed forces. After military training, some were allowed to return to teach in their former schools, but remained as armed forces reserves. Many families moved to big cities to avoid war consequences, so there was a shortage of classrooms. Some elementary schools ran three shifts for sometime (7:30-11:00 a.m., 11:00 a.m.-2:00 p.m., 2:00 p.m.-6:00 p.m.), but most high schools had only two shifts--7:30 a.m.-12:30 p.m. and 1:00 p.m.-6:00 p.m. There were five sessions a day, six days a week; one textbook for each subject was used in each grade. Textbooks were published by the Ministry of Education and by private publishing companies. Libraries were not available in most schools.

Private schools had the same curricula. The students of both systems had to pass the Second Baccalaureat test given by the Ministry of Education at the end of the 12th year before they could go on to universities.

Most of the tests were subjective. Students had to write an essay-type answer on all subjects being asked or tested. In 1974, the first objective Second Baccalaureat Exam was given, and it met with much criticism from both parents and press because there was doubt about its objective validity.

Moral and civic education was emphasized. A good student--beside having good grades in all subjects or most of the major ones, was also morally good. He knew his duties toward his family, his friends, his teachers, and his country. This meant that he respected and took his parents' advice, was loving and helpful to his brothers and sisters, was considerate of his friends, respected his teachers, and practiced his citizen duties.

These are the basic characteristics of the Vietnamese regular high school curriculum and system. Bearing these characteristics in mind, teachers and administrators can use this guide in placing Vietnamese high school students. Knowing the exact content of the subjects that students took in Viet-Nam will help in formulating the new concepts and skills that the refugee students will need to acquire.

First Cycle

6th Grade

Subjects	Number of Hours Per Week
Vietnamese	6
History	1-½
Geography	1-½
Civic Education	1
Foreign Languages	6
Physics	1
Chemistry	1
Mathematics	3
Natural Sciences	1
Physical Education	3
Drawing, Handicraft, Home Economics, Music	3
Total	28 hours

VIETNAMESE (6 hrs a wk)

A. LITERATURE. 1. Prose (2 hrs a wk): Texts to be selected from works of contemporary writers to match the essay program (see below). 2. Poetry: Excerpts from proverbs, folk songs--Nhị Thập Tứ Hiếu; Folk Tales: Excerpts from Truyện Cổ Tích by Nguyễn Văn Ngọc and Nam Hải Dị Nhân, Hưng Đạo Vương by Phan Kế Bính (1 hr a wk). B. DICTATION AND GRAMMAR (1 hr a wk). 1. Dictation: Select descriptive excerpts. 2. Grammar: Sound, tone, syllable; noun, article, demonstrative article, pronoun, verb, adjective; analysis of word classification; punctuation. C. ASSIGNMENTS. 1. Oral Presentation: Ask students to read a book, write a summary, and present it orally to the class (time can be taken from literature lesson--½ hr each wk--for oral presentation). 2. Essay Writing (1 hr a wk): Description (concrete topics); narration (common events); letter writing (concerning visits, common relationships). [All topics should be practical and emphasize description.]

D. SINO-VIETNAMESE. 1. Demotic Script: Strokes, letter forms, factors influencing the letter forms, length of letters, number and relative place of strokes. [Being with letters having a few strokes then move to the ones with many.] 2. Use: Expressions, idioms, historical references having known words. 3. Short, Essay Sentences and Texts: Excerpts from Tân Quốc Văn Giáo Khoa Thư; Âu Học Hán Tự Tân Thư; Minh Tâm Bửu Giám; Âu Học Quỳnh Lâm; Cổ Kim Cách Ngôn Đại Toàn; Thành Ngữ Cổ Sự; Việt Sử Tổng Vịnh; Âu Học Ngũ Ngôn Thi; Minh Đạo Gia Huấn; Nhi Đồng Tác Văn Sơ Bộ; Mông Học Tạo Cử Thật Tại Dị; Quốc Văn Tinh Hoa; Luận Thuyết Khải Ngộ Tập Sơ Biên; Sơ Học Luận Thuyết Khải Mông; Sơ Học Tân Vản Phạm; Sơ Học Tác Văn Tiệp Quyết; Sơ Học Tác Văn Tân Pháp; Sơ Học Văn Pháp Tất Độc. [Tell stories related to the texts.] 4. Handwriting: Students should count the strokes and write them properly.

HISTORY (1-½ hrs a wk)

A. ELEMENTARY NOTIONS OF HISTORY. 1. Definition: Historical documents, historical time (landmark of time, units, historical eras). 2. Historical Periods: Premedieval and prehistoric. 3. Main Civilizations: Mankind during antiquity, etc. B. VIETNAMESE HISTORY (from the beginning to Ngô Quyền). 1. Origins of the Vietnamese People and Civilization: Old theories, Hồng Bàng family, King Hùng Vương founded the nation [Theories related to Vietnamese activities during this time.]; the archaeologic works, Hòa Bình civilization, Bắc Sơn, Đồng Sơn civilization; hypotheses explaining the Vietnamese origin; Lạc Việt's civilization. 2. Thục Dynasty; Triệu Dynasty. 3. Chinese Domination: Chinese domination policy; wars against Lâm Ấp and Nam Chiếu during the Chinese domination; revolutions for independence. 4. Consequences of the Chinese Domination: Import of Chinese culture into Vietnamese society during the domination; changes in Vietnamese civilization.

GEOGRAPHY (1-½ hrs a wk)

A. PHYSICAL GEOGRAPHY. General Study of the Earth: The Earth in space; shape of the Earth; longitudes, latitudes, the Tropics, North and South Poles; movement of the Earth and its consequences (day, night, time, seasons, directions); maps. B. TERRAIN. 1. Mountains: New mountains--folded

terrain; old mountains--rock foundation. 2. Highlands: Structure; types of highlands. 3. Deltas: Structure; types. C. WEATHER. 1. Factors: Temperature; wind; rain. 2. Types: Equatorial; tropical; temperature; cold. D. HYDROLOGY. Water Bodies: Rivers, ponds, lakes; ocean (sea water, tides). E. VEGETATION AND ANIMALS. Human Geography: Population and distribution; racial groups; forms of dwelling (in the city, in the country).

CIVIC EDUCATION (1 hr a wk)

A. HUMANISM. 1. Economizing money and material things. 2. Kind treatment to animals. 3. Duty toward oneself, one's body, feeling, intellect; develop one's personality and emphasize self-respect. B. FAMILY LIFE. 1. Ancestors, parents, brothers and sisters, relatives, helpers. 2. Gratitude to the ancestors; the family situation; piety, mutual affection among family members. C. TRAFFIC REGULATIONS. 1. Important regulations when using public roads. 2. Common traffic signs.

FOREIGN LANGUAGES (6 hrs a wk)

A. ENGLISH. 1. Vocabulary, Conversation, Reading: Units 1,2,3 of Book I, English for Today. 2. Grammar: Important grammatical rules in all English classes. [Apply inductive method by using examples leading to the rules.] 3. Assignments: Ask students to create short sentences similar to sample sentences being learned. B. FRENCH. 1. Vocabulary, Conversation, Reading: Recitation, grammar, dictation, written assignments from Le Français Élémentaire by Mauger and Gougenleim, Book I, Lessons 1-28; Cours de Langue de Civilisation Française by Mauger, Book I, Lessons 1-14.

PHYSICS (1 hr a wk)

A. WEIGHT. 1. The weight of an object. 2. Vertical line: Application; hanging bob; balancing ruler. 3. Measurement of Weight: Measuring elasticity of a spring; unit--force kilogram; application. 4. Center Weight of a Lamina: Application; equilibrium of an object under gravitational force. (Equilibrium

of an object rotating about a horizontal axis or lying on a horizontal surface.) B. FORCE. 1. Direction and Magnitude: Units: force kilogram and Newton. 2. Addition of two vectors of the same or reverse direction. 3. Bearing of types 1, 2 and 3. 4. Balance: Normal and local; measurement of weights by balance; single balancing. 5. Definitions: Specific weights--solids, and liquids.

CHEMISTRY (1 hr a wk)

A. WATER. 1. Natural and Pure Water: Filtration; distillation and condensation; conclude that natural water is a mixture. 2. Properties of Pure Water: Transition of states of pure water; vaporization, liquefaction, and solidification; conclude that melting and boiling temperatures of pure water are invariable during the transitional period. 3. Water Solubility: Demonstrative example of water as a solvent; demonstrative example of water needed for a chemical reaction. 4. Composition of Water: Electrolysis of water to yield hydrogen and oxygen; synthesis of water from hydrogen and oxygen; conclude that pure water is a compound; hydrogen and oxygen are elements. B. OXYGEN. Main Properties: Oxidization; strong oxidization--combustion; slow oxidization--rusting, respiration; conclude that oxidization produces compounds. C. HYDROGEN. Main Properties: Light; burning. D. AIR. Composition; conclude that air is a mixture. E. CONCLUSION. Based on the above lessons, illustrate simple difference between mixture and purity, element and compound.

MATHEMATICS (3 hrs a wk)

A. ARITHMETIC AND ANALYSIS. 1. Dividing an Integer by 2, 5, 9 or 3: Condition for divisibility; test of divisibility by multiples of 9. 2. Fraction of a Quantity: Basic concepts of a fraction; equality of fractions; demonstrations of operations on fractions by numerical examples; decimal fractions. 3. Decimal Numbers: Operations on decimal numbers; quotients of 2 integers or 2 decimal numbers whose difference is a 10th, a 100th, etc. 4. Representation of Numbers by Letters: Explanation of addition, subtraction and multiplication by concrete examples; factorization. 5. A Simple

Problem: Solve the 1st degree equation with one unknown (all given coefficients are either fractional or decimal); selection of consistent units; use of letters to represent unknowns; formulation of the equation; rearrangement of terms; simplification; solving the equation. B. GEOMETRY. 1. Lines: Half lines, line segments; measurement of line segments. 2. Planes Configuration: Circle; arc; angle; right angle; measurement of angles by degrees; angles formed by 2 lines; perpendicularity of lines. 3. Equality of Triangles (the first two cases): Right triangles; Isoceles triangles; bisector of a segment; reflection in a line. 4. Equality of Triangles (the third case): Equality of right triangles (all cases). C. ENGINEERING DRAWING. Basic techniques using rulers, compass, triangle, and protractor.

NATURAL SCIENCES (1 hr a wk)

A. CONCEPT OF ECOLOGICAL NICHE. Generalities: Plants and animals, brief study of living conditions and influence of media. B. BOTANY (6 hrs). Class Angiospermae Only: a. Subclass Dicotyledoneae--common bean plant; description of the common bean plant--leaf, stem, root, flower, fruit, seed; seeding and germination; summary of characteristics of a bean plant. b. Subclass Monocotyledoneae--rice plant; description of the rice plant--leaf, stem, root, ear of grain, grain; seeding and germination; summary of characteristics of a rice plant; kinds of rice; rice crops. C. ZOOLOGY (17 hrs). Vertebrates Only (General morphology; head, bones, and teeth; living habits; resproduction): Class Osteichthyes--fish; Class Amphibia--a frog or a toad (one of the two); Class Reptilia--a snake; Class Aves--a chicken or a pigeon (one of the two); Class Mammalia--Order Insectivora: a bat, Order Rodendia: a rat, Order Carnivora: a cat or a dog (one of the two), Order Primates: a monkey. A. EXPERIMENTATION. 1. Bean and Rice Plants: Students are divided into groups; they sow the rice and beans every 7 days and 14 days in order to have plants of different sizes; they bring to the classroom beans, rice and bean and rice plants that they grew at home. 2. Animals: The teacher and the students collect pictures of animals being studied. 3. Homework: The students draw plants and animals.

PHYSICAL EDUCATION (3 hrs a wk)

DIRECTED GYMNASTICS. Each session 3 types, each type not more than 2 movements. Exercises requiring perseverance, toughness, and endurance. High jumping, long jumping, discus throwing, 60-m racing. Games involving breathing, jumping, running, throwing. Singing, tying knots, communications (Morse Code), trail markings.

DRAWING

SUMMARY. Drawing geometric figures, real objects at sight; drawing according to a scale. Perspective of cubes. Drawing from memory--animals. Free drawing--objects at sight.

HANDICRAFTS (1 hr a wk)

FOR BOYS. Paper folding. Use bamboo to make lanterns. Paper weaving of birds, animals. Make toys out of cardboard. Bamboo weaving. Book binding.

MUSIC (1 hr a wk) (Summary)

A. VOICE. Breathing; singing by ABCD; music scales. B. MUSIC THEORY. Distinction between a sound and a noise; melody, rhythm, harmony; cnaracteristics of sound; music notes, keys, measure; signs of flats and sharps. C. SINGING. The Vietnamese National anthem; some popular Vietnamese and foreign songs. D. MUSIC HISTORY . History of music; research; musical instruments from China, Greece, India, and Egypt; Chinese and Indian music; Middle Ages. E. LISTENING TO MUSIC. Mythological; Middle Ages; Vietnamese folk songs; descriptive music.

HOME ECONOMICS (1 hr a wk) (For Girls)

A. SEWING. 1. Easy Sewing: Stiches; application. 2. Mending: one, two and four corners. 3. Darning: Long, square, and round edges. 4. Knitting:

Stiches. B. HOME CARE. 1. Purpose of Home Economics. 2. Responsibilities and virtues of women in the family. 3. Eating: Daily eating, daily quantity, menus; ways of cooking--roast, stew, fry, brine; milk--preparation, use, sterilization, conservation; eggs--choice, use, and conservation; fat and oil--property and use; dried and fresh fruits--how to cook and conserve them; Cereals, flour; seafoods (treatment for poisoning); meat--conservation; canned foods; drinks--wine and liquer, fruit juice; diet--diet for people recovering from illness.

First Cycle

7th Grade

Subjects	Number of Hours Per Week
Vietnamese	6
History	1-½
Geography	1-½
Civic Education	1
Foreign Languages	6
Physics	1
Chemistry	1
Mathematics	3
Natural Sciences	1-½
Physical Education	3
Drawing, Handicraft, Home Economics, Music	3
Total	28-½ hours

VIETNAMESE (6 hrs a wk)

A. LITERATURE. 1. Prose (2 hr a wk): Selections of contemporary writers, especially narration; mixed forms (deseription and narration). 2. Poetry: Study excerpts from Bích Câu Kỳ Ngộ; Bà Huyện Thanh Quan, Folk Tales: Writings by Trương Vĩnh Ký; Huỳnh Tịnh Của (1 hr a wk). 3. Poetry Forms: Lục Bát (six and eight words) and its variations. B. DICTATION AND GRAMMAR (1 hr a wk): [Vocabulary is taught in the text study and in the Sino-Vietnamese lessons.] 1. Dictation: Select narrative excerpts. 2. Grammar: Adverb; preposition; conjunction; exclamation. 3. Sentence: Analysing a sent ıce (to help students learn how to build sentences). 4. Phrases. 5. Word Construction and Transformation. C. ASSIGNMENTS. 1. Oral Presentation: Guide students to read books, write summaries and present them orally to the class (time can be taken from literature lesson--½ hr each day--for oral

presentation). 2. Essay Writing (1 hr a wk): Description (total and complicated); narration (topics requiring imagination, memory, organization techniques); letter writing (harder topics than those in 6th grade, emphasize narration). D. SINO-VIETNAMESE: Same as in 6th grade.

HISTORY (1-½ hrs a wk)

VIETNAMESE HISTORY (from Ngô Dynasty to the end of Minh's domination). The Ngô Dynasty; the Đinh Dynasty; the Anterior Lê Dynasty; the Lý Dynasty--brief history of the dynasty, administration, foreign affairs, war against the Tống, the first steps of the advance toward the South, Vietnamese civilization during the Lý Dynasty; the Trần Dynasty--brief history of the dynasty, administration, foreign affairs, war against the Mongolians, advance toward the South, Vietnamese civilization during the Trần Dynasty; the Hồ Dynasty--brief history of the dynasty; administration and reforms of the Hồ Dynasty; Minh's domination--governing policy of Minh and its consequences; the revolts under the Posterior Trần Dynasty; revolution of Lê Lợi.

GEOGRAPHY (1-½ hrs a wk)

A. EUROPE. 1. Western Europe: West Germany; France; England. 2. Mediterranean Area: Italy; Spain. 3. Northern Europe: Sweden. 4. Eastern Europe: Poland; the USSR. B. AFRICA. 1. North Africa: Algeria; Saudi Arabia. 2. Central Africa: Congo. 3. South Africa: Federation of Southern states. A. AMERICAS. 1. North America: the U.S.A. 2. Central America: Mexico. 3. South America: Brazil; Argentina.

CIVIC EDUCATION (1 hr a wk)

LIFE AT SCHOOL. 1. Organization of the School: Administrative staff, personnel, and teaching staff; school building, school property; school regulations and disciplinary committee; student body; parents' association. 2. Duties of the Students: Duties toward the administrative staff; duties toward the teacher (respect, obedience, gratitude); behavior toward friends (competition,

group spirit, modesty, mutual respect); school discipline (industry, discipline observance, school honor, taking good care of school properties); student's deportment (clothes, way of speaking, individual honor and worth).

FOREIGN LANGUAGES (6 hrs a wk)

A. ENGLISH. 1. Vocabulary, Conversation, Reading: Review vocabulary learned in 6th grade; study units 4, 5 of Book I and units 1, 2 of Book II. 2. Grammar: Same as 6th grade. 3. Exercises. 4. Textbook: English for Today, Books I and II. B. FRENCH. 1. Vocabulary, Conversation, Reading: Recitation, grammar, dictation, written assignments from Le Francaise Élémentaire by Mauger and Gougenheim, Book I, Lessons 29-38; Book II, Lessons 1-16; Cours de Langue Civilisation Francaise, Book I, Lessons 36-49.

PHYSICS (1 hr a wk)

HYDROSTATICS. 1. Distinction between a liquid and a gas. 2. Definition of pressure, unit: force kilogram/cm^2, N/m^2. 3. Qualitative experiments on pressure in water. 4. Variation of pressure at different depths and specific weights of a liquid: statement the basic first law of hydrostatics. 5. Application: A still open surface of a liquid, connecting tube (containing one liquid), spray, fountain. 6. Presure of a liquid at the bottom of a container. 7. Archimedes' thrust; its application to determine the specific weight of solids and liquids. 8. Floating objects; principle; hydrometer. 9. Air pressure; Toricelli's experiment; atmosphere. 10. Mercury barometer and metal barometer. 11. Open manometer and metalic manometer. 12. Archimedes' thrust in a gas balloon.

CHEMISTRY (1 hr a wk)

A. GENERAL IDEAS ON CHEMICAL TERMINOLOGY. 1. Use the example of analysis and synthesis of water to help the students have some idea about molecules and atoms. 2. General Ideas: Chemical symbols and formulas; multiple atoms; atomic weight; gram-atomic weight; multiple molecules; molecular weight; gram-

molecular weight. B. CHEMICAL CHANGES. 1. Chemical Changes and Laws: Some examples of chemical changes--burning of hydrogen, iron rust; make a distinction of chemical changes and physical changes using simple examples; Lavoisier's experiment; laws of chemical changes deduced from this experiment. 2. Equations of Chemical Reactions: Simple examples about chemical reaction equation; list of valence of some common elements and radicals; application. C. ACIDS AND BASES. 1. Main Properties: Chloric acid; Sulfuric acid; Nitric acid; Sodium hydroxide; Ammoniac. 2. Summary: General ideas about acids and base.

MATHEMATICS (3 hrs a wk)

A. ARITHMETIC. 1. Practice in factorization of an interger into prime numbers, using simple examples; the largest common divisors and least common multipliers; find the largest common submultiples and smallest common multiples. 2. Application to operations on fractions. B. CALCULUS. 1. Algebraic value (negative, positive, or zero); use concrete problems to present algebraic operations. 2. Inequalities. 3. Linear equations of one unknown with numerical coefficients; problems leading to a linear equation with numerical coefficients. C. GEOMETRY. 1. Review of congruent triangles. 2. Parallelism of lines; angles made by two parallel lines and a secant; angles having parallel sides. 3. Method of Drawing Two Parallel Lines: Definition of polygons--tetragon, trapezoid, paralellogram, rectangle, rhombus, square; characteristics of a parallelogram, a rectangle, a right triangle, a rhombus, and a square--draw these figures; sum of angles of a triangle, a salient tetragon; compare the lengths of a perpendicular line and an oblique line drawn from a point to a line; inequalities in a triangle; cross-ratio of two circles--draw a regular triangle and a right triangle: in a circle, compare the arcs, the chords, the perpendicular distances from the center to the chords--draw the chord and the angles; compare the angle inscribing an arc and the central angle substanding the same arc. Characteristics of the angle of an inscribed tetragon; values of angles of an equilateral polygon--rectangle, octagon, hexagon, triangle--how to draw these figures. D. MATHEMATICAL DRAWING. Line Drawing: Use straight ruler; compass; triangular ruler; decimetric ruler; protractor; copy paper.

NATURAL SCIENCES (1-½ hrs a wk: 1 hr of Lecture; ½ hr of lab)

A. LECTURE (25 hrs). 1. Botany: Emphasis on the life cycles of: Gymnospermus--pine tree, vascular plants; lycopsida--moss; thallophytes--algae, fungi; make a classification by evolution, from the simple types to the more complex; summary. 2. Zoology: Phylum Platyhelminthes--tapeworm; Phylum Nemathelminthes --ascarid; Phylum Mollusca--snail, oyster, squid; Phylum Arthropoda--Class Crustacea, Diplopoda, Arachnida, Insecta; characteristics and metamorphosis of their organs for life adaptation; general conclusion; relationships between different organisms--autotrophic, competitive, parasitic, symbiotic lives.

LAB WORK (12 hrs) 1. In Class: a. Zoology: Morphology and dissection of ascarid, snail, oyster, squid, shrimp, dragonfly; raise a worm or a silkworm to observe the butterfly's life-cycle. b. Botany: Study the leaves, fruits and seeds of a pine tree; study the algae, mushroom, fungi; show students how to press the leaves and paste in an album all learned plants according to their classification. 2. Field Work: a. In the field: Teacher catches live animals, collects plants, and shows students how organisms live. During rice transplant or harvest seasons, the teacher shows students the work of plowing and raking soil, sowing rice, transplanting, harvesting and threshing; kinds of sweet rice. b. In the highland: Teacher catches bees, butterflies. Shows the students how to grow plants and to fertilize them. c. At the local nurseries of the Department of Agriculture: Teacher shows students how to start a new plant, to graft, to transplant. Students write a report in their notebooks after each field trip.

PHYSICAL EDUCATION (3 hrs a wk)

A. DIRECTED GYMNASTICS. Each session 3 types, each type not more than 3 movements; 200-m relay-racing; high jumping; shot putting; long jumping; basketball, volleyball. B. REVIEW. Singing; communication--Morse Code; tying knots. C. FIELD TRIPS. Camping.

DRAWING

SUMMARY. Same as 6th grade plus drawing real objects at sight--pots and vases;

perspective of sphere; mixing colors; decorative drawing using geometric lines; drawing from memory--birds; free drawing of objects.

HANDICRAFTS (1 hr a wk)

SUMMARY. Learn to use woodworking tools--the plane, the chisel, the saw, the drill, the T-square, Mortising; make small and simple wooden objects; varnish; mixing and painting.

HOME ECONOMICS (1 hr a wk) [For Girls]

A. SEWING. Making buttonholes; hemming collars; decorative stitches; applying stitches in the making of handkerchieves, napkins; knitting socks, caps, sweaters. B. HOME CARE. 1. Clothing: Selecting fabrics; washing, boiling, ironing, mending clothes. 2. Housing: Direction the house is facing (North, South, East, or West); arranging and decorating the rooms. 3. Furniture: Selecting, cleaning. 4. The Kitchen: Dishes. 5. Lighting: Kinds of lamps. 6. Organization of Housework. 7. Garden: Important rules about growing fruits and vegetables. 8. General ideas about raising animals (chickens, ducks, rabbits, pigs). 9. Income: Expenses, family budget. 10. Social Gatherings (visits, parties, receptions): Important occasions in life.

MUSIC (1 hr a wk)

1. Voice: Same as in 6th grade. 2. Music Theory: Review of 6th grade lessons; 6/8 measure; 32nd and 64th notes; rhythm, syncopation, scale, intervals. 3. Application of Singing Techniques: The Vietnamese national anthem; school anthem, songs involving canon technique; Vietnamese and foreign folk songs; foreign classical songs. 4. Music History: Middle Ages; instrumental music--lute, organ, clavichord. 5. Musical Performance: Vietnamese popular and traditional songs; records of songs involving lute, organ; Bach's suites; records of Wagner, Berlioz, Debussy, Faust, Moussorgski, Mendelssohn.

First Cycle

8th Grade

Subjects	Number of Hours Per Week
Vietnamese	6
History	1-½
Geography	1-½
Civic Education	2
Foreign Languages	5
Physics	1-½
Chemistry	1
Mathematics	3-½
Natural Sciences	1-½
Physical Education	3
Drawing, Handicraft, Home Economics, Music	3
Total	28-½ hours

VIETNAMESE (6 hrs a wk)

A. LITERATURE. 1. Prose (2-½ hrs a wk): Excerpts from some subtle and complicated descriptive and narrative forms; argumentative styles of Nguyễn Văn Vĩnh, Nguyễn Bá Học, Phan Kế Bính and excerpts from literary and scientific magazines (Đong Dương Tạp Chí, Nam Phong Tạp Chí, Tri Tân, Thanh Nghị, Tao Đàn). 2. Poetry (1-½ hrs a wk): Excerpts from Lê Thánh Tông, Nguyễn Bỉnh Khiêm, Lục Vân Tiên, Nguyễn Khắc Hiếu. 3. Literary Forms: Songs like Lục Bát and its variations; Đường Luật poetry. B. EXERCISES. 1. Oral Presentation: Students summarize the work of each author, evaluate it according to style, ideas, psychological and moral aspects by answering leading questions; study the authors' lives and times in which they lived. 2. Essay (1 hr a wk): Narration (how to arrange details and change actions); application, report; moral dissertation (of common topics). C. SINO-VIETNAMESE (1 hr a wk).

HISTORY (1-½ hrs a wk)

A. POSTERIOR LE DYNASTY. King Lê Thái Tổ to the end of Lê Cung Hoãng Dynasty (1428-1527); internal organization; foreign relations with Chiêm Thành, Lão Qua and Bồn Man; Vietnamese civilization under Posterior Lê. B. MẠC DYNASTY. Brief history; internal and foreign affairs. C. RESTORATION OF THE LE DYNASTY. Lê Dynasty's restoration; dispute between Trịnh and Nguyễn families; advance toward the South by the Nguyễn lords; contacts with Western countries; Vietnamese civilization under the reigns of Trịnh and Nguyễn--society in the North; society in the South. D. DYNASTY OF TÂY SƠN. The revolution; war against the Thanh's army; administration. E. NGUYỄN'S DYNASTY. Restoration of Nguyễn's family; dynasty of Nguyễn, from King Gia Long to King Tự Đức--brief history of the dynasty, administration, diplomatic relations with the neighboring countries and with Western countries; the French invasion--the Treaty of 1862: the loss of three Eastern provinces of South Việt-Nam, the loss of three Western provinces of South Việt-Nam, the first French attack on North Việt-Nam--Treaty of 1874, the second French attack on North Việt-Nam--Treaties of 1883 and 1884; Vietnamese civilization in the 19th century.

GEOGRAPHY (1-½ hrs a wk)

A. ASIA. 1. East Asia: China, Japan, Korea. 2. Southeast Asia: Indonesia, Thailand, Malaysia, Cambodia, Laos. 3. South Asia: India. 4. West Asia: Turkey, Saudi Arabia. B. OCEANIA. 1. Australia and New Zealand. 2. Melanesia and Polynesia.

CIVIC EDUCATION (1 hr a wk)

A. LIFE IN SOCIETY. 1. Mankind. 2. Relationship between the individual and society. 3. Activities and work of the past, present, and future generations. 4. Race, language, habits, customs. 5. National consciousness and patriotism. B. DUTIES TOWARD SOCIETY. 1. Discipline in society (laws and customs, consciousness of freedom, consciousness of justice. 2. Duty to contribute to the progress of mankind. C. RELIGIOUS LIFE. 1. The major religions. 2. Influence of religion in social life.

FOREIGN LANGUAGES (5 hrs a wk)

A. ENGLISH. 1. Vocabulary, Conversation, Reading, Grammar: Units 3, 4, 5 of Book II and unit 1 of Book III. 2. Exercises: Ask questions based on the reading; guide students to find the main idea and summarize a section of the text; have students do grammar exercises; have them write a short dictation; later use it as a text for study. 3. Textbook: English for Today, Books II and III. B. FRENCH. 1. Vocabulary, Conversation, Reading, Recitation, Grammar: Dictation, written assignments from Le Français Élémentaire by Mauger and Gougenheim, Book II, Lessons 17-38; Cours de Langue de Civilisation Française by Mauger, Book I, Lessons 36-49.

PHYSICS (1-½ hrs a wk)

A. HEAT. 1. Temperature: Qualitative experiment on expansion. 2. Mercury Thermometer: Celsius temperature scale. 3. Heat Unit: Calories; measuring calories by mixed method; heat solids and liquids; evaluation of heat; melting and freezing; melting temperature; change in volume caused by melting and freezing; melting heat; evaporation and boiling; evaporating temperature; evaporation in a vacuum. B. WORK AND POWER. 1. Units: Joule and Watt; 2. Forms of Energy (give examples of heat and mechanical energy only): Convertibility of heat and mechanical energy.

CHEMISTRY (1 hr a wk)

A. PROPERTIES OF NON-METALS AND METALS. 1. Non-metals: Main properties of: sulfur to show that sulfur is not a metal, chlorine to show that chlorine is not a metal, carbon to show that carbon is not a metal, carbon oxides--carbon dioxide and carbon monoxide. 2. Metals: brief study of: physical and mechanical properties of metals and alloys, common metallurgical process (only reactions investigated); main properties of: sodium, zinc, iron--cast iron, steel (only the properties should be emphasized), copper; summary--simple distinction between non-metals and metals.

MATHEMATICS (3-½ hrs a wk)

A. ARITHMETIC AND CALCULUS. 1. Ratio and Proportion: Proportional division; simple interest. 2. Graphs and Equations: Algebraic value of a vector along a directed line; calculus of variations--position determination of a point on an axis; position determination of a point in a plane by orthogonal coordinates; briefly explain about variables and functions, graphs, proportional quantities--equation $y = ax$, proportional quantities with an initial constant difference--equation $y = ax + b$ (a and b are known numbers), graphs; system of two linear equations with two unknowns, solved by analytical and graphical methods, examples of insoluble and indefinite cases. 3. Introduction to Algebraic Operation: Properties of multiplication, power, multiplication and division; binomial, multiplication and division of binomials; addition of binomial; polynomial of one variable, reducing terms of the same degree simplified forms, product of two polynomials, important equalities; simple exercises of polynomials or rational function. B. GEOMETRY. 1. Explanations by Examples: Inverse theorem, necessary and sufficient conditions and properties; properties of a parallelogram, a rectangle, a right triangle, and a rhombus. 2. Some Examples on Loci: The points at equal distance to two fixed points or two fixed straight lines; the points which are apart from a fixed straight line by a given distance. 3. Applications to Drawing Problems: A circle circumscribing a triangle; a circle inscribing a triangle; the tangent to a circle drawn from a given point. 4. Multiplication of a Segment by a Fraction: Ratio of two segment; points dividing a segment according to a given ratio. 5. Formulas: Thales' theorem; similar triangles; formulas in a right triangle; formulas in a circle cut by two lines drawn from one point. 6. Application to the drawing of the multiplicative average segment, the length of which is given as the square root of two given segments; find the sides and medians of a square, equilateral hexagon and an equilateral triangle in terms of the radius of the circumscribing circle. C. MATHEMATICAL DRAWING. 1. Use of Tools To Draw Geometry Figures: Straight ruler, triangle, compass, decimeteric ruler, protractor, ink pen. 2. Draw a curve going through some given points, using carbon and ruled paper to milimeter scale.

NATURAL SCIENCES (1-½ hrs a wk: 1 hr of lecture; ½ hr of lab)

A. LECTURE (25 hrs). 1. Shape and General Composition of the Earth: General introduction on the shape and appearance of the Earth; emphasis on the role of airplanes and satellites; atmosphere, water, living organisms around the Earth; crust, mantle, and core of the Earth; definition of geology. 2. Activities of the Earth and Its Consequences: Structure of the crust--comparison of soil rock; erosion of the crust by weather, wind, running water, sea waves, ice; deposits (caused by wind, stream, river, sea, ice, living organisms); formation of sedimentary rocks; movement of the crust--folding, stress and strain, metamorphism and metamorphic rocks; formation of volcanoes--lava on the surface, underground; fissures, collapses, and earthquakes. 3. Mineral Treasures: Underground water, characteristics and extraction; soil and rock used in industry--rock, gravel, pebbles, sand, mud, clay, sulfur and phosphate salts; jade and precious stones; metal ores--iron, copper, lead, zinc, aluminum. 4. History of Life: Historical transformation of living beings through the ages--precambrian (unicellular organisms) through cenozoic (multicellular organisms); evolution of plants and animals through the ages; fuel generated by dead organisms--coal, oil, gas.
B. LAB WORK (12 hrs). 1. Class Work(10 to 12 1-hr sessions): a. Soil and rocks--compare samples of soil collected in the area for color, general composition, origin, use; compare soil with rock for hardness, grain, crystallization, natural cement, grinding of rock into soil, use cement to make samples of man-made sand; compare samples of crystallized conglomerate, sandstone, mudstone in regards to form, arrangement, color, composition; compare sandstone with limestone in regards to grain, hardness, composition (use vinegar, observe and explain the effervescense), compare the way they were formed; compare mudstone with mica schist and describe the metamorphism from mudstone to mica schist, conclusion on the metamorphic phenomenon, compare it with bricks and tiles to draw conclusion on artificial transformation, do the same with limestone and marble; compare basalt with mudstone (schist) in regards to layers, hardness, and color, grind both kinds and compare hardness of cement in mudstone and lava rocks; compare volcanic rock with granite--color, grain, structure, deduce their origins. b. Ore--compare common metal ores in Viet-Nam--iron, lead, copper, coal--observe color, hardness, arrangement, find trace of vegetation, its compactness, experiment on the composition of coal. 2. Field Trips: Students

are taken to an open field and shown how to detect the direction of the wind, guess the temperature, observe the fog; how to observe the stream, the river or rivulet; deposition and erosion; if near the sea, they observe sand dunes, sea coast, and effect of the sea waves; they also observe an area which has foldings of sedimentary rocks, or an extinct volcano, or a stone mine; if possible, they are taken to observe a brick or ceramic factory, or where the sand pebbles are washed. 3. Collection: Students make an album of geological pictures or photographs; in each field trip, the students learn to collect samples of rocks, pebbles, and soil of that area. [In general during the lab work, the students are taught how to observe, to think and compare, to describe accurately by writing and drawing.]

PHYSICAL EDUCATION (3 hrs a wk)

A. DIRECTED GYMNASTICS. Techniques of high jumping, long jumping, shot putting, 80-m racing; basketball, volleyball, soccer; organize competitive games.
B. REVIEW. Singing; typing knots; communications--Morse syllables; trail markings; games involving running, jumping, throwing, balancing.

DRAWING

SUMMARY. Same as 7th grade plus lettering; water color painting of flowers, fruits, leaves, birds; drawing of scenery in the countryside; learning the methods of drawing the human body, its proportion, measurement.

HANDICRAFTS (1 hr a wk)

METALWORK. Learn to use metalworking tools; how to heat iron, give it a round, square, or rectangular shape, make a pointed end; harden the steel; learn to solder iron objects--tray, kettle, plate, oil container; drill holes in tin, clinch nails.

HOME ECONOMICS (1 hr a wk) [For Girls]

A. SEWING. Embroidery stitches applied to decoration of handkerchieves, bibs, caps; cutting and sewing children's clothes. B. CHILD CARE. Marriage; health care during pregnancy; preparation for the mother; preventing diseases; diet and work of the mother; the newborn baby; breast and bottle feeding; clothing; solid foods; health care; objective of child care. C. HOME CARE (in the countryside): Garbage disposal; gardening; vegetables--selection of seeds, germination, weeding; fruit trees; animals--fowls, bees.

MUSIC (1 hr a wk)

Voice: Same as 7th grade. Music Theory: Review the program of 6th and 7th grades; tonal notes and modal notes; a major and F# minor; E^b major and C minor; measures 2/2, 3/2, 4/2, 3/8, 9/8, 12/8; singing 1, 2, and 3 voice songs; rhythmic reading; musical dictation. Application of Singing Techniques: Memorize the national anthem and the school anthem; Vietnamese and foreign folk songs. Music History: Classical instrumental music, sonata, chamber music, symphony, dramatic music in Italy in 17th century, ballet, opera, Mozart opera. Musical Performance: Musical play of Italy; records--musical plays of Lully, Rameau, operas of Gluck, Mozart's sonatas, works of Handel, Bach, Haydn, Beethoven.

First Cycle

9th Grade

Subjects	Number of Hours Per Week
Vietnamese	6
History	1-½
Geography	1-½
Civic Education	2
Foreign Languages	5
Physics	1-½
Chemistry	1
Mathematics	3-½
Natural Sciences	2
Physical Education	3
Drawing, Handicraft, Home Economics, Music	3
Total	30 hours

VIETNAMESE (6 hrs a wk)

A. LITERATURE. 1. Prose (2 hrs a wk): Argumentative style of Phạm Quỳnh, Trần Trọng Kim, Phan Chu Trinh; excerpts of their writings from magazines. 2. Poetry (1 hr a wk): Study excerpts from Đoạn Trường Tân Thanh, Nguyễn Công Trứ, Nguyễn Khuyến, Trần Tế Xương, Cao Bá Quát, Tôn Thọ Tường, Phan Văn Trị; Poems of the patriots like Phan Bội Châu, Phan Chu Trinh. 3. Literary Form: Hát Nói. 4. Literature: General study of Vietnamese literature from the beginning up to modern times (5 hrs for the whole year). B. EXERCISES. 1. Oral Presentation: Summarize the work of each author, evaluate it in regards to style, ideas, psychological and moral aspects by answering leading questions; study the lives and times in which the authors lived. 2. Essay (2 hrs a wk): General dissertation; moral dissertation; literary. C. SINO-VIETNAMESE (1 hr a wk).

HISTORY (1-½ hrs a wk)

A. VIETNAMESE HISTORY (from 1884 to 1945). 1. The French Domination: Governing policy of the French; reaction of the Vietnamese people in regards to the French domination--movements against the French: Cần Vương Movement, Duy Tân Movement; movements against the French from 1914 to 1930--anti-French movement during World War I, anti-French movements from 1919 to 1930, revolt of the Vietnamese Kuomingtang, anti-French movement from 1930 to 1939; pro-French movements; changes occurred in Vietnamese civilization under the French domination. 2. Việt-Nam in the Second World War: The Japanese in Indochina; the French-Japanese policy in Việt-Nam; movements against the French and the Japanese; Coup d'Etat in March 9, 1945. B. WORLD HISTORY. 1. Western Expansion: The development of Western industry and the expansion of colonial movement; the Asian countries facing Western countries' colonial expansion movement--China: From Opium War to Tân Hợi revolution, Japan: From King Minh Trị to World War I, India: From 1857 to World War I; the First World War: its cause and effect. 2. The World between the Two World Wars: Internal changes of the Western big powers--the U.S., England, France, USSR, Germany, Italy; the countries of the East--Japan, China, India, and countries in the Far East. 3. The Second World War: Cause and effect.

GEOGRAPHY (1-½ hrs a wk)

VIỆT-NAM. 1. General Aspects: Location, boundaries, shape, area. 2. Physical Geography: Terrain--mountains and highlands, delta, sea coast and sea bottom; climate; rivers; vegetation. 3. Human Geography: Ethnic groups in Việt-Nam; population (census, changes, migration, distribution); politics. 4. Economic Geography: Agriculture (farming, husbandry, fishery); arts and crafts, industry; communication, trade.

CIVIC EDUCATION (2 hrs a wk)

PRIVILEGES AND RESPONSIBILITIES OF THE CITIZENS. 1. Human Rights: The International Declaration of Human Rights--causes, content, influence. 2. Civil Rights: Definition of a citizen; basic rights and limitations--freedom of

individual rights of safety, privacy, having one's honor respected, movement, lodging; freedom of thought,religion, culture and education, speech, assembly, politics (to join the government, to vote, to be a candidate); economic and social aspects of freedom in regards to right to work (freedom to join labor unions and to have strikes), right to private property, free enterprise, right to social welfare. 3. Citizen's Responsibilities: Duty to defend one's country; duty to defend the country's contitution and laws; duty to fulfill one's military obligations; duty to pay taxes.

FOREIGN LANGUAGES (5 hrs a wk)

A. ENGLISH. 1. Vocabulary, Conversation, Reading, Grammar: English for Today, Book III, Units 1, 2, 3 (the first 15 lessons); encourage students to read simplified versions written in the contemporary style (such as Tales from England, 1st and 2nd degrees, Longmans Series, etc.) [Attention: Ask the students to find the main ideas, to summarize and to answer questions orally related to the lessons.] 2. Exercises: Answer questions related to the reading; ask the students to answer questions orally relating to the main idea and to summarize each paragraph; do grammar exercises; write dictation and study it from English for Today, Book III.
B. FRENCH. 1. Vocabulary, Conversation, Recitation, Grammar, Dictation: Text study from Cours de Langue de Civilisation Française by Mauger, Book I, Lessons 50-65, Book II, Lessons 1-20. 2. Written Exercises: Answer questions based on reading and dictation; answer questions related to the same topic; write sentences following the teacher's sample ones.

PHYSICS (1-½ hrs a wk)

A. ELECTRICITY. Properties of directional current; atomic structure--electrons, nuclei (omit nuclear structure), ions, ionization; chemical effect of a current--qualitative law, application; chemical effect of a current--Faraday's law; heat effect of a current--Joule's law, application: light, stove, iron, fuse; resistance of a pure wire of uniform cross section--change of resistivity with temperature, rheostat and variable resistance; voltage--Ohm's law across a pure resistance; dry battery--Volta and Leclanche; principles of a lead battery.
B. OPTICS. Linear propagation of light, application--dark shadow, opaque shadow, solar eclipse, lunar eclipse; light reflection, plane mirrors, statement

of Descartes-Snell law, application--periscope, kaleidoscope; experiments on light refraction; converging lens, imaging, Descartes' formula; application--converging lens: camara, floodlight, magnifier.

CHEMISTRY (1 hr a wk)

INTRODUCTION TO ORGANIC CHEMISTRY. 1. Basic concepts of organic compounds--definition, general properties. 2. Hydrocarbons--by-products of petroleum and coal. 3. Study of methane, acetylene, benzene. 4. Alcoholic fermentation--ethanol. 5. Acidic fermentation--acetic acid. 6. Esterization--study of some common esters, usage of ester. 7. Hydrolysis--saponification, application to the making of candles and soap. 8. Introduction to carbohydrates--glucose, saccharin, cellulose, starch.

MATHEMATICS (3-½ hrs a wk)

A. ARITHMETIC AND CALCULUS. 1. Examples: In geometry or physics leading to the following equations: $y = x^2$, $y = ax^2$, $y = \frac{1}{x}$, $y = \frac{a}{x}$ where a is a constant; table of specific values; graph. 2. Definition of Square Root: Finding an approximate decimal value for a square root, using table of square values, direct method. 3. Solve a quadratic equation with one unknown, by analytical method and graphical method; examples leading to quadratic equation with numerical coefficients; use of graphs and tables. B. GEOMETRY. 1. Sine, Consine and Tangent of an Acute Angle: Trigonometric formulas in a right triangle; formulas relating sine and cosine of an angle; use of the sine, cosine, and tangent tables. 2. Area Units and Area: A rectangle, a triangle, a trapezoid, and other polygons; ratio of areas of two similar triangles; length of an arc and area of a circular sector (without making use of the two formulas: $L = 2\pi R$ and $S = 2\pi R^2$). C. SPACE GEOMETRY. Determination of a plane; introduction to parallel lines and parallel planes; definitions of a bi-hedron, a polyhedral cylinder and a parallelepiped; perpendicular lines and perpendicular planes; right cross-sections of a bi-hedron, and a polyhedral cylinder; formation of rotational rigid bodies (cylinder, sphere, cone); sphere (a brief study is intended to understand its applications to the study of the Earth and other common applications); practice in evaluating area and volume (e.g. parallepiped,

polyhedral cylinder, cylinder, cone, sphere); practice in unit conversions. D. MATHEMATICAL DRAWING. Draw by hand, drafts of several simple objects; draw the same drafts using pencil, pen, and other drawing aids according to a given scale; draw simple patterns.

NATURAL SCIENCES (2 hrs a wk: 1 hr lecture and 1 hr lab)

A. LECTURE. 1. Human Anatomy, Physiology and Hygiene: Generalities of animal cells and tissues; coordinative functions; hygiene of each function; motor system (musculo-skeletal)--bones (not the skeleton), muscles (not the names of the muscles); sensory system--cerebro-spinal system: brief study of the neurons, the spine, the brain (draw simple sketches to show direction of neurons in the motor and sensory pathways; the senses--general studies of the senses, especially the skin and the tactile sense; nutritional system--hygiene of each function; food--emphasis on the composition and the nutritional value of all kinds of foods and vitamins, and food's influence on health; digestion; circulation (very brief study on lymph); respiration; excretion (emphasis on mine excretion); diet (emphasis on physiological aspect, the anatomic aspect should be simplified). 2. General Microbiology: Brief study of micro-organisms--viruses, fungi, protista; their shape, structure, and living habits (emphasis on the effects caused by micro-organisms in fermentation, in decay); discuss food conservation by freezing and sterilization; general study of viruses and viral diseases. 3. Contagious Diseases: Research on cholera and tuberculosis; study the effects caused by disease germs; sensitivity and immunity; preventive measures--vaccination treatment--sero- and chemotherapies), (emphasis on the use and danger of antiseptics and antibiotics); some other contagious diseases--smallpox, malaria. B. LAB WORK. 1. Observe: The epithelial cell inside the human cheek, or of a frog; blood cells (erythrocytes and lencocytes); one kind of microbe--weed bacillus. 2. Study the Bone: Transversal and longitudinal sections of a fresh bone. 3. Study the Muscles: A skinned frog; experiment to prove the elasticity and contraction of the frog's leg muscles. 4. Observe a Brain: Pig's or ox's; experiments on frog's reflex movements. 5. Dissect: A mouse to study the digestive and reproductive systems; observe the shape of a pig's heart and dissect the heart.

PHYSICAL EDUCATION (3 hrs a wk)

A. DIRECTED GYMNASTICS. Racing and breathing control; high jumping; long jumping; shot putting; 100-m relay racing; techniques of volleyball, basketball, soccer. B. REVIEW. Singing; tying more complicated knots, communications by whistle; trail markings; finding directions with watch, the sun, the moon, and the Dipper; games.

DRAWING

SUMMARY. Drawing still life (fruits, statues) with pencils, coal, or paint; decorative drawing of household objects; drawing sketches of objects, people, and animals; review perpective; enlarge a small sketch, then paint it.

HANDICRAFTS (1 hr a wk)

SUMMARY. Learn to use tools of a blacksmith; learn to file iron; learn to use electrical tools, to wire a new current, a fuse, a bell, a light bulb; make a joint, solder a joint (the light bulb and the bell will be attached to a piece of wood, not on the wall); put the bicycle parts together, take them apart, repair the bicycle.

HOME ECONOMICS (1 hr a wk) [For Girls]

A. SEWING. Cutting and sewing of Vietnamese blouses and pants, underwear; Vietnamese, Chinese, Japanese embroidering. B. CHILD CARE. Illnesses and caring for the ill; emergency care; family medicine cabinet; baby's common sickness; social welfare institutions--orphanages; agencies to protect mother and child. C. HOME CARE. Family resources; kinds of expenses--saving, family budget; social welfare; social etiquette and family events--marriage, birth, funeral; letters of condolence or compliment.

MUSIC (1 hr a wk)

1. Voice: Same as the 6th, 7th, and 8th grades. 2. Music Theory: Review

the 8th grade program; classical modes; tonality, modality, modulation; transposition; short dictation with alterations; vocal and instrumental canon. 3. Application of Singing Techniques: Vietnamese and foreign folk songs; songs of Weber, Wagner, Moussorgski, Franck, Fauce. 4. Music History: Music of Lied, Schubert,Schumann; piano music of the 19th century; German operas by Weber, Wagner; Russian operas by Moussorgski, Borodine, Rimsky-Korsakow. 5. Music Performance: Piano music (records) by Mendelssohn, Schumann, Liszt, Chopin, Schubert, Brahms, Berlioz, Weber, Wagner, Rossini, Verdi.

Second Cycle

10th Grade: Experimental Science Major (Section A) and Mathematics Major (Section B)

Subjects	EXPERIMENTAL SCIENCE (A) Number of Hours Per Week	MATHEMATICS (B) Number of Hours Per Week
Vietnamese	3	3
History	2	2
Geography	1	1
Civic Education	2	2
Philosophy	0	0
First Foreign Languages	4	4
Second Foreign Languages	4	4
Classical Languages	0	0
Physics	3	2
Chemistry	1-½	1-½
Mathematics	4	6
Natural Sciences	3	1
Physical Education	3	3
Total	30-½ hours	30-½ hours

VIETNAMESE (3 hrs a wk)

A. LITERATURE. 1. Literature: Same as Modern Literature Major but more general; study excerpts of Sino-Vietnamese poems under Hồng Đức's Dynasty, Nguyễn Bỉnh Khiêm, or oration of war deads; excerpts of: Chinh Phụ Ngâm Khúc, Cung Oán Ngâm Khúc, Đoạn Trường Tân Thanh. B. DICTATION AND GRAMMAR. Not applicable to 10th grade. C. EXERCISES. Oral presentation and essays, same as Modern Literature Major.

HISTORY (2 hrs a wk): Same as Modern Literature Major.

GEOGRAPHY (1 hr a wk): Same as Modern Literature Major.

CIVIC EDUCATION (2 hrs a wk): Same as Modern Literature Major.

FIRST FOREIGN LANGUAGES (4 hrs a wk)

A. ENGLISH. Same as Modern Literature Major but more general; emphasize science excerpts and conversation; literature. B. FRENCH. Same as Modern Literature Major, except French literature and essay.

SECOND FOREIGN LANGUAGES (4 hrs a wk)

A. ENGLISH. Same as Modern Literature Major. B. FRENCH. Same as Modern Literature Major; textbook: Cours de Langue de Civilization Française by Mauger, Book I, Lessons 1-35.

PHYSICS (3 hrs a wk)

A. FORCE. 1. Force: Measurement of force by the extension of a spring; units of forces--force kilogram, Newton; experimental study of converging forces, addition and resolving of forces; experimental study of parallel forces, addition and resolving of forces, force couple; movement of a force about an axis (special cases: forces perpendicular to or parralel with the axis). 2. Balance: Characteristics of a balance--reliability, accuracy, sensitivity; balancing by comparisons; precision balances; Roman and Roberval balances. 3. Practical Concepts of weight: Unit--kg; definition of specific weight and specific volume of solids and liquids; unit; definition of liquid specific weight with respect to water. 4. Work: Done by a force of constant direction and magnitude; work done by an applied force or a frictional force; unit--Joule; power; unit--Watt. 5. Simple Engines: Pulley, inclined surface, crane; the law of work conservation; efficiency. B. HYDROSTATICS. 1. Definition of Pressure: Unit--N/m^2; pressure at a point in liquid; difference of pressure between points in a liquid; pressure at a point on the wall or the bottom of a liquid container. 2. Results and Applications: Open surface of the liquid; interface separating two undissolved

liquids; connecting tube containing one type of liquid of two undissolved liquids; Pascal theorem; compressor using water. 3. Archimedes' Principle: Applied in determining specific weight; floating objects, aerometer. C. THERMOMETRY. 1. Qualitative experiments on expansion. 2. Temperature: Mercury thermometer; Celsius and Kelvin temperature scale. 3. Expansion of Solids: Coefficients on longitudinal and transverse expansion (definition and formula); application. 4. Expansion of Liquids: Virtual expansion and real expansion; coefficient of virtual expansion and real expansion (definition and formula); expansion of water. Change in specific weight of a liquid with temperature. 5. Isothermal Opression of Gas: Law of Boyle-Mariotte; isobaric expansion of gas; change in pressure with volume being held constant--Charles and Gay Lussac's laws; ideal gas formulas; specific weight of gases. D. CALORIMETRY. 1. Heat: Units--calorie, Joule; specific heat of solids and liquids. 2. Vaporization: In a vacuum, in a gas; boiling; maximum pressure; lateral heat of vaporization.

CHEMISTRY (1-½ hrs a wk)

A. FUNDAMENTAL THEORY. 1. Atomic Structure: Elements; principal particles of atom; Bohr's atom; atomic level; atomic number; isotopes; definition of an element; description of the Mendeleer's periodic table (revised table); molecules; elements; compounds and mixtures. 2. Chemical Bonds: Ionic bond--ionization in a solution; valence bond, shared valence bond, polarization of valence bond; negativity table; Van der Waal bond; interpretation of physical states based on chemical bonds; distinction between metal, non-metal, and metalloid. 3. Acid, Base, and Salt: Definition of acid, base, and salt according to Arrhenius Properties of acids, bases, and salts; law of Berthollet. B. GASES. 1. Oxygen and Oxides. 2. Chlorine and Chlorous Compounds: Hydrogenic chlorides, hypochlorites, chlorates. 3. Sulfur and Its Compounds: Sulfurous dioxide and sulfite; sulfuric acid and sulfate. 4. Nitrogen and Its Compounds: Ammoniac and ammonium; Nitric acid nitrate. C. ANALYTICAL CHEMISTRY. Analysis of acids and bases.

(Applicable from school-year 1970-1971)

1. Basics: Water; hydrogen; oxygen; air; nitrogen; compounds and mixtures; introduction to the atomic theory; nomenclature; atomic weight; molecular weight;

chemical equation; lime; salt; ammoniac; nitric acid; carbon; carbonic anhydride; carbon oxide; silicon; silicate. 2. Statements of the Fundamental Laws in Chemistry: Chlorine; hydrochloric acid; acidic radical; decolorizing chlorides; Javel solvent; sulfur; sulfurous anhydride; sufuric acid; base radical.

MATHEMATICS (6 hrs a wk) [For Mathematics Major (B) only; same for Experimental Science Major (A) except 4 hrs a wk]

I. PLANE GEOMETRY. 1. Lines: Straight line; half line; line segment; half plane; angle; perpendicularing of lines; reflection about a straight line. 2. Figures: Triangle--Isosceles, equal triangles, equal right triangles; inequalities in a triangle; perpendicular and oblique segments drawn form a point to a line; locus of points at an equal distance from two given points or from two given lines; parallelity of lines; proporties; sum of angles of a triangle and of a convex polygon; parallelogram; reflection about a point; equivalent vectors; translation. 3. The Circle Intersection of a Circle and a Line: Tangent; chord and arc; cross ratio of two circles; methods of drawing a line and a circle; angle and chord subtending an arc from the center; angles from the center and from a point on the circle subtending the same arc; inscribable tetragon; locus of points subtending a fixed line segment under a constant angle. 4. Ratio of Two-line Segment: Points dividing a segment by a given ratio; algebraic ratio of two parallel vectors; point dividing a segment by a given algebraic ratio; Thales' theorem; isometric triangles; similarity--similarities of a line, a circle; centers of similarity of two circles; locus of points the distances of which from two given lines form a given ratio. 5. Conjugate Points; Conjugate Pencil: Two segments of a triangle side determined by the bisector of the opposite angle; locus of points the distances of which from two fixed points form a given ratio. 6. Trigonometric Formulas: Sum and difference of squared distances from one point to two others; application to problems relating to locus and drawing; power a point with respect to a circle. 7. Sine, Cosine, and Tangent of a Convex Angle (Acute or Obtuse): Algebraic value of the projection of a vector with respect to an axis; how to use sine, cosine, and tangent tables; formulas involving sides and angles of a right triangle: $a^2 = b^2+c^2-2bc \cos A$ and $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} = 2R$ in a triangle; formulas on the area of a triangle. 8. Equilateral Polygon: Square; octagon;

hexagon; equilateral triangle; circumference of a circle; length of an arc; radian; approximate value of sinx, tanx and cosx (x and $1-\frac{x^2}{a}$) for a small angle x is terms of radians; revision on methods to evaluate plane areas; area of a circle and sector. B. CALCULUS. 1. Algebraic Numbers--Negative, Positive, and Zero: Operation on algebraic numbers; basic properties of these operations; number with positive integral power; significance of negative power and fractional power; ratios and formulas on ratios; binomial and polynomial; reduction of polynomial quotient having common binomial(s); product of a binomial and a polynomial; examples on polynomials. 2. Vector: Algebraic value of a vector; Chasles formula; position of a point determined by its abscissa on an axis or its coordinates in a plane. 3. Dependent and Independent Variables: Increment of a variable; a function defined in a range; functions of the same or reverse variation; variation and graph of first degree functions; tangential angle; variation and graph of functions: $y = x^2$; $y = ax^2$; $y = \frac{1}{x}$; $y = \frac{a}{x}$. 4. Linear Equation and Inequality with One Unknown: Solution and discussion; a system of two linear equations with two unknowns; solution and discussion. 5. Quadratic Equation with One Unknown: The delta (b^2-4ac); existence and determination of roots; relationships between two roots; sum and product of roots; sign of roots; quadratic equation derived from two given roots; determination of two numbers, given their sum and product--discussion; quadratic trinomial; reduction into factors; sign of a trinomial; quadratic inequality; problems involving quadratic equations.

NATURAL SCIENCES (3 hrs a wk, for Experimental Science Major)

A. LECTURE. 1. Introduction to Geology: Definition; specialized field; aim; application; research methods; the Earth in the universe; the new hypothesis of Weizocker. 2. Geological Phenomena: By external causes--air, underground water, turbidity currents, stream, river, sea, snow and glacier; by organisms--corals; by internal causes--volcano, earthquake; events leading to change in Earth's surface; formation of mountains (counter current hypothesis); Earth structure. 3. Mineralogy: Introduction; some basic minerals--quartz, feldspar, mica, calcite, dolomite. 4. Rock Study: Generalities of rocks; igneous rocks--granite and basalt; some other rocks relating to these two; sedimentary--a sample of sandstone, siltstone, limestone, evaporites; metamorphic

rocks--metamorphism, a sample of gneiss and of marble. 5. Paleo-Geology: Definition of fossils; main findings of paleontology; basic principles in studying the Earth's strata; how to determine relative and absolute age; history of geology in Viet-Nam; evolution of living organisms; evolution theory; examples of the past--horse and humans. 6. Application of Geology: How to select materials for construction--rocks, pebbles, sand, mud, clay; how to slake lime and manufacture cement; how to make bricks and roofing tile; how to find underground ore--brief description of some methods such as using magnetism, electricity, seism; foundation of roads; hydroelectricity; how to bring up underground water. B. LAB WORK. 1. Geological Phenomena: Sedimentation--use a glass pan, put in sand, mud, clay and observe the speed as well as the order of sedimentation; law of sedimentation--piling up or spreading evenly; dune formation--make a sand-bank on the table, then blow from the low to the high side to see how sand moves; observe the sand of the bank and compare it with the smooth pebble at the river: press horizontally a piece of clay to explain the force which formed mountains; do the experiment with a connecting tube to explain the spurt of water from a well; observe ice--put the cubes next to one another to see them stick together (ogglomeration), break ice to have a sharp piece and scratch a piece of hard clay or a tile to test the hardness; making cement--use pebbles mixed with cement to see them harden, compare with natural cement in red laterite. 2. Mineralogy Study: Observe the color and measure the relative refractive index by putting the rock into solutions such as water, benzen, gasoline, oil; observe the relative hardness by scratching the surface, and measure the specific gravity with a scale; observe the common ores--iron, copper, zinc, and lead; burn some calcite to make quicklime and experiment with acid, draw chemical reactions, blow in lime solution to make a solution of hydroxide calcium. 3. Rock Study: Observe sedimentary rocks--conglomerate, sandstone, shale, siltstone; compare their grains; observe their strata comformation, observe cement; observe limestone and dolomite--dissolve them in acid, in water; observe a sample of granite--compare the grains of crystals, find main minerals by their colors and purities, compare it with a diorite or basalt sample (color, grain, purity), compare with a piece of glass (olivine, serpentine); compare a mica schist with a schist--degree of crystallization; compare a granulite with a granite; they are similar in purity but different in strata settlement. 4. Paleontology: Observe a fossil--form, mineral structure, purity (limestone, sand, clay, schist), draw conditions of fossilization; describe some existing

fossils around the school.

PHYSICAL EDUCATION (3 hrs a wk): Same activities as in former grades, more advanced.

Second Cycle

10th Grade: Modern Literature Major (Section C) and Classical Literature Major (Section D)

Subjects	MODERN LITERATURE (C) Number of Hours Per Week	CLASSICAL LITERATURE (D) Number of Hours Per Week
Vietnamese	5	5
History	2	2
Geography	1	1
Civic Education	2	2
Philosophy	0	0
First Foreign Languages	6	6
Second Foreign Languages	6	0
Classical Languages	0	6
Physics	½	½
Chemistry	½	½
Mathematics	1	1
Natural Sciences	1	1
Physical Education	3	3
Total	28 hours	28 hours

VIETNAMESE (5 hrs a wk)

A. LITERATURE. 1. Folk Literature: Sino-Vietnamese literature during the Trần Dynasty and up to Nguyễn Du's work; introduction of Chinese works written by the Vietnamese during the same period. 2. Forms of Literature: Couplet, essays, funeral oration. 2. Excerpts To Be Studied: Classical operas--Kim Thạch Kỳ Duyên, Địch Thanh Ly Hận, Tượng Kỳ Khí Xa; Poems under Hồng Đức's Dynasty, Nguyễn Bỉnh Khiêm, Phạm Thái, Nguyễn Huy Lượng, Lê Quí Đôn, Đặng Đức Siêu, Nguyễn Văn Thành; longer ones from: Chinh Phụ Ngâm Khúc, Cung Oán Ngâm Khúc, Hoa Tiên, Đoạn Trường Tân Thanh. B. DICTATION AND GRAMMAR. Not applicable to grade 10. C. EXERCISES. 1. Oral Presentation by Students: On

works and authors studied in Part A. 2. Essay: General dissertation on topics requiring students to use their knowledge of other subjects such as history, geography, civic education, moral education, sciences, and relate them to practical social situations and events; literary dissertation.

HISTORY (2 hrs a wk)

VIETNAMESE HISTORY FROM 1407 TO 1802. 1. Period the Minh's domination (Chinese); policy and administrative organization of the Minh; infiltration of the Chinese culture; consequences. 2. Lê Lợi's Uprising. 3. Post Lê Dynasty: Brief history of the period from Lê Thái Tổ's reign to 1527; administration--organization of the administration, law, organization of the national defense, economy--finance, culture, social aspects; foreign affairs--relations with China, with other neighboring countries; advance toward the South--war against the Chiêm, movement to migrate the people to the new area and to cultivate it; social aspects of the Đại Việt (name of Việt-Nam at that time) life, social customs, and events. 4. The Mạc Dynasty. 5. The Restoration of Lê Dynasty: The governments of the North and the South. 6. Civil war between the Trịnh and the Nguyễn families. 7. Đại Việt society under the Reigns of Trịnh and Nguyễn: In the North--internal administration, daily life and society; in the South--internal administration, advance toward the South, occupation of the Chiêm's land and Chân Lạp, migration and land clearance, social activities; contact with the West (emphasize cultural effects). 8. Dynasty of Tây Sơn: The revolution; King Quang Trung destroyed the Thanh's army; diplomatic relations with China; Vietnamese society under Tây Sơn's Dynasty. 9. Nguyễn Ánh's national unification.

GEOGRAPHY (1 hr a wk)

A. PHYSICAL GEOGRAPHY. 1. Generalities of the Earth: Origin of the Earth; movement of the Earth (day and night, hour, seasons, directions). 2. The Earth's Geology: Geological periods; kinds of rocks; earthquakes; erosion and soil deposits. 3. Study of Terrain: Địa Hình Thái Học: Địa thể địa bốn thuỷ tra thạch (characteristics, cuesta, flat highland); folded terrain (original forms)--anticline, syncline, and some changed terrains, combe, ruz, cluse; bouclier, massif anciens, their formation, eroded surface--peneplain, faille,

horst, graber; volcano--lava, forms of volcanoes; icebergs (their forms); desert (different forms); sea coast. 4. Climate: Atmosphere; climate factors and elements; equatorial, tropical, temperate and arctic zones; study of some special kinds of climate--monsoon, mediterranean, desert. 5. Hydrology: Ocean; river, pond, lake. 6. Animals and Vegetation. B. HUMAN GEOGRAPHY. 1. Population: World population; distribution of population in the world; population variations--birth rate, death rate, increase rate. 2. Ethnology: Race; languages; religion. C. ECONOMIC GEOGRAPHY. 1. Economic Activities: Early economic activities; industrial activities; transportation and business activities.

CIVIC EDUCATION (2 hrs a wk)

A. THE NATION. 1. Elements of a Nation: The people; the land; the government. 2. An Independent Country (Emphasize self-determination): International relations; basis to organize and administer public power--the constitution and national laws. 3. Organization of Public Powers (use the examples of the Republic of Viêt-Nam): Legislative; executive; judiciary. B. THE SOCIETY. 1. Social Relations: Courtesy (how to speak, greet, introduce oneself, etc.); weddings and funerals. 2. Teen-age Law Breakers: Causes; law-breaking forms; effects and solutions.

FIRST FOREIGN LANGUAGES (6 hrs a wk)

A. ENGLISH. 1. Grammar: Study in detail the 8th and 9th grade programs of study. 2. Literature: Political, cultural, economic, and social life of Great Britain by text study; outside reading of any simplified edition written by the authors studied in the literature program. 3. Assignments: Dictation--summarize the text studied; answer questions related to the units; do the tests related to the texts studied or to literature; write essays on simple topics; translate into English or vice versa. 4. Textbook: English for Today, Book III: the last 10 lessons, and Book IV: lessons 9, 13, 14, 15, 16. B. FRENCH. 1. French Culture: Cours de Langue de Civilisation Française by Mauger, Book II, Lessons 21-50; textbook. 2. French Literature: La Fontaine; Moliere; Alphonse Daudet; Anatole France. 3. Grammar: Learn grammar while studying

the texts in Cours de Langue de Civilisation Francaise by Mauger, Book II, Lessons 21-50. 4. Assignments: Translate text study into English and vice versa; write easy essays on common topics.

SECOND FOREIGN LANGUAGES (6 hrs a wk)

A. ENGLISH. Textbook: English for Today, Book I, McGraw-Hill Book Co., N.Y. 1962. B. FRENCH. Vocabulary; conversation; reading; recitation; grammar; dictation; written assignments from Cours de Langue de Civilisation Française by Mauger, Book I.

CLASSICAL LANGUAGES (6 hrs a wk) [For Classical Literature Major only]

A. SINO-VIETNAMESE. 1. Text Study: Modern Vietnamese language; ancient Chinese and Vietnamese poems (emphasize Chinese and Vietnamese texts which have been handed down to the present time or have been translated into Vietnamese); texts--classical language and Chinese poem collections, Hoãng Việt's prose collection, Hoãng Viêt's poem collection, excerpts from Vietnamese history and geography; tell stories related to the texts. 2. Literature: General study of the authors of the texts studied. 3. Vocabulary: Expressions, idioms, classical allusion. 4. Grammar and Calligraphy. 5. Assignments: Translate Tam Quốc Chí from Sino-Vietnamese to Vietnamese; write essays from memory. B. LATIN (Read Latin according to Roman pronunciation): 1. Morphology: Transformation of nouns, adjectives and pronouns; verb conjugation; words which have not been transformed; structure of a simple sentence; order of words in a sentence. 2. Grammar: Explanation of a number of main prefixes and suffixes. 3. Exercises: Read and translate short and easy paragraphs. 4. Authors: Epitone Historiae; Graecae; Phedre; 20 selected fables.

PHYSICS (½ hr a wk)

A. FORCE. 1. Study: Measurement of force by the extension of a spring; units--force kilogram, Newton; experiment with parallel forces and converging forces; add and revolving forces; force couple. 2. Work and Power: Definitions; units--Joule, Watt. B. HYDROSTATICS. 1. Definition of Pressure:

Unit: N/m^2; pressure at a point in liquid; difference of pressure between two points in liquid; pressure at a point on the wall or at the bottom of a liquid container. 2. Archimedes' Principle. C. TEMPERATURE. Mercury thermometer; isothermal opression of gas, law of Mariotte; definition of the specific weight of a gas; heat--units: calorie, Joule; definition of heat of solids and liquids.

CHEMISTRY (1 hr a wk)

A. BASICS. 1. Basics: Water; hydrogen; oxygen; air; mixtures and compounds; lime; ammonia; sulfur; sulfurous anhydride; sulfuric acid; nitric acid; carbon; carbonic anhydride; carbon oxide; basic concepts of acids, bases, and Salts. B. ATOMIC THEORY. 1. Introduction: Nomenclature; formulas.

MATHEMATICS (1 hr a wk)

A. PLANE GEOMETRY. 1. The Ratio of Two Straight Line Segments: Points dividing a straight line segment according to predetermined ratio; algebraic ratio of two parallel vectors; Thales' theorem; similar triangles; formulas in a right triangle; relations between the sections determined by a circle cutting two concurrent straight lines. 2. Sine, Cosine, and Tangent of an Acute Angle: Trigonometric formulas in a right triangle; length of the projection of a line segment; how to use the sine, cosine, and tangent tables. 3. Review of equilateral polygons and the length of an arc (accepting the formula $L = 2\pi R$); radian. 4. Review of the area of a circular sector (accepting the area of the circle to be πR^2). B. CALCULUS. 1. Vector, Algebraic Values, Chasles Formula: Determining a point on a plane by two orthogonal coordinates. 2. Function of a Variable: Function defined in a range; study of the function $y = ax$; $y = ax+b$; $y = \frac{1}{x}$; $y = \frac{a}{x}$. 3. Equation and Inequality Having One Unknown: System of two linear equations with two unknowns.

NATURAL SCIENCES (1 hr a wk)

A. INTRODUCTION. 1. Definition of Special Fields: Aim; application; the Earth in the universe; structure of the Earth; Earth temperature. B. MINERALOGY.

1. Introduction to Minerals: Main kinds--quartz, feldspar, mica. 2. Rock Study: Generalities of rocks; vocanic rocks--structure, classification, main kinds--granite and basalt; sedimentary rocks--main kinds; metamorphic rocks--gneiss, mica, schist. C. PALEONTOLOGY. Definition of fossoil; main findings of Paleontology.

PHYSICAL EDUCATION (3 hrs a wk): Same, more advanced, activities as in former grades.

Second Cycle

[illegible] Experimental Science Major (Section A) and Mathematics Major (Section B)

	EXPERIMENTAL SCIENCE (A) Number of Hours Per Week	MATHEMATICS (B) Number of Hours Per Week
[illegible]	3	3
[illegible]	2	2
[illegible]	[illegible]	1
[illegible]	2	2
[illegible]	0	0
First Foreign Language	4	4
Second Foreign Language	4	4
Chemical Laboratory	0	0
Physics	3	3
[illegible]	1-½	1-½
Mathematics	4	6
Natural Sciences	3	1
[illegible] Education	3	3
[illegible]	[illegible]-½ hours	30-½ hours

VIET[illegible] hrs a wk)

[illegible] AND LITERATURE. 1. Literature: Same as Modern Literature [illegible] detail. 2. Poetry Form: Modern poetry. 3. Study of [illegible] by Nguyễn Công Trứ, Nguyễn Khuyến, Trần Tế Xương, Đồng Dương [illegible] Group, Nam Phong Group (Phạm Quỳnh), Nguyễn Khắc Hiếu (prose) Tự Lực [illegible] Tinh (Đoàn Tuyết), Khái Hưng (Nửa Chừng Xuân), Hoàng Đạo (Mười [illegible]). B. EXERCISES. 1. Oral Presentation: Same as Modern Literature Major. 2. Essay: Same as Modern Literature Major.

[illegible] (2 hrs a wk): Same as Modern Literature Major.

GEOGRAPHY (1 hr a wk): Same as Modern Literature Major.

CIVIC EDUCATION (2 hrs a wk): Same as Modern Literature Major.

FIRST FOREIGN LANGUAGES (4 hrs a wk)

A. ENGLISH. Same as Modern Literature Major but in less detail and including excerpts dealing with science. No literature. B. FRENCH. Same as Modern Literature Major except 19th Century literature, and essays.

SECOND FOREIGN LANGUAGES (4 hrs a wk)

A. ENGLISH. Textbook: English for Today, Book II. B. FRENCH. 1. Vocabulary, conversation, reading, recitation, dictation, grammar from Cours de Langue de Civilisation Française by Mauger, Book I, Lessons 36-65. 2. Written Assignments: Answer questions in readings and dictations; answer questions focused on the same topic; make sentences according to the teacher's examples.

PHYSICS (3 hrs a wk)

A. OPTICS. 1. Linear Propagation of Light: Virtual and real images; eclipses, solar and lunar. 2. Reflection of Light: Plane mirror; statement of Descartes-Snell law; rotating mirror; field vision. 3. Refraction of Light: Statement of Descartes-Snell law; refraction index--absolute and relative refraction indices; method of drawing a refracted ray; partial refraction, total reflection; application--totally reflecting prism; reflection and refraction at plane surface--images and formulas; plane parallel plate--ray treatment, images, and formula. 4. Prisms: Ray treatment, formulas, condition for the existence of an emergent ray; experimental discussion of deviation; angle of deviation; minimum angle of deviation; thin lens--definition and classification (converging and diverging lens); condition for clear images; converging lens--ray treatment, images, Descartes formula; measurement of focal length by the Silbermann method; diverging lens--ray treatment, image, Descartes formula. 5. Degree of Convergence: Definition, formulas to measure the degree

[illegible] lens radii (without proof); compound lens; [illegible]; application to the measurement of [illegible]. 6. The Simplified Eye: Accommodation process; normal eye; near-sightedness; far-sightedness; old eye; medical spectacles; resolving power. 7. Magnifier: Range of viewing; magnification; [illegible] range of viewing; magnification; commercial [illegible]; magnification (excluding the method [illegible]; [illegible] prism; definition of light spectra. [illegible]. 1. Atom: [illegible] electrons; nuclei (excluding the [illegible]; ion; electric current in conducting metal and in conducting [illegible]. Electric force: electromagnetic force; motors; potential difference; power; Ohm law, [illegible] law; power efficiency. 3. Parallel circuit: Theorem; equivalent resistance; resistance box; measurement of resistance by the Wheatstone [illegible]; measurement of the electromagnetic force by voltmeter; [illegible] generators. 4. Magnetism: Natural magnet and man-made magnet; [illegible]; magnetic energy density; Coulomb law; magnetic field--[illegible] field; [illegible]; [illegible] of field; uniform magnetic field; the effect of a uniform magnetic field on a magnet; magnetic movement; magnetic flux through a surface; [illegible]; the field of the Earth. 5. Electromagnetism: [illegible] field of a current; Oersted experiment; magnetic field of an infinite [illegible], a ring, a [illegible] field: experiment about the effect of a uniform magnetic field on a definite current wire; statement of Laplace law; application; [illegible]; mutual action between two parallel straight wires; [illegible] Ampere; work of electromagnetic force; Maxwell law; the principle of maximum magnetic flux; magnetization; qualitative experiment about the magnetization of crude iron and steel; galvanometer; iron-core rotating ammeter and voltmeter.

[illegible] ($1\frac{1}{2}$ hours)

[illegible] Acid, base, and salts (in light of the ionization theory); Berthollet law; oxidizers and reductors (oxidization numbers); physical and mechanical properties of metals and metallic alloys; common processes in metallurgy. 2. Zinc: Zinc oxide and sulfates. 3. Aluminium: Aluminates; aluminum sulfate; alum; iron; cast iron; steel; iron oxides; iron sulfates;

properties of iron salts of types II and III. 4. Copper: Copperous alloys; copperous oxides and sulfates. 5. Lead: Alloys; lead oxides.

MATHEMATICS (4 hrs a wk) [For Experimental Science Major (A)]

A. SPACE GEOMETRY. 1. Lines and Planes: Parallelism of lines and planes; perpendicularity of a plane and a line; line segments, perpendicular and oblique; angle of two intersecting planes; definitions of angles of trihedral and polyhedral cones. 2. Linear Projection onto a Plane (of a point, a line and a line segment): Angle of a line and a plane; definitions of reflections in a point, a line, and a plane; definitions of center, axis, and plane of inflections. 3. Definitions: Parallelepipeds, polyhedral cylinders and cones; volume of a right parallelepiped; volumes of polyhedral cylinders and cones (without proofs); extended areas of orthogonal polyhedral cylinders and cones; circularly symmetric cylinders and cones; peripherical areas of these cylinders and cones (without proofs); volumes of these cylinders and cones (without proof). 4. Spheres: Intersection of a sphere and a line; tangent line to a sphere; plane cross-section; contact planes; determination of a sphere; definitions of cones and cylinder circumscribing a sphere; volume and surface area of a sphere (no proofs). B. ANALYSIS. 1. General Equation of Second Degree with One Unknown: Existence and determination of solutions; sum and product of the roots; sign of roots; given the sum and product of the two roots, find the roots; second degree polynomial; factorization into products; variation of second degree polynomial; inequalities of second degree. 2. Definition and Geometrical Meaning of Differentiation: Rules to evaluate derivatives (derivative of a sum, derivative of a product); the relationship between the variation of a function and the sign of its derivative; functions of second order; monotonous functions; functions of the form $\frac{ax^2+bx+c}{a'x^2+b'x+c'}$. 3. Linear Motion: Equation of motion; uniform linear motion; the Algebraic value of velocity; uniformly accelerating linear motion; equation of motion; the instant Algebraic value of velocity. C. TRIGONOMETRY. The same as the curriculum for section B, excluding the part on logarithmic functions.

MATHEMATICS (6 hrs a wk) [For Mathematics Major (B)]

A. SPACE GEOMETRY. 1. Lines and Planes and Their Determination: Cross-ratio; parallelism of line and plane; perpendicularity of line and plane; line segments,

perpendicular and oblique; angle of two intersecting planes; definition of angle of trihedral cones and polyhedral cones. 2. Linear Projection (of a point, a line and two parallel lines): Projection of a right angle; angle of a line and a plane; projection of a line segment onto a plane; principal inclined line of a plane; common perpendicular segment of two lines; projected area of a plane polygon. 3. Definitions: Reflection in a line, a point, and a plane; axis, center and surface of reflection; equivalent vectors; isometries; ratio of two parallel vectors; similarities, similarity of a plane, a line, and a circle. 4. Polyhedral Cylinder and Polyhedral Cone: Cross-section parrallel to bottom surface; volume of a box; volume of a polyhedral cylinder; volume of a polyhedral cone; extended surfaces of a cylinder and a cone; contact surfaces; volume of a cylinder and a cone. 5. Sphere: Intersection of a sphere and a line; plane cross-section; tangent line; contact planes; determination of a sphere; cylindrical and conical surfaces circumscribing a sphere; volume of a spherical sector, a spherical shell, a polar partial sphere. B. ANALYSIS. 1. Arithmetic Series: Progressive series; logarithm; compound interest; annuity; limit; continuity (proofs of the theorems on limit are not obligatory); indifinite forms. 2. Definition and Geometrical Meaning of Differentiation: Rules to evaluate derivatives (derivative of a sum, derivative of a product); the relationship between the variation of a function and the sign of its derivative; functions of second degree; monotonous function; functions of third degree; functions of the form $\frac{ax^2+bx+c}{a'x^2+b'x+c'}$. 3. Linear Motion: Equation of motion; uniform linear motion; the Algebraic value of velocity; uniformly accelerating linear motion; equation of motion; the instant Algebraic value of velocity. C. TRIGONOMETRY. 1. Trigonometric Arcs and Angles: Trigonometric functions (sine, cosine, tangent, cotangent); periodicity; relationships among trigonometric functions of the same angle; functions of negative angles; functions of angles in all quadrants in terms of those in the first quadrant; exact value for trigonometric functions of some special angles; equations: $\sin x = \sin a$, $\cos x = \cos a$, $\tan x = \tan a$. 2. Addition of Vectors: Projection of the addition vector on a definite axis; addition formulas for trigonometric functions; half-angle formulas for trigonometric functions; sum, difference, and product of trigonometric functions. 3. Use of the Trigonometric and Logarithmic Tables: Equalities and inequalities in trigonometry (focus on the solution and discussion of the equation: $a \cos x + b \cos x = c$); the functions sin x, cos x, tan x and cotan x; derivatives and graphs of these

functions; derivatives of the functions sin (ax+b) and cos (ax+b); the period of a periodic function; variation of several simple trigonometric functions.

NATURAL SCIENCES (3 hrs a wk: 2 hrs lecture; 1 hr lab) [For Experimental Science Major (A)]

A. CLASS WORK (2 hrs a wk). 1. Generalities of Botany: General structure of a flowering plant--description of a plant having roots, stem, leaves, flowers, fruits, and seeds; chemical composition and the physical properties of protoplasm; plant cell--structure, physiology; cell nucleus--DNA and RNA and synthesis of proteins; cell division; plant tissues; roots, stem, and leaves--parts of roots, stem, and leaves, primary structure, secondary structure, growth (roots and stem). 2. Plant Nutrition: Autotrophs--growth hormone and phototropic growth, absorption of water and inorganic salts, metabolism of nitrogen compounds (not including its cycle), circulation of xylem sap (active transport), assimilation of carbon dioxide (photosynthesis). [Experiments proving the assimilation of chlorophyll; chlorophyll intake, function; outcome of chlorophyll intake; the contemporary theory of the chlorophyll assimilation.] 3. Synthesis of Protein and Lipid: The circulation of phloem sap; plant respiration. [Experiments proving respiration (of a plant and a tissue); intensity of respiration; quotient of respiration; outcome of respiration.] 4. Anaerobic Life--Fermentation: Plants' food--synthetic method, survey on plants' food; principles; knop and sachs media; summary on plants' food. 5. Application in Agriculture: Heterotrophs--definition; predatic plants; parasitic plants; symbiotic plants; summary of plant nutrition; changes made by nitrogen and carbon in nature--nitrogen cycle, carbon cycle. 6. Vegetation and Its Media: General study on ecology; relationship between soil and plants--characteristics of soil, influence of vegetation on plants and vice versa; influence of climate on vegetation; interaction between different kinds of plants--competition (self-protection against climate), interdependence and mutualism; generalities of the plant kingdom--distribution of biomes; evolution of certain biotic communitics. 7. Reproduction: Asexual reproduction; sexual reproduction of angiosperms--morphology of a flower with all parts; anatomy of--stamen, pistil; fertilization--pollination, germination of pollen grains, union of gametes; fruits--development of a fruit, biology of fruits, kinds of fruits; seeds--seed formation, kinds of seeds, germination. 8. Pasteur's Contribution: Bacteria (general study only);

fermentation. B. LAB WORK (1 hr a wk). Each student has a notebook to take notes and make drawings. Lesseon 1: A flowering plant with roots, stem, leaves, flowers; fruits and seeds; each student brings one of such plants to class; after class, they draw all parts of the plant in the notebook. Lesson 2: Dehydration reaction of Fehling solution on glucose; color reactions of proteins. Lesson 3: Cell; tissue (if miscroscope is available, the students observe the onion skin cell, leaves, and different tissues). Lesson 4: Roots stem, and leaves; in regards to forms--the students make a collection of different kinds of roots, trunks, and leaves, how to press and dry them; on structure--if microscope is available, the students observe the cross-sectioned samples. Lesson 5: Experiments to show that the root is the organ that absorbs water and inorganic salts. Lesson 6: Experiments to show the assimilation of chlorophyll of green plants. Lesson 7: How to extract chlorophyll--chromatography. Lesson 8: Observation of flowers, fruits and seeds; draw them in the notebook.

NATURAL SCIENCES (1 hr a wk) [For Mathematics Major (B)]

A. GENERALITIES OF BOTANY. Part 1: Description of a flowering plant having roots, stem, leaves, flowers, fruits and seeds; plant cell; plant tissues; roots, stem, leaves (cotyledons), monocots, and dicots; parts of a root, a stem, a leaf; primary structure; secondary structure--root and trunk of a dicotyledon. Part 2: Plant nutrition; metabolism of nitrogen compounds; circulation of upward sap (active transport); the assimilation of chlorophyll; plant respiration; fermentation; circulation of outward sap (diffusion). Part 3: Sexual reproduction of an angiosperm; description of a flower (with all reproduction organs), structure of stamens and pistils, fertilization.

PHYSICAL EDUCATION (3 hrs a wk)

Review all activities in the former grades; organize competitive matches between classes; first-aid training.

Second Cycle

11th Grade: Modern Literature Major (Section C) and Classical Literature Major (Section D)

Subjects	MODERN LITERATURE (C) Number of Hours Per Week	CLASSICAL LITERATURE (D) Number of Hours Per Week
Vietnamese	5	5
History	2	2
Geography	1	1
Civic Education	2	2
Philosophy	0	0
First Foreign Languages	6	6
Second Foreign Languges	6	0
Classical Languages	0	6
Physics	½	½
Chemistry	½	½
Mathematics	1	1
Natural Sciences	1	1
Physical Education	3	3
Total	28 hours	28 hours

VIETNAMESE (5 hrs a wk)

A. LITERATURE. 1. Forms of Literature: From Nguyễn Du to 1945; review Hát Nói, Đường Luật form of Poetry; modern Poetry. 2. Study Excerpts of: Nguyễn Công Trứ; Cao Bá Quát; Nguyễn Đình Chiểu; Chu Mạnh Trinh; Nguyễn Khuyến; Trần Tế Xương; Staff of Đông Dương Tạp Chí (Phan Kế Bính); Nam Phong Magazine Staff (Phạm Quỳnh, Nguyễn Trọng Thuật); Nguyễn Khắc Hiếu (prose); Tự Lực Văn Đoàn groups: Nhất Linh (his work: Đoạn Tuyệt), Khái Hưng (Nửa Chừng Xuân), Hoàng Đạo (Mười Điều Tâm Niệm). B. EXERCISES. 1. Student's oral presentation of the works written by the authors mentioned in the literature program to help the students learn how to express themselves naturally and clearly. 2. Essays:

Analyse and discuss literature topics; how to write an outline and to organize different parts of the essay.

HISTORY (2 hrs a wk)

A. VIETNAMESE HISTORY (from 1802 to 1884). 1. The Nguyễn Dynasty: General history from King Gia Long to King Tự Đức; administration--government organization, law, defense organization, economics and finance, cultural and social situations, religious persecution; foreign relations--with China and other neighboring countries, with Western countries; the Vietnamese society in the 14th century--social structure, ways of living, modernization campaign. 2. The French Invasion: The French attack of Đà Nẵng; the loss of the three Eastern provinces of South Việt-Nam; treaty of 1862; the loss of the three Western provinces of South Việt-Nam; the first French attack of North Viet-Nam; the French attack of Thuận Hoá; the treaties of 1883-1884; the French-Chinese conflict in North Việt-Nam. B. WORLD HISTORY (from the end of the 18th Century to 1914). 1. The U.S.A.: From the campaign for independence to 1914. 2. England: The progress of the parliamentary regime. 3. The Industrial Revolution. 4. The European revolution in the second half of the 18th century. 5. The colony expansion of the Western countries (Europe). 6. China and the colonialists' invasion: Tân Hợi Revolution. 7. Japan: Minh Trị Era. 8. The Far-East countries facing the colonialists' invasion: (Burma, Thailand, Laos, Cambodia, Malaysia, Philippines, Indonesia).

GEOGRAPHY (1 hr a wk)

A. PHYSICAL GEOGRAPHY. 1. General view of Việt-Nam: Location, shape, and area of Việt-Nam; its boundaries (natural and legal). 2. Physical Aspects: The terrain--mountain and highland, delta, coast and sea bottom; climate--the climatic areas; hydrology and oceanography--river, pond and lake, ocean water and its movement, animals and vegetation under sea; distribution of animals and vegetation. B. HUMAN GEOGRAPHY. 1. Population of Việt-Nam: Ethnography--ethnic groups, languages, religions, customs; changes in population enumeration; migration; population distribution--in the country, in the city; forms of habitation (in the country, in the city). 2. Political Geography:

Political regime in Việt-Nam; central and loca. administration. 3. Economic Geography: Agricultural activities (farming, husbandry, fishery); arts and crafts; industry; communication, trade.

CIVIC EDUCATION (2 hrs a wk)

A. BASIC ECONOMICS. 1. Basic Concept: Definition; objective; usefulness. 2. Economic Policy: Free economic policy--its start, support argument and policy, how to carry it out, its consequences; the study of rigid and flexible economic policies--arguments for and against each policy, how to carry them out; their conquences. 3. Factors of Production: Natural resources, capital, labor, technique; outline of production factors in Việt-Nam; production and trade agencies--private enterprise--definition, classification, merging of companies; condition of private enterprises in Viet-Nam; public corporations--definition, classification; condition of public corporations in Việt-Nam; cooperatives--condition of cooperatives in Việt-Nam. 4. Money: Generalities on monetary system in Việt-Nam--definition, brief history of evolution; gold and silver coins; paper money (issue procedure, inflation, depreciation). 5. Credits and Banks: Credits--definition, kinds, role; summary on credits in Việt-Nam; banks--definition of main transaction, central banks, commercial banks.

FIRST FOREIGN LANGUAGES (6 hrs a wk)

A. ENGLISH. 1. Text Study and Literature: Text--Great Britain's political, social, cultural and economic aspects; Literature--summary of Great Britain's literature of the 19th and 20th centeries [the student makes a report in Vietnamese; summary and questions will be made in English]; outside reading--encourage students to read a simplified version of an author in the literature program. 2. Grammar: Review and gain futher grammatical knowledge acquired in previous years. 3. Assignments: Same as in 10th Grade for Literature Major.
B. FRENCH. 1. French Culture (2 hrs a wk). 2. French Literature: 19th century, including Chateaubriand; Lamartine; Victor Hugo; George Sand.
3. Grammar: Follow the order in Cours de Langue de Civilization Française, Lessons 51-70. 4. Written Assignments: Text study; translation; essays on common topic (description, narration, letter writing).

SECOND FOREIGN LANGUAGES (6 hrs a wk) [For Modern Literature Major (C) only]

A. ENGLISH. English for Today, Book II. B. FRENCH. 1. Vocabulary, Conversation, Reading, Dictation, Grammar, Recitation from Cours de Langue de Civilization Francaise by Mauger, Book I, Lessons 36-65. 2. Written Assignments: Answer questions in the readings and dictations; answer questions related to the same topic; make sentences according to the teacher's examples.

CLASSICAL LANGUAGES (6 hrs a wk) [For Classical Literature Major (D) only]

A. SINO-VIETNAMESE. 1. Text Study (2 hrs a wk): Modern Vietnamese; classical prose and poetry of China and Viêt-Nam, which have been translated into Vietnamese. 2. Literature (1 hr a wk): Make a brief study of the authors when the students study their texts. 3. Vocabulary (1 hr a wk): Idioms; expressions; references in the texts to be studied. 4. Grammar (1 hr a wk): Syntax; prosody; discuss poetry forms briefly. 5. Assignments (1 hr a wk): Translate from Sino-Vietnamese to Vietnamese (Dong Chu Liet Quoc); learn to use the dictionary. B. LATIN. 1. Complete study of morphology; structure of a compound sentence. 2. Vocabulary: Mutation and structure of words. 3. Exercises: Text study, translation of authors--Corneluis Nepos: Miltiades, Hannibal, Epaminondas; Caesar: De Bello Gallico.

PHYSICS (½ hr a wk)

A. OPTICS. 1. Linear Propagation of Light: Light reflection; plane mirrors; statement of Descartes-Snell law; light refraction; statement of Descartes-Snell laws; definition of relative and absolute indices of refraction; diffraction of light by prism. 2. Thin Lens: Definition and classification (converging lens and diverging lens); converging lens--ray treatment, focal point, focal length, imaging (omitting formulas); the principles of a magnifier. B. ELECTRICITY. 1. Atomic Structure: Electrons, nuclei (omitting the nuclear structure); ions; electric current. 2. Generators: Electromagnetic force; motors; potential difference. C. MAGNETISM. 1. Natural Magnets and Man-made Magnets: Poles; qualitative difinition of magnetic field; existence of the Earth's magnetic field; magnetic field of an electric current; Oerstedt experiment.

CHEMISTRY (½ hr a wk)

SUMMARY. Introduction to oxidizers and de-oxidizers; review on common processes in metallurgy; common metals--zinc, iron, cast iron, steel, aluminium, copper, lead (physical and mechnical properties of only zinc, iron, aluminium and copper are discussed).

MATHEMATICS (1 hr a wk)

A. SPACE GEOMETRY. 1. Lines and Planes and Their Determination: Cross-ratios; parallelism of a line and a plane; perpendicularity of a line and a plane; line segment, perpendicular and oblique; angle of two intersecting planes; perpendicular planes; definitions of angles of trihedral and polyhedral cones; definitions of reflections (in a point, a line, and a plane); definitions of center, axis, and plane of inflections; definitions of parallelpipeds, polyhedral cylinders and cones, circular cylinders and cones; peripherical areas and volumes (without proofs); definition of spheres; intersection of a sphere and a plane; tangent lines; contact planes; surface area and volume of a sphere (no proof).
B. ANALYSIS. 1. General Equation of Second Degree with One Unknown: Condition for the existence of roots; evaluation of roots; sum and product of roots; sign of roots. 2. Variation of polynomials of second degree with constant coefficients; graphs.

NATURAL SCIENCES (1 hr a wk)

GENERALITIES OF BOTANY. Part 1: Description of a flowering plant having roots, stem, leaves, flowers, fruits and seeds; plant cell; plant tissues; roots, stem, leaves (cotyledons), monocots and dicots--parts of a root, a stem, a leaf; primary structure; secondary structure--root and trunk of a dicotyledon. Part 2: Plant nutrition; metabolism of nitrogen compounds; circulation of upward sap (active transport); the assimilation of chlorophyll; plant respiration; fermentation; circulation of outward sap (diffusion). Part 3: Sexual reproduction of an angiosperm; description of a flower (with all reproduction organs); structure of stamens and pistils; fertilization.

PHYSICAL EDUCATION (3 hrs a wk)

Revise all activities in the former grades; organize competitive matches between classes; first-aid training.

Second Cycle

12th Grade: Experimental Science Major (Section A) and Mathematic Major (Section B)

Subjects	EXPERIMENTAL SCIENCE (A) Number of Hours Per Week	MATHEMATICS (B) Number of Hours Per Week
Vietnamese	0	0
History	1-½	1-½
Geography	1-½	1-½
Civic Education	1	1
Philosophy	4	3
First Foreign Languages	3	3
Second Foreign Languages	3	3
Classical Languages	0	0
Physics	5	5
Chemistry	2	2
Mathematics	5	9
Natural Sciences	4	1
Physical Education	3	3
Total	33 hours	33 hours

HISTORY (1-½ hrs a wk): Same as Modern Literature Major.

GEOGRAPHY (1-½ hrs a wk): Same as Modern Literature Major.

CIVIC EDUCATION (1 hr a wk): Same as Modern Literature Major.

PHILOSOPHY [3 hrs a wk for Mathematics Major; 4 hrs a wk for Experimental Science Major]

A. PSYCHOLOGY. Same as Modern Literature Major except--abstraction and generalization; use of symbols; language and ideas; judgment and reasoning; will; feeling;

reason; freedom. B. LOGIC. Same as Modern Literature Major except--some examples about the contemporary theories in Physics, Chemistry, and Biology. C. ETHICS. Same as Modern Literature Major.

FIRST FOREIGN LANGUAGES (3 hrs a wk)

A. ENGLISH. Same as Modern Literature Major but in less detail; texts concentrate on scientific terms; literature. B. FRENCH. Same as Modern Literature Major.

SECOND FOREIGN LANGUAGES (3 hrs a wk)

A. ENGLISH. English for Today, Book III. B. FRENCH. 1. Vocabulary, Conversation, Reading, Recitation, Grammar, Dictation from Cours de Langue de Civilisation Française, Book II, Lessons 1-36. 2. Assignment: Answer questions based on the reading and dictation; answer consecutive questions related to the same topic; build sentences according to a given pattern; translate short texts.

PHYSICS (5 hrs a wk)

A. KINETICS AND DYNAMICS. 1. Errors and Probability: Approximate formula; free fall in vacuum; a hanging bob; Newton's tube; motion photography. 2. The Fundamental Law of Kinetics (without proofs): Mass; weights; a system of mass points; external and internal forces; center of mass--position determination of center of mass; theorem on center of mass. 3. Application to Translational Motion: Tension; uniform circular motion (spherical pendulum, motion of a car at a curve, sattelite, oscillation of a mass-spring system); three-demensional motion of a particle in vacuum; rotation of a rigid body about an axis; fundamental equation of kinetics for the rotational motion of a rigid body; inertial motion; statement of Huyghens' theorem; sinusoidal motion; rotation of a torsional pendulum. 4. Kinetic Energy: Definition and theorems; applications--sliding or rolling without sliding on an inclined surface; relativistic formulas related to kinetic energy. 5. Potential Energy: Potential energy of gravitational field; potential energy of elastic forces; mechanical energy--

conservation of mechanical energy. 6. Compound Pendulum: Theoretical consideration of small oscillations--formula to find period; simple pendulum--formula to find the period equivalent to that of the compound pendulum (excluding reversible pendulum). 7. Momentum: Convervation theorem; principles of rockets. 8. Air Friction: Final velocity; applications--airplanes; parachutes; definition of the velocity unit Mach; convertibility of heat and work; energy units--calorie, Joule. 9. Heat Engine: Principles of 4-stroke engine; principles of 2-stroke engine; virtual power; real power; real (or industrial) efficiency and heat efficiency; Carnot principle and theorem; maximum heat efficiency; principles of a refrigerator. 10. Forms and Transformations of Energy (mechanical energy, heat, electricity, radiation, chemical energy): Conservation of energy; Einstein equation. B. PERIODIC MOTIONS. 1. Definition of a Periodic Motion: Period, frequency; Fourier theorem; methods of observation. 2. Propagation of a Pulse: Horizontal and vertical motion; velocity of propagation; propagation of a sinusoidal wave; wave length and equation of motion; Fresnel principle of superposition of 2 sinusoidal waves of identical period moving in the same direction; interference--theoretical and experimental discussion on wave magnitude. 3. Reflection of Waves: Standing waves; assumptions on wave motion; velocity (excluding the method of measurement); wave length; ultraviolet and infrared light--definition and properties; Young's experiment on interference of monochromatic light by two slits. C. ELECTRICITY. 1. Electromagnetic Induction: Lorenz law; induced emf; self-induction; induction unit--Henry. 2. Principles of a Plate Capacitor: Capacitance--definition,unit--(Farad); formula to determine capacitance of a plate capacitor; stored energy (without proof); capacitors in series and in parallel; plate capacitor box of variable capacitance; electric field between the two plates. 3. Definition of an Alternate Current: Generation of ar alternate current; properties (experimental approach); efficient current; efficient potential; effects of induction and capacitance on circuits, evaluation of total reactance of a circuit (using Fresnel diagram) excluding the cases where there are emf and motors or where a parallel circuit is involved; average power; power coefficient. 4. Principles of a Transformer: Formulas (without proof); application to energy transportation; properties of electromagnetic waves. D. NUCLEAR PHYSICS. 1. Electronic Radiation: Thermal radiation (diodes, triodes); photoelectric effect; photons; electron beam; cathode rays; ionization; cathode ray oscilloscope; x-rays; natural radiation; electromagnetic waves in summary; particle and wave nature.

CHEMISTRY (2 hrs a wk)

A. GENERAL CHEMISTRY. Compounds and mixtures; elements; the atomic theory (excluding the fundamental laws of Proust, Dalton, Richter, Gay-Lussac); symbol and atomic weight of an element; formula and molecular weight of a compound; nomenclature of compounds; atomic number; gram-atomic weight; gram-molecular weight; Avogadro number; physical law on molecular weight--Avogadro-ampere law; Raoul law; the concept of valency. B. ORGANIC CHEMISTRY. 1. Introduction: Definition of an organic compound; qualitative analysis; quantitative analysis; molecular formulas of organic compounds; synthesization of organic compounds; chemistry radicals; functional groups. 2. Methane: Saturated hydrocarbons; alkane radical; functional group; petroleum. 3. Ethylene: Usaturated acethyl hydrocarbons; alkene radical; functional group. 4. Ethyl Alcohols: Alcoholic fermentization; alcoholic radical; classification of primary, secondary, and tertiary alcohols; ethyl aldehyde; aldehyde radical. 5. Acetone: Acethol radical; acetic acid; acetic fermentization; radical of organic acids. 6. Esterization: Hydrolysis; saponization; fats; fatic acids; soaps; wax; glycerines; benzene; phenols; anilines.

MATHEMATICS (5 hrs a wk) [For Experimental Science Major (A)]

A. ANALYSIS. 1. Decimal Logarithm: Definition $y = \lg X \Leftrightarrow x = 10^y$; logarithm of a product, a quotient, a power function and functions of fractional powers; use of logarithmic table; logarithms and antilogarithms; laws of logarithms; application to numerical evaluation and to solution of equation reducible to a second order; equation. 2. Trigonometric Function (arguments expressed in terms of radians): Limit of $\frac{\sin x}{x}$ as $x \to 0$; derivatives of sin x, cos x, sin (ax+b) and cos (ax+b); determination of period and graph of the functions $y = \sin(ax+b)$; $y = \cos(ax+b)$. 3. Integration: Definition: Integral of a sum; integral of a function of known integral multiplied by a constant; integrals of x^n , $u'u^n$ (n is a rational number other than -1); sin (ax+b) and cos (ax+b), excluding the methods of integration by parts and by change of variables; evaluation of the area under a curve and between two curves (without proofs). 4. Vectors: Definition; free and bound vectors; zero vectors; translational vectors; axes; unit vectors; ratio of two parallel

vectors; Algebraic value of a vector projected on an axis; Chasles formula; addition of vectors; projection of vectors on an axis; definitions and properties. 5. Plane Coordinates: Orthogonal coordinates; coordinates of a point; components and norm of a vector; equation for a circle. 6. Vector Functions of One Variable (defined by its two components with respect to an orthogonal coordinate system): Vector differentiation; definition, components of the derivative vector; direction and Algebraic value of the derivative vector; formulas of vector differentiation. B. KINETICS. 1. Introduction to Motion: Description of motion by orbital equation and time; dependent equation; diagram of the orbit of motion projected on the abscissa; description of motion by a vector function; parametric equations of motion; Descartes equation of orbit. 2. Velocity Vector: Velocity vector defined as the first derivative vector; given time-dependent equations and orbital equation, determine velocity vector. 3. Acceleration Vector: Acceleration vector defined as the derivative vector; motion of uniform acceleration and deceleration. [Do not discuss normal or tangent components of acceleration vector.] 4. Linear Motion: Direction of motion; motion of uniform acceleration and deceleration; diagram of motion in the abscissa; uniform linear motion. 5. Uniform Circular Motion: Time-dependent equation and orbital equation--velocity and angular velocity; parametric equations; velocity vector and acceleration vector. 6. Sinusoidal Linear Motion: Sinusoidal linear motion with time-dependent equation of the form: $x = a \cos (wt+\phi)$; reduction of equation $x = a \cos (wt+\phi)+b \cos (wt+\theta)$. [Do not discuss Fresnel's graphical method.] C. SETS - PROBABILITY - STATISTICS. 1. Sets: Basic concepts; null set; subset; complementary; intersection; union; difference; product set; meaning of the symbols $\Rightarrow$, $\Leftrightarrow$, $\forall$, $\exists$; groups; permutations; Newton's equality; Pascal's inequality. 2. Probability: Events; sample; universe; the concept of equal chance; definition of probability in terms of percentage; addition formula; multiplication formula; independence between two events. 4. Descriptive Statistics: Arrangement of facts--tables, diagrams (bar diagram, line diagram, pie diagram); frequency distribution--single frequency, class frequency; graphs; histogram; frequency curve; frequency polygon; accumulative frequency; cumulative curve; mean, median, mode; deviations--mean deviation, quartile deviation, standard deviation; linearity--dispersion curves; curve fitting and the method of least squares.

MATHEMATICS (9 hrs a wk) [For Mathematics Major (B)]

A. ALGEBRA. 1. Basic Concepts of Mathematical Logic: Definition of a statement; negation; meaning of the symbols $\wedge$, $\vee$, $\Rightarrow$, $\Leftrightarrow$, $\forall$, $\exists$; inverse statement; methods of verification--induction, deduction. 2. Sets: Basic concepts of sets; null set; subset; set of subsets; complement; intersection; union; difference; product set; ordered pair; ordered element of n dimension (use N, Z, Q, R as examples). 3. Relation: Definition; properties--reflection, symmetry, antisymmetry, translation; equivalent relations--equivalent class, division of a set into equivalent classes; ordered relation. 4. Mapping: Definition, Diagram; onto mapping; one-to-one mapping; one-to-one-and-onto mapping; inverse mapping; product of mappings. 5. Internal Laws: Definition; properties; associativity, commutativity; identity element; inverse element; reducible element; distribution of two laws. 6. Basic Structures Group: Definition; properties; subgroup; ring; field--definition, examples; vector space--definition of external laws, definition, examples of vector space. 7. Complex Number: Definition in terms of ordered pairs (x, y); equal; opposite and conjugate complex numbers; addition, subtraction, multiplication, division of complex numbers; complex field; the symbol i; complex number expressed in the form z = x+iy; modulus and argument; trigonometric form; De Moivre's formula.

B. ANALYSIS. 1. Real Function of a Variable: A real function defined as a mapping in R; inverse function; limit and continuity; graph, graph of an inverse function; asymtotes--definition, how to find it. 2. Derivative: Derivative of a function and its inverse; differentials--definition, geometric description. 3. Integral: Definition; symbol of an indefinite integral; integral of a sum; integral of a product of a constant and a function of known integral (the function is of the form x^n, $u'u^n$ where n is a rational number other than -1); integral of sin (ax+b) and cos (ax+b). [Do not discuss the methods of change of variables and integration by parts]; geometrical meaning of integral; symbol of a definite integral; formulas to evaluate the area under a curve or between two curves. 4. Neperian Logarithmic Function Log x: Definition; logarithm of a product, a quotient, a power; limit of Log x as $x \rightarrow 0$ and $x \rightarrow \infty$; the base e; graphs; derivative of Log u, integral of $u'u^{-1}$. 5. Exponential Function e^x: Exponential function defined as the inverse function of Log x; derivative; graph. 6. Differential Equation: Acceptance of formula to solve the equations $y' = f(x)$; $y'' = f(x)$; $y' = ay$; $y''+w^2y = 0$ with f(x) being a simple function

such as a polynomial with integral coefficients, sin (ax+b); cos (ax+b) and a and w being constants. 7. Vectorial Function of a Variable (defined by its two components in a two-dimensional system of coordinates): Vectorial derivative--definition, components of a vectorial derivative, direction and Algebraic value, of a vectorial derivative; formula to find derivatives. C. KINETICS. 1. Introduction to Motion: Orbit; description of motion by orbit; time-dependent equations and diagram of motion on the abscissa; description of motion by a vector function or parametric equations. 2. Velocity Vector: Instantaneous velocity vector defined as the first derivative vector; determination of velocity vector given orbit and time-dependent equation. 3. Acceleration Vector: Instantaneous acceleration vector defined as the second derivative vector; tangential and normal components of accelerator vector; accelerating and decelarating motion. 4. Simple Motions: Linear motion; circular motion; linear sinusoidal motion; reduction of equation of the form $x = a \cos(wt+\phi) + b \cos(wt+\theta)$. D. GEOMETRY/ANALYTICAL GEOMETRY. 1. Vectors: Definition; equal vectors; equivalent vectors; free vectors; addition of vectors; structural properties of an additional group; vectors--structural properties of a vector space; product of the projected component of a vector by a real number. 2. Directional Angles in a Plane: Angles formed by two axes, or two vectors, or two half lines; Chasles formula; angle formed by two lines; middle line; inscribing angles; locus of points substanding a fixed segment under a given directional angle; inscribing tetrahedron; simson line; angle of two curves; properties of an angle of two circles. 3. Cartesian Coordinates: System of coordinates; coordinates of a point; components and norm of a vector; scalar product of two vectors; definition, properties; change of coordinates under a translation and a rotation. 4. Straight Line (in orthogonal coordinates): Equation $ax+bx+c = 0$; $x \cos\theta + y \sin\theta + p = 0$; directional cosines; directional parameters; angle formed by two straight lines; distance of a point from a line; equation of a line; a middle line of the angle formed by two lines. 5. Circles: Geometrical consideration; power of a point with respect to a circle; radical axis; radical center; power difference; orthogonal circles; pencil of circles--definitions, classification; conjugate pencils; directrix of a point with respect to two lines and to a circle; analytical consideration (orthogonal coordinates in a plane); equation of a circle; equation of a tangent to a circle; analytical expression of power; application. 6. Conics: Geometrical consideration--definitions; parabola determined by a

focal point and directrix; ellipse and hyperbola determined by two focal points; loci of centers of circles passing a fixed point and tangent to a line or another circle; symmetry; tangent at a fixed point--existence and properties; analytical consideration (orthogonal condinates in a plane)--equation of parabolas defined by the axes of reflection and the tangent at the peak; equations of hyperbolas and ellipse defined by two axes of reflection; equation of asyntotes to a hyperbola; laws of points, whose ratio of distance from a point and a line is a constant; locus of points, the coordinates of which satisfy $Ax^2 + 2Bxy + Cy^2 + 2Dx + 2Ey + F = 0$ (which can be reduced to a simplified form by change of axes). D. POINT TRANSFORMATIONS IN A PLANE. 1. Introduction to Point Transformations: Definition as a mapping in the R^2 space; identity transformation; preservation of shapes; inverse transformation; invertibility; product of transformations; group of transformations. 2. Isometries: Isometry--definition of isometries, definition and determination of isometry; translations--definition, properties, transformations of lines and circles, product of translations, groups of translations; rotations--definition, properties, transformations of lines and circles. 3. Anti-isometries: Definition of anti-isometries; definition of a reflection in a line; product of 2 reflections. 4. Similitudes: Similarity--definition, properties, product of two similarities, group of translational similarities, transformations of lines and circles, congruent transformations--definition, properties, transformations of lines and circles. 5. Inversions: Definition; properties; preservation of angles; product of two co-central inversions; transformations of lines and circles. 6. Transformations in a Complex Plane: $z' = az+b$ (a and b are complex numbers); $z' = \frac{k}{z}$ (k is a real constant); definitions; relationships between types of transformations.

NATURAL SCIENCES (4 hrs a wk; 3 hrs lecture, 1 hr lab) [For Experimental Science Major (A)]

A. LECTURE. 1. Animal Anatomy and Physiology: General Studies--general morphology of a mammal (using white mouse); animal cell--structure and physiology (emphasizing the DNA and RNA in the nucleus); animal main tissues. 2. The Function of Coordination: Bones--structure, chemical composition, calcification and growth, joints; muscular system--kinds of muscles, forms, structures, properties, experimental research on muscle contraction (not the chemical

reaction of muscle contraction), muscle energy; the nervous system--nerves tissue, neuron; the cerebro-spinal nervous system--anatomy and physiology of the main parts (not the origin and development of the cerebro-spinal nervous system, but the sensory and motor pathways of the cerebellum and the cerebro-spinal nerve); the vegetative nervous system--sympathetic and parasympathetic; the senses--the eye, sight. 3. The Nutritive Function: Digestion--food (including vitamins); enzymes--general outlines about the digestive tube (do not go into its structure); digestive glands--physiology of digestion (not including the extraction of the digestive juice); absorption of the chyle; circulation--blood and blood groups; anatomy of the circulatory system--the heart and blood vessels (general study only); physiology og blood circulation; lymph--composition, function, circulation; respiration--anatomy of the respiratory system; mechanic, physical, chemical phenomena of the respiratory system; cellular respiration (without mentioning lung capacity, the regulation of respiration, theories on cellular respiration and asphyxia); body temperature--regulation of body temperature; function of the liver. 4. Regulation of Different Organs Functions: Endocrine glands and hormones--thyroid and parathyroid glands; endocrine; pancreas; adrenals; ovaries and testes; pituitary gland; action of the hormones; regulation of the nervous system and the hormones. 6. Animal Physiology: Mammal's reproductive organs--generalities about the reproductive organs; gamchogenesis (reduction of chromosome); fertilization; sex determination; heredity--experimental research about hybridization; mono- and dihybridization, Mendel's Laws; man's heredity (explain heredity in terms of chromosomes, color blindness as an example). B. LABORATORY WORK. Dissect a mouse for general observation of the organs; observation of the animal cell; bone study (make a longitudinal and transversal section of a fresh cow bone); observation of the muscles of a frog; study of the frog muscles' elasticity and contraction; study of a pig's brain; testing the frog's reflex movements; study of the eyes, anatomy of cow's eyes; observation of the blood cells (red and white blood cells) of a frog and of man; observation of a capillary in the membrane of a frog's leg or at the tail of a gold fish; observation of the shape of a pig's heart; dissection.

NATURAL SCIENCES (1 hr a wk) [For Mathematics Major (B)]

A. ANIMAL ANATOMY AND PHYSIOLOGY. 1. Generalities: General structure of a mammal (use a mouse as an example); animal cell--composition, structure,

physiology; principal tissues of an animal. 2. Function of Coordination: The nervous system--nervous tissues, neurons; cerebro-spinal--the spine, the medulla, the brain; the e and sight. 3. The Nutritive Function: Digestion--food, enzymes, general outlines of the digestive system, digestion, the absorption of chyle; blood--composition and function, coagulation, blood groups. 4. The Endocrines: Thyroid gland; endocrine; pancreas; pituitary gland. 5. General Outline of Animal Reproduction: Composition and structure of the reproductive organs; gametogenesis (formation of gametes); fertilization.

PHYSICAL EDUCATION (3 hrs a wk): Same as 11th Grade.

Second Cycle

12th Grade: Modern Literature Major (Section C) and Classical Literature Major (Section D)

Subjects	MODERN LITERATURE (C) Number of Hours Per Week	CLASSICAL LITERATURE (D) Number of Hours Per Week
Vietnamese	0	0
History	2	2
Geography	1	1
Civic Education	1	1
Philosophy	9	9
First Foreign Languages	6	6
Second Foreign Languages	6	0
Classical Languages	0	6
Physics	½	½
Chemistry	½	½
Mathematics	1	1
Natural Sciences	1	1
Physical Education	3	3
Total	31 hours	31 hours

HISTORY (2 hrs a wk)

A. VIETNAMESE HISTORY (from 1884 to the present). 1. The French Domination: The establishment of the French administration--administrative policy, administrative structure (administrative, legal, economic, financial, educational, security); movements against the French; the Vietnamese society under the French domination--influence of Western civilization, material and spiritual activities. 2. Việt-Nam from 1945 to the present. B. CIVILIZATION OF VIET-NAM. 1. Brief History of Its Foundation: Local basis; influence from China, India, and the West. 2. Activities: Political, economic and social; intellectual. C. WORLD HISTORY (from 1914 up to the present). 1. China from

the Tân Hợi Revolution to the present. 2. Japan from after the Minh Dynasty to the present. 3. India: Gandhi and the national movement; independence period. 4. The First World War: Cause and consequence. 5. Western World Powers between the Two World Wars: Problems faced by England, France, U.S.; the economic depression of 1929; the dictatorial regimes (Communism in Russia, Nazism in Germany, Fascism in Italy). 6. The Second World War: Cause and consequences. 7. International Relations Since 1945: Development of world blocs; Cold War; role of the United Nations. 8. Civilization and Life of Man after 1945: In scientific and technical fields; in economic, social, cultural, religious fields.

GEOGRAPHY (1 hr a wk)

A. GENERALITIES. 1. Present World Economic Situation: Economic world powers; world markets. B. ECONOMIC BLOCS. 1. The Capitalist Economic Bloc: The U.S.; West Germany; Great Britain; Japan. 2. The Socialist Economic Bloc: The USSR; Red China. 3. The Third Bloc: India; Indonesia.

CIVIC EDUCATION (1 hr a wk)

A. THE NATIONAL POLITICAL STRUCTURE. 1. Free Democratic Regimes: Characteristics; different regimes; political parties. 2. Contemporary Dictatorial Regimes: Causes (political, economic, social); characteristics; forms (Marxism, Fascism). B. INTERNATIONAL ORGANIZATIONS. 1. The United Nations: Organization, operation. 2. Regional Organizations: NATO; SEATO; OAS.

PHILOSOPHY (9 hrs a wk)

A. PSYCHOLOGY. 1. Objectives: Nature of psychological phenomena; relationship between psychological and physiological phenomena; perception, sensation; association, memory, imagination, attention; abstraction and generalization, use of symbols; language and ideas; judgment and reasoning; pleasure and suffering, emotion, passion; consciousness, subconsciousness, personality; personalism, instinct, habit, volition, disposition; reason, freedom. B. LOGIC. 1. Basic Principles of Reasoning: Ordinary thinking process--

intuition and reasoning: induction and deduction, analysis and synthesis; science and scientific spirit, science and technique; mathematics--objectives, basis, method, reasoning, use; experimental science--facts, hypothesis, discovery and verifying the laws, principles, theory; some examples of theories in contemporary physics, chemistry, physiology; social studies--psychology, history, sociology. C. ETHICS. 1. The Question of Ethics: Ethics and science; conscience--nature and value; duty and right--responsibility; justice and charity; great concepts of Eastern and Western ethics; ethics and the individual--body and intellect; human dignity--personalism and community; ethics and family life--family, marriage, birth; humanism of Confucianism, benevolence of Buddhism; charity of Christianity. D. GENERAL PHILOSOPHY. 1. Basics: Theory of cognition, basic principles of reasoning; truth; philosophy and science; philosophy and ethics; philosophy and religion; space and time--materialism; life; spirit; freedom--personalism and values; God. 2. Philosophy of the East: Generalities on Confucianism, Taoism, Buddhism. 3. Philosophical Works: Each student should read one book on Philosophy of the East, and one book on Philosophy of the West, to be chosen from: (Phisolophy of the West) Plato: Phedon, Gorgias, the Republic (Phedon, Gorgias, la Republique); Aristotle: Moral at Nicomaque (Morale à Nicomaque); Marc Aurele: Thoughts (Pensées); Descartes: Discourse on Method (Discours de la Méthode); Pascal: Thoughts and Opuscules (Pensées et Opuscules); J.J. Rousseau: Social Contract (le Contrat Social); C.L. Bernard: Introduction to the Study of Experimental Medicine (first part); Bergson: Laughter (Le Rire), Thought and Motive (La Pensées et le Mouvant), The Two Sources of Moral and Religion (Les Deux Sources de la Morale et de la Religio , Emmanuel Mounier: Personalism (Le Personalisme), Introduction to Existentialism (Introduction aux existentialismes); Gabriel Marcel: To Be and To Have (Etre et Avoir). (Philosophy of the East) The Four Letters: Dai Hoc, Trung Dung, Manh Tu, Luan Ngu; Ethics (Dao Duc Kinh); Dharma: Pada, Khoa Hu Luc.

FIRST FOREIGN LANGUAGES (6 hrs a wk)

A. ENGLISH. 1. Grammar: Review rules; emphasize writing style. 2. Reading and Literature: Reading--American civilization; literature--brief study of American literature; supplementary reading--one book of each author. 3. Written

Assignments: Short presentation in English of topics selected by students or by the teacher; essay on common topics; translation. B. FRENCH. 1. French Civilization (4 hrs): Books--Cours de Langue de Civilisation Française (French Civilization, Mauger), Book III; the following 15 lessons: 1. Taxis, 2. Petits Métiers, 3. Parisiens et Provinciaux, 4. Gosses du Palais Royal, 5. Prise de la Bastille, 6. À la cité Universitaire, 7. La Tour Eiffel, 8. Un Grand Magasin, 9. À l'Inprimerie d'un Journal, la nuit, 10. Quand le penple fait grève, 11. Le premier voyage aérien, 12. Expositions, 13. Au Cinéma, 14. Le Zoo de Vincennes, 15. Aéroports de la Banlieue Parisienne. 2. French Literature (2 hrs): 19th Century--Vigny, Verlaine; 20th Century--Saint Exupéry, Duhamel, Colette. 3. Written Assignments: Text study; translation; essays on common topics (description, narration, letter writing).

SECOND FOREIGN LANGUAGES (6 hrs a wk)

A. ENGLISH. English for Today, Book III. B. FRENCH. 1. Vocabulary, Conversation, Reading, Silent reading, Grammar, Dictation from: Cours de Langue de Civilisation Française by Mauger, Book II, Lessons 37-70. 2. Written Assignments: a. First semester: Answer questions based on the reading and the dictation; answer questions relating to the topics studied; build sentences according to patterns; write a paragraph based on a picture, a game, or another paragraph; translate short texts which have been studied. b. Second semeter: Write short essays on common topics (descriptions, narration, letter writing).

CLASSICAL LANGUAGES (6 hrs a wk) [For Classical Literature Major (D) only]

A. SINO-VIETNAMESE. 1. Text Study (3 hrs a wk): Excerpts from Confucius, Mencius, other Chinese and Vietnamese authors. 2. Literature (2 hrs a wk): Teach briefly about the authors during the text study period. 3. Assignments (1 hr a wk): Translate from Chinese into Vietnamese (Kim Cổ Kỳ Quan, Truyền Kỳ Mạn Lục, Lam Sơn Thuc Lục, Hoàng Lê Nhất Thống Chí). B. LATIN. 1. Review: Grammar; study of poetry rhyme (poetry of 5 and 6 rhymes); general literature. 2. Assignments: Text study; translation. 3. Authors: De Signis, De Natura Deorum (Cicero); De Conjuratione Catilinae (Salbustius); Aeneidos Lib, I.II (Virgilius).

PHYSICS (½ hr a wk)

1. Free Fall in Vacuum: Zero initial velocity. 2. The Fundamental Law of Kinetics: Definition of mass; CGS and MKS units of force; mass and acceleration. 3. Definition of Energy: Definition of potential, kinetic, mechanical energy; other forms of energy--heat, electricity, radiation, chemical. 4. Concertibility of Work and Heat: Convertibility of other forms of energy; law of energy conservation; energy unit--Joule; heat unit--calorie; principles of a four-stroke engine. 5. Pulse: Propagation of a pulse; propagation velocity; sinusoidal motion; propagation of a sinusoidal wave; wave length; experimental study of the super position of two waves--interference; standing waves (only transverse waves are discussed in connection with a fixed obstacle); Young experiment on light interference by two slits; hypothesis about light waves. 6. Electronic Radiation: Photo electric effect; blank body radiation; cathode rays; properties of X-rays; natural radioactive materials; table of electromagnetic radiation; nature of particle and wave.

CHEMISTRY (½ hr a wk)

1. Origin of Formative Chemistry: Shortcomings of a planer chemical formula and the necessity of a formative chemical formula; some concrete examples on formative chemical formulas. 2. Interpretation of Chemical Bond by Wave Mechanics: Atomic shells; molecular shells; simple, double, triple bonds--properties, examples; formative structure of a number of simple molecules--thane, ethylene, acethylene, water. a. Introduction to the History of Organic Synthesis: Man-made and natural compounds; review of the differences between mixtures and compounds; review of atomic theory, covalence; avogadro number; saturated hydrocarbons--review on methane; unsaturated hydrocarbons--ethylene and acethylene; review on ethyl alcohol, acetic acid, benzene; functional groups and radicals.

MATHEMATICS (1 hr a wk)

A. ALGEBRA. 1. Basic Concepts of Mathematical Logic: Definition of a statement; negation; meaning of the symbols: $\wedge$, $\vee$, $\Rightarrow$, $\Leftrightarrow$, $\forall$, $\exists$;

introduction to some methods of verification--induction, deduction. 2. Sets: Definition and example; basic concepts of sets; null set; subset; complement; intersection; union. 3. Probability: Experiment on accidents; the universe; events; definition of probability in percentages; simple examples. B. STATISTICS. 1. Frequancy Distribution: Table; tabulation of facts. 2. Diagrams: Bar diagram, line diagram, pie diagram; frequency polygon. 3. Arithmetic: Definition; the n'th term; sum of the first n terms. C. GEOMETRIC SERIES. 1. Definition: The n'th term; sum of the first n terms; sum of the infinite series with the absolute value of being less than 1. 2. Decimal Logarithm: Definition; formula to evaluate logarithm of a product, a quotient, a power of integral exponent. 3. Quadratic Function: Study of the graph of a quadratic function with constant coefficients. [Do not verify the formula to find the peak of the graph.] D. TRIGONOMETRY. Definition of trigonometic function of an angle; relationships among various trigonometric functions of an angle.

NATURAL SCIENCES (1 hr a wk)

A. ANIMAL ANATOMY AND PHYSIOLOGY. 1. Generalities: General structure of a mammal (use a mouse as an example); animal cell--composition, structure, physiology; principal tissues of an animal. 2. Function of Coordination: The nervous system--nerve tissues, neurons; cerebro-spinal--the spine, the medulla, the brain; the eye and sight. 3. The Nutritive Function: Digestion--food, enzymes, general outlines of the digestive system, digestion, the absorption of chyle; blood--composition and function, coagulation, blood groups. 4. The Endocrines: Thyroid gland, endocrine; pancreas; pituitary gland. 5. General Outline of Animal Reproduction: Composition and structure of the reproductive organs; gametogenesis (formation of gametes); fertilization.

PHYSICAL EDUCATION (3 hrs a wk): Same as 11th Grade.