Senior School Curriculum

Design & Technology

MINISTRY OF EDUCATION
Bermuda
2000

FOREWORD

Quality curriculum is basic to any educational programme. The written curriculum must provide the structure and substance of what is taught to all students. The written curriculum is a guide to teachers to ensure that the knowledge, skills, competencies and resources students need in order to learn are provided during instruction.

In particular, it is acknowledged that knowledge is virtually infinite in that it is continually changing and expanding as "new" knowledge is developed and "old" knowledge is refined. In addition the skills and competencies that students need change as the environment in the total community changes. It is important therefore that a school system has a structure for the instructional programme that provides direction, focus, flexibility and state-of-the-art thinking about each content area.

Because of its strategic geographical position, Bermuda has been influenced continuously by the changes in the relationship between the continents bordering the Atlantic -- North and South America, Africa and Europe. The current interest in the globalization of the world community allows Bermuda to build on its strength in international relations. It is essential that our students become accustomed to viewing the entire world as the area in which they must live and grow. They must integrate knowledge across all subjects in preparation for their adult life. Our curriculum guides must be viewed from this perspective.

A team of teachers, education officers and other persons within the school system and community, drawing from their collective experience in working with young people, has developed this curriculum guide. Input from community representatives on each Curriculum Advisory Committee has assisted us in Bermudianizing the curriculum. All of the contributors share both the pride and the responsibilities of authorship. This guide represents the essential elements of education in Bermuda's senior schools.

J. T. Christopher, Ph.D.
Chief Education Officer

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The restructured curriculum development process began in 1994 under the leadership of Dr. Helen Stemler, restructuring curriculum coordinator. During 1994-1995, the frameworks for the entire curriculum development process were developed by the writing teams in the various content areas. From 1995-1997 the curricula for the middle level were created. Thanks also to Dr. Gina Tucker, curriculum coordinator 1998-1999. Special thanks to Mrs. Kalreta Conyers-Steede, education officer business studies, who coordinated the final production of these curriculum documents 1999-2000.

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CONTENTS

RESOURCES

OVERVIEW

The aim of the senior school is to provide for the academic achievement and personal development necessary to prepare students for work, further education and productive citizenry in the 21st Century. In keeping with this aim, the senior school curriculum builds on the middle level programme and is organized around four (4) career pathways: arts and communications, applied technologies, health & human services and international business and tourism.

The senior school curriculum, composed of a rigorous programme of study, sets high expectations for students by emphasizing mastery of complex academic and technical concepts. The programme is based on the belief that all students make every effort to succeed when in an environment that fosters and encourages success, regardless of their background or previous level of achievement.

The curriculum guide contains three (3) sections beginning with the Introduction. The stated twelve goals of education direct instructional outcomes in all senior school subjects and programmes. Specifically, a curriculum framework has been approved for each subject and is to be used as the basis for the subject specific philosophy, goals and subgoals, performance indicators and scope and sequence. Effective utilization of this framework will establish continuity and progression of instruction throughout all year levels.

The second section of this guide delineates the senior school programme of instruction and contains the following: subject's rationale, course description, requirements and outline, correlation matrix and modules for each course offered. It is expected that all teachers will focus instruction on the established curriculum objectives outlined in the modules. The final section of this guide contains an appendix of valuable resources for teachers.

GOALS OF EDUCATION

In Bermuda, the Goals of Education provide the direction for senior level education. These twelve (12) goals enable senior level students to:

- develop responsiveness to the dynamic process of learning
- develop resourcefulness, adaptability and creativity in learning and living
- acquire the basic knowledge and skills needed to comprehend and express ideas through words, numbers and other symbols
- develop a wellness approach to life
- gain satisfaction from participating in and appreciating the various forms of artistic expression
- develop a feeling of self-worth
- develop values related to personal and ethical beliefs and to the common welfare of society
- develop an understanding of the role of the individual within a family unit, the role of the family within society and the role of our society in a global context
- develop a sense of personal responsibility in society at the national and international levels
- acquire skills that contribute to self-reliance in solving practical problems in everyday life
- acquire skills and attitudes that will lead to satisfaction and productivity in a career
- develop respect for the environment and a commitment to the wise use of resources.

CAREER PATHWAYS

The curriculum at the senior level will be organized around four (4) career pathways: arts and communications, applied technologies, health and human services and international business and tourism. Career pathways are clusters of occupations/careers that are grouped because many of the people in them share similar interests and strengths. All pathways include a variety of occupations that require different levels of education and training. Career pathways help students focus on and prepare for the future. In addition, teachers, counsellors and other adults can better support students as they direct their energies toward their established goal.

The senior school graduation requirements are subsumed within each pathway and include four years of English language arts and three years of mathematics, science and social studies. Students also are required to take physical education, health education, computer studies, business studies, family studies or design and technology and at least one of the arts.

Additionally, information technology, library information, career education, learning support and other student service programmes will be offered to all senior level students. It is expected that the implemented curriculum will be based on the premise that all students can learn and that instruction should be differentiated to meet the unique needs of the learner. Further, it is expected that the senior school curriculum will be implemented from a Bermudianized and multicultural perspective as much as is feasible.

BERMUDA SCHOOL CERTIFICATE (BSC)

From September 1999 all students who successfully complete the graduation requirements will be awarded the Bermuda School Certificate (BSC). Students must acquire 116 credits; the 70 required credits from the chart below and an additional 46 credits from student selected courses.

SUBJECTS	COURSE LEVELS				Total Requirements
	100	200	300	400	
English Language Arts	4	4	4	4	16
Mathematics	4	4	4	-	12
Science	4	4	4	-	12
Social Studies	4	4	4	-	12
Physical Education	2	2	2	-	6
Health Education	2	-	-	2	4
The Arts*	2	-	-	-	2
Business Studies	2	-	-	-	2
Computer Studies	2	-	-	-	2
EITHER: Family Studies OR Design Technology	2 or 2	-	-	-	2 or 2
TOTALS	28	18	18	6	70

*A further two credits will be required in the Arts when the new facility at The Berkeley Institute is completed.

How will the courses be organized?

All 100 level courses will be mandatory.
200-400 level courses will be organized under broad career pathways:

Applied Technologies
Arts and Communications
Health and Human Services
International Business and Tourism

Within each Career Pathway students will choose courses in line with their intended career choice.

How are course grades obtained?

A variety of assessments, including written tests, portfolios and practical assignments will be used to indicate achievement of course objectives. Each assessment instrument is detailed in the curriculum document. Students need a pass grade (D) in each course to be awarded credit.

What do the grades mean?

GRADE	% SCORES	MEANING OF GRADE	GRADE POINT
A	90 and above	Outstanding	4.0
B	80 -89	Good	3.0
C	70 -79	Satisfactory	2.0
D	60 - 69	Pass	1.0
F	59 and below	Failing Grade	0.0

What is a Grade Point Average (GPA)?

The GPA is the total of grade points achieved in all courses taken by the student divided by the number of courses taken.

$$\text{GPA} = \frac{\text{grade points for all courses}}{\text{number of courses taken}}$$

Can students graduate and go directly to College or University?

Students will be able to enter the Bermuda College or another college or university directly from the senior school programme provided they meet that college's or university's entry requirements. Admission will depend upon the courses the student has taken, the grades obtained and overall grade point average.

Will students who enter the system from abroad or from a local private institution be given credit towards the BSC?

Students coming from a recognized institution will be given credit for course work successfully completed at that institution.

SENIOR SCHOOL COURSES AT A GLANCE

English Language Arts (EL)	Mathematics (MT)
English Language & Literature I **(R)** English Language & Literature II **(R)** English Language & Literature III English Language & Literature IV Journalism & Publications Literature of Africa, Bermuda & the Caribbean Reading & Study Skills Speech & Debate Writer's Workshop	Foundations of Mathematics **(R)** Mathematics Laboratory (no credit) Advanced Mathematics Applied Mathematics I Applied Mathematics II Applied Mathematics IIIA Applied Mathematics IIIB Business Mathematics I Business Mathematics II Integrated Mathematics I Integrated Mathematics II Introductory Calculus
Science (SC)	**Social Studies (SS)**
Science I **(R)** Science II **(R)** Applied Biology & Chemistry Applied Physics Biology I Biology II Chemistry I Chemistry II Earth Science Environmental Science I Environmental Science II Human Biology Introduction to Horticulture Marine Science Physics I Physics II	Bermuda Social Science: An Overview **(R)** Politics & Law in Action **(R)** Comparative Religion and Ethics Introduction to African History Introduction to American History Preserving our Heritage Physical and Human Geography I Physical and Human Geography II Physical and Human Geography III World History

Business Studies (BS)	Computer Science (CS)
Business Essentials I **(R)** Accounts I Accounts II Business & Personal Law Business Essentials II Computer Keyboarding & Business Applications Economics Insurance International Business Marketing Office Technology Office Technology & Business Application Small Business Management Travel & Tourism	Computer Science I **(R)** Computer Science II Computer Programming I Computer Programming II Information Technology Projects Inside the Computer Multimedia Network Technology Presentation Tools Web-Page Design
Design & Technology (DT)	**Family Studies (FM)**
Design & Technology Design & Realization I Design & Realization II Design & Realization III Electronics Technology I Electronics Technology II Electronics Technology III Graphic Communication I Graphic Communication II Graphic Communication III Transportation Technology I Transportation Technology II Transportation Technology III	Exploring Family Living Child Care & Development I Child Care as a Profession II Discovering Food & Nutrition Exploring Careers in Design & Textiles Exploring Careers in Nutrition & Hospitality Fashion & Textile Design Interior Decorating Meal Management & Hospitality Personal Care I Personal Care II Textile Design

Health (HE)	Physical Education (PE)
Health & Wellness **(R)** Health Issues**(R)** Tobacco, Alcohol & Other Drugs (A)* First Aid CPR (A)* Relationships & Human Sexuality (B)** Diseases, Prevention & Control (B)** Health Occupations ***/**Courses labeled A or B will run consecutively as a pair.**	Physical Education I **(R)** Physical Education II **(R)** Physical Education III **(R)** Physical Education IV
Foreign Languages (FL)	**Functional Skills (FC)**
French/Spanish/Portuguese I French/Spanish/Portuguese II French/Spanish/Portuguese III French/Spanish/Portuguese IV Foreign Languages for International Business	Functional Skills I Functional Skills II Functional Skills III Functional Skills IV

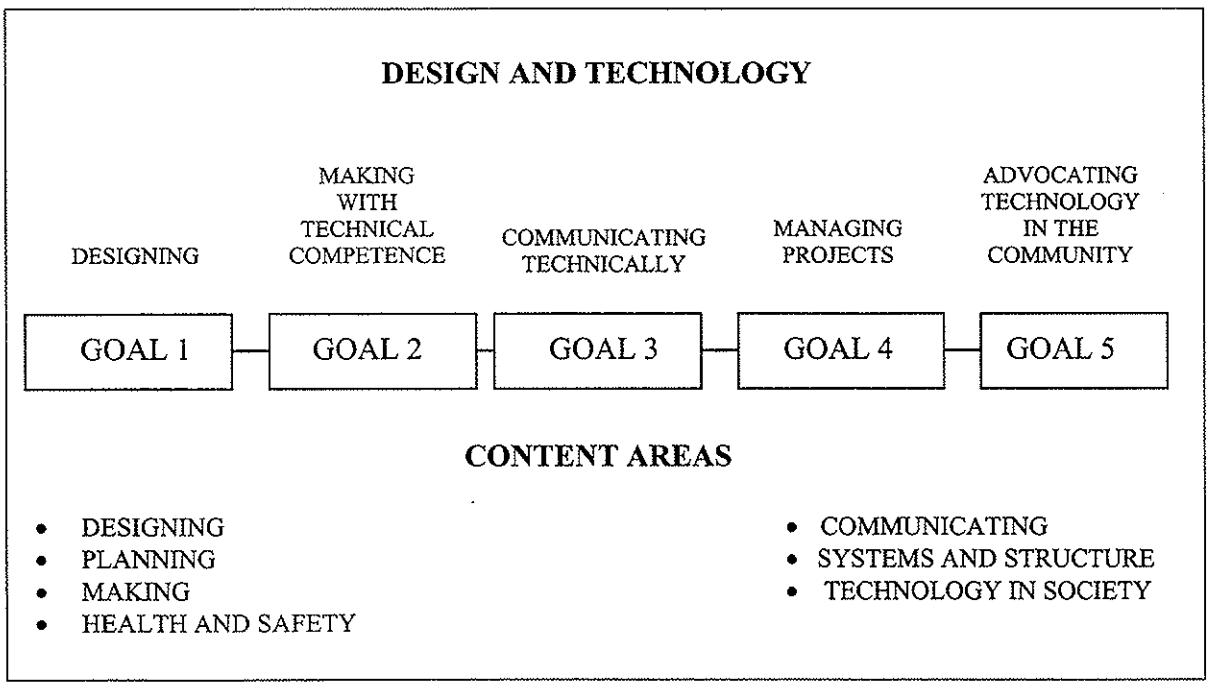
Music (MU)	Visual Art (VR)
Music in Society **Instrumental Music** Instrumental Ensemble Instrumental Independent Study Jazz Band Keyboard Lab Music Technology Show Band Ensemble **Vocal Music** Concert Choir Vocal Independent Study Vocal Ensemble	Visual Art in Society Ceramics Drawing & Painting Drawing, Painting & Printed Works Photography Three Dimensional Visual Art
Dance (DN)	**Theatre (TH)**
Dance in Society Ballet, Modern, Tap & Jazz I Ballet, Modern, Tap & Jazz II Dance & Sports Dance Production Popular & Social Dance Dance Company World Dance Forms	Theatre in Society Acting I Acting II General Communication Play Directing Play Production Scriptwriting Technical Theatre Video Arts

DESIGN AND TECHNOLOGY PHILOSOPHY

Design and Technology is about the creative processes of designing and making. It involves the application of knowledge, experience and resources to create products, systems or environments that meet human needs.

Central to Design and Technology is the design process, a logical, rational, and sequential process involving the perception of a need, the formulation of a specification, the development of ideas, leading to a practical solution that is produced and evaluated by the student.

The aim of the Design and Technology curriculum is to enable students to gain design and technological literacy and capability. Students should develop the independent decision making and problem solving skills they need to live and work effectively in a changing technological society.



DESIGN AND TECHNOLOGY
GOALS AND SUBGOALS

GOAL 1 **DESIGNING**

STUDENTS WILL USE SYSTEMATIC ANALYSIS AND DECISION-MAKING WHILST APPLYING CREATIVITY AND INGENUITY IN DEVELOPING IDEAS.

Subgoal 1.1 Demonstrate the ability to identify needs and opportunities for design and technology activity in unfamiliar situations

Subgoal 1.2 Analyze the design problem and select appropriate research and investigation strategies

Subgoal 1.3 Utilize appropriate techniques to the generation of a range of suitable design solutions

Subgoal 1.4 Justify reasons for selection and rejection of ideas

Subgoal 1.5 Review designs as they evolve and discriminate between good and bad design ideas

Subgoal 1.6 Critically evaluate the final product/solution against the original need

GOAL 2 **MAKING WITH TECHNICAL COMPETENCE**

STUDENTS WILL DEMONSTRATE TECHNICAL COMPETENCE THROUGH QUALITY MAKING AND THE SAFE, EFFECTIVE AND CREATIVE USE OF TOOLS, EQUIPMENT, MATERIALS AND COMPONENTS.

Subgoal 2.1 Select and use materials based upon their characteristics, costs, structural properties, and the aesthetic needs of the task

Subgoal 2.2 Use proficiently, appropriately and safely a range of tools: hand, powered, machine and Computer Numerically Controlled (CNC)

Subgoal 2.3 Produce quality products working to close tolerances with accurate fits and fine finishes

Subgoal 2.4 Select, analyze and utilize appropriate technical information and data sources in the making of desired outcomes

GOAL 3 **COMMUNICATING TECHNICALLY**

STUDENTS WILL USE GRAPHICAL MEANS TO EFFECTIVELY COMMUNICATE DESIGN THINKING AND PROPOSALS USING A RANGE OF MEDIA AND METHODS.

Subgoal 3.1 Select and use appropriate technical drawing systems of a recognized international standard to specify and communicate technical information

Subgoal 3.2 Select and use suitable pictorial drawing/sketching systems to assist in the development and communication of ideas

Subgoat 3.3 Select and use appropriate information and presentation graphics to communicate data and technical detail

Subgoal 3.4 Select and use recognized symbols to communicate information

GOAL 4 MANAGING PROJECTS

STUDENTS WILL DEMONSTRATE THE APPROPRIATE SELECTION AND USE OF INFORMATION AND DILIGENCE IN THE PERSONAL ORGANIZATION OF TIME AND RESOURCE MANAGEMENT.

Subgoal 4.1 Source and select appropriate resource material and identify relevant information to support design and make tasks

Subgoal 4.2 Propose and justify the optimum solution for desired outcome while recognizing the full range of constraints in a task

Subgoal 4.3 Determine and organize process stages on a time line, acknowledge the importance of forward planning and the sequencing of tasks

Subgoal 4.4 Recognize difficulties or shortcomings and adapt or modify proposals to ensure success

GOAL 5 ADVOCATING FOR TECHNOLOGY IN THE COMMUNITY

STUDENTS WILL DEMONSTRATE AN UINDERSTANDING OF SIGNIFICANT TECHNOLOGICAL DEVELOPMENTS IN BERMUDA AND DISPLAY A RESPONSIBLE ATTITUDE THAT IS SOCIALLY, ETHICALLY, ENVIRONMENTALLY AND FINANCIALLY INFORMED.

Subgoal 5.1 Identify and distinguish among the technological systems that are crucial to the local and international infrastructure and select the most appropriate

Subgoal 5.2 Recognize how technological developments can be used to diversify and enhance the Bermudian and global environment

GOAL 1	Students will use systematic analysis and decision making whilst applying creativity and ingenuity in developing ideas.			
DESIGN AND TECHNOLOGY	**PERFORMANCE INDICATORS**			
Sub Goals	**PS – P3* Learning Phase A**	**P4 - P6* Learning Phase B**	**M1 - M3 Learning Phase C**	**S1 - S4 Learning Phase D**
1.1 Demonstrate an ability to identify needs and opportunities for design and technology activity in unfamiliar situations	N/A	N/A	in familiar and unfamiliar situations, identify needs and opportunities for design and technology activity	demonstrate an ability to identify needs and opportunities for design and technology activity in unfamiliar situations
1.2 Analyze the design problem and select appropriate research and investigation strategies	N/A	N/A	determine the research and investigation needs of a design problem	analyze the design problem and select appropriate research and investigation strategies
1.3 Utilize appropriate techniques to the generation of a range of suitable design solutions	N/A	N/A	apply a range of design methods to the generation of design ideas	utilize appropriate techniques to the generation of a range of suitable design solutions
1.4 Justify reasons for selection and rejection of ideas	N/A	N/A	justify reasons for selection and rejection of ideas	justify reasons for selection and rejection of ideas
1.5 Review designs as they evolve and discriminate between good and bad design ideas	N/A	N/A	review designs and justify the selection and rejection of ideas	review designs as they evolve and discriminate between good and bad design ideas

* Refer to primary school science and mathematics curricular or approved primary school design and technology initiatives

GOAL 1 (cont'd)	Students will use systematic analysis and decision making whilst applying creativity and ingenuity in developing ideas.			
DESIGN AND TECHNOLOGY	PERFORMANCE INDICATORS			
Sub Goals	PS – P3* Learning Phase A	P4 - P6* Learning Phase B	M1 - M3 Learning Phase C	S1 - S4 Learning Phase D
1.6 Evaluate the final product/solution against original need	N/A	N/A	evaluate the final product/solution against the original need	evaluate the final product/solution against original need

* Refer to primary school science and mathematics curricular or approved primary school design and technology initiatives

GOAL 2	**Students will demonstrate technical competence through quality making and the safe, effective and creative use of tools, equipment, materials and components.**			
DESIGN AND TECHNOLOGY	**PERFORMANCE INDICATORS**			
Sub Goals	**PS – P3* Learning Phase A**	**P4 - P6* Learning Phase B**	**M1 - M3 Learning Phase C**	**S1 - S4 Learning Phase D**
2.1 Select and use materials based upon their characteristics, cost, structural properties and the aesthetic needs of the task	N/A	N/A	show the ability to select from a range of materials according to their characteristics and properties	select and use materials based upon their characteristics, cost, structural properties and the aesthetic needs of the task
2.2 Use proficiently, appropriately and safely a range of tools: hand, powered, machine and Computer Numerically Controlled (CNC)	N/A	N/A	demonstrate competent selection and use of a range of hand and powered tools in the manufacture of artifacts	use proficiently, appropriately and safely a range of tools: hand, powered, machine and Computer Numerically Controlled (CNC)
2.3 Produce quality products working to close tolerances with accurate fits and fine finishes	N/A	N/A	produce work that demonstrates accurate use of tools leading to quality outcomes	produce quality products working to close tolerances with accurate fits and fine finishes
2.4 Select, analyze and utilize appropriate technical information and data sources in the making of the desired outcome	N/A	N/A	discriminate between information/data from a range of sources and apply it effectively	select, analyze and utilize appropriate technical information and data sources in the making of the desired outcome

* Refer to primary school science and mathematics curricular or approved primary school design and technology initiatives

GOAL 3	**Students will use graphical means to effectively communicate design thinking and proposals, using a range of media and methods.**			
DESIGN AND TECHNOLOGY	**PERFORMANCE INDICATORS**			
Sub Goals	**PS – P3* Learning Phase A**	**P4 - P6* Learning Phase B**	**M1 - M3 Learning Phase C**	**S1 - S4 Learning Phase D**
3.1 Select and use appropriate technical drawing systems of a recognized international standard to specify and communicate technical information	N/A	N/A	select and use 2D and 3D drawing systems appropriately	select and use appropriate technical drawing systems of recognized international standard to specify and communicate technical information
3.2 Select and use suitable pictorial drawing/sketching systems to assist in the development and communication of ideas	N/A	N/A	generate annotated sketches that communicate design thinking	select and use suitable pictorial drawing/sketching systems to assist in the development and communication of ideas
3.3 Select and use appropriate information and presentation graphics to communicate data and technical detail	N/A	N/A	use a range of presentation graphics for visual impact and clarity	select and use appropriate information and presentation graphics to communicate data and technical detail
3.4 Select and use recognized symbols to communicate information	N/A	N/A	select from and use a range of recognized symbols to communicate technical information	select and use recognized symbols to communicate information

* Refer to primary school science and mathematics curricular or approved primary school design and technology initiatives

GOAL 4	**Students will demonstrate the appropriate selection and use of information and diligence in the personal organization of time and resource management.**			
DESIGN AND TECHNOLOGY	**PERFORMANCE INDICATORS**			
Sub Goals	**PS – P3* Learning Phase A**	**P4 - P6* Learning Phase B**	**M1 - M3 Learning Phase C**	**S1 - S4 Learning Phase D**
4.1 Source and select appropriate resource material and identify relevant information to support design and make tasks	N/A	NA	identify and select suitable reference material when researching the design task	source and select appropriate resource material and identify relevant information to support design and make tasks
4.2 Recognize the full range of constraints in a task, propose and justify the optimum solution for desired outcome	N/A	N/A	working within the constraints to consider and reflect the design criteria as closely as possible	recognize the full range of constraints in a task, propose and justify the optimum solution for desired outcome
4.3 Determine and organize process stages on a time line, acknowledge the importance of forward planning and the sequencing of tasks	N/A	N/A	prioritize and reconcile decisions relating to materials, time and production	determine and organize process stages on a time line, acknowledge the importance of forward planning and the sequencing of tasks
4.4 Recognize difficulties or shortcomings and adapt or modify proposals to ensure success	N/A	N/A	recognize difficulties or shortcomings and modify proposals	recognize difficulties or shortcomings and adapt or modify proposals to ensure success

* Refer to primary school science and mathematics curricular or approved primary school design and technology initiatives

GOAL 5	Students will demonstrate an understanding of significant technological developments in Bermuda and display a responsible attitude that is socially, ethically, environmentally and financially informed			
DESIGN AND TECHNOLOGY	**PERFORMANCE INDICATORS**			
Sub Goals	**PS – P3* Learning Phase A**	**P4 - P6* Learning Phase B**	**M1 - M3 Learning Phase C**	**S1 - S4 Learning Phase D**
5.1 Identify and distinguish between the technological systems and select the most appropriate	N/A	N/A	compare and contrast technological systems	identify and distinguish between the technological systems and select the most appropriate
5.2 Recognize how technological developments can be used to diversify and enhance the Bermudian and global environment	N/A	N/A	recognize the effects of technology on our environment	recognize how technological developments can be used to diversify and enhance the Bermudian and global environment

* Refer to primary school science and mathematics curricular or approved primary school design and technology initiatives

DESIGNING	DESIGN AND TECHNOLOGY SCOPE AND SEQUENCE			
	PS – P3* **Learning Phase A**	**P4 - P6*** **Learning Phase B**	**M1 - M3** **Learning Phase C**	**S1 - S4** **Learning Phase D**
Identification of Opportunities	N/A	N/A	• recognize design problems, "client's needs" • investigate solutions • design brief • constraints	• identify problems "clients needs" • research • criteria • design brief • constraints • specifications
Evolution of Design		N/A	• design proposals • limitations - skills - resources - time • appearance • function • design evaluation - modification - justification	• design proposals • recognize limitations - skills - resource/materials - time • appearance • function • continuous critical design evaluation • test • refine • modification • justification

* Refer to Primary School Science and Mathematics Curricula

PLANNING	DESIGN AND TECHNOLOGY SCOPE AND SEQUENCE			
	PS – P3* **Learning Phase A**	**P4 - P6*** **Learning Phase B**	**M1 - M3** **Learning Phase C**	**S1 - S4** **Learning Phase D**
Sources and Resources	N/A	N/A	• materials - properties - working - characteristics - availability • resources • information	• appropriate materials - properties - working - characteristics - availability - aesthetics - environmental impact • suitable resources
Constraints		N/A	• reflect on brief • optimum solution • compromise • prioritize	• review all criteria • optimum solution • compromise • prioritize
Project Management		N/A	• forward plan • sequence • prioritize	• forward plan • sequence • prioritize • adjust timeframe • modify processes

* Refer to Primary School Science and Mathematics Curricula

MAKING (1 of 2)	DESIGN AND TECHNOLOGY SCOPE AND SEQUENCE			
	PS – P3* **Learning Phase A**	**P4 - P6*** **Learning Phase B**	**M1 - M3** **Learning Phase C**	**S1 - S4** **Learning Phase D**
Materials and Components	N/A	N/A	• selection • application • handling • properties • hard/soft woods • manufactured boards • ferrous/non ferrous • alloys • thermoplastic/thermoset • protection, finish	• selection • application • storage • handling • working characteristics • classification • properties physical/chemical • combined and processed • disadvantage/advantages • commercial/industrial application
Tools and Equipment	N/A	N/A	• selection • safe use • storage	• selection • safe use • maintenance/storage

* Refer to Primary School Science and Mathematics Curricula

MAKING (2 of 2)	DESIGN AND TECHNOLOGY SCOPE AND SEQUENCE			
	PS – P3* **Learning Phase A**	**P4 - P6*** **Learning Phase B**	**M1 - M3** **Learning Phase C**	**S1 - S4** **Learning Phase D**
Process and Techniques	N/A	N/A	• surface finish • protection • joining: - permanent - semi-permanent - temporary	• heat/chemical treatment • surface finish • protection • joining: - permanent - semi-permanent - temporary
Production	N/A	N/A	• single/batch/mass • quality control • evaluation	• CAD/CAM • commercial/industrial • quality control/assurance

* Refer to Primary School Science and Mathematics Curricula

HEALTH AND SAFETY	DESIGN AND TECHNOLOGY SCOPE AND SEQUENCE			
	PS – P3* **Learning Phase A**	**P4 - P6*** **Learning Phase B**	**M1 - M3** **Learning Phase C**	**S1 - S4** **Learning Phase D**

Hazards	N/A	N/A	• recognition
			• assessment
			• control
			• design for safety
			• materials
			  - properties
			  - handling
			• personal protection
			• tools/equipment
			  - use
			  - permission
			  - supervision
			• working environment
			  - chemical
			  - electrical
			  - heat
			• storage areas
			• waste management
				• recognition
				• assessment
				• control
				• implications
				  - legal
				  - moral
				  - environmental
				• design for safety
				  - client
				  - end-user
				  - disposal
				• materials
				  - properties
				  - handling/storage
				  - working
				• tools/equipment
				  - use
				  - maintenance
				  - permission
				  - supervision
				• working environment
				• storage areas
				• waste/by-product management

* Refer to Primary School Science and Mathematics Curricula

COMMUNICATING	DESIGN AND TECHNOLOGY SCOPE AND SEQUENCE			
	PS – P3* **Learning Phase A**	**P4 - P6*** **Learning Phase B**	**M1 - M3** **Learning Phase C**	**S1 - S4** **Learning Phase D**
Communication of Design Ideas	N/A	N/A	• record ideas • brainstorm • sketch 2D and 3D • annotate • colour • model	• record ideas - own - team - client • brainstorm • sketch 2D and 3D • ergonomics • anthropometrics • model
Communication of Manufacturing Requirements	N/A	N/A	• signs/symbols • orthographic projection - first angle • scale • development of surfaces • circuit diagrams • simple CAD	• standards • symbols • orthographic projection - first angle - third angle • assembly drawing • circuit diagrams • PCB design • CAD

* Refer to Primary School Science and Mathematics Curricula

COMMUNICATING (2 of 2)	DESIGN AND TECHNOLOGY SCOPE AND SEQUENCE			
	PS – P3* Learning Phase A	P4 - P6* Learning Phase B	M1 - M3 Learning Phase C	S1 - S4 Learning Phase D
Communication of Proposals and Information	N/A	N/A	• isometric • graphs/charts • flow chart • colour • shade • render • simple CAD	• oblique • isometric • planometric • schematics • block diagrams • graphs/charts • CAD • AUTOCAD
Written and Verbal Communication	N/A	N/A	• vocabulary • questionnaire • evaluation	• explanations • reports/evaluation

* Refer to Primary School Science and Mathematics Curricula

SYSTEMS AND STRUCTURES (1 of 2)	DESIGN AND TECHNOLOGY SCOPE AND SEQUENCE			
	PS – P3* Learning Phase A	**P4 - P6*** Learning Phase B	**M1 - M3** Learning Phase C	**S1 - S4** Learning Phase D
Structures	N/A	N/A	• mass, shell, frame • forces • loads • action reaction • simple frames • triangulation	• forces • action reaction • stress, strain, strength • elasticity • beams • moments
Mechanical Systems	N/A	N/A	• types of motion • input/output • inclined plane • levers and linkages • mechanical advantage • simple pulley systems	• mechanical advantage • pulley, belts and chains • gears • screws • cams. cranks • ratchets & pawls • couplings
Electrical and Electronic Systems	N/A	N/A	• electricity • simple circuits • batteries, bulbs and switches • use of "Tracktronics' • L.E.D.s • input/output • membrane switches • resistors	• diodes • transistors • integrated circuit • operational amps • output devices • electric motors • logic • digital electronics • PCB design/produce • multimeter

* Refer to Primary School Science and Mathematics Curricula

SYSTEMS & STRUCTURES (2 of 2)	DESIGN AND TECHNOLOGY SCOPE AND SEQUENCE			
	PS – P3* Learning Phase A	P4 - P6* Learning Phase B	M1 - M3 Learning Phase C	S1 - S4 Learning Phase D
Hydraulic and Pneumatic Systems	N/A	N/A	• types of systems • input/output • simple hydraulics/ pneumatics systems • force, pressure, and area	• safety • compressors • regulators • connections • symbols • cylinders • valves • control circuits • logic circuits

* Refer to Primary School Science and Mathematics Curricula

TECHNOLOGY IN SOCIETY (1 of 2)	DESIGN AND TECHNOLOGY SCOPE AND SEQUENCE			
	PS – P3* Learning Phase A	P4 - P6* Learning Phase B	M1 - M3 Learning Phase C	S1 - S4 Learning Phase D
Energy	N/A	N/A	• Bermuda's energy needs • energy sources • energy production/use • energy conservation • environmental impact	• Bermuda's energy policy • international policy • alternative energy - sources - production - use • energy conservation • environmental impact
Industry	N/A	N/A	• Bermuda's industry • technology in industry • role of design	• Bermuda's industry • technology applications • design makes a difference • social impact • economic impact
Industry and Conservation	N/A	N/A	• Bermuda's industry and conservation • international industry and conservation • role of design	• industry and conservation • Bermuda and other nations • pressures - social - moral - economic - political • role of design and designers

* Refer to Primary School Science and Mathematics Curricula

TECHNOLOGY IN SOCIETY (2 of 2)	DESIGN AND TECHNOLOGY SCOPE AND SEQUENCE			
	PS – P3* **Learning Phase A**	**P4 - P6*** **Learning Phase B**	**M1 - M3** **Learning Phase C**	**S1 - S4** **Learning Phase D**
Clients, Customers, and Consumers	N/A	N/A	• design processes - who's who • consumer legislation/protection • good/bad design	• professional designers • consumer legislation/protection • design processes in • - industry - commerce - infrastructure

* Refer to Primary School Science and Mathematics Curricula

REFERENCES

International Technology Education Association, National Standards for Technology Education. Reston, Virginia: International Technology Education Association, 1993.

United Kingdom HMSO, Department of Education The National Curriculum: Design and Technology. London, U.K.: Department of Education, 1995.

INTRODUCTION TO SENIOR SCHOOL CURRICULUM

The senior school curriculum (S1 - S4) recognizes the distinct needs of the middle to late adolescent learner (14 to 18 years) and is based on the necessity of working consciously with the many developmental changes of students during this phase. It is a time to build on the foundation laid in the middle school by preparing students for work, further education and productive citizenry in the 21st Century.

As members of the senior school community, students have an opportunity to choose from a number of options and to participate in a variety of activities. The more involved students become in the life of the school, the more meaning school will have. Students will get the most from their educational experiences if their choices reflect their personal needs, interests, and talents. Students should select carefully those courses which offer the greatest opportunity for learning and which serve to better individual education and career goals.

Following are some of the characteristics of senior school students:

- intellectual habits increase
- thought processes become more abstract
- awareness of complexity of issues increases; rejection of simplistic explanations
- thought becomes more comprehensive
- ability to hypothesize and analyze increases
- thought becomes less egocentric
- interest in laws that regulate society increases
- ability to focus attention for long periods, increases (i.e. on topics of interest)

The senior school curriculum is a written guide that identifies the goals and curriculum objectives which teachers establish for students to achieve. It makes visible the articulation necessary for preschool through senior level programmes so that students do not have large gaps in their understanding, skills and competencies. Its scope and sequence also allows teachers to plan linkages across the curriculum so those cross-curricular connections can be made more easily between and among various subjects.

Given the above characteristics, the senior school curriculum is intended to provide students opportunities to:

- discuss, explore, investigate and hypothesize
- find solutions to real problems
- utilize both concrete and abstract reasoning skills
- process information at formal operations level

The following section outlines the curriculum to be taught in Bermuda's senior schools.

Senior Level Education

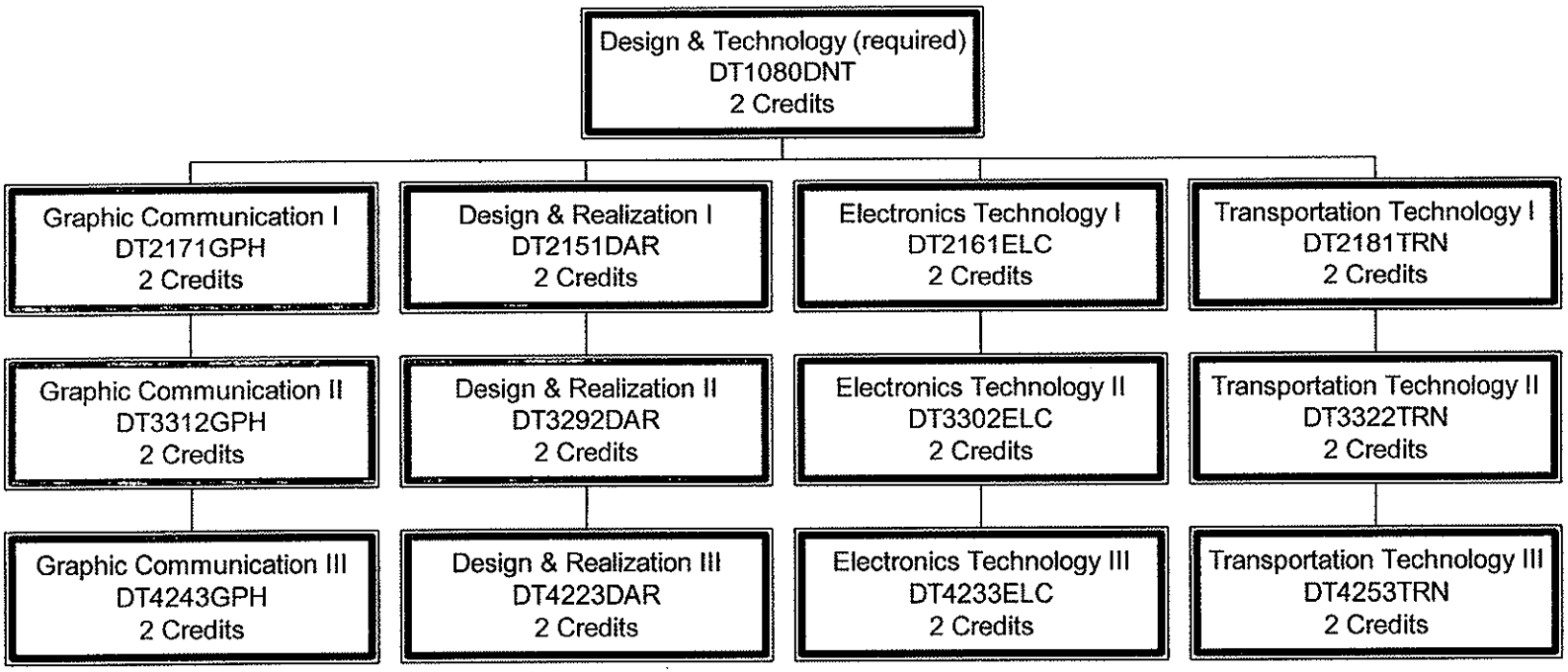
Goal:

To ensure students become critical and analytical readers, logical and insightful thinkers, and concise users of visual, written and oral language.

SENIOR SCHOOL DESIGN AND TECHNOLOGY RATIONALE

The Design and Technology courses at the senior secondary schools will build upon the skills and values established at the middle schools. Design, research, problem solving, production, communication, project management and creative skills are developed at this level. Applying these skills will enable students to choose from an exciting variety of career paths in our technological world.

SENIOR SCHOOL DESIGN & TECHNOLOGY COURSES



COURSE DESCRIPTIONS
Design & Technology (DT)

Design and Technolog **DT1080 DNT**
Prerequisite: None 2 credit (s)

S1-S2 level (s)

This course builds upon the essential skills, knowledge and capabilities established in the middle school. This balanced, broad-based course will develop, through practical exercises, the research, designing, communicating, making and evaluating skills necessary for subsequent Design and Technology based courses essential in education and employment in the new millennium.

Design and Realization I **DT2151 DAR**
Prerequisite: Design and Technology 2 credit (s)

S2-S4 level (s)

In this course, students progress from the broad Design and Technology course. Three projects will be undertaken each focusing on a different durable material and its associated manufacturing skills. Students will follow the design process to reach their final product. Emphasis will be upon covering prescribed designing; making and evaluating skills to be used in later design technology elective courses.

Design and Realization II **DT3292 DAR**
Prerequisite: Design and Realization I 2 credit (s)

S3-S4 level (s)

This course will build upon already established skills. Students will undertake two designs and make tasks following prescribed themes that allow them considerable choice in what they design and how it is realized.

Design and Realization III **DT4223 DSR**
Prerequisite: Design and Realization II 2 credit (s)

S4 level (s)

This course will build upon skills developed at 300 level. The students will be required to undertake a major self-directed project, implementing the designing techniques developed through the previous levels. The project will be completed using resistant materials.

Electronics Technology I **DT2161 ELC**
Prerequisite: Design and Technology S1 2 credit (s)

S2-S4 level (s)

In this course students will be taught the fundamentals of electronics theory, they will build and test electronic circuits using integrated circuits and individual components. Students taking this course must have a good level if mathematics.

Electronics Technology II **DT3302 ELC**
Prerequisite: Electronics Technology I 2 credit (s)

S3-S4 level (s)

In this course students will learn about the ability of personal computers to be used as a control medium, they will write programmes used in everyday situations to control such devices as motorized vehicles, traffic lights, car park barriers, etc.

Electronics Technology III **DT4233 ELC**
Prerequisite: Electronics Technology II 2 credit (s)

S4 level (s)

In this course students will undertake research visits to an industrial or commercial business where they will identify the use of electronics. Through theory and practical classwork they will investigate an aspect of electronics and produce a detailed portfolio detailing their investigations.

Graphic Communication I **DT2171 GPH**
Prerequisite: Design and Technology 2 credit (s)

S2-S4 level (s)

The Graphic Communication I course focuses on and further develops graphical skills established in the Design and Technology course. During this course students will undertake four varied project based design modules each with a supportive graphic skills content.

Graphic Communication II **DT3312 GPH**
Prerequisite: Graphic Communication I 2 credit (s)

S3-S4 level (s)

The Graphic Communication II course will reinforce and expand upon many of the skills taught at introductory level of this course. New areas will be explored and applied to two design situations. Students will be expected to demonstrate a thorough understanding of the design skills associated with extended projects.

Graphic Communication III **DT4243 GPH**
Prerequisite: Graphic Communication II 2 credit (s)

S4 level (s)

The student undertaking this advanced course will be expected to produce a single extended project of their own choice which will allow then to explore and future develop their understanding of the graphical skills and applications. Students will select and apply appropriate media and equipment, including computers, as they follow through the design process and realize their ideas.

Transportation Technology I **DT2181 TRN**
Prerequisite: Design and Technology 2 credit (s)

S2-S4 level (s)

The Transportation Technology I course builds upon skills obtained in Design and Technology. This broad and balanced course will develop, through workshop practices, investigation of power sources and vehicle support systems, the necessary skills and knowledge for subsequent Transportation Technology courses.

Transportation Technology II **DT3322 TRN**
Prerequisite: Transportation Technology I 2 credit (s)

S3-S4 level (s)

Transportation Technology II course builds upon skills obtained in Transportation Technology I. Students will further develop their workshop practices, (including fabrication and vehicle body repair) and investigate in detail vehicle support systems.

Transportation Technology III **DT4253 TRN**
Prerequisite: Transportation Technology II 2 credit (s)

S4 level (s)

The Transportation Technology III course builds upon skills obtained in Transportation Technology II. Students will further develop their workshop practices and understanding of vehicle systems. This course is essential for those considering a career in the transport service industry.

Design and Technology

Course Code:DT1080DNT

MINISTRY OF EDUCATION
Bermuda
2000

SENIOR SCHOOL DESIGN AND TECHNOLOGY
COURSE OVERVIEW

Title: Design and Technology — **2 credit (s)** **60 hour (s)**

Prerequisite (s): None — **S1 level (s)**

Course Code: DT1080DNT — ☐ **required or** ☐ **elective**

Course Description

The S1 Design and Technology course builds upon the essential skills, knowledge and capabilities established in the middle school. This balanced, broad based course will develop, through practical exercises, the research, designing, communicating, making and evaluating skills necessary for subsequent Design and Technology based courses essential in education and employment in the new millennium.

Course Requirements

The requirements for this course are as follows:

	Module A **Electronics Project**	**Module B** **Packaging Project**	**Module C** **Design and Make**	**Module D** **Model Making**	**Total for 4 Modules**	**X .25 = Final % Grade**
Performance Assessments:	Electronics Experiments 20%	Support Work 30% Design Work 30%	Support Work 20% Design Work 20%	Mechanisms Experiments 40%	160	**40%**
Product Assessments:	Electronics Workbook 30%	Packaging Product 40%	Storage Product 60%	Mechanisms Product 30%	160	**40%**
Written Assessments:	Final Test 50%			Final Test 30%	80	**20%**
Total					400	**100%**

Course Resources

Cave, John, Access Technology, Electronics. London, England: Nelson International, 1996.

Fowler, P. and Horsley, M. Collins C.D.T. Technology. London, England: Collins Ed., 1988.

Garrett, J. Design and Technology (2nd Ed.). Cambridge, London: Cambridge University Press, 1996.

Cave, J. Access Technology, Designing. London, England: Nelson International, 1993.

Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. London, England: Collins Educational, 1988.

Chapman, C. and Peace, M. Collins C.D.T. Design and Realization. London, England: Collins Educational, 1988.

Course Outline

Module Title	# Double Periods
A. Electronics Project	10
- electronics	
- digital and analogue signals	
- circuits - electricity flow	
- OHM'S law	
- electronic symbols	
- short course - alpha electronics	
- truth tables	
- simple logic	
- fault finding	
C. Design and Make	9
- preparation of materials	
- permanent joining techniques	
- selection of tools, equipment and materials	
- project planning	
- assembly techniques	
- surface finishing	
- costing	
- mechanical fix	

Module Title	# Double Periods
B. Packaging Project	9
- client/consumer needs	
- product research (CD ROM and www)	
- design evaluation	
- presentation and display graphics	
- CAD reprographics	
- industrial perspective	
- presentation techniques	
- evaluation report	
- information graphics	
- selection of materials and equipment	
- storage project	
D. Model Making	10
- mechanisms	
- power sources	
- power transmission	
- systems	
- prototyping/testing	
- application of mechanical systems	
- linkages and control devices	
- research	
- safety	

Subtotal	38
Optional double periods	7
Total double periods	45

SENIOR SCHOOL DESIGN & TECHNOLOGY

check one: S1 ☒ S2 ☐ S3 ☐ S4 ☐

Design & Technology

GOALS		SUBGOALS		MODULE & CURRICULUM CORRELATION MATRIX			
1	Design	1.1	Problem identification		x	x	x
		1.2	Research/analysis	x	x	x	x
		1.3	Synthesis	x	x	x	x
		1.4	Justification	x	x	x	x
		1.5	Discrimination	x	x	x	x
		1.6	Evaluation	x	x	x	x
2	Make	2.1	Resource selection	x	x	x	x
		2.2	Tool skills	x	x	x	x
		2.3	Realization	x	x	x	x
		2.4	Data utilization	x		x	
3	Communicate	3.1	Drawing system	x	x	x	x
		3.2	Design sketch		x	x	x
		3.3	Presentation graphics		x	x	
		3.4	Standard symbols	x			
4	Manage Projects	4.1	Resource identification	x	x	x	x
		4.2	Prioritization	x	x	x	x
		4.3	Organization	x	x	x	x
		4.4	Adaptation	x	x	x	
5	Technology in Society	5.1	Identification	x	x	x	
		5.2	Awareness	x	x		
CONTENT STRUCTURE		Designing		x	x	x	x
		Planning		x	x	x	x
		Making		x	x	x	x
		Health & Safety		x		x	x
		Communicating		x	x	x	
		Systems and Structures		x		x	x
		Technology in Society		x		x	
		MODULE KEY		A	B	C	D

MODULE KEY

A - Electronics
B - Packaging
C - Design and Make
D - Model Making

DESIGN & TECHNOLOGY

Course Title: FOUNDATION OF DESIGN TECHNOLOGY

Module Title: Electronics Project

Number of Periods: 10 double periods

Sequence Reference: DT1080DNT-A

Senior School Level

S1	S2	S3	S4
☒	☐	☐	☐

Subgoal Emphasis:

- 2.1 - 2.4 Make
- 3.1 - 3.3 Communicate
- 4.1 - 4.4 Manage Project
- 5.1 Technology in Society

Content Focus

- Planning
- Making
- Communicating
- Technology in Society

Curriculum Objectives:

At the end of this module, students will:

- understand the meaning of electronics
- identify analogue and digital signals
- know how electricity flows round a circuit
- identify electronic components
- build and test circuits
- use simple logic and truth tables

Content Detail:

- create worksheets with explanation
- use switches and sensors in circuits
- use meters and logic probes to show flow
- draw symbols with descriptions
- undertake short course on Alpha electronics
- complete worksheets used with electronic circuits

Module Evaluation:

- **Performance Assessments:**
  - electronics experimentation 20% teacher assessed
- **Product Assessments:**
  - electronics workbook 30% teacher/self
- **Written Assessments:**
  - electronics theory 50% teacher/peer/self

Prerequisite Skill Areas (if any):

- N/A

Special Resources (materials, equipment & community involvement):

- Alpha electronics equipment

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, John, Access Technology, Electronics. London, England: Nelson International, 1996.

Fowler, P. and Horsley, M. Collins C.D.T. Technology. London, England: Collins Ed., 1988.

Garrett, J. Design and Technology (2nd Ed.). Cambridge, London: Cambridge University Press, 1996.

REFERENCES - STUDENT:

Fowler, P. and Horsley, M. Collins C.D.T. Technology. London, England: Collins Ed.,1988.

Garrett, J. Design and Technology (2nd Ed.). Cambridge, England: Cambridge University Press, 1996.

DESIGN & TECHNOLOGY

Course Title: FOUNDATION OF DESIGN AND TECHNOLOGY

Module Title: Packaging Project

Number of Periods: 9 double periods

Sequence Reference: DT1080DNT-B

Senior School Level

S1	S2	S3	S4
☒	☐	☐	☐

Subgoal Emphasis:

- 1.1 - 1.6 Design
- 2.1 - 2.3 Make
- 3.1 - 3.3 Communicate
- 4.1 - 4.4 Manage Projects
- 5.1 - 5.2 Technology in Society

Content Focus

- Designing and Planning
- Making
- Communicating
- Technology in Society

Curriculum Objectives:

At the end of this module, students will:

- research existing products
- select and synthesize ideas
- apply research to design process
- understand fitness for purpose
- formulate proposals
- modify where necessary
- refine design ideas
- justify design proposals
- evaluate at all stages
- produce prototype packaging
- organize design
- record design decisions
- present design proposals

Content Detail:

- design sketching
- client/end user needs
- existing product research
- corporate image
- promotion/advertising
- lettering, logos and layout
- developments, nets
- display and presentation
- product evaluation
- CAD/computer graphics

Module Evaluation:

- **Performance Assessments:**
  - task support work 30% (teacher and self evaluation)
  - design 30% (teacher evaluation)
- **Product Assessments:**
  - final product 40% (teacher, peer & self evaluation)
- **Written Assessments:**

Prerequisite Skill Areas (if any):

- N/A

Special Resources (materials, equipment & community involvement):

- examples of existing packaging
- lettering and logo samples
- pre-prepared developments (nets)
- colouring media
- drawing guides
- CoralDraw software
- Techsoft software

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, J. Access Technology, Designing. London, England: Nelson International, 1993.

Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. London, England: Collins Educational, 1988.

REFERENCES - STUDENT:

Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. London, England: Collins Educational, 1988.

DESIGN & TECHNOLOGY

Course Title: FOUNDATIONS OF DESIGN AND TECHNOLOGY

Sequence Reference: DT1080DNT-C

Module Title: Design and Make

Number of Periods: 10 double periods

Senior School Level

S1	S2	S3	S4
☒	☐	☐	☐

Subgoal Emphasis:

- 1.1 - 1.6 Design
- 2.1 - 2.3 Make
- 3.1 - 3.2 Communicate
- 4.1 - 4.3 Manage Projects

Content Focus

- Designing
- Planning
- Making
- Health and Safety
- Communication

Curriculum Objectives:

At the end of this module, students will:

- research to support task
- modify ideas
- develop ideas
- justify design proposals
- evaluate at all stages
- record design decisions
- organize design thinking
- present design proposals
- use tools competently
- employ safety techniques

Content Detail:

- permanent joining of materials
- construction techniques
- finishing techniques
- materials constraints/properties
- measurement/marking technique
- generate design brief and specification
- production drawing
- working with wood
- hand and machine tool safety
- planning for making
- cutting, shaping, finishing of wood products
- evaluation at all stages design

Module Evaluation:

- **Performance Assessments:**
  - task support work (20% - teacher evaluation)
  - design work (20% - teacher/student evaluation)
- **Product Assessments:**
  - final product (60% - teacher/student evaluation)
- **Written Assessments:**

Prerequisite Skill Areas (if any):

- N/A

Special Resources (materials, equipment & community involvement):

- examples of corner joints
- examples of successful design
- pre-prepared wood materials
- job related hand tools
- card
- drawing equipment

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, J. Construction Materials (access technology). Glasgow, Scotland: Blackie - Nelson International, 1993.

Chapman, C. and Peace, M. Collins C.D.T. Design and Realization. London, England: Collins Educational, 1988.

Garrett, J. Design and Technology (2nd Ed.). Cambridge, England: Cambridge University Press, 1986.

REFERENCES - STUDENT:

Cave, J. Construction Materials (access technology). Glasgow, Scotland: Blackie -Nelson International, 1993.

Chapman, C. and Peace, M. Collins C.D.T. Design and Realization. London, England: Collins Educational, 1988.

Garrett, J. Design and Technology (2nd Ed.). Cambridge, England: Cambridge University Press, 1986.

DESIGN & TECHNOLOGY

Course Title: FOUNDATIONS OF DESIGN AND TECHNOLOGY

Sequence Reference: DT1080DNT-D

Module Title: Model Making

Number of Periods: 9 double periods

Senior School Level

S1	S2	S3	S4
☒	☐	☐	☐

Subgoal Emphasis:

- 1.1 - 1.6 Design
- 2.1 - 2.4 Make
- 3.1 - 3.3 Communicate
- 4.1 - 4.4 Manage Project
- 5.1 Technology in Society

Content Focus

- Designing
- Planning
- Making
- Communicating
- Technology in Society

Curriculum Objectives:

At the end of this module, students will:

- apply principles and concepts of mechanisms to a prescribed problem
- analyze mechanical system
- synthesize ideas using prototyping and modelling
- apply an objective approach to problem solving and testing

Content Detail:

- technical illustration
- mechanisms - power sources, power transmission
- structures
- use of construction kits for experimentation
- use of fixtures, fittings and fastenings
- application of mechanisms theory
- friction

Module Evaluation:

- **Performance Assessments:**
  - workbooks — 40% - teacher assessment
- **Product Assessments:**
  - practical product — 40% - teacher/self
- **Written Assessments:**
  - final test — 30% - test

Prerequisite Skill Areas (if any):

- N/A

Special Resources (materials, equipment & community involvement):

- mechanisms simulation software
- examples of mechanisms
- construction kits

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, John, Access Technology Mechanisms. London, England: Nelson, 1993.

Fowler, P. and Horsley, M. Collins C.D.T Technology. London, England: Collins Educational, 1988.

Crampton, K. and Finney, M. Collins C.D.T. D & T. London, England: Collins Educational, 1988.

Garrett, J. Design and Technology (2nd Ed.) Cambridge. Cambridge, England: Cambridge University Press, 1996.

REFERENCES - STUDENT:

Cave, John, Access Technology Mechanisms. London, England: Nelson, 1993.

Fowler, P. and Horsley, M. Collins C.D.T Technology. London, England: Collins Educational, 1988.

Crampton, K. and Finney, M. Collins C.D.T. D & T. London, England: Collins Educational, 1988.

Garrett, J. Design and Technology (2nd Ed.). Cambridge, England: Cambridge University Press, 1996.

Design and Realization I

Course Code:DT2151DAR

MINISTRY OF EDUCATION
Bermuda
2000

SENIOR SCHOOL DESIGN AND TECHNOLOGY
COURSE OVERVIEW

Title: Design and Realization I — **2 credit (s)** / **60 hour (s)**

Prerequisite (s): Design and Technology — **S2-S4 level (s)**

Course Code: DT2151DAR — ☐ **required or** ☒ **elective**

Course Description

In this course, students progress from the broad Design and Technology course. Three projects will be undertaken, each focusing on a different durable material and its associated manufacturing skills. Students will follow the design process to reach their final product. Emphasis will be on covering prescribed designing, making and evaluating skills to be used in later design technology elective courses.

Course Requirements

The requirements for this course are as follows:

	Module A **Plastic Materials**	**Module B** **Wood Products**	**Module C** **Non Ferrous Metals**	**Total for 3 Modules**	**X .33 = Final % Grade**
Performance Assessments:	Design Work 40%	Design Work 40%	Design Work 40%	160	**40**
Product Assessments:	Final Product 60%	Final Product 60%	Final Product 60%	180	**60**
Total	100%	100%	100%	**300%**	**100%**

Course Resources

Cave, J. Construction Materials (access technology). Blackie - Glasgow, Scotland: Nelson International, 1993.

Chapman C. Peace M. Design and Realization (Collins C.D.T.). London, England: Collins Educational, 1988.

Garrett, J. Design and Technology (2nd Edition). Cambridge, England: Cambridge University Press, 1986.

Course Outline

Module Title	# Double Periods	Module Title	# Double Periods
A. Plastic Materials	13	**B. Wood Products**	13
- joining		- carcas construction	
- line bending		- turning	
- drape moulding		- finishing	
- vale forming		- joining techniques	
- finishing		- hand power tools	
C. Non Ferrous Metals	12		
- heat treatment			
- silver smithing			
- joining			
- machines			
- forming sheet metal			
- casting			
- finishing			

Subtotal	38
Optional double periods	7
Total double periods	45

SENIOR SCHOOL DESIGN AND TECHNOLOGY

check: S1 ☐ S2 ☒ S3 ☒ S4 ☒

Design and Realization I

GOALS		SUBGOALS		MODULE & CURRICULUM CORRELATION MATRIX		
1	Design	1.1	Problem Identification	x	x	x
		1.2	Research/Analysis	x	x	x
		1.3	Synthesis	x	x	x
		1.4	Justification	x	x	x
		1.5	Discrimination	x	x	x
		1.6	Evaluation	x	x	x
2	Make	2.1	Resource Selection	x	x	x
		2.2	Tool Skills	x	x	x
		2.3	Realization	x	x	x
		2.4	Data Utilization	x		x
3	Communicate	3.1	Drawing System			
		3.2	Design Sketch	x	x	x
		3.3	Presentation Graphics			
		3.4	Standard Symbols			x
4	Manage Projects	4.1	Resource Identification	x	x	x
		4.2	Prioritization	x	x	x
		4.3	Organization	x	x	x
		4.4	Adaptation	x	x	x
5	Technology In Society	5.1	Identification	x	x	x
		5.2	Awareness	x	x	x
CONTENT STRUCTURE		Designing		x	x	x
		Planning		x	x	x
		Making		x	x	x
		Health & Safety		x	x	x
		Communicating		x	x	x
		Systems and Structures		x	x	x
		Technology in Society		x		x
		MODULES		**A**	**B**	**C**

MODULE KEY

A - Plastic Materials
B - Wood Products
C - Non Ferrous Metals

DESIGN & TECHNOLOGY

Course Title: DESIGN AND REALIZATION I

Module Title: Plastic Materials

Number of Periods: 13 double periods

Sequence Reference: DT2151DAR-A

Senior School Level

S1	S2	S3	S4
☐	☒	☒	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 Designing
- 2.1, 2.2, 2.3, 2.4 Making
- 3.2, 3.3 Communicating
- 4.1, 4.2, 4.3, 4.4 Managing
- 5.1 Advocating

Content Focus

- Design
- Planning
- Project Management
- Safety

Curriculum Objectives:

At the end of this module, students will:

- understand working properties of acrylic
- demonstrate competency in:
  - gluing
  - cutting
  - shaping
  - joining
  - finishing
- produce artifact which is at least part made from acrylic

Content Detail:

- understand dangers from:
  - fumes
  - sharp edges
  - dust
- apply techniques in design process
- marking and measuring
- appropriate hand tool skills
- special techniques in acrylic drilling
- hand finishing techniques

Module Evaluation:

- **Performance Assessments:**

  - design work 40%

- **Product Assessments:**

  - final product 60%

- **Written Assessments:**

Prerequisite Skill Areas (if any):

- S1 Course

Special Resources (materials, equipment & community involvement):

- examples
- adhesives
- jigs
- special bits
- line bender
- fixed temp kiln

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, J. Construction Materials (access technology). Blackie - Glasgow, Scotland: Nelson International, 1993.
Chapman C. Peace M. Design and Realization (Collins C.D.T.). London, England: Collins Educational, 1988.
Garrett, J. Design and Technology (2nd Edition). Cambridge, England: Cambridge University Press, 1986.

REFERENCES - STUDENT:

Cave, J. Construction Materials (access technology). Blackie - Glasgow, Scotland: Nelson International, 1993.
Chapman C. Peace M. Design and Realization (Collins C.D.T.). London, England: Collins Educational, 1988.
Garrett, J. Design and Technology (2nd Edition). Cambridge, England: Cambridge University Press, 1986.

DESIGN & TECHNOLOGY

Course Title: DESIGN AND REALIZATION I

Module Title: Wood Products

Number of Periods: 13 double periods

Sequence Reference: DT2151DAR-B

Senior School Level

S1	S2	S3	S4
☐	☒	☒	☒

Subgoal Emphasis:

• 1.1, 1.2, 1.3, 1.4, 1.5, 1.6	Designing
• 2.1, 2.2, 2.3, 2.4	Making
• 3.2, 3.3	Communicating
• 4.1, 4.2, 4.3, 4.4	Managing
• 5.1	Advocating

Content Focus

- Designing
- Planning
- Safety
- Project Management

Curriculum Objectives:

At the end of this module, students will:

- understand the properties of timbers
- design an artifact
- understand timber joining techniques fit for purpose
- complete and present related design work
- complete and present wooden artifact

Content Detail:

- explore timber limitations
- demonstrate competence in:
  - cutting
  - sharping
  - gluing
  - finishing
- understand joining alternatives
- wood strengths
- wood defects
- use of appropriate hand tools
- use of appropriate machines

Module Evaluation:

- **Performance Assessments:**

  - design work 40%

- **Product Assessments:**

  - final product 60%

- **Written Assessments:**

Prerequisite Skill Areas (if any):

- S1 Course

Special Resources (materials, equipment & community involvement):

- examples of completed work
- adhesives
- special jigs
- special bits
- workshop tools
- workshop machines
- range of clamps
- range of fixings

GLOSSARY:

- refer to appendix

REFERENCES - TEACHER:

Cave, J. Construction Materials (access technology). Blackie - Glasgow, Scotland: Nelson International, 1993.
Chapman C. Peace M. Design and Realization (Collins C.D.T.). London, England: Collins Educational, 1988.
Garrett, J. Design and Technology (2nd Edition). Cambridge, England: Cambridge University Press, 1986.

REFERENCES - STUDENT:

Cave, J. Construction Materials (access technology). Blackie - Glasgow, Scotland: Nelson International, 1993.
Chapman C. Peace M. Design and Realization (Collins C.D.T.). London, England: Collins Educational, 1988.
Garrett, J. Design and Technology (2nd Edition). Cambridge, England: Cambridge University Press, 1986.

DESIGN & TECHNOLOGY

Course Title: DESIGN AND REALIZATION I

Sequence Reference: DT2151DAR-C

Module Title: Non Ferrous Metals

Number of Periods: 15 double periods

Senior School Level

S1	S2	S3	S4
☐	☒	☒	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 Designing
- 2.1, 2.2, 2.3, 2.4 Making
- 3.2, 3.3 Communicating
- 4.1, 4.2, 4.3, 4.4 Managing
- 5.1 Advocating

Content Focus

- Designing
- Project Management
- Safety

Curriculum Objectives:

At the end of this module, students will:

- identify types of non ferrous metals
- understand working properties:
  - heat treatments
  - bending
  - forming
  - sharping
  - joining
  - finishing
- produce artifact at least part made of non ferrous metal

Content Detail:

- safety
- work sheets on properties
- experiment applying skills
- show appropriate hand tool skills
  - marking out
  - rivetting
  - threading
  - annealing
  - finishing techniques

Module Evaluation:

- **Performance Assessments:**

  - design work 40%

- **Product Assessments:**

  - final product 60%

- **Written Assessments:**

Prerequisite Skill Areas (if any):

- S1 Course

Special Resources (materials, equipment & community involvement):

- examples
- special tools
- pop rivet gun
- snap and set
- soft soldering
- cleaning compounds

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, J. Construction Materials (access technology). Blackie - Glasgow, Scotland: Nelson International, 1993.
Chapman C. Peace M., Design and Realization (Collins C.D.T.). London, England: Collins Educational, 1988.
Garrett, J. Design and Technology (2nd Edition). Cambridge, England: Cambridge University Press, 1986.

REFERENCES - STUDENT:

Cave, J., Construction Materials (access technology). Blackie - Glasgow, Scotland: Nelson International, 1993.
Chapman C. Peace M., Design and Realization (Collins C.D.T.). London, England: Collins Educational, 1988.
Garrett, J., Design and Technology (2nd Edition). Cambridge, England: Cambridge University Press, 1986.

Design and Realization II

Course Code:DT3292DAR

MINISTRY OF EDUCATION
Bermuda
2000

SENIOR SCHOOL DESIGN AND TECHNOLOGY
COURSE OVERVIEW

Title: Design and Realization II — **2 credit (s)** **60 hour (s)**

Prerequisite (s): Design and Realization I — **S3-S4 level (s)**

Course Code: DT3292DAR — ☐ **required or** ☒ **elective**

Course Description

This course will build upon already established skills. Students will undertake two designs and make tasks following prescribed themes that allow them considerable choice in what they design and how it is realized.

Course Requirements

The requirements for this course are as follows:

	Module A **Child's Play**	**Module B** **Low Voltage Lighting**	**Total for 2 Modules**	**X .5 = Final % Grade**
Performance Assessments:	Design Work 50%	Design Work 50%	100	**50**
Product Assessments:	Final Product 50%	Final Product 50%	100	**50**
Total	100%	100%	**200**	**100%**

Course Resources

Cave, J. Construction Materials (access technology). Blackie - Glasgow, Scotland: Nelson International, 1993.

Chapman C. Peace M. Design and Realization (Collins C.D.T.). London, England: Collins Educational, 1988.

Garrett, J. Design and Technology (2nd Edition). Cambridge, England: Cambridge University Press, 1986.

Course Outline

Module Title	# Double Periods	Module Title	# Double Periods
A. Child's Play - analysis of products - client needs - joining materials - appropriate finishes	19	**B. Low Voltage Lighting** - simple circuits - switches - fixed and moveable joints - energy - joining dissimilar materials - analysis of problem/situation - aesthetics	19

Subtotal	38
Optional double periods	7
Total double periods	45

SENIOR SCHOOL DESIGN AND TECHNOLOGY

check: S1 ☐ S2 ☐ S3 ☒ S4 ☒

Design and Realization II

GOALS		SUBGOALS		MODULE & CURRICULUM CORRELATION MATRIX	
1	Design	1.1	Problem Identification	x	x
		1.2	Research/Analysis	x	x
		1.3	Synthesis	x	x
		1.4	Justification	x	x
		1.5	Discrimination	x	x
		1.6	Evaluation	x	x
2	Make	2.1	Resource Selection	x	x
		2.2	Tool Skills	x	x
		2.3	Realization	x	x
		2.4	Data Utilization	x	x
3	Communicate	3.1	Drawing System	x	x
		3.2	Design Sketch	x	x
		3.3	Presentation Graphics	x	x
		3.4	Standard Symbols	x	x
4	Manage Projects	4.1	Resource Identification	x	x
		4.2	Prioritization	x	x
		4.3	Organization	x	x
		4.4	Adaptation	x	x
5	Technology In Society	5.1	Identification	x	x
		5.2	Awareness	x	x
CONTENT STRUCTURE		Designing		x	x
		Planning		x	x
		Making		x	x
		Health & Safety		x	x
		Communicating		x	x
		Systems and Structures		x	x
		Technology in Society			x
		MODULES		A	B

MODULE KEY

A - Child's Play
B - Low Voltage Lighting

DESIGN & TECHNOLOGY

Course Title: DESIGN AND REALIZATION II

Module Title: Child's Play

Number of Periods: 19 double periods

Sequence Reference: DT3292DAR-A

Senior School Level

S1	S2	S3	S4
☐	☐	☒	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 Designing
- 2.1, 2.2, 2.3, 2.4 Making
- 3.2, 3.3 Communicating
- 4.1, 4.2, 4.3, 4.4 Managing
- 5.1 Advocating

Content Focus

- Design
- Planning
- Project Management

Curriculum Objectives:

At the end of this module, students will:

- understand research methods
- show evidence of comparisons with market products
- express methods of client responses
- choose solution, explain reasoning
- produce at least one prototype
- produce artifact
- evaluate product
- survey client market

Content Detail:

- research market products
- analysis of client requirements
- produce portfolio of design work
- development of design ideas
- choice and reasons
- apply appropriate making techniques
- show sound ideas and safety procedures

Module Evaluation:

- **Performance Assessments:**

  - design work 50%

- **Product Assessments:**

  - final product 50%

- **Written Assessments:**

Prerequisite Skill Areas

(if any):

- N/A

Special Resources

(materials, equipment & community involvement):

- examples
- variety of materials and adhesives
- special jigs
- possible community involvement

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, J. Construction Materials (access technology). Blackie - Glasgow, Scotland: Nelson International, 1993.
Chapman C. Peace M. Design and Realization (Collins C.D.T.). London, England: Collins Educational, 1988.
Garrett, J. Design and Technology (2nd Edition). Cambridge, England: Cambridge University Press, 1986.

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Cave, J. Construction Materials (access technology). Blackie - Glasgow, Scotland: Nelson International, 1993.
Chapman C. Peace M. Design and Realization (Collins C.D.T.). London, England: Collins Educational, 1988.
Garrett, J. Design and Technology (2nd Edition). Cambridge, England: Cambridge University Press, 1986.

DESIGN & TECHNOLOGY

Course Title: DESIGN AND REALIZATION II

Module Title: Low Voltage Lighting

Number of Periods: 19 double periods

Sequence Reference: DT3292DAR-B

Senior School Level

S1	S2	S3	S4
☐	☐	☒	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 Designing
- 2.1, 2.2, 2.3, 2.4 Making
- 3.2, 3.3 Communicating
- 4.1, 4.2, 4.3, 4.4 Managing
- 5.1 Advocating

Content Focus

- Design
- Planning
- Project Management

Curriculum Objectives:

At the end of this module, students will:

- show an understanding of potential low voltage systems
- show evidence of design ideas
- make choices based on research/survey
- prototype
- make final product
- evaluate product through peer/client survey

Content Detail:

- show understanding of simple circuit switches
- appropriate joints both moveable and fixed
- potential energy sources
- joining of dissimilar materials
- impact of aesthetics
- analysis and development of situation

Module Evaluation:

- **Performance Assessments:**

  - design work 50%

- **Product Assessments:**

  - final product 50%

- **Written Assessments:**

Prerequisite Skill Areas (if any):

- N/A

Special Resources (materials, equipment & community involvement):

- examples
- variety of materials and adhesives
- special jigs

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, J. Construction Materials (access technology). Blackie - Glasgow, Scotland: Nelson International, 1993.
Chapman C. Peace M. Design and Realization (Collins C.D.T.). London, England: Collins Educational, 1988.
Garrett, J. Design and Technology (2nd Edition). Cambridge, England: Cambridge University Press, 1986.

REFERENCES - STUDENT:

Cave, J. Construction Materials (access technology). Blackie - Glasgow, Scotland: Nelson International, 1993.
Chapman C. Peace M. Design and Realization (Collins C.D.T.). London, England: Collins Educational, 1988.
Garrett, J. Design and Technology (2nd Edition). Cambridge, England: Cambridge University Press, 1986.

Design and Realization III

Course Code: DT4223DAR

MINISTRY OF EDUCATION
Bermuda
2000

SENIOR SCHOOL DESIGN AND TECHNOLOGY
COURSE OVERVIEW

Title: Design and Realization III — **2 credit (s)**, **60 hour (s)**

Prerequisite (s): Design and Realization II — **S4 level (s)**

Course Code: DT4223DSR — ☐ **required or** ☒ **elective**

Course Description

This course will build upon skills developed at S2. The students will be required to undertake a major self-directed project, implementing the designing techniques developed through the previous levels. The project will be completed using resistant materials.

Course Requirements

The requirements for this course are as follows:

	Module A **Major Project**
Performance Assessments:	Design Work 60%
Product Assessments:	Final Product 40%
Total	**100%**

Course Resources

Cave, J. Construction Materials (access technology). Nelson International: Blackie - Glasgow, Scotland, 1993.

Chapman C. Peace M. Design and Realization (Collins C.D.T.). Collins International: London, England, 1988.

Garrett, J. Design and Technology (2nd Edition). Cambridge University Press: Cambridge, England, 1986.

Course Outline

Module Title	# Double Periods
A. Major Project	38

- project selection
- client understanding
- research
- prototyping
- realization
- continuous evaluation

Subtotal	38
Optional double periods	7
Total double periods	45

SENIOR SCHOOL DESIGN AND TECHNOLOGY

check: S1 ☐ S2 ☐ S3 ☐ S4 ☒

Design & Realization III

GOALS		SUBGOALS		MODULE & CURRICULUM CORRELATION MATRIX
1	Design	1.1	Problem Identification	x
		1.2	Research/Analysis	x
		1.3	Synthesis	x
		1.4	Justification	x
		1.5	Discrimination	x
		1.6	Evaluation	x
2	Make	2.1	Resource Selection	x
		2.2	Tool Skills	x
		2.3	Realization	x
		2.4	Data Utilization	x
3	Communicate	3.1	Drawing System	x
		3.2	Design Sketch	x
		3.3	Presentation Graphics	x
		3.4	Standard Symbols	x
4	Manage Projects	4.1	Resource Identification	x
		4.2	Prioritization	x
		4.3	Organization	x
		4.4	Adaptation	x
5	Technology In Society	5.1	Identification	x
		5.2	Awareness	x
CONTENT STRUCTURE		Designing		x
		Planning		x
		Making		x
		Health & Safety		x
		Communicating		x
		Systems and Structures		x
		Technology in Society		x
		MODULES		A

MODULE KEY

A - Major Project

DESIGN & TECHNOLOGY

Course Title: DESIGN AND REALIZATION III

Module Title: Major Project

Number of Periods: 38 double periods

Sequence Reference: DT4223DSR-A

Senior School Level

S1	S2	S3	S4
☐	☐	☐	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 Designing
- 2.1, 2.2, 2.3, 2.4 Making
- 3.2, 3.3 Communicating
- 4.1, 4.2, 4.3, 4.4 Managing
- 5.1 Advocating

Content Focus

- Design
- Planning
- Project Management

Curriculum Objectives:

At the end of this module, students will:

- produce a folio to include:
  - research
  - survey
  - client needs
  - ideas
  - project development
  evaluation of ideas
  final drawings
  a final evaluation
- present a prototype
- present a final product

Content Detail:

- choose an appropriate major project to undertake
- skills with appropriate hand tools
- skills with appropriate machine
- display safety techniques
- time/project management skills
- range of skills with variety of materials
- ongoing and final analysis of project development

Module Evaluation:

- **Performance Assessments:**

  - design work 60%

- **Product Assessments:**

  - final product 40%

Prerequisite Skill Areas
(if any):

- N/A

Special Resources
(materials, equipment & community involvement):

- examples
- availability range of materials
- prior planning to determine material needs/special ties etc.

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, J. Construction Materials (access technology). Nelson International: Blackie - Glasgow, Scotland, 1993.
Chapman C. Peace M. Design and Realization (Collins C.D.T.). Collins International: London, England, 1988.
Garrett, J. Design and Technology (2nd Edition). Cambridge University Press: Cambridge, England, 1986.

REFERENCES - STUDENT:

Cave, J. Construction Materials (access technology). Nelson International: Blackie - Glasgow, Scotland, 1993.
Chapman C. Peace M. Design and Realization (Collins C.D.T.). Collins International: London, England, 1988.
Garrett, J. Design and Technology (2nd Edition). Cambridge University Press: Cambridge, England, 1986.

Electronics Technology I

Course Code:DT2161ELC

MINISTRY OF EDUCATION
Bermuda
2000

SENIOR SCHOOL DESIGN AND TECHNOLOGY
COURSE OVERVIEW

Title: Electronics Technology I — **2 credit (s)**, **60 hour (s)**

Prerequisite (s): Design and Technology — **S2-S4 level (s)**

Course Code: DT2161ELC — ☐ **required or** ☒ **elective**

Course Description

In this course students will be taught the fundamentals of electronics theory, they will also build and test electronic circuits using integrated circuits and individual electronic components. Students taking this course must be proficient in applying complex mathematical concepts to electronic theory.

Course Requirements

The requirements for this course are as follows:

	Module A **Electronics Components**	**Module B** **Logic Control**	**Total for 2 Modules**	**X .50 = Final % Grade**
Performance Assessments:	Classwork 40%	Classwork 40%	80	**40**
Written Assessments:	End of Unit Exam 60%	End of Unit Exam 60%	120	**60**
Total	100%	100%	**200**	**100**

SENIOR SCHOOL DESIGN AND TECHNOLOGY

check: S1 ☐ S2 ☒ S3 ☒ S4 ☒

Electronics Technology I

GOALS		SUBGOALS		MODULE & CURRICULUM CORRELATION MATRIX	
1	Design	1.1	Problem Identification		x
		1.2	Research/Analysis		x
		1.3	Synthesis		
		1.4	Justification		x
		1.5	Discrimination		x
		1.6	Evaluation		x
2	Make	2.1	Resource Selection	x	x
		2.2	Tool Skills	x	x
		2.3	Realization		x
		2.4	Data Utilization	x	x
3	Communicate	3.1	Drawing System	x	x
		3.2	Design Sketch		
		3.3	Presentation Graphics		
		3.4	Standard Symbols	x	x
4	Manage Projects	4.1	Resource Identification	x	x
		4.2	Prioritization	x	x
		4.3	Organization	x	x
		4.4	Adaptation	x	x
5	Technology In Society	5.1	Identification	x	x
		5.2	Awareness	x	x
CONTENT STRUCTURE		Designing			x
		Planning		x	x
		Making		x	x
		Health & Safety		x	x
		Communicating		x	x
		Systems and Structures		x	x
		Technology in Society			x
		MODULES		**A**	**B**

MODULE KEY

A - Electronics Components
B - Logic Control

DESIGN & TECHNOLOGY

Course Title: ELECTRONICS TECHNOLOGY I

Module Title: Electronics Components

Number of Periods: 19 double periods

Sequence Reference: DT2161ELC-A

Senior School Level

S1	S2	S3	S4
☐	☒	☒	☒

Subgoal Emphasis:

- 1.1, 1.4, 1.5, 1.6 Designing
- 2.1, 2.2, 2.3, 2.4 Making
- 3.1, 3.2, 3.3, 3.4 Communicating
- 4.1, 4.2, 4.3, 4.4 Managing

Content Focus

- Planning
- Making
- Health and Safety
- Communicating
- Systems
- Technology in Society

Curriculum Objectives:

At the end of this module, students will:

- be able to calculate current, voltage and resistance
- understand and calculate how and when voltage dividers should be used
- identify and use individual electronic components
- understand integrated circuits and their uses

Content Detail:

- use multimeters to prove calculations
- series and parallel circuits, test equipment, resistance, Ohms law

Module Evaluation:

- **Performance Assessments:**

  - formative assessment, classwork 40%

- **Written Assessments:**

  - end of unit tests, final exam 60%

Prerequisite Skill Areas
(if any):

- N/A

Special Resources
(materials, equipment & community involvement):

- auto range multimeters
- logic probes
- RS data sheets
- integrated circuits

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, John, Access Technology, Electronics. Nelson International: London, England, 1996.
Fowler, P. Horsley, M. Collins C.D.T. Technology. Collins Ed.: London, England, 1988.
Garrett, J, Design and Technology (2nd Edition). Cambridge University Press: Cambridge, London, 1996.

REFERENCES - STUDENT:

Cave, John, Access Technology, Electronics. Nelson International: London, England, 1996.
Fowler, P. Horsley, M. Collins C.D.T. Technology. Collins Ed.: London, England, 1988.
Garrett, J, Design and Technology (2nd Edition). Cambridge University Press: Cambridge, London, 1996.

DESIGN & TECHNOLOGY

Course Title: ELECTRONICS TECHNOLOGY I

Module Title: Logic Control

Number of Periods: 19 double periods

Sequence Reference: DT2161ELC-B

Senior School Level

S1	S2	S3	S4
☐	☒	☒	☒

Subgoal Emphasis:

- 1.1, 1.4, 1.5, 1.6 Designing
- 2.1, 2.2, 2.3, 2.4 Making
- 3.1, 3.2, 3.3, 3.4 Communicating
- 4.1, 4.2, 4.3, 4.4 Managing

Content Focus

- Planning
- Making
- Health and Safety
- Communicating
- Systems
- Technology in Society

Curriculum Objectives:

At the end of this module, students will:

- look up and identify individual integrated circuits
- recognize the theory of chip mapping and its uses
- build and test electronic circuits

Content Detail:

- use RS data sheets to obtain relevant information on individual components and integrated circuits
- build and test circuits using relevant chip mapping techniques
- construct gates from nand technology

Module Evaluation:

- **Performance Assessments:**

  - formative assessment, classwork 40%

- **Written Assessments:**

  - end of unit tests, final exam 60%

Prerequisite Skill Areas
(if any):

- N/A

Special Resources
(materials, equipment & community involvement):

- breadboards
- low voltage power supplies
- I.C.'s
- R.S. data sheets

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, John, Access Technology, Electronics. Nelson International: London, England, 1996.
Fowler, P. Horsley, M. Collins C.D.T. Technology. Collins Ed.: London, England, 1988.
Garrett, J, Design and Technology (2nd Edition). Cambridge University Press: Cambridge, London, 1996.

REFERENCES - STUDENT:

Cave, John, Access Technology, Electronics. Nelson International: London, England, 1996.
Fowler, P. Horsley, M. Collins C.D.T. Technology. Collins Ed.: London, England, 1988.
Garrett, J, Design and Technology (2nd Edition). Cambridge University Press: Cambridge, London, 1996.

Electronics Technology II

Course Code:DT3302ELC

MINISTRY OF EDUCATION
Bermuda
2000

SENIOR SCHOOL DESIGN AND TECHNOLOGY
COURSE OVERVIEW

Title: Electronics Technology II — **2 credit (s)** **60 hour (s)**

Prerequisite (s): Electronics Technology I — **S3-S4 level (s)**

Course Code: DT3302ELC — ☐ **required or** ☒ **elective**

Course Description

In this course students will learn about the ability of personal computers to be used as a control medium, they will write programmes used in everyday situations for control e.g. motorized vehicles, traffic lights sequencing, car park barriers, etc.

Course Requirements

The requirements for this course are as follows:

	Module A **Control Systems**
Performance Assessments:	Classwork 40%
Written Assessments:	End of Unit Exam 60%
Total	**100**

Course Resources

Cave, John, Access Technology, Electronics. Nelson International: London, England, 1996.
Fowler, P. Horsley, M. Collins C.D.T. Technology. Collins Ed.: London, England, 1988.
Garrett, J. Design and Technology (2nd Edition). Cambridge University Press: Cambridge, London, 1996.

Course Outline

Module Title	# Double Periods
A. Control Systems	38

- use a P.C. and interface to control inputs and outputs
- recognize and use machine code for programming
- write control programmes for a P.C.
- assemble control devices and connect to P.C.

Subtotal	38
Optional double periods	7
Total double periods	45

SENIOR SCHOOL DESIGN AND TECHNOLOGY

check: S1 ☐ S2 ☐ S3 ☒ S4 ☒

Electronics Technology II

GOALS		SUBGOALS		MODULE & CURRICULUM CORRELATION MATRIX
1	Design	1.1	Problem Identification	x
		1.2	Research/Analysis	
		1.3	Synthesis	x
		1.4	Justification	x
		1.5	Discrimination	x
		1.6	Evaluation	x
2	Make	2.1	Resource Selection	x
		2.2	Tool Skills	x
		2.3	Realization	x
		2.4	Data Utilization	x
3	Communicate	3.1	Drawing System	x
		3.2	Design Sketch	
		3.3	Presentation Graphics	
		3.4	Standard Symbols	x
4	Manage Projects	4.1	Resource Identification	x
		4.2	Prioritization	x
		4.3	Organization	x
		4.4	Adaptation	x
5	Technology In Society	5.1	Identification	x
		5.2	Awareness	x
CONTENT STRUCTURE		Designing		x
		Planning		x
		Making		x
		Health & Safety		x
		Communicating		x
		Systems and Structures		x
		Technology in Society		x
		MODULES		A

MODULE KEY

A - Control Systems

DESIGN & TECHNOLOGY

Course Title: ELECTRONICS TECHNOLOGY II

Module Title: Control Systems, P.C.'s

Number of Periods: 38 double periods

Sequence Reference: DT3302ELC-A

Senior School Level

S1	S2	S3	S4
☐	☐	☒	☒

Subgoal Emphasis:

- 1.1, 1.4, 1.5, 1.6 Designing
- 2.1, 2.2, 2.3, 2.4 Making
- 3.1, 3.2, 3.3, 3.4 Communicating
- 4.1, 4.2, 4.3, 4.4 Managing

Content Focus

- Planning
- Making
- Health and Safety
- Communicating
- Systems
- Technology in Society

Curriculum Objectives:

At the end of this module, students will:

- use a P.C. and interface to control outputs
- recognize and use machine code
- write control programmes for a P.C.

Content Detail:

- how to connect an interface to a P.C.
- configure for input and output, if, then, etc.
- decimal, binary, hexadecimal number systems and machine code language
- 3 chip plus and nemec chip tutorials

Module Evaluation:

- **Performance Assessments:**

  - classwork 40%

- **Written Assessments:**

  - end of unit tests 60%

Prerequisite Skill Areas (if any):

- N/A

Special Resources (materials, equipment & community involvement):

- 3 chip plus
- nemec chip
- interface (5 off)
- CD-ROM material
- floppy disc tutorials
- robots
- motorized buggy's

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, John, Access Technology, Electronics. Nelson International: London, England, 1996.
Fowler, P. Horsley, M. Collins C.D.T. Technology. Collins Ed.: London, England, 1988.
Garrett, J. Design and Technology (2nd Edition). Cambridge University Press: Cambridge, London, 1996.

REFERENCES - STUDENT:

Cave, John, Access Technology, Electronics. Nelson International: London, England, 1996.
Fowler, P. Horsley, M. Collins C.D.T. Technology. Collins Ed.: London, England, 1988.
Garrett, J. Design and Technology (2nd Edition). Cambridge University Press: Cambridge, London, 1996.

Electronics Technology III

Course Code:DT4233ELC

MINISTRY OF EDUCATION
Bermuda
2000

SENIOR SCHOOL DESIGN AND TECHNOLOGY
COURSE OVERVIEW

Title: Electronics Technology III — **2 credit (s)**, **60 hours (s)**

Prerequisite (s): Electronics Technology II — **S4 level (s)**

Course Code: DT4233ELC — ☐ **required or** ☒ **elective**

Course Description

In this course students will undertake research visits to an industrial or commercial business where they will identify the use of electronics. Through theory and practical classwork they will investigate an aspect of electronics and produce a detailed portfolio detailing their investigations.

Course Requirements

The requirements for this course are as follows:

	Module A **Report/Schools Industry Liaison**
Product Assessments:	Modeling 40%
Written Assessments:	Report 60%
Total	**100%**

Course Resources

Cave, John, Access Technology, Electronics. Nelson International: London, England, 1996.
Fowler, P. and Horsley, M. Collins C.D.T. Technology. Collins Ed.: London, England, 1988.
Garrett, J. Design and Technology (2nd Edition). Cambridge University Press: Cambridge, London, 1996.

Course Outline

Module Title **# Double Periods**

A. Report/Schools Industry Liaison 38
- classwork to suit content of report
- theory of schematic diagrams
- circuit design
- project investigation - day release?

Subtotal	38
Optional double periods	7
Total double periods	45

SENIOR SCHOOL DESIGN AND TECHNOLOGY

check: S1 ☐ S2 ☐ S3 ☐ S4 ☒

Electronics Technology III

GOALS		SUBGOALS		MODULE & CURRICULUM CORRELATION MATRIX
1	Design	1.1	Problem Identification	x
		1.2	Research/Analysis	x
		1.3	Synthesis	x
		1.4	Justification	x
		1.5	Discrimination	x
		1.6	Evaluation	x
2	Make	2.1	Resource Selection	x
		2.2	Tool Skills	x
		2.3	Realization	x
		2.4	Data Utilization	x
3	Communicate	3.1	Drawing System	x
		3.2	Design Sketch	
		3.3	Presentation Graphics	x
		3.4	Standard Symbols	x
4	Manage Projects	4.1	Resource Identification	x
		4 2	Prioritization	x
		4.3	Organization	x
		4.4	Adaptation	x
5	Technology In Society	5.1	Identification	x
		5.2	Awareness	x
CONTENT STRUCTURE		Designing		
		Planning		x
		Making		x
		Health & Safety		x
		Communicating		x
		Systems and Structures		x
		Technology in Society		x
		MODULES		A

MODULE KEY

A - Report/Schools Industry Liaison

DESIGN & TECHNOLOGY

Course Title: ELECTRONICS TECHNOLOGY III

Module Title: Report/Schools Industry Liaison

Number of Periods: 10 double periods

Sequence Reference: DT4233ELC-A

Senior School Level

S1	S2	S3	S4
☐	☐	☐	☒

Subgoal Emphasis:

- 1.1, 1.4 Designing
- 2.4 Making
- 3.1, 3.3, 3.4 Communicating
- 4.1, 4.3 Managing
- 5.1, 5.2 Advocating

Content Focus

- Planning
- Making
- Health and Safety
- Communicating
- Systems
- Technology in Society

Curriculum Objectives:

At the end of this module, students will:

- be able to write a technical report on a specific topic related to electronics in technology
- be able to converse using a technological vocabulary
- build and test a specific piece of equipment related to the area of interest chosen for study
- be able to recognize and read schematic diagrams

Content Detail:

- students will learn about report writing and construction of reports
- use proper technological terminology when required
- choose an area in a circuit design and model it in the electronics workshop thus giving the student a full understanding of how the control process works
- read a diagram and be able to decode the drawing, follow the circuit and understand how the progression affects the workings of the circuit

Module Evaluation:

- **Product Assessments:**

  - modeling 40%

- **Written Assessments:**

  - report 60%

Prerequisite Skill Areas

(if any):

- S3 Mathematics

Special Resources

(materials, equipment & community involvement):

- schools industry liaison for placement
- specialized electronic components

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, John, Access Technology, Electronics. Nelson International: London, England, 1996.
Fowler, P. and Horsley, M. Collins C.D.T. Technology. Collins Ed,: London, England, 1988.
Garrett, J. Design and Technology (2nd Edition). Cambridge University Press: Cambridge, London, 1996.

REFERENCES - STUDENT:

Cave, John, Access Technology, Electronics. Nelson International: London, England, 1996.
Fowler, P. and Horsley, M. Collins C.D.T. Technology. Collins Ed.: London, England, 1988.
Garrett, J. Design and Technology (2nd Edition). Cambridge University Press: Cambridge, London, 1996.

Graphic Communication I

Course Code:DT2171GPH

MINISTRY OF EDUCATION
Bermuda
2000

SENIOR SCHOOL DESIGN AND TECHNOLOGY
COURSE OVERVIEW

Title: Graphic Communication I — **2 credit (s)** **60 hour (s)**

Prerequisite (s): Design and Technology — **S2-S4 level (s)**

Course Code: DT2171GPH — ☐ **required or** ☒ **elective**

Course Description

The Graphic Communication I course focuses on and further develops graphical skills established at S1. During this course students will undertake four varied project based design modules each with a supportive graphic skills content.

Course Requirements

The requirements for this course are as follows:

	Module A **Product Drawing and Design**	**Module B** **Product Design**	**Module C** **Information Graphics**	**Module D** **Promotional Graphics**	**Total for 4 Modules**	**X .25 = Final % Grade**
Performance Assessments:	Teacher lead basic skills 50%	Teacher lead basic skills. Sketched initial ideas 40%	Information gathering. Exploration work 50%	Information gathering. Teacher lead exploratory work 50%	190%	
Product Assessments:	Set of object drawings 30%	Presentation drawings 60%	Presentation of data 50%	Presentation of product 50%	190%	
Written Assessments:	Ortho multiple choice test 20%				20%	
Total	100%	100%	100%	100%	**400%**	

Course Resources

Cave, J. Access Technology, Designing. Nelson International: London: England, 1993.
Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988.

Course Outline

A. Product Drawing and Design 9
- isometric drawing
- orthographic drawing
- cutaway drawing
- scale
- specifications
- drawing standards
- consumer product analysis
- product design/modelling

B. Product Design 9
- aesthetics
- visual impact
- presentation
- form and function
- basic ergonomics
- styling
- production constraints
- materials limitations
- realization of design
- design evaluation

C. Information Graphics 9
- typography
- symbols
- logos and ideograms
- flow charts
- DTP and CAD
- data collection and presentation
- layout
- cut and paste techniques
- presentation
- end user evaluation

D. Promotional Graphics 11
- advertising and promotion
- business/industry links
- DTP
- corporate identify
- production techniques
- posters, booklets - leaflets
- environmental issues
- 2D and 3D presentation

Subtotal	38
Optional double periods	7
Total double periods	45

SENIOR SCHOOL DESIGN AND TECHNOLOGY

check: S1 ☐ S2 ☒ S3 ☒ S4 ☒

Graphic Communication I

GOALS		SUBGOALS		MODULE & CURRICULUM CORRELATION MATRIX			
1	Design	1.1	Problem Identification	x	x	x	x
		1.2	Research/Analysis	x	x	x	x
		1.3	Synthesis	x	x	x	x
		1.4	Justification	x	x	x	x
		1.5	Discrimination	x	x	x	x
		1.6	Evaluation	x	x	x	x
2	Make	2.1	Resource Selection	x	x	x	x
		2.2	Tool Skills				
		2.3	Realization				
		2.4	Data Utilization	x	x	x	x
3	Communicate	3.1	Drawing System	x	x	x	x
		3.2	Design Sketch	x	x	x	x
		3.3	Presentation Graphics	x	x	x	x
		3.4	Standard Symbols	x	x	x	x
4	Manage Projects	4.1	Resource Identification	x	x	x	x
		4.2	Prioritization	x	x	x	x
		4.3	Organization	x	x	x	x
		4.4	Adaptation	x	x	x	x
5	Technology In Society	5.1	Identification	x			
		5.2	Awareness				
CONTENT STRUCTURE		Designing		x	x	x	x
		Planning		x	x	x	x
		Making		x	x	x	x
		Health & Safety					
		Communicating		x	x	x	x
		Systems and Structures		x	x		
		Technology in Society		x	x	x	x
		MODULES		**A**	**B**	**C**	**D**

MODULE KEY

A - Product Drawing and Design
B - Product Design
C - Information Graphics
D - Promotional Graphics

DESIGN & TECHNOLOGY

Course Title: GRAPHIC COMMUNICATION I

Sequence Reference: DT2171GPH-A

Module Title: Product Drawing and Design

Number of Periods: 9 double periods

Senior School Level

S1	S2	S3	S4
☐	☒	☒	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 Design
- 2.1, 2.2, 2.3, 2.4 Make
- 3.1, 3.2, 3.3, 3.4 Communicate
- 4.1, 4.2, 4.3, 4.4 Manage Projects

Content Focus

- Production/Engineering Drawing
- Product Analysis
- 2D Technical Illustration

Curriculum Objectives:

At the end of this module, students will:

- understand basic orthographic, layout and procedure
- be able to apply a range of technical illustration methods to communicate technical information
- have an improved understanding of industrial methods of manufacture and material properties
- select a product/range of products for illustration purposes
- recognize the need for standardized practices in technical illustration
- have an improved understanding of clarity of communication
- have demonstrated an understanding of tolerances
- produce clear and accurate drawings of a product to illustrate its features
- evaluate the characteristics of a product

Content Detail:

- line drawing and line styles
- accepted conventions and drawing symbols
- regular drawing equipment
- CAD
- orthographic drawing
- 2D representations
- scale drawing
- cutaways and sections
- analysis of mechanical and physical features
- geometrical construction

Module Evaluation:

- **Performance Assessments:**

  - teacher lead basic skills 50%

- **Product Assessments:**

  - set of object drawings 30%

- **Written Assessments:**

  - ortho multiple choice test 20%

Prerequisite Skill Areas (if any):

- S1 Course

Special Resources (materials, equipment & community involvement):

- Auto CAD
- Tech Soft
- drawing tools
- examples of engineered products
- examples of threads, bushes and bearings

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, J. Access Technology, Designing. Nelson International: London, England, 1993.
Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988.

REFERENCES - STUDENT:

Cave, J., Access Technology, Designing. Nelson International: London, England, 1993.
Crampton, K., Finney, M., Collins, C.D.T. Design and Communication. Collins Educational: London, England, 1988.

DESIGN & TECHNOLOGY

Course Title: GRAPHIC COMMUNICATION I

Sequence Reference: DT2171GPH-B

Module Title: Product Design

Number of Periods: 9 double periods

Senior School Level

S1	S2	S3	S4
☐	☒	☒	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 Design
- 2.1, 2.2, 2.3, 2.4 Make
- 3.1, 3.2, 3.3, 3.4 Communicate
- 4.1, 4.2, 4.3, 4.4 Manage Projects
- 5.1 Technology in Society

Content Focus

- Product Analysis and Design
- Popular Market Trends
- Aesthetics/Style
- Clothing/Sports Equipment/Consumer Durable Items

Curriculum Objectives:

At the end of this module, students will:

- develop an improved understanding of market trends and consumer needs
- have explored color and texture to enhance a product's appearance
- explore different ways of packaging consumer durable items
- develop an improved understanding of consumer needs
- analyze a range of popular fashion products and accessories
- generate and present alternatives or improvements to fashion products
- understand the implications of consumerism upon society

Content Detail:

- research using internet
- the design brief
- consumer requirements
- free hand drawing
- cut and paste techniques
- air brush techniques
- computer graphics (Corel draw)
- color tone and texture in presenting

Module Evaluation:

- **Performance Assessments:**

  - teacher lead basic skills, sketched initial ideas 40%

- **Product Assessments:**

  - presentation drawings 60%

- **Written Assessments:**

Prerequisite Skill Areas (if any):

- S1 Course

Special Resources (materials, equipment & community involvement):

- air brush
- textured paper
- soft pencils
- corel draw
- art markets
- cut and paste equipment
- internet access

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, J. Access Technology, Designing. Nelson International: London, England, 1993.
Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988..

REFERENCES - STUDENT:

Cave, J. Access Technology, Designing. Nelson International: London, England, 1993.
Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988.

DESIGN & TECHNOLOGY

Course Title: GRAPHIC COMMUNICATION I

Sequence Reference: DT2171GPH-C

Module Title: Information Graphics

Number of Periods: 9 double periods

Senior School Level

S1	S2	S3	S4
☐	☒	☒	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 Design
- 2.1, 2.2, 2.3, 2.4 Make
- 3.1, 3.2, 3.3, 3.4 Communicate
- 4.1, 4.2, 4.3, 4.4 Manage Projects

Content Focus

- Data Collection, Interpretation and Presentation
- Symbolism and Information Communication
- Information Systems
- Communication of Instructions and Technical Information

Curriculum Objectives:

At the end of this module, students will:

- have designed and produced an image that communicates statistical information effectively
- have explored a variety of information systems
- have undertaken a simple research task i.e. gathered and sorted information
- have analyzed and presented the results of a market survey
- have presented a sequence of diagrams to explain a process or procedure
- understand the meaning of a graphical representation

Content Detail:

- symbols
- ideograms
- flow charts
- schematics
- CAD and computer graphics (clipart)
- data collection and presentation
- cut and paste
- presentation
- sequential diagrams

Module Evaluation:

- **Performance Assessments:**

  - information gathering, exploration work 50%

- **Product Assessments:**

  - presentation of data 50%

- **Written Assessments:**

Prerequisite Skill Areas (if any):

- S1 Course

Special Resources (materials, equipment & community involvement):

- Windows Draw wizards
- circuit diagrams and schematics
- statistical information
- common examples of ideograms (road signs)
- maps, charts, plans

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, J., Access Technology, Designing. Nelson International: London, England, 1993.
Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988.

REFERENCES - STUDENT:

Cave, J. Access Technology, Designing. Nelson International: London, England, 1993.
Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988.

DESIGN & TECHNOLOGY

Course Title: GRAPHIC COMMUNICATION I

Sequence Reference: DT2171GPH-D

Module Title: Promotional Graphics

Number of Periods: 11 double periods

Senior School Level

S1	S2	S3	S4
☐	☒	☒	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 Design
- 2.1, 2.2, 2.3, 2.4 Make
- 3.1, 3.2, 3.3, 3.4 Communicate
- 4.1, 4.2, 4.3, 4.4 Manage Projects

Content Focus

- Corporate Image and Identity
- Advertising and Promotion
- Logos

Curriculum Objectives:

At the end of this module, students will:

- explore graphical applications in society
- have produced a poster advertising an event of their choice
- have designed and manufactured a logo that can be duplicated and applied to a prescribed product
- have explored the correct use of type faces and color to create impact

Content Detail:

- DTP
- logos
- visual impact
- market trends
- consumer needs and interests
- social implications
- manual and computer rendering techniques
- 2D presentations
- cut and paste techniques
- internet searches

Module Evaluation:

- **Performance Assessments:**

  - information gathering, teacher lead exploratory work 50%

- **Product Assessments:**

  - presentation of product 50%

- **Written Assessments:**

Prerequisite Skill Areas (if any):

- Design process skills and knowledge from Design and Technology Course

Special Resources (materials, equipment & community involvement):

- air brush
- popular logos
- popular range of products
- Camm 1 and 2
- appropriate software
- vinyl and acrylic
- prepared line art for rendering
- posters, flyers and advertisements

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, J. Access Technology, Designing. Nelson International: London, England, 1993.
Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988.

REFERENCES - STUDENT:

Cave, J., Access Technology, Designing. Nelson International: London, England, 1993.
Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988.

Graphic Communication II

Course Code:DT3312GPH

MINISTRY OF EDUCATION
Bermuda
2000

SENIOR SCHOOL DESIGN AND TECHNOLOGY
COURSE OVERVIEW

Title: Graphic Communication II — **2 credit (s)** / **60 hour (s)**

Prerequisite (s): Graphic Communication I, Introduction to DTP — **S3-S4 level (s)**

Course Code: DT3312GPH — ☐ **required or** ☒ **elective**

Course Description

The Graphic Communication II course will reinforce and expand on many of the skills taught in S2. New areas will be explored and applied to one of the two design situations. Students will be expected to demonstrate a thorough understanding of the design skills associated with an extended project.

Course Requirements

The requirements for this course are as follows:

	Module A The Built Environment	**Module B Transportation**	**Total for 2 Modules**	**X .5 = Final % Grade**
Performance Assessments:	Research Activities 10% Exploratory Activities 30%	Research Activities 10% Exploratory Activities 30%	20% 60%	**10%** **30%**
Product Assessments:	Presentation of Products 60%	Presentation of Products 60%	120%	**60%**
Total	100%	100%		**100%**

Course Resources

Cave, J., Access Technology, Designing. Nelson International: London, England, 1993.
Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988.

Course Outline

Module Title	# Double Periods	Module Title	# Double Periods
A. The Built Environment	19	**B. Transportation**	19
- plans and elevations		- advanced presentation techniques	
- perspective views		- constructions	
- CAD		- logos	
- scale drawing		- styling and ergonomics	
- international drawing conventions		- symbols and idea grams	

Subtotal	38
Optional double periods	7
Total double periods	45

SENIOR SCHOOL DESIGN AND TECHNOLOGY

check: S1 ☐ S2 ☐ S3 ☒ S4 ☒

Graphic Communication II

GOALS		SUBGOALS		MODULE & CURRICULUM CORRELATION MATRIX	
1	Design	1.1	Problem Identification	x	x
		1.2	Research/Analysis	x	x
		1.3	Synthesis	x	x
		1.4	Justification	x	x
		1.5	Discrimination	x	x
		1.6	Evaluation	x	x
2	Make	2.1	Resource Selection	x	x
		2.2	Tool Skills	x	
		2.3	Realization		
		2.4	Data Utilization	x	x
3	Communicate	3.1	Drawing System	x	x
		3.2	Design Sketch	x	x
		3.3	Presentation Graphics	x	x
		3.4	Standard Symbols	x	x
4	Manage Projects	4.1	Resource Identification	x	x
		4.2	Prioritization	x	x
		4.3	Organization	x	x
		4.4	Adaptation	x	x
5	Technology In Society	5.1	Identification	x	x
		5.2	Awareness	x	x
CONTENT STRUCTURE		Designing		x	x
		Planning		x	x
		Making		x	x
		Health & Safety			
		Communicating		x	x
		Systems and Structures		x	x
		Technology in Society		x	x
		MODULES		A	B

MODULE KEY

A - The Built Environment
B - Transportation

DESIGN & TECHNOLOGY

Course Title: GRAPHIC COMMUNICATION II

Module Title: The Built Environment

Number of Periods: 19 double periods

Sequence Reference: DT3312GPH-A

Senior School Level

S1	S2	S3	S4
☐	☐	☒	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 Design
- 2.1, 2.2, 2.3, 2.4 Make
- 3.1, 3.2, 3.3, 3.4 Communicate
- 4.1, 4.2, 4.3, 4.4 Manage Projects
- 5.1 Technology in Society

Content Focus

- Architectural Drawing and Design
- Bermudian Architecture

Curriculum Objectives:

At the end of this module, students will:

- have applied their understanding of Bermudian features to a built structure
- have produced a variety of plans to different scales
- have made modifications to an existing structure
- have generated a comprehensive range of drawings to communicate their design thinking
- have applied their understanding of architectural standards to a set of drawings

Content Detail:

- CAD
- plans and elevations
- industry regs
- planometric
- rendering
- scale
- representational drawing
- interior/landscape design CAD
- industry college links (Auto CAD)
- utilities and systems
- vernacular styling
- urban redevelopment

Module Evaluation:

- **Performance Assessments:**

  - research activities 10%
  - exploratory activities 30%

- **Product Assessments:**

  - presentation of products 60%

Prerequisite Skill Areas
(if any):

- N/A

Special Resources
(materials, equipment & community involvement):

- maps, charts and plans of Bermuda
- representative from Planning Department
- practicing architect
- expert landscape and home design software
- auto CAD

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, J. Access Technology, Designing. Nelson International: London, England, 1993.
Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988.

REFERENCES - STUDENT:

Cave, J. Access Technology, Designing. Nelson International: London, England, 1993.
Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988.

DESIGN & TECHNOLOGY

Course Title: GRAPHIC COMMUNICATION II

Module Title: Transportation

Number of Periods: 19 double periods

Sequence Reference: DT3312GPH-B

Senior School Level

S1	S2	S3	S4
☐	☐	☒	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 Design
- 2.1, 2.2, 2.3, 2.4 Make
- 3.1, 3.2, 3.3, 3.4 Communicate
- 4.1, 4.2, 4.3, 4.4 Manage Projects
- 5.1 Technology in Society

Content Focus

- Technical Illustration
- Geometry
- Ergonomics
- Styling
- Systems Illustration
- Presentation Techniques

Curriculum Objectives:

At the end of this module, students will:

- have identified an aspect of transportation for further research and development
- produce a design proposal suggesting area of interest
- explore a variety of construction and geometry techniques when exploring ideas
- collect and present research relevant to the proposal
- produce a range of possible solutions to the stated problem
- present a prototype as a solution

Content Detail:

- assembly drawing
- aerodynamics
- scale drawing
- advanced rendering techniques
- logos and promotional graphics
- prototyping
- CAD and computer graphics
- symbols
- user needs
- 3D rendering

Module Evaluation:

- **Performance Assessments:**

  - research activities 10%
  - exploratory activities 30%

- **Product Assessments:**

  - presentation of products 60%

Prerequisite Skill Areas

(if any):

- Familiarity with suitable CAD and Computer Graphics packages

Special Resources

(materials, equipment & community involvement):

- local automotive dealers
- internet access
- magazines and periodicals
- air brush
- cut and paste media including circle cutter
- regular drawing materials
- miscellaneous markers and coloring media
- circle cutter

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, J. Access Technology, Designing. Nelson International: London, England, 1993.

Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988.

REFERENCES - STUDENT:

Cave, J. Access Technology, Designing. Nelson International: London, England, 1993.

Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988.

Graphic Communication III

Course Code:DT4243GPH

MINISTRY OF EDUCATION
Bermuda
2000

SENIOR SCHOOL DESIGN AND TECHNOLOGY
COURSE OVERVIEW

Title: Graphic Communication III — **2 credit (s)**, **60 hour (s)**

Prerequisite (s): Graphic Communication II — **S4 level (s)**

Course Code: DT4243GPH — ☐ **required or** ☒ **elective**

Course Description

The student undertaking this advanced course will be expected to produce a single extended project of their own choice which will allow them to explore and future develop their understanding of the graphical skills and applications. Students will select and apply appropriate media and equipment, including computers, as they follow through the design process and realize their ideas.

Course Requirements

The requirements for this course are as follows:

	Module A **Personal Project**	**Total** **Modules**
Performance Assessments:	Research Activities 10% Ideas 15% Developmental Work 15%	40%
Product Assessments:	Product 50% Evaluation 10%	60%
Total		**100%**

Course Resources

Cave, J. Access Technology, Designing. Nelson International: London, England, 1993.
Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988..

Course Outline

Module Title	# Double Periods
A. Personal Project	38
- research	
- client understanding	
- project management	
- project evaluation	

Subtotal	38
Optional double periods	7
Total double periods	45

SENIOR SCHOOL DESIGN & TECHNOLOGY

check: S1 ☐ S2 ☐ S3 ☐ S4 ☒

Graphic Communication III

GOALS		SUBGOALS		MODULE & CURRICULUM CORRELATION MATRIX
1	Design	1.1	Problem Identification	x
		1.2	Research/Analysis	x
		1.3	Synthesis	x
		1.4	Justification	x
		1.5	Discrimination	x
		1.6	Evaluation	x
2	Make	2.1	Resource Selection	x
		2.2	Tool Skills	x
		2.3	Realization	x
		2.4	Data Utilization	x
3	Communicate	3.1	Drawing System	x
		3.2	Design Sketch	x
		3.3	Presentation Graphics	x
		3.4	Standard Symbols	x
4	Manage Projects	4.1	Resource Identification	x
		4.2	Prioritization	x
		4.3	Organization	x
		4.4	Adaptation	x
5	Technology In Society	5.1	Identification	x
		5.2	Awareness	x
CONTENT STRUCTURE		Designing		x
		Planning		x
		Making		x
		Health & Safety		x
		Communicating		x
		Systems and Structures		x
		Technology in Society		x
		MODULES		**A**

MODULE KEY

A - Personal Project

DESIGN & TECHNOLOGY

Course Title: GRAPHIC COMMUNICATION III

Module Title: Personal Project

Number of Periods: 38 double periods

Sequence Reference: DT4243GPH-A

Senior School Level

S1	S2	S3	S4
☐	☐	☐	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 Design
- 2.1, 2.2, 2.3, 2.4 Make
- 3.1, 3.2, 3.3, 3.4 Communicate
- 4.1, 4.2, 4.3, 4.4 Manage Projects
- 5.1 Technology in Society

Content Focus

- Project Management
- Presentation Techniques
- Cooperative Education
- Graphical Communication in the workplace
- Self Evaluation
- Client Evaluation

Curriculum Objectives:

At the end of this module, students will:

- have identified an issue worthy of development
- have searched for presented and utilized appropriate resource material
- generate a range of proposals which fit the brief
- develop and present an idea for evaluation
- write a comprehensive evaluation comparing the product to the design brief
- provide evidence of planning
- have analyzed and interrogated information as the project unfolds (formative evaluation)
- have generated and followed a design brief

Content Detail:

- market research
- product evaluation
- architectural drawing
- promotional graphics
- engineering drawing
- technical illustration techniques
- information systems
- reprographics
- CAD applications and computer peripheral devices
- computer graphics applications
- advanced construction techniques
- scale drawing
- advanced rendering techniques

Module Evaluation:

- **Performance Assessments:**

  - research activities 10%
  - ideas 15%
  - developmental work 15%

- **Product Assessments:**

  - product 50%
  - evaluations 10%

Prerequisite Skill Areas (if any):

- familiarity with a variety of research methods
- moderate understanding of computer graphics

Special Resources (materials, equipment & community involvement):

- tie project to work placement
- appropriate computer software, auto CAD, vision, 3D architect
- internet access
- full range of drawing tools
- CADCAM machinery
- Auto CAD

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, J. Access Technology, Designing. Nelson International: London, England, 1993.
Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988.

REFERENCES - STUDENT:

Cave, J. Access Technology, Designing. Nelson International: London, England, 1993.
Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988.

Transportation Technology I

Course Code:DT2181TRN

MINISTRY OF EDUCATION
Bermuda
2000

SENIOR SCHOOL DESIGN AND TECHNOLOGY
COURSE OVERVIEW

Title: Transportation Technology I — **2 credit (s)**, **60 hour (s)**

Prerequisite (s): Design & Technology — **S2-S4 level (s)**

Course Code: DT2181TRN — ☐ **required or** ☒ **elective**

Course Description

The Transportation Technology I course builds upon skills obtained in Design and Technology. This broad and balanced course will develop, through workshop practices, investigation of power sources and vehicle support systems, the necessary skills and knowledge for subsequent Transportation Technology courses.

Course Requirements

The requirements for this course are as follows:

	Module A Workshop Practices	**Module B** The Power Sources	**Module C** Vehicle Support Systems	**Total for 3** Modules	**X .33 =** Final % Grade
Performance Assessments:	30%	30%	30%	90%	**30%**
Product Assessments:	20%	20%	20%	60%	**20%**
Written Assessments:	50%	50%	50%	150%	**50%**
Total	100%	100%	100%	**300%**	**100%**

Course Resources

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978

Course Outline

A. Workshop Practices 12
- health and safety
- hand tools and equipment
- remove, investigate and replace
- care and clean up

B. The Power Sources 13
- the 4 stroke cycle in detail
- the 2 stroke cycle
- main parts and working principles

C. Vehicle Support Systems 13
- vehicle systems
- brakes
- ignition and electrical systems
- cooling and lubrication
- gearbox and transmission of power
- steering and suspension

Subtotal	38
Optional double periods	7
Total double periods	45

SENIOR SCHOOL DESIGN AND TECHNOLOGY

check: S1 ☐ S2 ☒ S3 ☒ S4 ☒

Transportation Technology I

GOALS		SUBGOALS		MODULE & CURRICULUM CORRELATION MATRIX		
1	Design	1.1	Problem Identification	x	x	x
		1.2	Research/Analysis	x	x	x
		1.3	Synthesis	x		x
		1.4	Justification			x
		1.5	Discrimination	x	x	x
		1.6	Evaluation		x	x
2	Make	2.1	Resource Selection	x	x	x
		2.2	Tool Skills	x	x	x
		2.3	Realization		x	
		2.4	Data Utilization		x	x
3	Communicate	3.1	Drawing System	x	x	x
		3.2	Design Sketch			
		3.3	Presentation Graphics			
		3.4	Standard Symbols	x	x	
4	Manage Projects	4.1	Resource Identification	x	x	x
		4.2	Prioritization	x		
		4.3	Organization	x	x	x
		4.4	Adaptation	x		
5	Technology In Society	5.1	Identification	x		
		5.2	Awareness			
CONTENT STRUCTURE		Designing				
		Planning		x		x
		Making		x	x	
		Health & Safety		x	x	x
		Communicating		x	x	x
		Systems and Structures		x	x	x
		Technology in Society		x		
		MODULES		A	B	C

MODULE KEY

A - Workshop Practices
B - The Power Sources
C - Vehicle Support Systems

DESIGN & TECHNOLOGY

Course Title: TRANSPORTATION TECHNOLOGY I

Module Title: Workshop Practices

Number of Periods: 12 double periods

Sequence Reference: DT2181TRN-A

Senior School Level

S1	S2	S3	S4
☐	☒	☒	☒

Subgoal Emphasis:

- 1.1, 1.5 Design
- 2.1, 2.2 Make
- 3.1, 3.4 Communicate
- 4.1, 4.2, 4.3, 4.4 Manage
- 5.1 Identify

Content Focus

- Understanding Systems
- Manufacturing Processes
- Understanding Energy Sources
- Understanding Health and Safety
- Remove, Investigate and Replace
- Proper use of Hand Tools and Equipment

Curriculum Objectives:

At the end of this module, students will:

- understand health and safety needs
- use hand tools and equipment
- be able to remove, investigate and replace components

Content Detail:

- personal safety
- choosing the correct tools for job
- care and clean up
- organize removal sequence
- understand processes (correct and simplest way to remove)
- understand why removed, study components why and who they work
- replace components, correctly and sequentially

Module Evaluation:

- **Performance Assessments:**

  - 30%

- **Product Assessments:**

  - 20%

- **Written Assessments:**

  - 50%

Prerequisite Skill Areas (if any):

- N/A

Special Resources (materials, equipment & community involvement):

- broken down, cut away chassis
- video library, shop safety, tools
- CD-ROM library, shop safety and tools

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978

REFERENCES - STUDENT:

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978

DESIGN & TECHNOLOGY

Course Title: TRANSPORTATION TECHNOLOGY I

Module Title: The Power Sources

Number of Periods: 13 double periods

Sequence Reference: DT2181TRN-B

Senior School Level

S1	S2	S3	S4
☐	☒	☒	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.5, 1.6 Design
- 2.1, 2.2, 2.3, 2.4 Make
- 3.1, 3.4 Communicate
- 4.1, 4.3 Manage

Content Focus

- Understanding Systems
- Manufacturing Processes
- Understanding Energy Sources

Curriculum Objectives:

At the end of this module, students will:

- understand the 4 stroke cycle
- understand the 2 stroke cycle
- know the main parts and working principles of engines

Content Detail:

- engine configurations
- engine internal components, materials and manufacturing processes
- operation principles, four stroke cycle, two stroke cycle
- considerations for environmental pollution, energy costs
- repair procedures, remove to access components
- discuss reasons and procedures for repair, replace

Module Evaluation:

- **Performance Assessments:**

  - 30%

- **Product Assessments:**

  - 20%

- **Written Assessments:**

  - 50%

Prerequisite Skill Areas
(if any):

- N/A

Special Resources
(materials, equipment & community involvement):

- broken down, cut away chassis
- engines and engine components
- video library, engine operation
- CD-ROM library, basic engine principles

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978

REFERENCES - STUDENT:

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978

DESIGN & TECHNOLOGY

Course Title: TRANSPORTATION TECHNOLOGY I

Module Title: Vehicle Support Systems

Number of Periods: 13 double periods

Sequence Reference: DT2181TRN-C

Senior School Level

S1	S2	S3	S4
☐	☒	☒	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 — Design
- 2.1, 2.2, 2.4 — Make
- 3.1 — Communicate
- 4.1, 4.3 — Manage

Content Focus

- Understanding Systems
- Manufacturing Processes
- Understanding Energy Sources
- Understanding Transmission of Power

Curriculum Objectives:

At the end of this module, students will:

- understand brake system basic principals:
  - ignition and electrical systems
  - cooling and lubrication principals
  - gearbox and transmission basic theory
  - steering and suspension principals

Content Detail:

- power transmission options, belt, chain, simple gear boxes, disengagement systems/concepts
- need for reduction
- typical servicing and repair concepts
- chassis suspension, methods
- spring configurations
- steering systems, components
- brakes, simple systems
- concepts of friction and traction
- hydraulic brake system

Module Evaluation:

- **Performance Assessments:**

  - 30%

- **Product Assessments:**

  - 20%

- **Written Assessments:**

  - 50%

Prerequisite Skill Areas
(if any):

- N/A

Special Resources
(materials, equipment & community involvement):

- broken down, cut away chassis
- transmission, suspension, steering and brake components
- video library, power transmission, brakes, steering
- CD-ROM library, transmissions, brake and steering

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978

REFERENCES - STUDENT:

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978

Transportation Technology II

Course Code:DT3322TRN

MINISTRY OF EDUCATION
Bermuda
2000

SENIOR SCHOOL DESIGN AND TECHNOLOGY

check: S1 ☐ S2 ☐ S3 ☒ S4 ☒

Graphic Communication II

GOALS		SUBGOALS		MODULE & CURRICULUM CORRELATION MATRIX	
1	Design	1.1	Problem Identification	x	x
		1.2	Research/Analysis	x	x
		1.3	Synthesis	x	x
		1.4	Justification	x	x
		1.5	Discrimination	x	x
		1.6	Evaluation	x	x
2	Make	2.1	Resource Selection	x	x
		2.2	Tool Skills	x	
		2.3	Realization		
		2.4	Data Utilization	x	x
3	Communicate	3.1	Drawing System	x	x
		3.2	Design Sketch	x	x
		3.3	Presentation Graphics	x	x
		3.4	Standard Symbols	x	x
4	Manage Projects	4.1	Resource Identification	x	x
		4.2	Prioritization	x	x
		4.3	Organization	x	x
		4.4	Adaptation	x	x
5	Technology In Society	5.1	Identification	x	x
		5.2	Awareness	x	x
CONTENT STRUCTURE		Designing		x	x
		Planning		x	x
		Making		x	x
		Health & Safety			
		Communicating		x	x
		Systems and Structures		x	x
		Technology in Society		x	x
		MODULES		**A**	**B**

MODULE KEY

A - The Built Environment
B - Transportation

DESIGN & TECHNOLOGY

Course Title: GRAPHIC COMMUNICATION II

Module Title: The Built Environment

Number of Periods: 19 double periods

Sequence Reference: DT3312GPH-A

Senior School Level

S1	S2	S3	S4
☐	☐	☒	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 Design
- 2.1, 2.2, 2.3, 2.4 Make
- 3.1, 3.2, 3.3, 3.4 Communicate
- 4.1, 4.2, 4.3, 4.4 Manage Projects
- 5.1 Technology in Society

Content Focus

- Architectural Drawing and Design
- Bermudian Architecture

Curriculum Objectives:

At the end of this module, students will:

- have applied their understanding of Bermudian features to a built structure
- have produced a variety of plans to different scales
- have made modifications to an existing structure
- have generated a comprehensive range of drawings to communicate their design thinking
- have applied their understanding of architectural standards to a set of drawings

Content Detail:

- CAD
- plans and elevations
- industry regs
- planometric
- rendering
- scale
- representational drawing
- interior/landscape design CAD
- industry college links (Auto CAD)
- utilities and systems
- vernacular styling
- urban redevelopment

Module Evaluation:

- **Performance Assessments:**

  - research activities 10%
  - exploratory activities 30%

- **Product Assessments:**

  - presentation of products 60%

Prerequisite Skill Areas
(if any):

- N/A

Special Resources
(materials, equipment & community involvement):

- maps, charts and plans of Bermuda
- representative from Planning Department
- practicing architect
- expert landscape and home design software
- auto CAD

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, J. Access Technology, Designing. Nelson International: London, England, 1993.
Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988.

REFERENCES - STUDENT:

Cave, J. Access Technology, Designing. Nelson International: London, England, 1993.
Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988.

DESIGN & TECHNOLOGY

Course Title: GRAPHIC COMMUNICATION II

Module Title: Transportation

Number of Periods: 19 double periods

Sequence Reference: DT3312GPH-B

Senior School Level

S1	S2	S3	S4
☐	☐	☒	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 Design
- 2.1, 2.2, 2.3, 2.4 Make
- 3.1, 3.2, 3.3, 3.4 Communicate
- 4.1, 4.2, 4.3, 4.4 Manage Projects
- 5.1 Technology in Society

Content Focus

- Technical Illustration
- Geometry
- Ergonomics
- Styling
- Systems Illustration
- Presentation Techniques

Curriculum Objectives:

At the end of this module, students will:

- have identified an aspect of transportation for further research and development
- produce a design proposal suggesting area of interest
- explore a variety of construction and geometry techniques when exploring ideas
- collect and present research relevant to the proposal
- produce a range of possible solutions to the stated problem
- present a prototype as a solution

Content Detail:

- assembly drawing
- aerodynamics
- scale drawing
- advanced rendering techniques
- logos and promotional graphics
- prototyping
- CAD and computer graphics
- symbols
- user needs
- 3D rendering

Module Evaluation:

- **Performance Assessments:**

  - research activities 10%
  - exploratory activities 30%

- **Product Assessments:**

  - presentation of products 60%

Prerequisite Skill Areas

(if any):

- Familiarity with suitable CAD and Computer Graphics packages

Special Resources

(materials, equipment & community involvement):

- local automotive dealers
- internet access
- magazines and periodicals
- air brush
- cut and paste media including circle cutter
- regular drawing materials
- miscellaneous markers and coloring media
- circle cutter

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, J. Access Technology, Designing. Nelson International: London, England, 1993.
Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988.

REFERENCES - STUDENT:

Cave, J. Access Technology, Designing. Nelson International: London, England, 1993.
Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988.

Graphic Communication III

Course Code:DT4243GPH

MINISTRY OF EDUCATION
Bermuda
2000

SENIOR SCHOOL DESIGN AND TECHNOLOGY
COURSE OVERVIEW

Title: Graphic Communication III — **2 credit (s)**, **60 hour (s)**

Prerequisite (s): Graphic Communication II — **S4 level (s)**

Course Code: DT4243GPH — ☐ **required or** ☒ **elective**

Course Description

The student undertaking this advanced course will be expected to produce a single extended project of their own choice which will allow them to explore and future develop their understanding of the graphical skills and applications. Students will select and apply appropriate media and equipment, including computers, as they follow through the design process and realize their ideas.

Course Requirements

The requirements for this course are as follows:

	Module A **Personal Project**	**Total** **Modules**
Performance Assessments:	Research Activities 10% Ideas 15% Developmental Work 15%	40%
Product Assessments:	Product 50% Evaluation 10%	60%
Total		**100%**

Course Resources

Cave, J. Access Technology, Designing. Nelson International: London, England, 1993.
Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988..

Course Outline

Module Title	# Double Periods
A. Personal Project	38

- research
- client understanding
- project management
- project evaluation

Subtotal	38
Optional double periods	7
Total double periods	45

SENIOR SCHOOL DESIGN & TECHNOLOGY

check: S1 ☐ S2 ☐ S3 ☐ S4 ☒

Graphic Communication III

GOALS		SUBGOALS		MODULE & CURRICULUM CORRELATION MATRIX
1	Design	1.1	Problem Identification	x
		1.2	Research/Analysis	x
		1.3	Synthesis	x
		1.4	Justification	x
		1.5	Discrimination	x
		1.6	Evaluation	x
2	Make	2.1	Resource Selection	x
		2.2	Tool Skills	x
		2.3	Realization	x
		2.4	Data Utilization	x
3	Communicate	3.1	Drawing System	x
		3.2	Design Sketch	x
		3.3	Presentation Graphics	x
		3.4	Standard Symbols	x
4	Manage Projects	4.1	Resource Identification	x
		4.2	Prioritization	x
		4.3	Organization	x
		4.4	Adaptation	x
5	Technology In Society	5.1	Identification	x
		5.2	Awareness	x
CONTENT STRUCTURE		Designing		x
		Planning		x
		Making		x
		Health & Safety		x
		Communicating		x
		Systems and Structures		x
		Technology in Society		x
		MODULES		A

MODULE KEY

A - Personal Project

DESIGN & TECHNOLOGY

Course Title: GRAPHIC COMMUNICATION III

Module Title: Personal Project

Number of Periods: 38 double periods

Sequence Reference: DT4243GPH-A

Senior School Level

S1	S2	S3	S4
☐	☐	☐	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 Design
- 2.1, 2.2, 2.3, 2.4 Make
- 3.1, 3.2, 3.3, 3.4 Communicate
- 4.1, 4.2, 4.3, 4.4 Manage Projects
- 5.1 Technology in Society

Content Focus

- Project Management
- Presentation Techniques
- Cooperative Education
- Graphical Communication in the workplace
- Self Evaluation
- Client Evaluation

Curriculum Objectives:

At the end of this module, students will:

- have identified an issue worthy of development
- have searched for presented and utilized appropriate resource material
- generate a range of proposals which fit the brief
- develop and present an idea for evaluation
- write a comprehensive evaluation comparing the product to the design brief
- provide evidence of planning
- have analyzed and interrogated information as the project unfolds (formative evaluation)
- have generated and followed a design brief

Content Detail:

- market research
- product evaluation
- architectural drawing
- promotional graphics
- engineering drawing
- technical illustration techniques
- information systems
- reprographics
- CAD applications and computer peripheral devices
- computer graphics applications
- advanced construction techniques
- scale drawing
- advanced rendering techniques

Module Evaluation:

- **Performance Assessments:**

  - research activities 10%
  - ideas 15%
  - developmental work 15%

- **Product Assessments:**

  - product 50%
  - evaluations 10%

Prerequisite Skill Areas

(if any):

- familiarity with a variety of research methods
- moderate understanding of computer graphics

Special Resources

(materials, equipment & community involvement):

- tie project to work placement
- appropriate computer software, auto CAD, vision, 3D architect
- internet access
- full range of drawing tools
- CADCAM machinery
- Auto CAD

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Cave, J. Access Technology, Designing. Nelson International: London, England, 1993.
Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988.

REFERENCES - STUDENT:

Cave, J. Access Technology, Designing. Nelson International: London, England, 1993.
Crampton, K. and Finney, M. Collins C.D.T. Design and Communication. Collins Educational: London, England, 1988.

Transportation Technology I

Course Code:DT2181TRN

MINISTRY OF EDUCATION
Bermuda
2000

SENIOR SCHOOL DESIGN AND TECHNOLOGY
COURSE OVERVIEW

Title: Transportation Technology I — **2 credit (s)**, **60 hour (s)**

Prerequisite (s): Design & Technology — **S2-S4 level (s)**

Course Code: DT2181TRN — ☐ **required or** ☒ **elective**

Course Description

The Transportation Technology I course builds upon skills obtained in Design and Technology. This broad and balanced course will develop, through workshop practices, investigation of power sources and vehicle support systems, the necessary skills and knowledge for subsequent Transportation Technology courses.

Course Requirements

The requirements for this course are as follows:

	Module A **Workshop Practices**	**Module B** **The Power Sources**	**Module C** **Vehicle Support Systems**	**Total for 3 Modules**	**X .33 = Final % Grade**
Performance Assessments:	30%	30%	30%	90%	**30%**
Product Assessments:	20%	20%	20%	60%	**20%**
Written Assessments:	50%	50%	50%	150%	**50%**
Total	100%	100%	100%	**300%**	**100%**

Course Resources

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978

Course Outline

A. Workshop Practices 12
- health and safety
- hand tools and equipment
- remove, investigate and replace
- care and clean up

B. The Power Sources 13
- the 4 stroke cycle in detail
- the 2 stroke cycle
- main parts and working principles

C. Vehicle Support Systems 13
- vehicle systems
- brakes
- ignition and electrical systems
- cooling and lubrication
- gearbox and transmission of power
- steering and suspension

Subtotal	38
Optional double periods	7
Total double periods	45

SENIOR SCHOOL DESIGN AND TECHNOLOGY

check: S1 ☐ S2 ☒ S3 ☒ S4 ☒

Transportation Technology I

GOALS		SUBGOALS		MODULE & CURRICULUM CORRELATION MATRIX		
1	Design	1.1	Problem Identification	x	x	x
		1.2	Research/Analysis	x	x	x
		1.3	Synthesis	x		x
		1.4	Justification			x
		1.5	Discrimination	x	x	x
		1.6	Evaluation		x	x
2	Make	2.1	Resource Selection	x	x	x
		2.2	Tool Skills	x	x	x
		2.3	Realization		x	
		2.4	Data Utilization		x	x
3	Communicate	3.1	Drawing System	x	x	x
		3.2	Design Sketch			
		3.3	Presentation Graphics			
		3.4	Standard Symbols	x	x	
4	Manage Projects	4.1	Resource Identification	x	x	x
		4.2	Prioritization	x		
		4.3	Organization	x	x	x
		4.4	Adaptation	x		
5	Technology In Society	5.1	Identification	x		
		5.2	Awareness			
CONTENT STRUCTURE		Designing				
		Planning		x		x
		Making		x	x	
		Health & Safety		x	x	x
		Communicating		x	x	x
		Systems and Structures		x	x	x
		Technology in Society		x		
		MODULES		**A**	**B**	**C**

MODULE KEY

A - Workshop Practices
B - The Power Sources
C - Vehicle Support Systems

DESIGN & TECHNOLOGY

Course Title: TRANSPORTATION TECHNOLOGY I

Module Title: Workshop Practices

Number of Periods: 12 double periods

Sequence Reference: DT2181TRN-A

Senior School Level

S1	S2	S3	S4
☐	☒	☒	☒

Subgoal Emphasis:

- 1.1, 1.5 Design
- 2.1, 2.2 Make
- 3.1, 3.4 Communicate
- 4.1, 4.2, 4.3, 4.4 Manage
- 5.1 Identify

Content Focus

- Understanding Systems
- Manufacturing Processes
- Understanding Energy Sources
- Understanding Health and Safety
- Remove, Investigate and Replace
- Proper use of Hand Tools and Equipment

Curriculum Objectives:

At the end of this module, students will:

- understand health and safety needs
- use hand tools and equipment
- be able to remove, investigate and replace components

Content Detail:

- personal safety
- choosing the correct tools for job
- care and clean up
- organize removal sequence
- understand processes (correct and simplest way to remove)
- understand why removed, study components why and who they work
- replace components, correctly and sequentially

Module Evaluation:

- **Performance Assessments:**

  - 30%

- **Product Assessments:**

  - 20%

- **Written Assessments:**

  - 50%

Prerequisite Skill Areas

(if any):

- N/A

Special Resources

(materials, equipment & community involvement):

- broken down, cut away chassis
- video library, shop safety, tools
- CD-ROM library, shop safety and tools

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978

REFERENCES - STUDENT:

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978

DESIGN & TECHNOLOGY

Course Title: TRANSPORTATION TECHNOLOGY I

Module Title: The Power Sources

Number of Periods: 13 double periods

Sequence Reference: DT2181TRN-B

Senior School Level

S1	S2	S3	S4
☐	☒	☒	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.5, 1.6 Design
- 2.1, 2.2, 2.3, 2.4 Make
- 3.1, 3.4 Communicate
- 4.1, 4.3 Manage

Content Focus

- Understanding Systems
- Manufacturing Processes
- Understanding Energy Sources

Curriculum Objectives:

At the end of this module, students will:

- understand the 4 stroke cycle
- understand the 2 stroke cycle
- know the main parts and working principles of engines

Content Detail:

- engine configurations
- engine internal components, materials and manufacturing processes
- operation principles, four stroke cycle, two stroke cycle
- considerations for environmental pollution, energy costs
- repair procedures, remove to access components
- discuss reasons and procedures for repair, replace

Module Evaluation:

- **Performance Assessments:**

  - 30%

- **Product Assessments:**

  - 20%

- **Written Assessments:**

  - 50%

Prerequisite Skill Areas
(if any):

- N/A

Special Resources
(materials, equipment & community involvement):

- broken down, cut away chassis
- engines and engine components
- video library, engine operation
- CD-ROM library, basic engine principles

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978

REFERENCES - STUDENT:

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978

DESIGN & TECHNOLOGY

Course Title: TRANSPORTATION TECHNOLOGY I

Module Title: Vehicle Support Systems

Number of Periods: 13 double periods

Sequence Reference: DT2181TRN-C

Senior School Level

S1	S2	S3	S4
☐	☒	☒	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 Design
- 2.1, 2.2, 2.4 Make
- 3.1 Communicate
- 4.1, 4.3 Manage

Content Focus

- Understanding Systems
- Manufacturing Processes
- Understanding Energy Sources
- Understanding Transmission of Power

Curriculum Objectives:

At the end of this module, students will:

- understand brake system basic principals:
  - ignition and electrical systems
  - cooling and lubrication principals
  - gearbox and transmission basic theory
  - steering and suspension principals

Content Detail:

- power transmission options, belt, chain, simple gear boxes, disengagement systems/concepts
- need for reduction
- typical servicing and repair concepts
- chassis suspension, methods
- spring configurations
- steering systems, components
- brakes, simple systems
- concepts of friction and traction
- hydraulic brake system

Module Evaluation:

- **Performance Assessments:**

  - 30%

- **Product Assessments:**

  - 20%

- **Written Assessments:**

  - 50%

Prerequisite Skill Areas
(if any):

- N/A

Special Resources
(materials, equipment & community involvement):

- broken down, cut away chassis
- transmission, suspension, steering and brake components
- video library, power transmission, brakes, steering
- CD-ROM library, transmissions, brake and steering

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978

REFERENCES - STUDENT:

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978

Transportation Technology II

Course Code:DT3322TRN

MINISTRY OF EDUCATION
Bermuda
2000

SENIOR SCHOOL DESIGN AND TECHNOLOGY
COURSE OVERVIEW

Title: Transportation Technology II — **2 credit (s)** **60 hour (s)**

Prerequisite (s): Transportation Technology I — **S3-S4 level (s)**

Course Code: DT3322TRN — ☐ **required or** ☒ **elective**

Course Description

The Transportation Technology II course builds upon skills obtained in Transportation Technology I. Students will further develop their workshop practices, (including fabrication and vehicle body repair) and investigate in detail vehicle support systems.

Course Requirements

The requirements for this course are as follows:

	Module A Workshop Practices	**Module B** The Power Sources	**Module C** Vehicle Support Systems	**Module D** Power Trans-mission and Vehicle Control	**Module E** Vehicle Body Repair	**Total for 5 Modules**	**x .20 = Final % Grade**
Performance Assessments:	30%	30%	30%	30%	30%	150	**30**
Product Assessments:	20%	20%	20%	20%	20%	100	**20**
Written Assessments:	50%	50%	50%	50%	50%	250	**50**
Total	100%	100%	100%	100%	100%	**500**	**100%**

Course Resources

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978

Course Outline

A. Workshop Practices 7
- health and safety
- hand tools, power tools and equipment
- remove, investigate and replace
- care and clean up

B. The Power Sources 7
- types of power sources
- the 4 stroke cycle in detail
- the 2 stroke cycle in detail
- main parts and working principles
- cooling and lubrication

C. Vehicle Support Systems 8
- vehicle systems
- electrical systems
- fuel systems
- vehicle layout

D. Power Transmission and Vehicle Control Systems 8
- standard and automatic transmission
- motorcycle and motor vehicle clutches
- chassis control systems

E. Vehicle Body Repair 8
- health and safety
- repair concepts
- repair hand tools, power tools and equipment
- body repair materials

Subtotal	38
Optional double periods	7
Total double periods	45

SENIOR SCHOOL DESIGN AND TECHNOLOGY

check: S1 ☐ S2 ☐ S3 ☒ S4 ☒

Transportation Technology II

GOALS		SUBGOALS		MODULE & CURRICULUM CORRELATION MATRIX				
1	Design	1.1	Problem Identification	x	x	x	x	x
		1.2	Research/Analysis	x	x	x	x	x
		1.3	Synthesis					
		1.4	Justification					
		1.5	Discrimination	x	x	x	x	x
		1.6	Evaluation					
2	Make	2.1	Resource Selection	x	x	x	x	x
		2.2	Tool Skills	x	x	x	x	x
		2.3	Realization					
		2.4	Data Utilization	x	x	x	x	x
3	Communicate	3.1	Drawing System	x	x	x	x	x
		3.2	Design Sketch					
		3.3	Presentation Graphics					
		3.4	Standard Symbols	x	x	x	x	x
4	Manage Projects	4.1	Resource Identification	x	x	x	x	x
		4.2	Prioritization	x	x	x	x	x
		4.3	Organization	x	x	x	x	x
		4.4	Adaptation					
5	Technology In Society	5.1	Identification	x	x	x	x	x
		5.2	Awareness					
CONTENT STRUCTURE		Designing		x	x	x	x	x
		Planning		x	x	x	x	x
		Making		x	x	x	x	x
		Health & Safety		x	x	x	x	x
		Communicating		x	x	x	x	x
		Systems and Structures		x	x	x	x	x
		Technology in Society						
		MODULES		A	B	C	D	E

MODULE KEY

A - Workshop Practices
B - The Power Sources
C - Vehicle Support Systems
D - Power Transmission and Vehicle Control Systems
E - Vehicle Body Repair

DESIGN & TECHNOLOGY

Course Title: TRANSPORTATION TECHNOLOGY II

Module Title: Workshop Practices

Number of Periods: 7 double periods

Sequence Reference: DT3322TRN-A

Senior School Level

S1	S2	S3	S4
☐	☐	☒	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.5 Design
- 2.1, 2.2, 2.4 Make
- 3.4 Communicate
- 4.1, 4.2, 4.3 Manage
- 5.1 Technology in Society

Content Focus

- Understanding Systems
- Manufacturing Processes
- Understanding Energy Sources
- Understanding Health and Safety
- Remove, Investigate and Replace
- Proper use of Hand Tools and Equipment

Curriculum Objectives:

At the end of this module, students will:

- understand health and safety needs
- use hand tools, power tools and equipment
- be able to remove, investigate and replace components

Content Detail:

- personal safety
- choosing the correct tools for job
- using pullers
- using impact wrenches
- using bench and hand grinders, drills, chop saws
- using parts cleaners
- care and clean up
- oxy acetylene welding, set up, safety, lighting the torch. Make metal flow, metal cutting
- MIG, how it works, set up, practice welding

Module Evaluation:

- **Performance Assessments:**

  - 30%

- **Product Assessments:**

  - 20%

- **Written Assessments:**

  - 50%

Prerequisite Skill Areas

(if any):

- S2 Transportation Technology

Special Resources

(materials, equipment & community involvement):

- Various automotive related power tools
- Video library, shop safety, tools
- CD-ROM library, shop safety and tools
- tour of Meyer Industries machine shop

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978.

REFERENCES - STUDENT:

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978.

DESIGN & TECHNOLOGY

Course Title: TRANSPORTATION TECHNOLOGY II

Module Title: The Power Sources

Number of Periods: 7 double periods

Sequence Reference: DT3322TRN-B

Senior School Level

S1	S2	S3	S4
☐	☐	☒	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.5 Design
- 2.1, 2.2, 2.4 Make
- 3.4 Communicate
- 4.1, 4.2, 4.3 Manage
- 5.1 Technology in Society

Content Focus

- Understanding Systems
- Manufacturing Processes
- Understanding Energy Sources

Curriculum Objectives:

At the end of this module, students will:

- understand power sources

Content Detail:

- types of power sources, gas, diesel, turbine, electric
- review operation principles, four stroke cycle, two stroke cycle
- in depth look at internal components
- compare two and four stroke cycle
- valve trains systems
- lubrication systems
- cooling systems
- remove, investigate and replace engine components
- repair and adjust engine components
- change oil/filters, adjust valves, replace gaskets, replace faulty components

Module Evaluation:

- **Performance Assessments:**

  - 30%

- **Product Assessments:**

  - 20%

- **Written Assessments:**

  - 50%

Prerequisite Skill Areas (if any):

- N/A

Special Resources (materials, equipment & community involvement):

- broken down, cut away chassis
- engines and engine components
- video library, engine operation
- CD-ROM library, basic engine principles

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978.

REFERENCES - STUDENT:

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978.

DESIGN & TECHNOLOGY

Course Title: TRANSPORTATION TECHNOLOGY II

Module Title: Vehicle Support Systems

Number of Periods: 8 double periods

Sequence Reference: DT3322TRN-C

Senior School Level

S1	S2	S3	S4
☐	☐	☒	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.5 Design
- 2.1, 2.2, 2.4 Make
- 3.4 Communicate
- 4.1, 4.2, 4.3 Manage
- 5.1 Technology in Society

Content Focus

- Understanding Systems
- Manufacturing Processes
- Understanding Energy Sources
- Understanding Electrical Sources and Systems
- Understanding Fuel and Fuel Processing within a Vehicle

Curriculum Objectives:

At the end of this module, students will:

- understand electrical systems
- understand fuel systems

Content Detail:

- ignition system, primary and secondary, spark plugs and servicing, testing secondary ignition wires
- starting system, battery, starter, starter solenoid, low voltage high current, battery cables, voltage drop
- starter draw test
- charging system, alternator, controlling voltage, belt drives, minor testing (is the system working?) and servicing
- fuel lines and filters, service/replace filters and air cleaners
- understand carburetor systems and operation
- disassemble a carburetor systems and operation
- understand fuel pumps, electrical and mechanical

Module Evaluation:

- **Performance Assessments:**

  - 30%

- **Product Assessments:**

  - 20%

- **Written Assessments:**

  - 50%

Prerequisite Skill Areas (if any):

- N/A

Special Resources (materials, equipment & community involvement):

- broken down, cut away chassis
- fuel and electrical system components
- video library, fuel and carburetor systems
- CD-ROM library, fuel and electrical systems

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978

REFERENCES - STUDENT:

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978

DESIGN & TECHNOLOGY

Course Title: TRANSPORTATION TECHNOLOGY II

Module Title: Power Transmission and Vehicle Control Systems

Number of Periods: 8 double periods

Sequence Reference: DT3322TRN-D

Senior School Level

S1	S2	S3	S4
☐	☐	☒	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.5 Design
- 2.1, 2.2, 2.4 Make
- 3.4 Communicate
- 4.1, 4.2, 4.3 Manage
- 5.1 Technology in Society

Content Focus

- Understanding Systems
- Manufacturing Processes
- Understanding Energy Sources
- Understanding Transmission of Power

Curriculum Objectives:

At the end of this module, students will:

- understand transmission of power to the wheels
- chassis control systems

Content Detail:

- bike and motor vehicle clutches
- basic standard transmissions, automatic transmissions
- front wheel drive axle assemblies, removal, CV joints and boots, replacement
- service and lubrication of power transmission components
- shock absorbers, operation, purpose
- various spring configurations, advantages, applications
- steering systems, linkages, power assist, alignment
- brakes, disc/drum systems, servicing, replacement
- hydraulic brake system, how force is multiplied, dual systems, reason for anti lock
- tires, construction, repair

Module Evaluation:

- **Performance Assessments:**

  - 30%

- **Product Assessments:**

  - 20%

- **Written Assessments:**

  - 50%

Prerequisite Skill Areas

(if any):

- N/A

Special Resources

(materials, equipment & community involvement):

- broken down, cut away chassis
- transmission, suspension, steering and brake components
- video library, power transmission, brakes, steering
- CD-ROM library, transmissions, brake and steering
- tour an auto repair shop

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978.

REFERENCES - STUDENT:

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978.

DESIGN & TECHNOLOGY

Course Title: TRANSPORTATION TECHNOLOGY II

Module Title: Vehicle Body Repair

Number of Periods: 8 double periods

Sequence Reference: DT3322TRN-E

Senior School Level

S1	S2	S3	S4
☐	☐	☒	☒

Subgoal Emphasis:

- 1.1, 1.2, 1.5 Design
- 2.1, 2.2, 2.4 Make
- 3.4 Communicate
- 4.1, 4.2, 4.3 Manage
- 5.1 Technology in Society

Content Focus

- Understanding Systems
- Manufacturing Processes
- Repair Concepts

Curriculum Objectives:

At the end of this module, students will:

- understand vehicle body repairs

Content Detail:

- body repair processes, collision damage restoration, fillers, abrasives, primers and paints
- using body repair tools, safety
- using welding equipment, safety, vehicle fire hazards
- using body fillers, make it smooth, correct contour
- materials
- prepare for paint, priming
- top coating, vehicle detailing, clean-up

Module Evaluation:

- **Performance Assessments:**

  - 30%

- **Product Assessments:**

  - 20%

- **Written Assessments:**

  - 50%

Prerequisite Skill Areas
(if any):

- N/A

Special Resources
(materials, equipment & community involvement):

- broken down, cut away chassis
- vehicle body components
- video library
- CD-ROM library
- tour body repair shops

GLOSSARY:

- refer to text

REFERENCES - TEACHER:

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978.

REFERENCES - STUDENT:

Wilding, Alan W. How It Works - The Motor Car. Ladybird: Loughborough, U.K.
Jordan, M.R. Motor Maintenance - An Introduction. Nelson: Walton on Themes, U.K., 1978.

EXEMPLAR SCORING GUIDE
(0 - 4 Scale)

Level	Definition	EQUIVALENT	
		Letter	% mark
4	**An excellent performance** • focuses on the purpose of the task • meets or exceeds all the requirements of the task • organizes content and ideas in a logical way • presents information clearly • includes appropriate detail to support ideas or conclusions • demonstrates creativity, originality and/or initiative	**A**	**90-100**
3	**A good performance** • focuses on purpose of the task • meets all the requirements of the task • organizes content and ideas in a logical way • presents information clearly • includes some detail to support ideas or conclusions	**B**	**80-89**
2	**A fair performance** • has some awareness of the purpose of the task • meets most of the requirements of the task • organizes content and ideas in a logical way • presents information in an understandable way • may not include significant details to support ideas or conclusions	**C**	**70-79**
1 (R)	**A poor performance** • does not fit the purpose of the task • does not meet the requirements of the task • presents information in an unorganized or confused way • does not include details to support ideas or conclusions • Remediation required.	**D**	**60-69**
0 (R)	**An unscorable performance** • does not demonstrate the required knowledge, skills or capabilities • is not understandable, is incomplete or 'defiant' (e.g. "I won't do this"). • Extensive remediation is required.	**F**	**Below 60**

'R' – Extensive Remediation required: student may need to repeat or restart work, or teaching method may need to be altered.
An '0' student may be one who refuses to work or needs specialist help.

*** Adapted from British Columbia**

Design & Technology
Assessment Rubrics

SCALE	General Statement	Is the project or task completed	Design Problem Solving Student initiative vs. teacher support/direction	Use of Tools Materials and Process	Quality of Finish, Productivity	Project and process management	Group or Team working
	Definition	*It:*	*The student:*			*The student:*	*The student:*
4	**Excellent Performance** focuses on purpose of the task, meets or exceeds all the requirements, organizes content & ideas in logical way, presents information clearly, includes appropriate detail to support ideas, demonstrates creativity, originality, and/or initiative	exceeds the expect outcomes	plans and solves design problems effectively and creatively in a self directed manner	tools, materials and/or processes are selected and used efficiently, effectively and with confidence	quality, in particular details and finish, and productivity are consistent and exceed expected standard	sets and follows a course of action without assistance; works independently or with others without supervision; supports and assists the work of others	shapes the way the group works. Develops and extends the group's work, offers clarification, synthesizes, resolves conflicts, adjusts thinking after listening to others
3	**Good Performance Focuses** on purpose of the task, organizes content and ideas in a logical way, presents information clearly, includes some detail to support ideas, may not have significant detail to support ideas/conclusions	meets the expected outcomes	plans and solves design problems in a self directed manner	tools, materials and/or processes are selected and used efficiently, effectively	quality and productivity are consistent and meet expected standard	sets own course of action with limited teacher supervision; works independently or with others without direct supervision	is comfortable in group situations, makes suggestions, asks questions and adjusts thinking after listening to others
2	**Acceptable Performance** has some awareness of the purpose of the task, meets most of requirements, organizes content and ideas in logical way, may lack significant detail to support ideas of conclusions	meets the expected outcomes	plans and solves design problems with limited assistance	tools, materials and/or process are selected and used appropriately	quality and productivity are reasonably consistent and meet expected standard	follows semi-guided course of action; works independently or with others with limited supervision	is socially engaged, is willing to accept group decisions, participates in brainstorming, shows interest in ideas of others
1	**Poor Performance** does not fit purpose of task or meet requirements of task, presents information in unorganized or confused way lack detail to support ideas or conclusions	meets the expected outcomes	follows a guided of action	a limited range of tools, materials and/or processes are used appropriately	quality and productivity are reasonably consistent and meet expected standard	follows guided course of action; works independently or with others with direct supervision	is largely unaware of the needs of others, adds little to the discussion makes a limited contribution of ideas
R	**Very Poor Performance** has not demonstrated required knowledge, skills or capabilities	has not completed expected outcomes	cannot follow a guided plan of action, without step by step supervision	tools and materials and/or process selected and used inappropriately	quality and productivity are inconsistent and do not meet expected standard	has difficulty following guided course of action, requires constant direction and supervision	does not participate or disrupts the group's efforts

R – Remedial instruction is required.

GLOSSARY OF DESIGN & TECHNOLOGY TERMS

2D	Two dimensional
3D	Three dimensional
Acrylic	A type of thermoplastic. Also known as Perspex or Plexiglas
Alloy	A metal made from a mixture of two or more different metals
Anthromometrics	The study of the human form in relation to machinery, equipment, furniture, tools etc.
Anthropometric Table	A reference source giving detailed dimensions of the human body; for example, the variations in the length of leg in men, women and children of various ages.
Assembly Drawing	A scale technical drawing showing the various parts of an artifact assembled
Batch Production	Manufacturing more than one product simultaneously.
Battery	A number of cells added together to produce a higher voltage.
Block Diagram	A diagram made up of squares and rectangles representing different parts of a machine, hardware or software components with lines to show their interconnections.
Bow's Notation	A method of notation for forces acting at a point in a structure.
CAD	Computer-aided design.
CAM	Computer aided manufacture.
Capacitor	An electronic component, which can store an electrical charge.
Circuit	A combination of conductors and components that conduct and control current.
Client	In design, the end user of the product or the person or organization who commissions the work.
CNC	Computer Numerically Controlled describes machines that are controlled by computers.
Components	The parts making up a circuit or artifact.
Compression	Squeezing or forcing together.
Conductor	A material that passes current with very little resistance.
Constraint	In design, a condition that must be met.
Consumer	The ultimate end user of any product design and manufactured.
Design Criteria	The desirable performance characteristics of the product to be designed against which the product can be evaluated.
Design Brief	A concise statement which sets out the task to be solved and gives the context in which possibilities are explored.

Design Proposal	A series of suggested solutions indicating how the design brief might be solved.
Design Specification	A detailed statement derived from the design proposals which describe the purpose and the desirable performance characteristics of the product to be designed
Digital Electronics	Electronic devices or circuits where the information, data or commands are in a digital form, usually 1 or 0.
Diode	A component that allows current to pass through it only in one direction.
Electronics	The subject concerned with the control of electrons in circuits.
Ergonomics	The study of the human factors affecting a design. Ergonomic information is used to ensure that designed artifacts and environment are safe, comfortable and efficient to use. See also anthropometrics.
Ferrous metals	Metals containing iron.
First Angle Projection	A formal technical *orthographic* drawing system (becoming obsolete) that shows three or more views of an object. *See third angle.*
Force	An influence which causes or resists motion (movement).
Frame/Framework	The supporting skeleton of a structure.
Gears	A toothed wheel used in conjunction with another or with a *rack* to transmit motion.
Hardwood	Wood from deciduous trees.
Integrated Circuit (IC)	Very small solid state circuit consisting of interconnected semiconductor devices like transistors, capacitors and resistors printed into a single silicon chip.
Isometric Projection	A type of drawing in which all the horizontal lines are drawn at 30 to the horizontal plane of projection resulting in a 3D drawing.
Light Emitting Diode (LED)	A diode that emits visible light, used as an indicator in electronic circuits.
Load	The weight supported by, or the force applied to a structure.
Mass Production	Manufacturing large quantities of the same product.
Membrane Switch	A type of switch made up of a sandwich of thin plastic layers, at least two of which are printed with conductors.
Microchip	See Integrated circuit.
Monocoque Construction	A single-skin structure.
Non-Ferrous Metals	Metals which do not contain iron.
Ohm's Law	The law of physics that states the relationship between current, voltage and resistance. If two of these are know, the third can be worked out using Ohm's Law.
Orthographic Projection	A formal technical drawing system. In orthographic

	projection at least two of three views can be given; looking at the object from the front, the side and/or the top. These views are referred to as elevations.
PCB	Printed Circuit Board, a insulated board having thin copper tracks from connecting electronic components.
Product Specification	A definitive statement which provided the detail necessary to make a product of the chosen standard of quality.
Pulley	A grooved wheel which drives, or is driven by, a cord or belt passing over it.
Resistor	Electronic component use to introduce a resistance to the flow of electricity in a circuit.
Softwood	Wood from coniferous trees.
Strain	Change in length/original length.
Stress	Force/Area.
Structures	Framework or assembly of rigid elements designed to withstand a variety of forces.
Switch	A component used in circuits for controlling current flow.
Symbol	A 'picture' on a diagram, that represents a component.
Tension	Pulling or stretching forces.
Thermoplastic	Plastics which can be softened and reshaped when heated.
Thermosetting Plastic	Plastics which cannot be reformed once shaped.
Third Angle Projection	A formal orthographic technical drawing system that shows three or more views of an object. See *first angle*.
Torsion	A turning force
Toughness	The condition of a material – between brittle and soft.
Transistor	A component used in electronics as a switch or amplifier.

SENIOR 1 DESIGN TECHNOLOGY OBJECTIVES AT A GLANCE
PACING GUIDE

Objectives	Time/ Minutes	Date Completed	Objectives	Time/ Minutes	Date Completed
A. ELECTRONICS PROJECT ❑ understand the meaning of electronics ❑ identify analogue and digital signals ❑ know how electricity flows around a circuit ❑ identify electronic components ❑ build and test circuits ❑ use simple logic and truth tables **B. PACKAGING PROJECT** ❑ research existing products ❑ select and synthesize ideas ❑ apply research to design process ❑ understand fitness for purpose ❑ formulate proposals ❑ modify where necessary ❑ refine design ideas ❑ justify design proposals ❑ evaluate at all stages ❑ produce prototype packaging ❑ organize design ❑ record design decisions ❑ present design proposals			**C. DESIGN AND MAKE** ❑ research to support task ❑ modify ideas ❑ develop ideas ❑ justify design proposals ❑ evaluate at all stages ❑ record design decisions ❑ organize design thinking ❑ present design proposals ❑ use tools competently ❑ employ safety techniques **D. MODEL MAKING** ❑ apply principles and concepts of mechanisms to a prescribed problem ❑ analyze mechanical system ❑ synthesize ideas using prototyping and modeling ❑ apply an objective approach to problem solving and testing		

SAFETY AT SCHOOLS

The Ministry of Labour and Home Affairs, Health and Safety at Work Act, 1982 provides standards for Safety at School. As developed by the Advisory Council for Health and Safety, these guidelines and similar ones developed in the future are of paramount importance to the well-being of our staff and students. It is expected that all staff members will follow these written guidelines. These are written in the following three documents:

- HSG7 General Advice
- HSG9 Safety in Practical Subjects
- HSG10 Safety in Science Laboratories

These documents suggest safety precautions for all those who work in or attend schools. It is important that teachers, administrators and other users of present school facilities be aware of the dangers which can arise from the incorrect use of materials and equipment. In the senior school, no activity should be undertaken unless it can be made reasonably safe. If the resources are not available to ensure safety, then that activity should not be continued and some other means found to safely provide the necessary educational experience. It is expected that teachers of science, design and technology, family studies, physical education, visual arts and dance pay particular attention to advice for safety in practical subjects and science laboratories.

SUGGESTIONS FOR INFUSING
LIBRARY INFORMATION, INFORMATION TECHNOLOGY AND CAREER EDUCATION ACROSS

DESIGN AND TECHNOLOGY

LIBRARY INFORMATION	S1 Students will:
Orientation and Organization	• research projects, products and design ideas, using the resources available in a structured and self directed manner
Selection and Utilization	• search for material and information to support design proposals
Research and Thinking Skills	• select suitable search strategy based on the specific need • determine the relevance and currency of information
Appreciation of Literature	

INFORMATION TECHNOLOGY	S1 Students will:
Word Processing	• use word processing software to prepare design briefs, reports and evaluations
Spreadsheet	• use spreadsheets to cost proposals, compare alternative proposals
Databases	• use database software to check and compare materials and determine availability
Desktop Publishing	• use desktop publishing to produce packaging prototypes

CAREER EDUCATION	S1 Students will:
Self Assessment	• recognize the needs of others in a design framework, have to communicate effectively with others, make design decisions, plan their own work, accept criticism, behave in an acceptable and safe manner, value the work and ideas of others
Career Directions	• understand the specific careers associated with design & technology and understand the roles and responsibilities of those in those careers
Career Planning	• begin to understand the values of the generic skills taught in design and technology for life long learning and apply these skills to other areas of the curriculum

SUGGESTIONS FOR INFUSING
LIBRARY INFORMATION, INFORMATION TECHNOLOGY AND CAREER EDUCATION ACROSS

DESIGN AND TECHNOLOGY

LIBRARY INFORMATION	S1 Students will:
Production, Application and Communication	

INFORMATION TECHNOLOGY	S1 Students will:
Enrichment/ Demonstrative Software	• use electronics circuit simulation software to check proposed layout
Internet Use	• Use CD-ROM and Internet to research suitable design solutions

CAREER EDUCATION	S1 Students will:

PLANNING FOR INTEGRATED CURRICULUM IN THE SENIOR SCHOOLS

When you walk through the Botanical Gardens, you don't hear kiskadees for ten minutes, then the wind rustling for five minutes, and then smell the flowers for three minutes. All of this impacts on you at once and you make the experience into a meaningful whole.

> *"Young people are interested in the entire world around them - it doesn't make sense to them to say, 'Mathematics', 'Science' or 'Social Studies'. When instruction jumps from one discipline to another every 45 minutes, learning is fragmented unnecessarily."*
>
> *By Susan Krog,*
> *Professor of Education*
> *Western Washington University*

Where Are We Now?

If we consider a continuum from parallel connections across each discipline to a blending of all subject areas, teachers may be at different stages of integrating curriculum.

Simplest Stage: Parallel teachers realign content so that related topics are taught concurrently.

More Ambitious Stage: Teachers begin to link subjects by scrutinizing what they teach, reinforcing overlapping concepts and avoiding needless repetition.

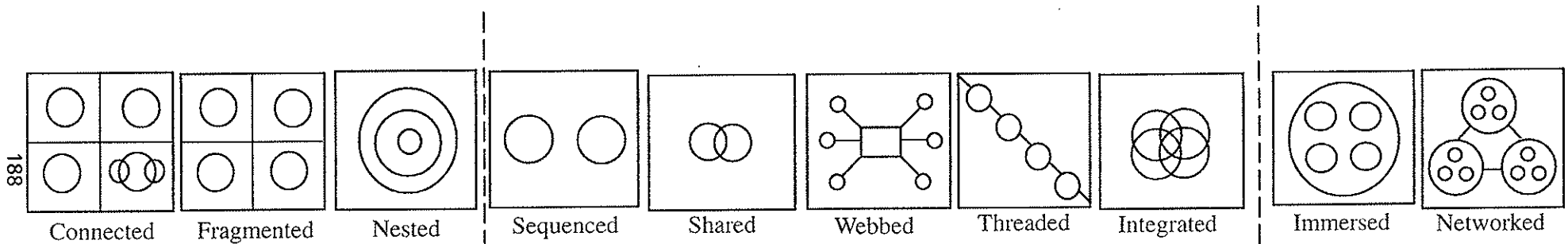
Most Ambitious Stage: Teachers create interdisciplinary modules that focus on a theme or project.

The process of collaboration at the building level will strengthen integrated curriculum and give a vital tool for professional growth of teachers. Appropriate and meaningful staff development, perusal of professional literature, and/or university training on approaches to integrating curriculum is vital to any significant change in education practice. Teachers should find ways to naturally integrate subjects and develop meaningful instruction.

Design Options (see next page)

Techniques for designing an integrated curriculum include mapping the curriculum and planning an integrated module. To design an integrated curriculum, teachers need to know what is taught in other subject areas and at other grade levels - information that is traditionally not shared.

How to Integrate the Curriculum



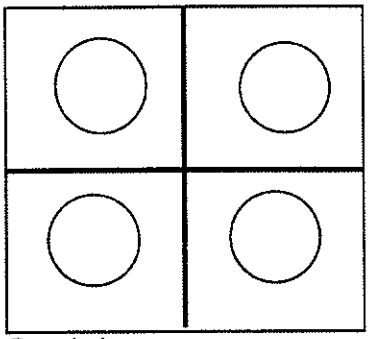
Within single disciplines

Across several disciplines

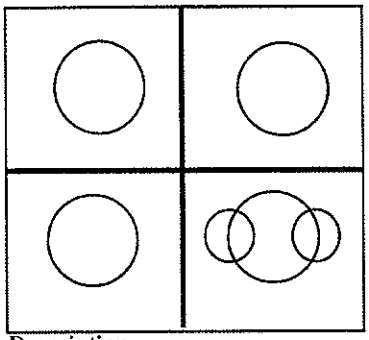
Inside the mind of the learner

Design options for curriculum might include:

Disciplined-based

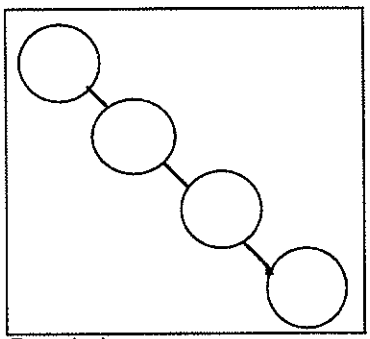


Description
The traditional model of separate and distinct disciplines which fragments the subject areas.
Example
Teacher applies this view in ics, science and social studies,

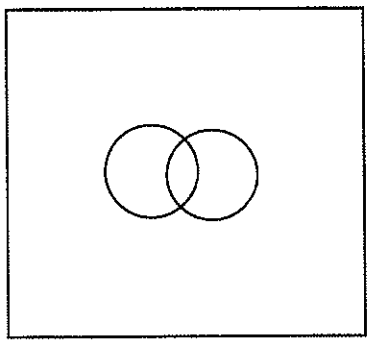


Description
Within each subject area, course content is connected topic to topic, concept to concept, one year's work to next and relates idea(s)
Example
Teacher relates the concept of to decimals, which in turn relates to money, grades,

Parallel Disciplines

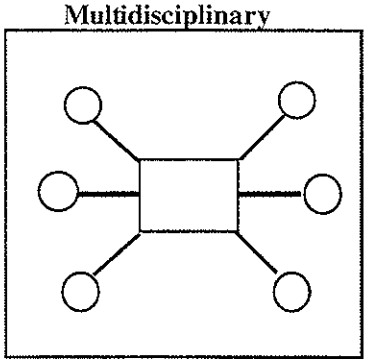


Description
The metacurricular approach threads thinking skills, multiple technology and study skills through various disciplines.
Example
Teaching staff targets prediction in reading, mathematics and science lab experiments while the social studies teacher targets forecasting current events and thus threads the skill (prediction) across all



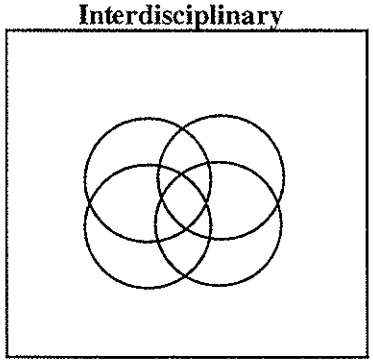
Description
Shared planning and teaching take place in two disciplines in which lapping concepts or ideas emerge as organizing
Example
Science and mathematics teachers data collection, charting and as shared concepts that can be team-taught.

Multidisciplinary



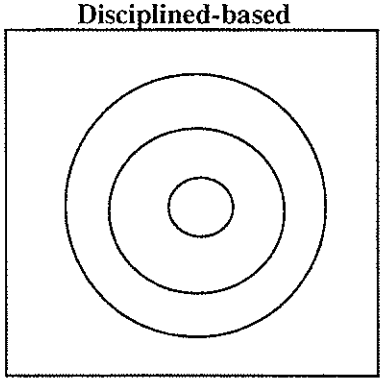
Description
The fertile theme is webbed to
lum contents and disciplines;
use the theme to sift out appropriate
concepts, topics and
Example
Teacher presents a simple topical
theme, such as the circus, and webs
into the subject areas. A conceptual
theme, such as conflict, can be
for more depth in the theme

Interdisciplinary



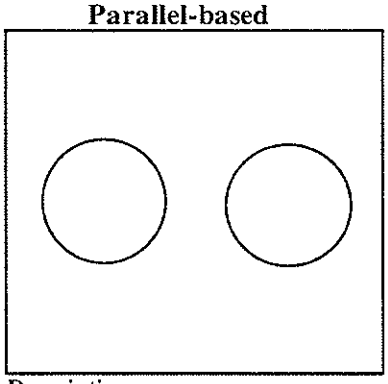
Description
This interdisciplinary approach
matches subjects for overlaps in
and concepts with some team
in an authentic integrated
Example
In science, the arts, health
family studies and design and
technology, teachers look for
patterning models and approach
content through these

Disciplined-based



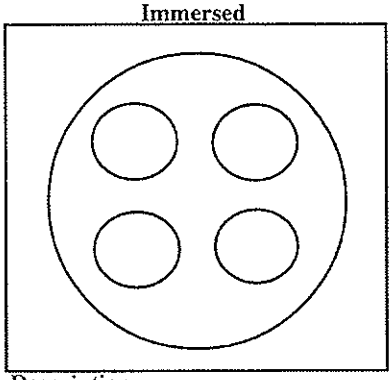
Description
Within each subject area, the teacher
targets multiple skills: a social skill, a
thinking skill and a concept-specific
skill.
Example
Teacher designs the unit on photosyn-
thesis to simultaneously target consen-
sus seeking (social skill), sequencing
(thinking skill) and plant life cycle (sci-
ence skill)

Parallel-based



Description
Topics or units of study are rearranged
and sequenced to coincide with one
another. Similar ideas are taught in
concert while remaining separate sub-
jects.
Example
English Language Arts teacher
an historical novel depicting a particu-
lar period while Social Science teacher
teaches covers the same period.

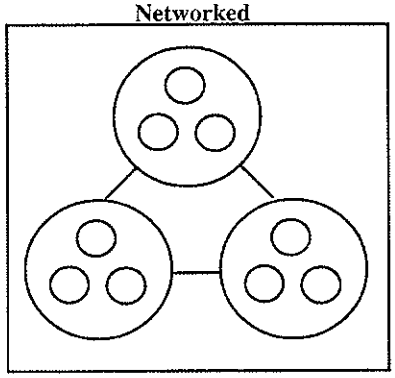
Immersed



Description

The disciplines become part of the learner's lens of expertise: the learner filters all content through this lens and becomes immersed in his or her own experience.

Networked



Description

Learner filters all learning through the expert's eye and makes internal connetions that lead to external networks of experts in related fields.

Choosing a Theme

In the initial development of senior schools, four career pathways have been identified:

- Applied Technologies
- Arts and Communications
- Health and Human Services
- International Business and Tourism

Interdisciplinary teachers, along with teachers of other subjects areas should utilize related materials located in their professional library, modifying these as appropriate to their students' needs and interests.

It is important that senior school teachers keep abreast of current research and trends on integrating curriculum and careers associated with the various pathways. Teachers are encouraged to take part in related staff development workshops, read professional literature and/or take university courses.

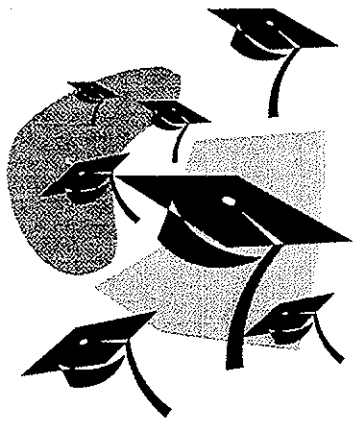
Teachers should:

- take inventory of what is already being done - career awareness initiatives, writing across the curriculum, etc.
- design a curriculum map by listing the content of associated subjects and then identify a theme or umbrella
- design an integrated module and develop related lesson plans
- decide on the length of time for completion and an appropriate title
- discover student interest - ask them what they want to know!
- decide whether the theme has substance and application to the real world
- display student work
- celebrate success!

Department of Education

Career Pathways

SEPTEMBER 2000

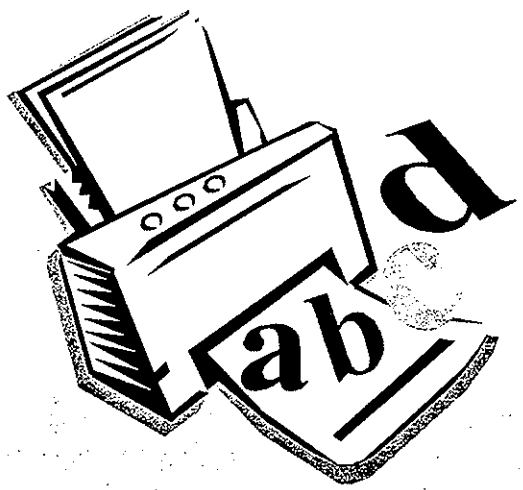


FOR BERMUDA'S SENIOR SCHOOLS

Applied Technologies

Are you practically inclined? Do you enjoy doing puzzles and solving problems? Are you curious about how things work? Are you fascinated by technology? Do you like designing and creating things? Do you love nature? Are you interested in plants and animals? Are you interested in numbers and symbols?

This may be the pathway for you!



APPLIED TECHNOLOGIES

PRODUCTION OCCUPATIONS

Blue-Collar Worker Supervisors
Food Processing Occupations
- Butchers & Meat, Poultry, & Fish Cutters

Inspectors, Testers & Graders
- Boilermakers
- Jewellers
- Machinists
- Metalworking & Plastics-Working Machine Operators
- Tool & Die Makers
- Welders, Cutters & Welding Machine Operators

Plant & Systems Operators
- Electric Power Generating Plant Operators & Power Distributors & Dispatchers
- Stationary Engineers
- Water & Wastewater Treatment Plant Operators

Printing Occupations
- Prepress Workers
- Printing Press Operators
- Bindery Workers

Textile, Apparel and Furnishings Occupations
- Shoe & Leather Workers & Repairers
- Upholsterers

Woodwork Occupations
Miscellaneous Production Occupations
- Dental Laboratory Technicians
- Painting & Coating Machine Operators
- Photographic Process Workers

Transportation & Material Moving Occupations
- Bus drivers
- Material Moving Equipment Operators
- Truckdrivers
- Water Transportation Occupations

Handlers, Equipment Cleaners, Helpers & Labourers
Job Opportunities in the Armed Forces

ARCHITECTS & SURVEYORS
- Architects
- Landscape Architects
- Surveyors

CONSTRUCTION TRADES & EXTRACTIVE OCCUPATIONS
- Stonemasons
- Bulldozer Operators
- Carpenters
- Carpet Installers
- Concrete Masons and Terazzo Workers
- Drywall Workers and Lathers
- Electricians
- Engineering Technicians
- Forklift Operators
- Glaziers
- Insulation Workers
- Painters & Paperhangers
- Plasterers
- Plumbers & Pipefitters
- Roofers
- Strictiral & Reinforcing Ironworkers
- Tilesetters

COMPUTER, MATHEMATICAL & OPERATIONS RESEARCH OCCUPATIONS
- Actuaries
- Computer Service Technicians
- Computer Systems Analysts
- Mathematicians
- Operations Reseach Analysts
- Statisticians

TECHNOLOGISTS (EXCEPT HEALTH)
- Air Traffic Controllers
- Broadcast Technicians
- Computer Programmers
- Drafters
- Engineering Technicians
- Science Technicians

MECHANICS, INSTALLERS & REPAIRERS
- Aircraft Mechanics and Engine specialists
- Automotive Body Repairers
- Automotive Mechanics
- Biomedical Technicians
- Diesel Mechanics
- Electronic Equipment Repairers
  - Commercial and Indstrial Electronics Equipment Repairs
  - Communications Equipment Mechanics
    - Computer & Office Machine Repairers
    - Electronic Home Entertainment Equipment Repairers
  - Telephone Installers & Repairers
  - TV & Radio Repairers
- Elevator Installers & Repairers
- General Maintenance Mechanics
- Heating, Air-Cond. & Refrigeration Technicians
- Home Appliance & Power Tool Repairers
- Industrial Machinery Repairers
- Line Installers & Cable Splicers
- Millwrights
- Mobile Heavy Equipment Mechanics
- Motorcycle, Boat, & Small-Engine Mechanics
- Musical Instrument Repairers & Tuners
- Small Engine Mechanics
- Vending Machine Servicers & Repairers

ENGINEERS
- Chemical Engineers
- Civil Engineers
- Electrical and Electronics Engineers
- Industrial Engineers
- Mechanical Engineers

Career Pathway: Applied Technologies

Subject		100	200	300	400
English Language Arts 16cr		ELA I 4cr	ELA II 4cr	ELA III 4cr	ELA IV 4cr
Math 12cr		Foundations of Mathematics 4cr	Integrated Math I 4cr **or** Applied Math I 4cr	Integrated Math II **or** Business Math I & II **or** Applied Math II, IIIA & IIIB **or** Introductory Calculus **or** Advanced Math	
Science 12cr		Science I 4cr	Science II 4cr	Biology **or** Chemistry **or** Physics **or** Environmental Science **or** Horticulture **or** Marine Science **or** Applied Biology & Chemistry **or** Applied Physics **or** Human Biology **or** Earth Science	
Social Studies 12cr		Overview of Social Studies 4cr	Politics and Law in Action 4cr	Preserving Our Heritage **or** World Geography **or** World History	
D & T or Family Studies 2cr		Design & Technology 2cr **or** Exploring Family Living 2cr			
Bus. Studies and Computer Science 4cr		Business Essentials I 2cr **and** Computer Science I 2cr			
Physical Education 6cr and Health 4cr		Physical Education I 2cr **and** Health & Wellness 2cr	Physical Education II 2cr	Physical Education III 2cr **and** Health Issues 2cr	
The Arts 2cr		Music or Theatre or Dance or Visual Arts (in Society) 2cr		Band/Choir or Theatre or Dance or Visual Arts	Band/Choir or Theatre or Dance or Visual Arts
Electives from the areas of...		Computer Studies, Science, Family Studies, Foreign Language, Design & Technology, Physical Education, Health			
Possible Electives for Career Pathway		• All Computer Science Courses, Technical Theatre & Music Technology • Graphic Communications, Design & Realization, Fashion & Textiles, Electronics Technology, Transportation Technology, Textile Design, & Interior Decorating • Business Essentials II, Foreign Languages & American History			

-----POST SENIOR-----

Bermuda College

Associate Degree Programmes

- Associate in Science
- Associate in Arts and Science
- Associate in Arts *(Computer Information Systems)*
- Associate in Computer Information Systems
- Associate in Science *(Electronics)*
- Associate in Electronics Technology

Certificate Programmes

- Certificate in Electrical Structure and Maintenance
- Certificate in Engineering Competencies
- Certificate in Tele-communications and Electronics
- Certificate in Motor Vehicle Bodywork
- Certificate in Motor Vehicle Mechanics
- Certificate in Plumbing
- Certificate in Heating, Ventilating and Air Conditioning
- Certificate in Horticulture
- Certificate in Wood Trades
- Developmental Technology

Other Academic Institutions

- Post Graduate Year Programmes
- Associate Degree Programmes
- Bachelor's Degree Programmes

Apprenticeship and Trainee Programmes under the Bermuda National Training Board

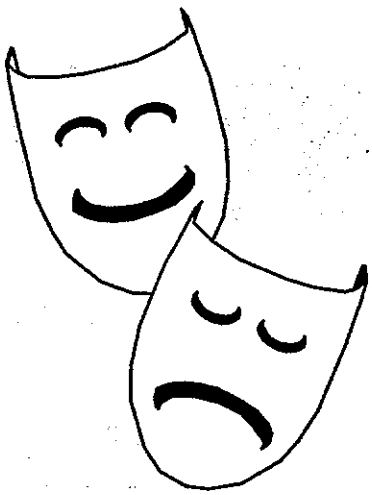
Career Pathway: "Student Constructed"

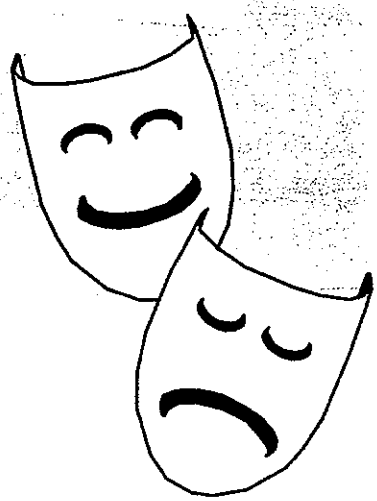
----------SENIOR----------						-----POST SENIOR----
Subject		**100 (28 cr)**	**200 (18 cr)**	**300 (20 cr)**	**400 (4 cr)**	**Bermuda College**
English Language Arts 16cr		ELA I 4cr	ELA II 4cr	ELA III 4cr	ELA IV 4cr	**Associate Degree Programmes**
Math 12cr		Foundations of Mathematics 4cr	Integrated Math I 4cr **or** Applied Math I 4cr	4cr		
Science 12cr		Science I 4cr	Science II 4cr	4cr		
Social Studies 12cr		Overview of Social Studies 4cr	Politics and Law in Action 4cr	4cr		**Certificate Programmes**
D&T or Family Studies 2cr		2cr				
Bus. Studies and Comp. Science 4cr		Business Studies I 2cr **and** Computer Science I 2cr				
Physical Education 6cr **and Health** 4cr		Physical Education I 2cr **and** Health & Wellness 2cr	Physical Education II 2cr	Physical Education III 2cr **and** Health Issues 2cr		
The Arts 2cr		2cr				**Other Academic Institutions** ▪ Post Graduate Year Programmes ▪ Associate Degree Programmes ▪ Bachelor's Degree Programmes
Electives from the areas of...		Computer Studies Science	Family Studies Business Studies	Physical Education Foreign Languages	Design & Technology Health	
Possible Electives for Career Pathway		**(Additional 46 credit hours required for graduation)**				**Apprenticeship and Trainee Programmes under the Bermuda National Training Board**

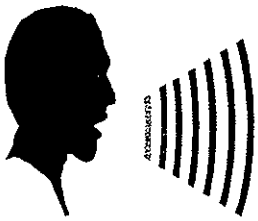
Arts and Communications

Do you like to communicate ideas? Do you like to express yourself creatively? Do you like to travel and learn about other cultures? Do you enjoy going to concerts and performances? Are you imaginative, innovative and original? Do you like to perform in front of an audience?

This may be the pathway for you!

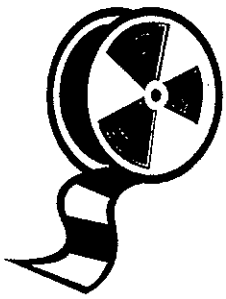






ARTS & COMMUNICATIONS

COMMUNICATION OCCUPATIONS



Announcers & Newscasters
Broadcast Technicians
Composition/Typesetters
Interpreters & Translators
Public Relations Specialists
Radio & Television
Reporters & Correspondents
Technical Writers
Writers & Editors

VISUAL ARTS OCCUPATIONS

Commercial Artists
Fashion Designers
Florists
Graphic Designers
Interior Decorators
Jewelers
Merchandise Display Workers
Photographers & Camera Operators
Visual Artists

PERFORMING ARTS OCCUPATIONS

Actors, Directors. & Producers
Dancers & Choreographers
Models
Musicians

ref: arts & communications/ls disc SS Certification

Career Pathway: Arts & Communications

Subject		100	200	300	400
		----------SENIOR----------			
English Language Arts 16cr		ELA I 4cr	ELA II 4cr	ELA III 4cr	ELA IV 4cr
Math 12cr		Foundations of Mathematics 4cr	Integrated Math I 4cr **or** Applied Math I 4cr	Integrated Math II **or** Business Math I & II **or** Applied Math II, IIIA & IIIB **or** Introductory Calculus **or** Advanced Math	
Science 12cr		Science I 4cr	Science II 4cr	Biology **or** Chemistry **or** Physics **or** Environmental Science **or** Horticulture **or** Marine Science **or** Applied Biology & Chemistry **or** Applied Physics **or** Human Biology **or** Earth Science	
Social Studies 12cr		Overview of Social Studies 4cr	Politics and Law in Action 4cr	Preserving our Heritage **or** World Geography **or** World History **or** Introduction to Africa	
D&T or Family Studies 2cr		Design & Technology 2cr **or** Exploring Family Living 2cr			
Bus. Studies and Computer Science 4cr		Business Studies I 2cr **and** Computer Science I 2cr			
Physical Education 6cr and Health 4cr		Physical Education I 2cr **and** Health & Wellness 2cr	Physical Education II 2cr	Physical Education III 2cr **and** Health Issues 2cr	
The Arts 2cr		Music or Theatre or Dance or Visual Arts (in Society) 2cr		Band/Choir or Theatre or Dance or Visual Arts	Band/Choir or Theatre or Dance or Visual Arts
Electives from the areas of...		Computer Studies, Family Studies, Design & Technology, Science, Business Studies, Foreign Languages, Health			
Possible Electives for Career Pathway		• Business Essentials II, Marketing & Graphic Communication • Journalism & Publications, Speech and Debate, Writer's Workshop, Foreign Languages • Fashion & Textiles Design, Interior Decorating, Textiles Design & Photography			

-----POST SENIOR----

Bermuda College

Associate Degree Programmes

- Associate in Arts
- Associate in Arts & Science
- Associate in Art & Design

Other Academic Institutions

- Post Graduate Year Programmes
- Associate Degree Programmes
- Bachelor's Degree Programmes

Apprenticeship and Trainee Programmes under the Bermuda National Training Board

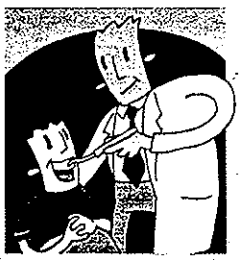
Career Pathway: "Student Constructed"

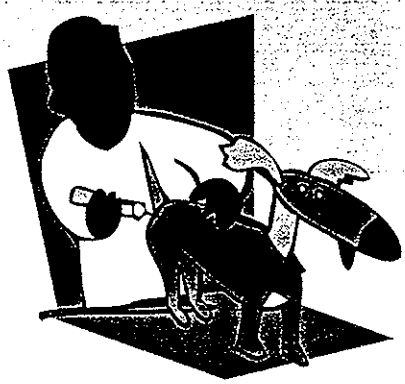
SENIOR						POST SENIOR
Subject		**100 (28 cr)**	**200 (18 cr)**	**300 (20 cr)**	**400 (4 cr)**	**Bermuda College**
English Language Arts 16cr		ELA I 4cr	ELA II 4cr	ELA III 4cr	ELA IV 4cr	**Associate Degree Programmes**
Math 12cr		Foundations of Mathematics 4cr	Integrated Math I 4cr **or** Applied Math I 4cr	4cr		
Science 12cr		Science I 4cr	Science II 4cr	4cr		
Social Studies 12cr		Overview of Social Studies 4cr	Politics and Law in Action 4cr	4cr		**Certificate Programmes**
D&T or Family Studies 2cr		2cr				
Bus. Studies and Comp. Science 4cr		Business Studies I 2cr **and** Computer Science I 2cr				
Physical Education 6cr **and Health** 4cr		Physical Education I 2cr **and** Health & Wellness 2cr	Physical Education II 2cr	Physical Education III 2cr **and** Health Issues 2cr		
The Arts 2cr		2cr				**Other Academic Institutions** ▪ Post Graduate Year Programmes ▪ Associate Degree Programmes ▪ Bachelor's Degree Programmes
Electives from the areas of...		Computer Studies, Science, Family Studies, Business Studies, Physical Education, Foreign Languages, Design & Technology, Health				
Possible Electives for Career Pathway		**(Additional 46 credit hours required for graduation)**				**Apprenticeship and Trainee Programmes under the Bermuda National Training Board**

Health and Human Services

Do you like to care for people or animals who are sick? Are you fitness and wellness oriented? Are you interested in how the body works and how disease or drugs affect us? Are you friendly, outgoing, compassionate and cooperative? Do you like to work with people to solve problems? Is it important for you to provide service to the community by doing something that makes things better for other people?

This may be the pathway for you!





HEALTH & HUMAN SERVICES

Health Services

Health Diagnosing Practitioners

Chiropractors
Dentists
Opticians
Optometrists
Physicians
Podiatrists
Veterinarians

Health Assessment & Treating Occupations

Activity Therapists
Dietitians & Nutritionists
Occupational Therapists
Pharmacists
Physical Therapists
Physician Assistants
Recreational Therapists
Registered Nurses
Respiratory Therapists
Speech-Language Pathologists & Audiologists
Nursing Aides & Psychiatric Aides

Health Technologists & Technicians

Certified Nurses Aides
Clinical Laboratory Technologists & Technicians
Dental Hygienists
Dialysis Technicians
Dispensing Opticians
EEG Technologists
EKG Technicians
Emergency Medical Technicians
License Practical Nurses
Medical Record Technicians
Nuclear Medicine Technologists
Radiologic Technologists
Surgical Technicians
Ultrasound Technologists

Health Service Occupations

Dental Assistants
Home Health Aides
Medical Assistants

Human Services

Lawyers & Judges

Social Scientists & Urban Planners

Economists & Marketing Research Analysts
Psychologist
Sociologists
Urban & Regional Planners

Social & Recreation Workers

Human Services Workers
Marriage Counsellors
Social Workers
Social Worker Aides
Recreation Workers
Substance Abuse Counsellors
Janitors & Cleaners
Private and Household Workers

Religious Workers

Clergy
Protestant Ministers
Religious Workers
Rabbis
Roman Catholic Priests

Teachers, Librarians, & Counsellors

Adult Education Teachers
Archivists & Curators
College & University Faculty
Counsellors
Teachers
Librarians
Paraprofessional

Technologists, Except Health

Library Technicians
Paralegals

Protective Service Occupations

Correction's Officers
Firefighting Occupations
Security Guard
Police

Food & Beverage Preparation & Service Occupations

Chefs, Cooks, & Other Kitchen Workers
Food & Beverage Service Occupations
Meat Cutter/Butcher

Personal Service & Building & Grounds Service Occupations

Animal Caretakers
Barbers & Cosmetologists
Flight Attendants
Gardeners & Groundkeepers
Homemaker-Home Health Aides

Career Pathway: Health and Human Services

SENIOR						POST SENIOR
Subject		**S1**	**S2**	**S3**	**S4**	**Bermuda College**
English Language Arts 16cr		ELA I 4cr	ELA II 4cr	ELA III 4cr	ELA IV 4cr	**Associate Degree Programmes** ▪ Associate in Arts ▪ Associate in Science ▪ Associate in Arts & Science ▪ Associate in Arts *(Business Administration)* ▪ Associate in Business Administration ▪ Associate in Arts *(Hospitality Management)* ▪ Associate in Hospitality Management ▪ Associate in Office Administration ▪ Associate in Arts *(Human Services)* ▪ Associate in Human Services
Math 12cr		Foundations of Mathematics 4cr	Integrated Math I 4cr **or** Applied Math I 4cr	Integrated Math II **or** Business Math I & II **or** Applied Math II, IIIA & IIIB **or** Calculus **or** Advanced Math		
Science 12cr		Science I 4cr	Science II 4cr	Biology **or** Chemistry **or** Physics **or** Environmental Science **or** Horticulture **or** Marine Science **or** Applied Biology & Chemistry **or** Applied Physics **or** Human Biology **or** Earth Science		
Social Studies 12cr		Overview of Social Studies 4cr	Politics and Law in Action 4cr	World Geography **or** World History **or** Introduction to American History		
D & T or Family Studies 2cr		Design Technology 2cr **or** Exploring Family Living 2cr				**Certificate Programmes** ▪ Certificate for General Secretaries ▪ Certificate for Culinary Arts ▪ Certificate for Front Office Procedures ▪ Certificate in Secretarial Skills ▪ Certificate in Food & Beverage Service ▪ Certificate for Child Care Assistant ▪ Certificate for Geriatric Aids ▪ Certificate in Legal Studies ▪ Certificate in Hairdressing
Bus. Studies and Computer Science 4cr		Business Essentials I 2cr **and** Computer Science I 2cr				
Physical Education 6cr and Health 4cr		Physical Education I 2cr **and** Health & Wellness 2cr	Physical Education II 2cr	Physical Education III 2cr **and** Health Issues 2cr		
The Arts 2cr		Music or Theatre or Dance or Visual Arts (in Society) 2cr		Band/Choir or Theatre or Dance or Visual Arts	Band/Choir or Theatre or Dance or Visual Arts	**Other Academic Institutions** ▪ Post Graduate Year Programmes ▪ Associate Degree Programmes ▪ Bachelor's Degree Programmes
Electives from the areas of...		Computer Studies, Science, Family Studies, Business Studies, Physical Education, Foreign Languages, Design & Technology, Health				**Apprenticeship and Trainee Programmes under the Bermuda National Training Board**
Possible Electives for Career Pathway		• All Health Courses & Business Essentials II • Exploring Family Living, Discovery Food & Nutrition, Meal Management & Hospitality, Exploring Careers in Nutrition & Hospitality, Personal Care, & Child Care • Speech and Debate, Foreign Languages & Preserving Our Heritage				

Career Pathway: "Student Constructed"

----------SENIOR----------						-----POST SENIOR----
Subject		**100 (28 cr)**	**200 (18 cr)**	**300 (20 cr)**	**400 (4 cr)**	**Bermuda College**
English Language Arts 16cr		ELA I 4cr	ELA II 4cr	ELA III 4cr	ELA IV 4cr	**Associate Degree Programmes**
Math 12cr		Foundations of Mathematics 4cr	Integrated Math I 4cr **or** Applied Math I 4cr	4cr		
Science 12cr		Science I 4cr	Science II 4cr	4cr		
Social Studies 12cr		Overview of Social Studies 4cr	Politics and Law in Action 4cr	4cr		**Certificate Programmes**
D&T or Family Studies 2cr		2cr				
Bus. Studies and Comp. Science 4cr		Business Studies I 2cr **and** Computer Science I 2cr				
Physical Education 6cr **and Health** 4cr		Physical Education I 2cr **and** Health & Wellness 2cr	Physical Education II 2cr	Physical Education III 2cr **and** Health Issues 2cr		
The Arts 2cr		2cr				**Other Academic Institutions** ▪ Post Graduate Year Programmes ▪ Associate Degree Programmes ▪ Bachelor's Degree Programmes
Electives from the areas of…		Computer Studies Science	Family Studies Business Studies	Physical Education Foreign Languages	Design & Technology Health	
Possible Electives for Career Pathway		**(Additional 46 credit hours required for graduation)**				**Apprenticeship and Trainee Programmes under the Bermuda National Training Board**

International Business and Tourism

Do you enjoy being a leader, organizing people, talking and planning activities? Do you enjoy initiating an idea and seeing it through to the end product? Do you like things neat and orderly? Are you business-minded in organizing your life? Do you value the importance of travel and tourism in Bermuda?

This may be the pathway for you!

International Business & Tourism

EXECUTIVE ADMINISTRATIVE, & MANAGERIAL OCCUPATIONS

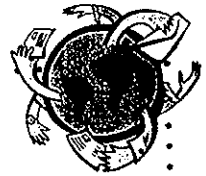
- Accountants & Auditors
- Administrative Services Managers
- Budget Analysis
- Construction & Building Inspectors
- Construction Contractors & Managers
- Cost Estimators
- Education Administrators
- Employment Interviewers
- Engineering, Science, & Data Processing Managers
- Financial Managers
- General Managers & Top Executives
- Government Chief Executives & Legislators
- Health Services Managers
- Hotel Managers & Assistants
- Industrial Production Managers
- Inspectors & Compliance Officers, Except Construction
- Management Analysts & Consultants
- Marketing, Advertising, & Public Relations Managers
- Personnel, Training, & Labour Relations Specialists & Managers
- Property & Real Estate Managers
- Purchasing Agents & Managers
- Restaurant & Food Service Managers
- Underwriters
- Wholesale & Retail Buyers & Merchandise Managers

MARKETING AND SALES OCCUPATIONS

- Advertising Agent
- Cashiers
- Counter & Rental Clerks
- Insurance Agency & Brokers
- Manufacturer's & Wholesale Sales Representatives
- Real Estate Agents, Brokers & Appraisers
- Retail Sales Workers
- Securities & Financial Service Sales Representatives
- Services Sales Representatives
- Stockbrokers
- Travel Agents

ADMINISTRATIVE SUPPORT OCCUPATIONS

- Adjusters, Investigators, & Collectors
- Bank Tellers
- Clerical Supervisors & Managers
- Computer & Peripheral Equipment Operators
- General Office Clerks
- Credit Clerks and Authorizers



- Information Clerks
  - Hotel & Motel Clerks
  - Interviewing & New Accounts Clerks
  - Receptionists
  - Reservation & Transportation Ticket Agents and Travel Clerks
- Mail Clerks & Messengers
- Material Recording, Scheduling, Dispatching and Distributing Occupations
  - Dispatchers
  - Stock Clerks
  - Traffic, Shipping & Receiving Clerks
- Postal Clerks & Mail Carriers
- Record Clerks
  - Billing Clerks
  - Bookkeeping, Accounting & Auditing Clerks
  - Brokerage Clerks & Statement Clerks
  - File Clerks
  - Library Assistants & Bookmobile Driver
  - Order Clerks
  - Payroll & Timekeeping Clerks
  - Personnel Clerks
- Receptionists
- Secretaries
- Stenographers & Court Clerk/Reporters
- Telephone, Telegraph & Teletype Operators
- Typist, Word Processors and Data Entry Keyers

ref: Int'l Bus/ts disc SS Certification

Career Pathway: International Business & Tourism

SENIOR						POST SENIOR
Subject		**100**	**200**	**300**	**400**	**Bermuda College**
English Language Arts 16cr		ELA I 4cr	ELA II 4cr	ELA III 4cr	ELA IV 4cr	**Associate Degree Programmes** ▪ Associate in Arts ▪ Associate in Science ▪ Associate in Arts & Science ▪ Associate in Arts *(Business Administration)* ▪ Associate in Business Administration ▪ Associate in *Arts (Hospitality Management)* ▪ Associate in Hospitality Management ▪ Associate in Arts *(Computer Information Systems)* ▪ Associate in Computer Information Systems
Math 12cr		Foundations of Mathematics 4cr	Integrated Math I **or** Applied Math I 4cr	Integrated Math II **or** Business Math I & II **or** Applied Math II, IIIA & IIIB **or** Introductory Calculus **or** Advanced Math		
Science 12cr		Science I 4cr	Science II 4cr	Biology **or** Chemistry **or** Physics **or** Environmental Science **or** Horticulture **or** Marine Science **or** Applied Biology & Chemistry **or** Applied Physics **or** Human Biology **or** Earth Science		
Social Studies 12cr		Overview of Social Studies 4cr	Politics and Law in Action 4cr	World Geography **or** World History		
D&T or Family Studies 2cr		Design & Technology 2cr **or** Exploring Family Living 2cr				**Certificate Programmes** ▪ Certificate for Accounting Systems ▪ Certificate for General Secretaries ▪ Certificate in Secretarial Skills ▪ Certificate in Culinary Arts ▪ Certificate for Front Office Procedures ▪ Certificate in Food & Beverage Service ▪ Certificate in Legal Studies
Bus. Studies and Computer Science 4cr		Business Essentials I 2cr **and** Computer Studies I 2cr				
Physical Education 6cr and Health 4cr		Physical Education I 2cr **and** Health & Wellness 2cr	Physical Education II 2cr	Physical Education III 2cr **and** Health Issues 2cr		
The Arts 2cr		Music or Theatre or Dance or Visual Arts (in Society) 2cr		Band/Choir or Theatre or Dance or Visual Arts	Band/Choir or Theatre or Dance or Visual Arts	
Electives from the areas of…		Computer Studies Science	Family Studies Foreign Languages	Design & Technology Health		**Other Academic Institutions** ▪ Post Graduate Year Programmes ▪ Associate Degree Programmes ▪ Bachelor's Degree Programmes
Possible Electives for Career Pathway		• All Computer Science Courses, Computer Keyboarding & Business Applications, • Accounting, Business Essentials II, Business & Personal Law, Economics, Insurance, International Business, Marketing, Office Technology, Small Business Management, Office Technology & Business Application, Travel & Tourism • Personal Care, Discovering Food & Nutrition; Meal Management & Hospitality, Exploring Careers in Nutrition & Hospitality, Speech and Debate and Foreign Languages				**Apprenticeship and Trainee Programmes under the Bermuda National Training Board**

Career Pathway: "Student Constructed"

----------SENIOR----------						-----POST SENIOR----
Subject		**100 (28 cr)**	**200 (18 cr)**	**300 (20 cr)**	**400 (4 cr)**	**Bermuda College**
English Language Arts 16cr		ELA I 4cr	ELA II 4cr	ELA III 4cr	ELA IV 4cr	**Associate Degree Programmes**
Math 12cr		Foundations of Mathematics 4cr	Integrated Math I 4cr **or** Applied Math I 4cr	4cr		
Science 12cr		Science I 4cr	Science II 4cr	4cr		
Social Studies 12cr		Overview of Social Studies 4cr	Politics and Law in Action 4cr	4cr		**Certificate Programmes**
D&T or Family Studies 2cr		2cr				
Bus. Studies and Comp. Science 4cr		Business Studies I 2cr **and** Computer Science I 2cr				
Physical Education 6cr **and Health** 4cr		Physical Education I 2cr **and** Health & Wellness 2cr	Physical Education II 2cr	Physical Education III 2cr **and** Health Issues 2cr		
The Arts 2cr		2cr				**Other Academic Institutions** ▪ Post Graduate Year Programmes ▪ Associate Degree Programmes ▪ Bachelor's Degree Programmes
Electives from the areas of...		Computer Studies, Science, Family Studies, Business Studies, Physical Education, Foreign Languages, Design & Technology, Health				
Possible Electives for Career Pathway		**(Additional 46 credit hours required for graduation)**				**Apprenticeship and Trainee Programmes under the Bermuda National Training Board**

Personal Education Plan

Student's Name:_____ **Date:**_____ **Expected Graduation Date:**_____

Career Pathway: (Check One)

_____ Arts and Communication
_____ Health and Human Services
_____ International Business and Tourism
_____ Applied Technologies

S1 (100)		S2 (200)		S3 (300)		S4 (400)	
Semester 1	**Semester 2**	**Semester 1**	**Semester 2**	**Semester 1**	**Semester 2**	**Semester 1**	**Semester 2**
ELA (I)	ELA (I)	ELA (II)	ELA (II)	ELA	ELA	ELA	ELA
Science (I)	Science (I)	Science (II)	Science (II)	Science	Science		
Soc. Stud.	Soc. Stud.	Soc. Stud.	Soc. Stud.	Soc. Stud.	Soc. Stud.	_____	_____
Math	Math	Math	Math	Math	Math	_____	_____
						_____	_____
PE (I)	Bus. Stud.	PE (II)	_____	PE (III)	_____	_____	_____
Health	Com. Sc.	_____	_____	Health	_____	_____	_____
Arts	DT/Fam.	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
Summer School:		**Summer School:**		**Summer School:**		**Summer School:**	
_____		_____		_____		_____	

Graduation Requirements:

Course	Credits	Course	Credits
ELA	16	Health Education	4
Math	12	The Arts	2
Science	12	Computer Studies	2
Social Studies	12	Business Studies	2
Physical Education	6	Fam. Stud. or D&T	2
		Electives	46

Annual Review: (Advisor's Signature)
S1 Date:_____ S2 Date: _____
S3 Date: _____ S4 Date: _____
Annual Review: (Parent's Signature)
S1 Date: _____ S2 Date: _____
S3 Date: _____ S4 Date: _____

PROFESSIONAL ASSOCIATION

DESIGN AND TECHNOLOGY

Name: Design and Technology Association

Address: 16 Wellesbourne House
Walton Road
Wellesbourne
Warwickshire CV35 9JB

Country: UK

Telephone: (+44) 789 47007
Fax: (+44) 789 841955
Website: http:lupin.csv.warwick.ac.uk/www/projects/cits/dandt/data/data.html

Name: International Technology Education Association

Address: 1914 Reston Drive
Reston, VA 22091-1502

Country: USA

Telephone: (703) 860 2100

Website: http://www.iris.org/-itea.www/ITIA.html
email: itea@iris.org

CURRICULUM ABBREVIATIONS

School Abbreviations

Preschool	PS
Primary School	P1-P6
Middle School	M1-M3
Senior School	S1-S4

Subject Area Abbreviations

Business Studies	BS
Dance	DN
Design & Technology	DT
English Language Arts	EL
Family Studies	FM
Foreign Languages	FL
Health Education	HE
Computer Science	CS
Mathematics	MT
Music	MU
Physical Education	PE
Science	SC
Social Studies	SS
Theatre	TH
Visual Arts	VR

Course Code

e.g. Physical and Human Geography II
SS3192GEO

Subject Area	**Course Level**	**Number Placement**	**Course Sequence**	**Course Title**
abbreviated subject area	(1-4) representing course level 100-400	(1-99) representing placement of course in each level	(1-4) representing sequence of course with same title	abbreviated course title
SS	**3**	**19**	**2**	**GEO**
(Social Studies)	(300 level course)	(19th course in 300 series)	(2nd in the sequence of 3 courses)	(Physical and Human Geography)

Curriculum Framework & Course Abbreviations

Philosophy	PHL
Goals & Sub Goals	GLS
Performance Indicators	PI
Scope & Sequence	SAS
References	REF
Course Overview	OVW
Correlation Matrix	MTX
Modules	MDL
Teacher Resources	TRS
Student Resources	SRS
Exemplar Scoring Guide	SCO
Rubrics	RUB
Objectives at a Glance	OBJ
Infusing Across the Curriculum	INF
Glossary	GRY
Health and Safety	HAS
Professional Association Directory	PAD
Curriculum Abbreviations	ABR
Appendix	APX

Programme Abbreviations

Advisory Programme	ADV
Career Education Programme	CED
Functional Skills Programme	FUN
Guidance and Counselling Programme	GUI
Library Information Programme	LIB

Ministry of Education
P.O. Box HM 1185
Hamilton HM EX
Bermuda
September 2000