

# MARINE TECHNOLOGY - NAVIGATION

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## Program Outline

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|--------------------|---|
| <b>Major:</b>      | MNAV                                    |
| <b>Length:</b>     | 3 Years                                 |
| <b>Delivery:</b>   | 6 Semesters, plus 3 work terms          |
| <b>Credential:</b> | Ontario College Advanced Diploma, Co-op |
| <b>Effective:</b>  | 2013-2014                               |
| <b>Location:</b>   | Owen Sound                              |
| <b>Start:</b>      | Fall (Owen Sound)                       |

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### Description

This program has been planned in co-operation with Transport Canada and Canada's shipping companies. It offers a complete education for those seeking employment as a ship's Navigation Officer. The specialized competencies and work experience also provide the graduate with opportunities for employment in government and in other marine-related industries. NOTE: This is a Transport Canada approved program.

### Career Opportunities

Graduates of this program will find a rewarding career as a ship's officer on board commercial vessels throughout Canada and the world. This 3 year co-operative cadet training program may lead to career advancement to senior ranks on board ship and to positions of leadership in the marine industry. Graduates are eligible to write examinations for the Transport Canada Watchkeeping Mate Certificate of Competency and can gain employment in domestic and international shipping industries.

### Program Learning Outcomes

The graduate has reliably demonstrated the ability to:

- show a professional attitude and use ethical practices to monitor and control compliance with legislation to ensure the safety of life at sea and protection of the marine environment;

- work with others to safely and effectively function as a member of a large dynamic team whose goal is to transport cargo in a safe and environmentally sustainable manner;
- communicate and manage information in a variety of forms;
- plan and conduct a sea passage, determine and monitor the vessels position at all times;
- maintain a safe navigational watch using modern and traditional navigation skills;
- forecast weather and oceanographic conditions;
- communicate effectively between ship to ship and ship to shore;
- maneuver the ship safely and efficiently;
- inspect the ship for defects and damage;
- load, transport and discharge cargo to the orders of the ship owner, cargo owner and government requirements and maintain the seaworthiness of the ship;
- apply "hands on" seamanship skills;
- use modern technology in the performance of shipboard duties and be able to adapt to changes in technology;
- monitor and control compliance with legislation to ensure the safety of life at sea and protection of the marine environment;
- practice and develop effective basic management skills with respect to human and physical resources.

### **Practical Experience:**

Co-operative Education is a mandatory component of all Co-op programs at Georgian College; it has been designed as a process by which students integrate their academic education with work experience related to their program of study. This integration affects much more than simply earning a salary, including the adjustment to the work environment and the development of professionalism. It also reinforces skills and theory learned during academic semesters, develops professional contacts, job knowledge and career path, improves human relations and communication skills and promotes personal maturity and financial independence.

Students are requested to register, attend and participate in their scheduled co-operative education classes. These classes are scheduled for all first year students and are expected to be completed in order to proceed successfully to their first co-op work experience. To ensure students are eligible to proceed onto any co-op work experience students should refer to Promotional Status and Eligibility for Co-op as outlined in the College Calendar. Co-op policies and procedures can be located on our website:

[www.georgianc.on.ca/careers/for-students/](http://www.georgianc.on.ca/careers/for-students/)

Georgian College follows the Co-operative Education guidelines set out by the Canadian Association for Co-operative Education (CAFCE) and Education at Work Ontario (EWO) by supporting the learning outcomes designed for the program specific graduate profile and curriculum as set out by the Ministry of Training, Colleges and Universities.

### **The Program Progression:**

Fall Intake - Owen Sound

|            |        |                 |       |        |                 |       |
|------------|--------|-----------------|-------|--------|-----------------|-------|
| Sem 1      | Sem 2  | Work Term 1     | Sem 3 | Sem 4  | Work Term 2-dbl | Sem 5 |
| -----      |        |                 |       |        |                 |       |
| -          |        |                 |       |        |                 |       |
| Fall       | Winter | Summer          | Fall  | Winter | Summer          |       |
| Winter     |        |                 |       |        |                 |       |
| 2013       | 2014   | 2014            | 2014  | 2015   | 2015            | 2016  |
|            |        |                 |       |        |                 |       |
| Sem 6-8wks |        | Work Term 3-8wk |       |        |                 |       |
| -----      |        |                 |       |        |                 |       |
| Summer     |        | Summer          |       |        |                 |       |
| 2016       |        | 2016            |       |        |                 |       |

### **Articulation:**

A number of articulation agreements have been negotiated with universities and other institutions across Canada, North America and internationally. These agreements are assessed, revised and updated on a regular basis. Please contact the program co-ordinator for specific details if you are interested in pursuing such an option. Additional information can be found on our website at

<http://www.georgianc.on.ca/academics/articulations/>

### **Admission Requirements:**

You must meet ONE of the following requirements to be eligible for admission to these programs:

Secondary school applicants:

- OSS Curriculum: OSSD or equivalent with Grade 12 English (C) or (U) (ENG 4C, ENG 4U); plus any Grade 12 College Mathematics (MAP 4C or MCT 4C), or any Grade 12 U University Mathematics. Also recommended: Physics: Grade 12 College or University (SPH4C, SPH4U), OR Chemistry: Grade 12 Chemistry College or Grade 11 or 12 University (SCH4C, SCH4U, SCH3U).

Non-Secondary school applicants (19 years or older):

- Any credit Communication course and most credit mathematics courses taken at Georgian College  
- College preparatory programs including those taken at Georgian College: Technology Foundation and Technology Fundamentals\*  
- Equivalent courses in English and mathematics taken through secondary school or Independent Learning Centres (at the general, advanced, college or university level)  
- Academic and Career Entrance Certificate (ACE) program with communications and business, apprentice or technical mathematics\*

- Mature student testing in English and mathematics that meets the minimum standards for admission (available through most testing services)\*
- Ontario High School Equivalency Certificate (GED)
- English, Literature or Communication credit courses and most mathematics credit courses from accredited colleges/universities

Home school applicants:

- Applicants can write the mature student testing in English and mathematics that meets the minimum standards for admission (available through testing services)\*

\* available from Georgian College. For a complete listing please contact the Office of the Registrar.

Note: Applicants must provide a valid Transport Canada Marine Medical stating 'fit for sea service' or 'fit for sea service with limitations'. In the case of an applicant with a certificate 'fit for sea service with limitations', the application will be reviewed for admission.

Non-secondary school applicants who are 19 years of age or over by the first day of classes, and who lack the academic entrance qualifications, may be considered for entrance to an appropriate post-secondary diploma or certificate program as mature applicants. Mature applicants must meet all program specific prerequisites including all selection criteria; equivalencies are stated above. Applicants who are unsure whether they meet admission requirements should contact the Office of the Registrar. In addition, those applying as mature students and having no documentation of Grade 12 education must supply, if required, proof of age, such as a copy of an official birth certificate or driver's licence. Refer to Section 2.5 and 2.6 of the Academic Calendar for further details.

Credit transfer and course exemptions:

Applicants who have taken courses from a recognized and accredited post-secondary institution and/or have relevant life/learning experience may be eligible for credit transfer/course exemptions. Courses/experience must match at least 80% of the learning outcomes of a Georgian College course with a minimum grade of 60% or C achieved in previous coursework; some program exceptions apply (see program outline). For further information please visit the Credit Transfer Centre website: [georgiancollege.ca/admissions/credit-transfer/](http://georgiancollege.ca/admissions/credit-transfer/)

### **Additional Information:**

Co-operative Work Term Requirements

This is a fully integrated co-operative education program, wherein the cadet will participate in semesters of academic study at the Owen Sound Campus interspersed with work term placements on board ships. Hence, undergraduates are involved in work activities directly related to their educational objectives.

Marine Emergency Duties training which is required before a cadet may proceed to the shipboard work placement and for certification as an officer will be scheduled for students for an extra charge.

Every effort is made to arrange work term placements, however, cadets must qualify for such and no guarantee of placement can be made.

Canadian flagged ships only accept Canadian Citizens or Permanent Residents for employment. International students are encouraged to investigate Co-op opportunities prior to commencing studies. Cadets may be subjected to adverse environmental conditions while on board ship (noise, dirt, dust, confined quarters and heavy lifting). Anyone with known allergies should consult with the Co-op department.

Eligibility to enter the U.S.

Although not an admission requirement, all shipping companies, whether Canadian or foreign, which have vessels trading in U.S. ports require that all their shipboard personnel be eligible to legally enter the U.S.

**Graduation Requirements:**

- 40 Mandatory Courses
- 2 Communications Courses
- 3 Co-op Work Terms

**Graduation Eligibility:**

To graduate from this program, the passing weighted average for promotion through each semester, from year to year and to graduate is 60%. Additionally, a student must attain a minimum of 50% or a letter grade of P (Pass) or S (Satisfactory) in each course in each semester.

**Mandatory Courses**

- DRFT1012 Drafting and Basic Blueprint Reading
- ELEC2017 Marine Electricity Fundamentals
- MARE1007 Basic Engineering Knowledge
- MARE1014 Practical Seamanship
- MARE1016 Astronomy For Navigation
- MARE1017 Radar Navigation
- MARE1018 Navigational Safety
- MARE1019 Introduction to Ship Master's Business

MARE1021 Ship Construction  
 MARE1023 Electronic Navigational Aids  
 MARE1024 GMDSS Part 1  
 MARE1026 Seamanship  
 MARE1030 Coastal Navigation 1  
 MARE2005 Transverse Stability  
 MARE2012 Industrial and Environmental Safety  
 MARE2013 Signals and Communications  
 MARE2014 Simulated Navigation  
 MARE2022 Ocean Navigation 1  
 MARE2026 Ocean Navigation 2  
 MARE2028 Navigational Safety 2  
 MARE2029 Cargo Work 1  
 MARE2030 Coastal Navigation 2  
 MARE2031 Magnetic Compass Adjustment  
 MARE3015 Shipmaster's Business  
 MARE3024 Electronic Chart Display and Information System (ECDIS)  
 MARE3025 Longitudinal Stability  
 MARE3029 Advanced Seamanship and Bridge Resource Management  
 MARE3030 Advanced Navigational Safety  
 MARE3031 Navigational Systems and Instruments  
 MARE3032 Leadership and Managerial Skills  
 MARE3033 Cargo Work 2  
 MARE3034 Naval Architecture  
 MARE3035 Advanced Engineering Knowledge for Navigation  
 MATH1018 Introduction to Technical Mathematics  
 MATH1019 Technical Mathematics  
 MATH2007 Spherical Mathematics  
 MENG1017 Applied Mechanics  
 METE2002 Meteorology 1  
 METE2003 Meteorology 2  
 PHYS3000 Physics

#### Communications Courses

To be selected at time of registration from the College list, as determined by testing.

#### Co-op Work Terms

COOP1033 Marine Navigation Work Term 1  
 COOP2031 Marine Navigation Work Term 2  
 COOP3012 Marine Nav Co-op Work Term 3

**Course Descriptions:****COOP1033 Marine Navigation Work Term 1 840.0 Hours**

This is the first of three Co-op sea terms designed to provide the cadet with practical work experience to develop the competencies required of a ship's officer. For most, this first Co-op placement onboard ship represents the beginning of a seagoing career. As such, a cadet is expected to be involved in learning about the vessel's operations, the command structure and safety procedures. In this course the student is to commence work on a cadet training manual or logbook. Upon return to school from the first Co-op work term the College will evaluate your logbook and assign a mark. The focus for this phase is shipboard and personal safety.

**COOP2031 Marine Navigation Work Term 2 ##### Hours**

This is the second of three Co-op sea terms and is a continuation of the practical work experience on board a merchant ship thus enabling the cadet to develop the competencies required of a ship's officer. During this sea term the student is required to complete the logbook that was commenced during the first Co-op work term. Upon return to school from the second Co-op work term the College will evaluate your logbook and assign a final mark. The fully completed training record book is required by Transport Canada. The focus for this phase is shipboard operations.

**DRFT1012 Drafting and Basic Blueprint Reading 32.0 Hours**

Students will learn basic drafting and blueprint reading skills that will allow them to read and understand ships structural plans and to draft simple plans and specifications that will effectively communicate corrective measures and creative solutions.

**ELEC2017 Marine Electricity Fundamentals 64.0 Hours**

Students taking this course will learn about basic electricity fundamentals for use in the marine industry. Basic DC and AC electrical units and circuits are studied and the response of resistive, inductive, and capacitive loads to DC and AC voltages are analysed. An operator level introduction to electrical machines, control and power distribution are included.

**MARE1007 Basic Engineering Knowledge 48.0 Hours**

This course is a basic study of common systems, machinery, pipeline components, and fittings on board steam and diesel powered ships. This knowledge prepares a student for the co-op work terms and offers familiarization for some of the systems present on board ships.

**MARE1014 Practical Seamanship 48.0 Hours**

This is a practical course in the use, construction and strength of ropes and wire ropes. The theory of rope and wire rope construction and knowing the safe working limits of rope is the centre of this course. Practical proficiency in knot tying, whipping and splicing of rope and wire rope will prepare students for their co-op work terms.

#### MARE1016 Astronomy For Navigation 48.0 Hours

Use of the astronomical bodies for navigation is a centuries old skill. With the advent of modern electronic aids, this skill is still important because the sky never fails. Learning the terminology and particular astronomical relationships/phenomena is the main focus of this course. Also, included is using the astronomical bodies to determine compass error.

#### MARE1017 Radar Navigation 64.0 Hours

Radar as a navigational tool has proven its value. Yet the incorrect use of this tool has lead to many disasters. Understanding how radar works, its limitations, and how to use this instrument properly forms the heart of the course. Practical aspects include being able to interpret information from radar and plotting radar echoes to determine risk of collision.

#### MARE1018 Navigational Safety 48.0 Hours

Students will learn the contents of the Regulations for Preventing Collisions at Sea and the Code of Nautical Procedures and Practices. This will include being able to identify ship types by the navigational lights displayed, knowing the sound signals used by various vessels and the navigational responsibilities when ships meet at sea. With this knowledge, the student will be able to act as part of a navigational team.

#### MARE1019 Introduction to Ship Master's Business 48.0 Hours

The marine industry is a highly regulated international industry. In this course the student will be introduced to some of the regulations that affect everyday life for a seafarer. This includes knowledge about international and domestic conventions, codes, acts and regulations and your rights and responsibilities as a crew member. The role of government authorities and employers to monitor and ensure the safety of the ships, the cargo, and the environment is also discussed.

#### MARE1021 Ship Construction 64.0 Hours

Many types of ships sail the waters of the world. The basic principles of ship construction are the same for all. Students will study the principles of ship structures, the materials used in ship construction and the processes of building a ship. This helps in the understanding of the stresses which a ship must withstand due to inclement weather and the loading of a ship.

#### MARE1023 Electronic Navigational Aids 64.0 Hours

This course introduces the student to electronic aids which are used in marine navigation. Electronic navigation aids, available worldwide, will be discussed in depth so that the student will know and understand the use, limitation and practical operation of each aid used in the safe navigation of a vessel.

#### MARE1024 GMDSS Part 1 24.0 Hours



Effective radio communication is necessary to the safety, navigation, and business management of a ship. The Restricted Operator Certificate-Maritime Commercial is intended for mariners serving on compulsory fitted commercial ships within the North American A1 sea area. The material presented in this course covers the scope of the examination for the Restricted Operators Certificate-Maritime Commercial (ROC-MC) for the Global Maritime Distress and Safety System (GMDSS) and forms the first part of the GMDSS General Operators certification training.

#### MARE1026 Seamanship 48.0 Hours

This is an introduction into the marine environment and its terminology. The working routine and roles of shipboard personnel are explained and described to prepare individuals for their first co-op work periods. The course also describes the various types of equipment found on board ship and how to safely work with them.

#### MARE1030 Coastal Navigation 1 96.0 Hours

This course introduces the student to the charts and publications required for coastal navigation. The student will develop the ability to identify and interpret the information contained on various nautical charts and in publications, and to utilize the ship's compass and speed measuring devices to perform coastal navigation position fixing. The student will learn to use the Canadian Tide Tables to perform tidal calculations.

#### MARE2005 Transverse Stability 48.0 Hours

In this course, the student will be introduced to basic stability theory and definitions. The student will be able to recognize the factors that keep a ship floating upright. The course will consist of many calculations about the effects of loading a weight on a ship's centre of gravity, hydrostatics, coefficients of form, Simpson's rules for determining areas, and volumes, and moments of inertia.

#### MARE2012 Industrial and Environmental Safety 64.0 Hours

The shipping industry is an international business. This course introduces students to the various relationships and functions of international and national authorities. With this knowledge the course continues into the various regulations that provide for safe working conditions, safe ship operations and for protection of the marine environment.

#### MARE2013 Signals and Communications 32.0 Hours

Signals is an integral part of seamanship and the cadet must be conversant with the techniques of communication between ships, and ship to shore. The Morse Code, radio-telephone and the International code of signals have traditionally been the method by which communication has been effected.

#### MARE2014 Simulated Navigation 96.0 Hours

A modern Blind Pilotage Simulator allows the student to obtain experience in realistic shipboard navigation. Students will practise team management as it applies to navigation. Decision making and critical thinking is an integral part of this course. This

course will provide the student with a thorough knowledge of the application of the Collision Regulations and principles to be observed in keeping a navigational watch. Electronic aids are used to plot the ship's position and progress. The student will be required to take necessary action to avoid collision without putting the vessel at risk. Each exercise is monitored by audio and visual observation of the students. Post-exercise evaluations and play back capabilities support effective debriefing of the students.

P- SNAV Simulated Navigation Equivalen

#### MARE2022 Ocean Navigation 1 64.0 Hours

Building on the theory of astronomy, this course provides a practical method of using astronomy to fix the ship's position. Involved with fixing the ship's position is the ability to use nautical instruments and calculating a ship's position following a known course and distance traveled. This course will conclude with practice problems which demonstrate the traditional celestial methods of fixing a ship's position while at sea.

P- MARE1016 Astronomy For Navigation or P- NAS4141 Astronomy For Navigation

#### MARE2026 Ocean Navigaton 2 64.0 Hours

Continuing from the theory of astronomy, this course will consider the advanced application of time consideration. Time considerations are important for determining the use of the astronomical bodies in finding the ships latitude. A further study will be done on achieving economies in navigation by different methods of sailing a route. This will be applied by practical experience of transferring the route onto ocean charts.

P- MARE2009 Ocean Navigation 1 or P- MARE2022 Ocean Navigation 1

#### MARE2028 Navigational Safety 2 32.0 Hours

Students will gain an extended knowledge of the contents of the Regulations for Preventing Collisions at Sea. The principals of keeping a safe navigational watch at sea, at anchor and in port will be examined and studied in detail.

#### MARE2029 Cargo Work 1 32.0 Hours

This course will introduce the student to principles of cargo stowage, including care and precautions during loading, transit and discharge. The requirements under the Canada Shipping Act for the care and carriage of cargo and maintenance of the cargo handling equipment are also studied.

#### MARE2030 Coastal Navigation 2 80.0 Hours

The student will develop an advanced comprehension of the use of and limitations of the nautical chart. The student will be expected to utilize all knowledge and experience gained to date to create a comprehensive voyage plan demonstrating a solid working knowledge of all phases of a voyage. The following skills will be explored and practiced: advanced visual position fixing, multilevel tidal calculations, and proper record keeping.

#### MARE2031 Magnetic Compass Adjustment 32.0 Hours

Students will study the interrelationship between the Magnetic Compass and the earth's and ship's magnetic fields. The students will then determine errors and magnetic coefficients using a deviascope. These errors will then be corrected using magnets and soft iron.

**MARE3015 Shipmaster's Business 48.0 Hours**

Students will soon appreciate the complicated world of marine insurance. Efficiency and concern for the ship owner's investment is covered as it applies to port operations. With the international scope of this industry, study is given to Custom House procedures and documentation.

**MARE3024 Electronic Chart Display and Information System (ECDIS) 32.0 Hours**

This course provides the mariner with the knowledge and practical experience required to safely operate an ECDIS system to its full potential and to recognize the limitations of the system.

P- MARE1012 Coastal Navigation 1 or P- MARE1030 Coastal Navigation 1

**MARE3025 Longitudinal Stability 64.0 Hours**

Knowledge of dynamical stability and longitudinal stability are the focus of this course. The effect of bilging, grounding and drydocking are examined. The rolling of the ship and how to resist it are studied.

P- MARE2005 Transverse Stability or P- NAS4371 Transverse Stability

**MARE3029 Advanced Seamanship and Bridge Resource Management 64.0 Hours**

The student's understanding of seamanship is elevated to a standard equivalent to that required by a Master of a ship. The course includes principles of ship handling in confined waterways and in open waters, heavy weather sailing, ice navigation, beaching and stranding, towing, working with tugboats, collision, dry-docking and anchoring. The student is also introduced to the principles of Bridge Resource Management, and its role in the promotion of safe navigation and effective bridge team communications.

**MARE3030 Advanced Navigational Safety 32.0 Hours**

This course will focus on applying the knowledge and experience gained from Navigational Safety 1 and 2 and from the cadets' experiences at sea. Students will analyze case studies and examples of navigational mistakes and blunders and combine this with their own experiences to develop conclusions.

**MARE3031 Navigational Systems and Instruments 80.0 Hours**

This course provides an advanced level of education around the theory and use of modern electronic aids to navigation and the integration of these electronics into intelligent, integrated marine navigation systems. Students will also study navigation in high latitudes and radio signal manipulation, radio communication equipment and systems.

**MARE3032 Leadership and Managerial Skills 32.0 Hours**

This course is designed to provide the student with a practical understanding of shipboard personnel management techniques and leadership traits and practices. Workload and resource management, situation and risk assessment, and development and implementation of directives and standard operational practices will be studied and practiced.

**MARE3033 Cargo Work 2 48.0 Hours**

Students will gain an in depth appreciation concerning aspects of Transport Canada Technical Publication documents and those of the International Maritime Organization concerning safe and environmentally sound cargo handling and transportation practices and procedures. Cargo plans will be created in accordance with the regulations learned.

**MARE3034 Naval Architecture 48.0 Hours**

Stability of the vessel is of the utmost importance. A vessel is loaded and then leaves port and enters the sailing portion of the trip. During the voyage, fuel is consumed and other variables such as weather can adversely affect the safety of the vessel. On arrival the cargo is discharged. This course attempts to address several factors that will ensure safe, efficient loading, transit and discharge of a vessel. The officer must understand the purpose and intent of the stability books and regulations governing this subject. The student will demonstrate competence to carry out loading discharging calculations and to fully complete a grain stability calculation.

**MARE3035 Advanced Engineering Knowledge for Navigation 32.0 Hours**

This course is a study of shipboard machinery and systems including some operational aspects not covered in Basic Engineering Knowledge.

**MATH1018 Introduction to Technical Mathematics 42.0 Hours**

This course provides a foundation in mathematics in engineering technology and related programs. Students will develop skill in mathematical thinking and problem solving, and appropriately apply technology in the solution of engineering related problems using algebra, geometry, right angle trigonometry, trigonometric functions of any angle, systems of linear equations, and exponential and logarithmic functions. Additional time to strengthen and reinforce mathematical competencies will be made available to those students who require it.

**MATH1019 Technical Mathematics 42.0 Hours**

This course extends the mathematics ideas taught in Introduction to Technical Mathematics through advanced mathematics problems needed for mechanical engineering programs. Mathematical reasoning and problem solving will be reinforced through problems in an engineering context. Mathematics concepts reinforced and extended are algebra, systems of linear equations, vectors and oblique triangles, graphs of trigonometric functions, and complex numbers.

P- MATH1018 Introduction to Technical Mathematics

**MATH2007 Spherical Mathematics 48.0 Hours**

This course both supplements and prepares students for the study of celestial navigation and associated calculations. Great circle sailing and celestial navigation all rely on the utilization of spherical trigonometry.

P- MATH1019 Technical Mathematics

**MENG1017 Applied Mechanics 48.0 Hours**

This course provides a sound working knowledge of the fundamentals of Applied Engineering Mechanics including kinetics, dynamics, statics and elementary strength of materials related to various marine applications.

**METE2002 Meteorology 1 48.0 Hours**

This course introduces the student to the science of meteorology. Understanding the basics of weather systems to being able to prepare rudimentary forecasts are important skills for the navigation officer.

**METE2003 Meteorology 2 64.0 Hours**

This course advances the study of meteorology to cover global weather phenomena, ocean currents, weather routing of ships safely and efficiently around and through extreme weather systems and phenomenon.

**PHYS3000 Physics 48.0 Hours**

This course provides the student with a knowledge of and understanding of the practical application of physics to Transport Canada standards which includes heat and thermodynamics, fluid mechanics, light, sound and modern physics.

**Course Description Legend**

P = Prerequisite; C = Concurrent prerequisite; CO= Corequisite

*Information contained in College documents respecting programs is correct at the time of publication. Academic content of programs and courses is revised on an ongoing basis to ensure relevance to changing educational objectives and employment market needs. The college reserves the right to add or delete programs, options, courses, timetables or campus locations subject to sufficient enrolment, and the availability of courses.*