A POLYTECHNIC INSTITUTION

School of Manufacturing, Electronics and Industrial Processes
Program: Technology Teacher Education
Option: Diploma

Course Outline

TTED 3050
Power Technology Foundations

Start Date: Oct. 10, 2006 **End Date:** Dec. 8, 2006

Total Hours:	30	**Total Weeks:**	10			**Term/Level:**		**Course Credits:**	3
Hours/Week:	3	**Lecture:**	1	**Lab:**	2	**Shop:**		**Seminar:**	**Other:**

Prerequisites

Course No.
TTED 3002
TTED 3009
TTED 3020
TTED 3030
TTED 3040

TTED 3050 is a Prerequisite for:

Course No.
TTED 4050
TTED 4071
TTED 4080
TTED 6099

■ Course Description

This course will introduce engines and the conventions of BHP and Torque measurement comparison. Students will learn the basics of engines, ignition and fuel systems and will gain practical hands-on experience with engine operation and maintenance.

■ Evaluation

Mid Term Exam	15%
Final Exam	25%
Practical Work	60%
TOTAL	100%

Comments: Performance in this course will be divided between theory and practical work. The theoretical work will be comprised of a mid-term test after the first five lectures and a final exam encompassing all material covered. Practical work will involve the completion of up to six lab activities with marks apportioned equally between them.

■ Course Learning Outcomes/Competencies

Upon successful completion, the student will be able to:

1. differentiate between Work, Power and Torque and solve B.H.P. and torque problems.
2. describe the combustion characteristics of both internal and external combustion engines and appreciate the limits to performance with respect Charles' Law and volumetric efficiency.
3. demonstrate an understanding of each of the parts/systems and their respective functions in the operation of a four cycle engine.

■ Course Learning Outcomes/Competencies (cont'd.)

4. develop and use to solve problems; the formulae for piston engine displacement and piston engine compression ratio (in both Imperial and S.I. measurement)

5. explain the phenomena of flame propagation, detonation and pre-ignition, identify the conditions that promote them and describe what steps can be taken to prevent them.

6. interpret typical valve timing diagrams, and relate that information to valve position and engine "breathing".

7. draw schematic representations of different valve and camshaft configurations and evaluate them comparatively.

8. demonstrate an understanding of electrical induction and battery ignition systems including nomenclature, function, advantages and disadvantages, assembly and troubleshooting.

9. demonstrate a working understanding of small engine carburetion including theory of operation, variations, the "circuits" within conventional and diaphragm carburetors and adjustment and maintenance procedures.

■ Verification

I verify that the content of this course outline is current.

Authoring Instructor — Date: Sept 5 /06

I verify that this course outline has been reviewed.

Program Head/Chief Instructor — Date: Sept 5-/06

I verify that this course outline complies with BCIT policy.

Dean/Associate Dean — Date: 2006/09/05

Note: Should changes be required to the content of this course outline, students will be given reasonable notice.

Instructor(s)

James Bartz | Office Location: SW9–202 | Office Hrs.: By Appt. | Office Phone: local 8924 | E-mail Address: jbartz@bcit.ca

Learning Resources

Required:

Text(s): *Small Gas Engines*. Roth, Alfred C. The Goodheart-Willcox Company Inc. Tinley Park, Illinois ISBN 1-56637-574-6, Copyright 2004 or prior

Equipment: Vernier caliper, steel rule
Supplies and/or Protective Apparel: Safety equipment as per start of year handout

Recommended: None

Information for Students

(*Information below can be adapted and supplemented as necessary.*)

Note: Please refer to BCIT policy number 5002, Student Regulations Policy, for additional information. Policies are available at http://www.bcit.ca/about/administration/policies.shtml.

Ethics: BCIT assumes that all students attending the institute will follow a high standard of ethics. Incidents of cheating or plagiarism may, therefore, result in a grade of zero for the assignment, quiz, test, exam or project for all parties involved and/or expulsion from the course.

Assignments: Assignments, lab reports or projects must be done on an individual basis unless otherwise specified by the instructor. Late assignments, lab reports or projects will be devalued 10% per day late to a maximum of 3 days late.

Makeup Tests, Exams or Quizzes: There will be **no** makeup tests, exams or quizzes. If you miss a test, exam or quiz, you will receive zero marks. Exceptions may be made for **documented** medical reasons or extenuating circumstances. In such a case, it is the responsibility of the student to inform the instructor **immediately**.

Attendance: The attendance policy as outlined in BCIT Policy 5002 will be enforced. Attendance will be taken at the beginning of each session. Students not present at that time will be recorded as absent.

Illness: If you miss an evaluation such as an assignment, quiz, exam, or project, or you miss 3 or more consecutive days of class, you must provide the department with a BCIT Student Medical Certificate (available at http://www.bcit.ca/admission/downloads.shtml). You may be asked to complete the work that you missed or the course evaluation may be adjusted to reflect the missed component(s).

Attempts: Students must successfully complete a course within a maximum of three attempts. Students with two attempts in a single course must get written permission from the Associate Dean to attempt the course for the third time. Students who have not successfully completed a course within three attempts will not be eligible to graduate from the program.

Advancement: Students who fail three or more courses in a term cannot advance to the next term and may be asked to discontinue from the program.

Course Outline Changes: The material or schedule specified in this course outline may be changed by the instructor. If changes are required, they will be announced in class.

Assignment Details

Refer to handouts given in class.

Schedule

See separate sheet