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ABSTRACT

The 2 + 2 Tech-Prep Associate Degree Program at the Community College of Rhode Island (CCRI) is a high school/community college partnership which provides an alternative program of study for students who are enrolled in general education or vocational programs. Students are targeted for the program in grade 10 and begin the program in grade 11 at the secondary level. The 2 + 2 curriculum at the secondary level is an occupational core curriculum that highlights goal setting and development, as well as practical application. Students enrolling in the 2 + 2 program take Principles of Technology, English (with the Applied Communications component where available), and Math in grades 11 and 12. Students who successfully complete the high school portion of the 2 + 2 program are guaranteed acceptance into the technical programs at CCRI. Following the format of the tech-prep curriculum as a whole, specific articulated degree curricula have been developed for chemical technology, computer engineering technology, electronics, electronic engineering technology, engineering, instrumentation technology, machine design, machine processes, and mechanical engineering technology. Course sequences for each of the tech-prep curricula are included in the program guide. An appendix provides sample placement test questions. (JMC)

2 Program +2 Guide

2 + 2 Tech-Prep Associate Degree Program

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A Community College High School Partnership

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2 + 2 TECH PREP ASSOCIATE DEGREE PROGRAM

ARTICULATION IN THE COMPREHENSIVE SCHOOL

PROGRAM GUIDE

The 2 + 2 Tech-Prep Associate Degree Program is a high school/community college partnership which provides an alternative program of study for students who are enrolled in general education or vocational programs.

The program begins in grade 11 at the secondary level where students enroll in a focused curriculum in science (Principles of Technology), math and English - all taught in an applied setting. These courses provide a foundation of basic proficiency skills so that students will be better prepared to pursue a postsecondary technical training program and subsequently a career in a technical field. Because it is goal-oriented, the 2 + 2 curriculum has the potential for giving the less motivated student an incentive to finish high school and eventually complete the requirements for an associate degree.

STUDENT SELECTION

Students are targeted for 2 + 2 in grade 10 and begin the program in grade 11 at the secondary level. The kinds of students likely to enroll in the 2 + 2 Program are those students who are in an unfocused program of study and who lack career and educational goals as well as students who are enrolled in vocational technical programs. The 2 + 2 curriculum at the secondary level is a core curriculum that is occupationally related and highlights goal development and goal setting as well as practical application. It exposes students to a number of career options in technical fields and provides them with the academic and technical skills needed to pursue any one of those careers.

To assist with student recruitment, 2 + 2 staff at the Community College of Rhode Island are available during the school year to conduct student and parent orientations at individual high schools.

COURSE SELECTION

Students enrolling in the 2 + 2 Program take the Principles of Technology, English with the Applied Communications component where available, and math in grades 11 and 12. Selection of math courses may vary according to a student's math skills and career goals. Some of the technical programs at CCRI require advanced math skills for acceptance. (See curriculum outlines for specific program requirements)

PARTICIPATING TECHNICAL PROGRAMS AT CCRI

The 2 + 2 curriculum at the secondary level prepares students to pursue the following programs at CCRI:

- Chemical Technology
- Computer Science
- Electronics
- Engineering
- Engineering Technology (Computer Engineering Technology, Electronic Engineering Technology, Mechanical Engineering Technology)
- Instrumentation
- Machine Design
- Machine Process

OTHER 2 + 2 ACTIVITIES

Students who are enrolled in the 2 + 2 Program are invited to participate in a number of career and educational development programs during the school year. While in high school, 2 + 2 students visit the Community College of Rhode Island on two occasions. The first visit, which takes place in the Fall, introduces students to the college and faculty and provides them with a general overview of all of the technical programs that are offered at CCRI. Students receive information about career opportunities in technological fields and visit the technical labs to get a first-hand look at the various programs.

In the spring, students return to CCRI for a full day of "hands-on" lab activities and an opportunity to meet and talk with employers from various technical industries and businesses.

In addition, high school seniors are provided an opportunity to shadow CCRI students who are enrolled in technical programs at the college any time during the school year. All of these activities help to increase students' awareness of the career opportunities in high technology and the educational requirements needed to successfully pursue a career in a technical field.

Students are also invited to attend a number of workshops that are scheduled throughout the academic year that deal with study skills, time management and financial aid.

Additional programs and activities are scheduled for individual high schools upon request.

CAREER BEGINNINGS

The 2 + 2 Program will offer a number of students an opportunity to participate in the Career Beginnings Program, a support service program developed and managed by Brandeis University. Career Beginnings provides students with mentors and an opportunity to participate in a summer enrichment/work experience program in addition to the other 2 + 2 activities.

GUARANTEED ACCEPTANCE

Students who successfully complete the high school portion of the 2 + 2 Program are guaranteed acceptance into the technical programs at the Community College of Rhode Island.

Criteria for guaranteed acceptance are

(1) a C or better in the Principles of Technology, Year I and Year II
(2) a C or better in English, grade 11 and 12
(3) a C or better in a math program that meets the requirements of the specific technical program that the student is applying to; for most of the technical programs, a C or better in Applied Math I and II, Elementary Algebra Part I and II, or Algebra I meet the requirements for guaranteed acceptance; however, the Computer Science Program requires that students maintain a B or better in Algebra I, Engineering requires that students complete a minimum of two years of Algebra or equivalent, and Electronic Engineering Technology and Mechanical Engineering Technology require that students complete Algebra and Geometry or the equivalent
(4) proficiency on the English and Math Placement Tests (see appendix)

Students who successfully complete the high school portion of the 2 + 2 Program will receive a certificate of completion from the Community College of Rhode Island.

Students who do not meet the criteria for guaranteed acceptance will be accepted to the college and will be able to complete their chosen program of study once they have met the academic criteria.

APPLICATION PROCESS

Students enrolled in 2 + 2 who wish to attend the Community College of Rhode Island upon graduation from high school can apply to the college any time during their senior year. They should complete an application that is stamped with "2 + 2" which signifies that they are in the 2 + 2 Program and therefore eligible for guaranteed acceptance and waiver of the application fee ($10).

Students will be scheduled for the Math and English Placement Tests and will receive notice of acceptance by mail.

2 + 2 SECONDARY/POSTSECONDARY TECH-PREP CURRICULUM

GRADE 11	GRADE 12
Principles of Tech. I	Principle of Tech. II
English/Applied Communications	English/Applied Communications
*Math (Applied Math I, Elementary Algebra Part I, Algebra I	*Math (Applied Math II, Elementary Algebra Part II, Algebra II
Phys. Ed.	Phys. Ed.
Other required coursework	Other required coursework
Electives	Electives

COMMUNITY COLLEGE OF RHODE ISLAND

Elec- tronics Tech.	--Chem. Design	---Machine Process	---Machine	---Instru- mentation	---Engin- eering	--Computer Studies

General Education Requirements	Core Curriculum
Composition I or Technical Report Writing	See individual course descriptions
Algebra for Technology or Technical Math I and II	
Trigonometry for Technology	
Technical Physics or Physics for Technology I, II	
Electives	

TRANSFER EMPLOYMENT

*Math requirements may vary for some postsecondary technical programs.

Competency Guidelines*

Secondary Level

SUGGESTED GUIDELINES FOR MATH

The following guidelines were recommended for the high school mathematics portion of the program.

1) Students should begin studying math in the 9th grade and take one math course each year through grade 12.

2) By the end of the 12th grade the students should be proficient in elementary algebra. Students who are proficient at the intermediate algebra level would be able to choose one of the more advanced technical programs.

3) The students should have the following arithmetic skills.
   - A) A working knowledge of addition, subtraction, multiplication, division facts and number concepts
   - B) Add, subtract, multiply, and divide whole numbers, fractions and decimals
   - C) Find the least common multiple and the greatest common factor
   - D) Convert fractions to decimals and decimals to fractions
   - E) Convert fractions to decimals and percents and reverse the process
   - F) Find the rate, base and percentage
   - G) Solve ratio and proportion problems
   - H) Find rate of increase and rate of decrease
   - I) Solve numerical geometric and trigonometric problems
   - J) Understand the concept of exponents and be able to raise a number to any power
   - K) Solve arithmetic word problems
   - L) Round decimals to the required number of places
   - M) Use the metric system of measurement
   - N) Use approximations to determine if an answer is reasonable

4) The students should have the following geometric skills. These concepts should be taught along with the arithmetic and elementary algebra courses and with their technical courses.

   A) Understand and use the properties of:
      1) A circle-radius, diameter, circumference, area
      2) A rectangle-length, width, perimeter, and area
      3) A triangle-side, length, altitude, perimeter, angular measurements, and area
      4) A right triangle-pythagorean theorem
      5) A rectangular solid-length, width, height, area of the sides, and volume
      6) A cylindrical solid-radius, diameter, circumference, area for surfaces, and volume
      7 A triangular solid (prism)-length, triangular

side lengths, triangular altitudes, triangular angles, area of plane surfaces, and volume

B) Each of these figures should be looked at in a real-life situation

C) The students should understand how to construct and interpret graphs, such as circle, bar, and line graphs

5) The students should have the following algebraic skills:

A) Add, subtract, multiply and divide signed numbers
B) Solve linear equations-non-fractional, fractional, decimal, forms with and without parenthesis
C) Simplify algebraic expressions
D) Factor-common factors, special products, trinomials
E) Solve quadratic equations-factoring, completing the square formula
F) Graph linear and quadratic functions on the x-y coordinate plane
G) Given an algebraic formula solve for a specific letter
H) Solve algebraic word problems
I) Solve two simultaneous linear equations
J) Properties of exponents and radicals

ENGLISH

The following guidelines were recommended for the high school English portion of the program.

1) English 1010 - Composition I - is the basic English course required by CCRI technical programs.

2) If, after taking the English placement test, a student isn't ready for English 1010, English 1050, Fundamentals of Writing - may be taken in its place. Students who receive credit for English 1050 will not have to take English 1010.

3) English 2100 - Technical Report Writing - and English 1100 - Oral Communications - are required by some of the technical programs.

4) A student who has the following competencies should be prepared for English 1010:

   A) Write complete sentences - no fragments and no run-ons

   B) Write organized single paragraphs

   C) Outline

   D) Write small essays

   E) Grammar: know subject, verb, adjective

   F) Punctuation: know comma, period, apostrophe, quotation, colon

   G) Critical reading

   H) Critical thinking skills

   I) Research skills

   J) Study skills

TECHNICAL STUDIES

It was recommended that high schools use the Principles of Technology (Units 1 - 14) for the applied physics portion of the program in grades 11 and 12. Students should complete a minimum of 9 units by the end of grade 12.

*These curriculum guidelines were determined by a curriculum committee made up of high school and community college faculty.

TECH PREP/ASSOCIATE DEGREE CURRICULUM
CHEMICAL TECHNOLOGY

SECONDARY COURSE OF STUDY

GRADE 11	GRADE 12
PRINCIPLES OF TECHNOLOGY I	PRINCIPLES OF TECHNOLOGY II
ENGLISH/APPLIED COMMUNICATIONS	ENGLISH/APPLIED COMMUNICATIONS
*MATH (APPLIED MATH, ELEMENTARY ALGEBRA PART I)	*MATH (APPLIED MATH, ELEMENTARY ALGEBRA PART II, ALGEBRA I)
PHYSICAL EDUCATION	PHYSICAL EDUCATION
OTHER REQUIRED COURSEWORK	OTHER REQUIRED COURSEWORK
ELECTIVE	ELECTIVES

POST SECONDARY COURSE OF STUDY
SUGGESTED COURSE SEQUENCE

YEAR I	YEAR II
GENERAL EDUCATION REQUIREMENTS	
FALL	FALL
ALGEBRA FOR TECHNOLOGY	MODERN TECHNICAL PHYSICS II
GENERAL BIOLOGY-ZOOLOGY	INTRODUCTION TO COMPUTERS
LIBERAL ARTS OR SOCIAL SCIENCES ELECTIVE	
SPRING	SPRING
TRIGONOMETRY FOR TECHNOLOGY	GENERAL MICROBIOLOG
MODERN TECHNICAL PHYSICS I	LIBERAL ARTS ELECTIVE OR ANY NON-SCIENCE OR MATH ELECTIVE
COMPOSITION I	
MAJOR REQUIREMENTS	
FALL	FALL
CHEMICAL TECHNOLOGY	CHEMICAL TECHNOLOGY III
SPRING	SPRING
CHEMICAL TECHNOLOGY II	CHEMICAL TECHNOLOGY IV

*Students' math selection should prepare them to take Algebra for Technology at the community college level and to successfully complete the math placement test that is administered at the end of their senior year.

Students who successfully complete this program will receive an Associate Degree in Applied Science.

PREP/ASSOCIATE DEGREE CURRICULUM
COMPUTER ENGINEERING TECHNOLOGY

SECONDARY COURSE OF STUDY

GRADE 11

PRINCIPLES OF TECHNOLOGY I
ENGLISH/APPLIED COMMUNICATIONS
*MATH - ALGEBRA II

PHYSICAL EDUCATION
OTHER REQUIRED COURSEWORK
ELECTIVES

GRADE 12

PRINCIPLES OF TECHNOLOGY II
ENGLISH/APPLIED COMMUNICATIONS
*MATH - GEOMETRY

PHYSICAL EDUCATION
OTHER REQUIRED COURSEWORK
ELECTIVES

POSTSECONDARY COURSE OF STUDY
SUGGESTED COURSE SEQUENCE

YEAR I

YEAR II

GENERAL EDUCATION REQUIREMENTS

FALL
TECHNICAL MATH I
COMPOSITION I

PROGRAMMING IN BASIC

SPRING
TECHNICAL MATH II
PHYSICS FOR TECHNOLOGY II

FALL
SCIENTIFIC PROGRAMMING
DATA BASE DESIGN AND MAINTENANCE
LIBERAL ARTS ELECTIVE

SPRING
PROGRAMMING ASSEMBLER
OPERATING SYSTEMS
LIBERAL ARTS ELECTIVE

MAJOR REQUIREMENTS

FALL
FUNDAMENTALS OF ELECTRICITY & ELECTRONICS I
INTRO. TO ENGINEERING & TECHNOLOGY
ENGINEERING APPLICATIONS OF COMPUTERS

SPRING
GRAPHICS FOR ELECTRONICS
BASIC ELECTRONIC CIRCUIT THEORY & DEVICES
FUNDAMENTALS OF ELECTRICITY & ELECTRONICS II

FALL
ELECTRONIC MEASUREMENTS & INSTRUMENTS
DIGITAL ELECTRONICS

SPRING
TECHNICAL PROJECT
MICROPROCESSORS & MICROCOMPUTERS

*A minimum of two years of Algebra and one year of Geometry or equivalent is required for acceptance into the program.

Students who successfully complete this program will receive an Associate in Science Degree.

TECH PREP/ASSOCIATE DEGREE CURRICULUM
ELECTRONICS

SECONDARY COURSE OF STUDY

GRADE 11	GRADE 12
PRINCIPLES OF TECHNOLOGY I	PRINCIPLES OF TECHNOLOGY II
ENGLISH/APPLIED COMMUNICATIONS	ENGLISH/APPLIED COMMUNICATIONS
*MATH (APPLIED MATH, ELEMENTARY ALGEBRA PART I)	*MATH (APPLIED MATH, ELEMENTARY ALGEBRA PART II, ALGEBRA I)
PHYSICAL EDUCATION	PHYSICAL EDUCATION
OTHER REQUIRED COURSEWORK	OTHER REQUIRED COURSEWORK
ELECTIVE	ELECTIVES

POST SECONDARY PROGRAM
SUGGESTED COURSE SEQUENCE

YEAR I	YEAR II
GENERAL EDUCATION REQUIREMENTS	
FALL	FALL
ALGEBRA FOR TECHNOLOGY	ELECTIVE
TECHNICAL REPORT WRITING	
TECHNICAL PHYSICS	
SPRING	SPRING
TRIGONOMETRY FOR TECHNOLOGY	ELECTIVE
SOCIAL SCIENCE ELECTIVE	
MAJOR REQUIREMENTS	
FALL	FALL
ELECTRICAL FUNDAMENTALS	COMPUTER APPLICATIONS
ELECTRICAL FUNDAMENTALS LAB	COMMUNICATIONS
DIGITAL CONCEPTS	ANALOG CIRCUITS
	NONLINEAR CIRCUITS
SPRING	SPRING
ELECTRICAL CIRCUITS	MICROPROCESSORS
SEMICONDUCTOR DEVICES	TECHNICAL PROJECT & SEMINAR
MEASUREMENTS FOR ELECTRONICS	SPECIAL TOPICS

*Students' math selection should prepare them to take Algebra for Technology at the community college level and to successfully complete the math placement test administered at the end of their senior year.

Students who successfully complete this program will receive an Associate Degree in Applied Science. TECH-

TECH PREP/ASSOCIATE DEGREE CURRICULUM
ELECTRONIC ENGINEERING TECHNOLOGY
SECONDARY COURSE OF STUDY

GRADE 11	GRADE 12
PRINCIPLES OF TECHNOLOGY I	PRINCIPLES OF TECHNOLOGY II
ENGLISH/APPLIED COMMUNICATIONS	ENGLISH/APPLIED COMMUNICATIONS
*MATH - ALGEBRA II	*MATH - GEOMETRY
PHYSICAL EDUCATION	PHYSICAL EDUCATION
OTHER REQUIRED COURSEWORK	OTHER REQUIRED COURSEWORK
ELECTIVE	ELECTIVES

POST SECONDARY COURSE OF STUDY
SUGGESTED COURSE SEQUENCE

YEAR I	YEAR II
GENERAL EDUCATION REQUIREMENTS	
FALL	FALL
TECHNICAL MATH I	LIBERAL ARTS ELECTIVE
COMPOSITION I	PHYSICS FOR TECHNOLOGY I
PROGRAMMING IN BASIC	
SPRING	SPRING
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PHYSICS FOR TECHNOLOGY II	
MAJOR REQUIREMENTS	
FALL	FALL
FUNDAMENTALS OF ELECTRICITY & ELECTRONICS I	ADVANCED ELECTRONIC CIRCUIT THEORY & DEVICES
INTRO. TO ENGINEERING & TECHNOLOGY	ELECTRONIC MEASUREMENTS & INSTRUMENTS
ENGINEERING APPLICATIONS OF COMPUTERS	SEMI-CONDUCTOR TECHNOLOGY
	DIGITAL ELECTRONICS
SPRING	SPRING
GRAPHICS FOR ELECTRONICS	TECHNICAL PROJECT
BASIC ELECTRONIC CIRCUIT THEORY & DEVICES	MICROPROCESSORS & MICROCOMPUTERS
FUNDAMENTALS OF ELECTRICITY & ELECTRONICS II	COMMUNICATION ELECTRONICS
ADVANCED ELECTRONIC CIRCUIT THEORY & DEVICES	INDUSTRIAL ELECTRONICS
ELECTRONIC MEASUREMENT & INSTRUMENTS	
SEMI-CONDUCTOR TECHNOLOGY	
DIGITAL ELECTRONICS	

*A minimum of two years of algebra and one year of geometry or equivalent is required for acceptance into the program.

Students who successfully complete this program will receive an Associate in Science Degree.

TECH-PREP/ASSOCIATE DEGREE CURRICULUM
ENGINEERING
SECONDARY COURSE OF STUDY

GRADE 11	GRADE 12
PRINCIPLES OF TECHNOLOGY I	PRINCIPLES OF TECHNOLOGY II
ENGLISH/APPLIED COMMUNICATIONS	ENGLISH/APPLIED COMMUNICATIONS
*MATH - ALGEBRA I	*MATH - ALGEBRA II
PHYSICAL EDUCATION	PHYSICAL EDUCATION
OTHER REQUIRED COURSEWORK	OTHER REQUIRED COURSEWORK
ELECTIVES	ELECTIVES

POSTSCECONDARY COURSE OF STUDY
SUGGESTED COURSE SEQUENCE

YEAR I	YEAR II
GENERAL EDUCATION REQUIREMENTS	
FALL	FALL
COMPOSITION I	CALCULUS II
PRE-CALCULUS MATH	PHYSICAL SCIENCE ELECTIVE
GENERAL CHEMISTRY I	2 LIBERAL ARTS ELECTIVES
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SCIENTIFIC PROGRAMMING	
LIBERAL ARTS ELECTIVE	
MAJOR REQUIREMENTS	
FALL	FALL
ENGINEERING GRAPHICS	INTRO. TO ELECTRICAL ENGINEERING
INTRO. TO ENGINEERING & TECHNOLOGY	ENGINEERING MECHANICS STATICS
SPRING	SPRING
ENGINEERING PHYSICS	ENGINEERING MECHANICS-DYNAMICS
	LINEAR ELECTRICAL SYSTEMS & CIRCUIT THEORY
	ELECTRICAL ENGINEERING LAB
	MECHANICS OF MATERIALS FOR ENGINEERING
	MECHANICAL ENGINEERING LAB

*A minimum of two years of algebra or the equivalent is required for admission into the engineering program.
Students who successfully complete this program will receive an Associate in Science Degree.

TECH PREP/ASSOCIATE DEGREE CURRICULUM
INSTRUMENTATION TECHNOLOGY

SECONDARY COURSE OF STUDY

GRADE 11	GRADE 12
PRINCIPLES OF TECHNOLOGY I	PRINCIPLES OF TECHNOLOGY II
ENGLISH/APPLIED COMMUNICATIONS	ENGLISH/APPLIED COMMUNICATIONS
*MATH (APPLIED MATH, ELEMENTARY ALGEBRA PART I)	*MATH (APPLIED MATH, ELEMENTARY ALGEBRA PART II, ALGEBRA I)
PHYSICAL EDUCATION	PHYSICAL EDUCATION
OTHER REQUIRED COURSEWORK	OTHER REQUIRED COURSEWORK
ELECTIVE	ELECTIVES

POST SECONDARY COURSE OF STUDY
SUGGESTED COURSE SEQUENCE

YEAR I	YEAR II
GENERAL EDUCATION REQUIREMENTS	
FALL	FALL
TECHNICAL REPORT WRITING	SOCIAL SCIENCE ELECTIVE
ALGEBRA FOR TECHNOLOGY	
SPRING	SPRING
TRIGONOMETRY FOR TECHNOLOGY	ELECTIVES
TECHNICAL PHYSICS	
MAJOR REQUIREMENTS	
FALL	FALL
INSTRUMENTATION I	CONTROL PRINCIPLES & TELEMETRY
ELECTRICAL FUNDAMENTALS	FUNDAMENTALS OF ELECTRONICS CIRCUITS
ELECTRICAL FUNDAMENTALS LAB	COMPUTER APPLICATIONS
DIGITAL CONCEPTS	
SPRING	SPRING
INSTRUMENTATION II	TECHNICAL PROJECT & SEMINAR
ELECTRICAL CIRCUITS	ELECTRONICS FOR INSTRUMENTATION
SEMICONDUCTOR DEVICES	

*Students' math selection should prepare them to take Algebra for Technology at the community college level and to successfully complete the math placement test that is administered at the end of their senior year.

Students who successfully complete this program will receive an Associate Degree in Applied Science.

TECH PREP/ASSOCIATE DEGREE CURRICULUM
MACHINE DESIGN
SECONDARY COURSE OF STUDY

GRADE 11	GRADE 12
PRINCIPLES OF TECHNOLOGY I	PRINCIPLES OF TECHNOLOGY II
ENGLISH/APPLIED COMMUNICATIONS	ENGLISH/APPLIED COMMUNICATIONS
*MATH(APPLIED MATH, ELEMENTARY ALGEBRA PART I)	*MATH(APPLIED MATH,ELEMENTARY ALGEBRA PART II, ALGEBRA I
PHYSICAL EDUCATION	PHYSICAL EDUCATION
OTHER REQUIRED COURSEWORK	OTHER REQUIRED COURSEWORK
ELECTIVES	ELECTIVES

POSTSECONDARY COURSE OF STUDY
SUGGESTED COURSE SEQUENCE

YEAR I	YEAR II
GENERAL EDUCATION REQUIREMENTS	
FALL	FALL
COMPOSITION I OR ENGL 1050	ELECTIVE
ALGEBRA FOR TECHNOLOGY	NEWTONIAN PHYSICS
SPRING	SPRING
TRIGONOMETRY FOR TECHNOLOGY	ELECTIVE
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*Students' math selection should prepare them to take Algebra for Technology at the community college level and to successfully complete the math placement test that is administered at the end of their senior year.

Students who successfully complete this program will receive an Associate Degree in Applied Science.

TECH PREP/ASSOCIATE DEGREE CURRICULUM
MACHINE PROCESSES
SECONDARY COURSE OF STUDY

GRADE 11	GRADE 12
PRINCIPLES OF TECHNOLOGY I	PRINCIPLES OF TECHNOLOGY II
ENGLISH/APPLIED COMMUNICATIONS	ENGLISH/APPLIED COMMUNICATIONS
*MATH (APPLIED MATH, ELEMENTARY ALGEBRA PART I)	*MATH (APPLIED MATH, ELEMENTARY ALGEBRA PART II, ALGEBRA I)
PHYSICAL EDUCATION	PHYSICAL EDUCATION
OTHER REQUIRED COURSEWORK	OTHER REQUIRED COURSEWORK
ELECTIVE	ELECTIVES

POST SECONDARY COURSE OF STUDY
SUGGESTED COURSE SEQUENCE

YEAR I	YEAR II
GENERAL EDUCATION REQUIREMENTS	
FALL	FALL
COMPOSITION I	
ALGEBRA FOR TECHNOLOGY	
SPRING	SPRING
TRIGONOMETRY FOR TECHNOLOGY	NEWTONIAN PHYSICS
SOCIAL SCIENCE ELECTIVE	ELECTIVE
ELECTIVE	
MAJOR REQUIREMENTS	
FALL	FALL
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LATHE I LAB	LATHE III
LATHE I	MILLING III LAB
MILL I LAB	MILLING III
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LATHE II LAB	DIEMAKING II
LATHE II	MACHINE PROCESSES PROJECT
MILLING II LAB	MACHINE PROCESSES PROJECT LAB
MILLING II	STRENGTH & PROPERTIES OF MATERIALS
GRINDING II LAB	
GRINDING II	
MEASUREMENT II	

*Students' math selection should prepare them to take Algebra for Technology at the community college level and to successfully complete the math placement test that is administered at the end of their senior year.

Students who successfully complete this program will receive an Associate Degree in Applied Science.

TECH PREP/ASSOCIATE DEGREE CURRICULUM
MECHANICAL ENGINEERING TECHNOLOGY
SECONDARY COURSE OF STUDY

GRADE 11	GRADE 12
PRINCIPLES OF TECHNOLOGY I	PRINCIPLES OF TECHNOLOGY II
ENGLISH/APPLIED COMMUNICATIONS	ENGLISH/APPLIED COMMUNICATIONS
*MATH - ALGEBRA II	*MATH - GEOMETRY
PHYSICAL EDUCATION	PHYSICAL EDUCATION
OTHER REQUIRED COURSEWORK	OTHER REQUIRED COURSEWORK
ELECTIVE	ELECTIVES

POST SECONDARY COURSE OF STUDY
SUGGESTED COURSE SEQUENCE

YEAR I	YEAR II
GENERAL EDUCATION REQUIREMENTS	
FALL	FALL
TECHNICAL MATH I	2 LIBERAL ARTS ELECTIVES
COMPOSITION I	
PHYSICS FOR TECHNOLOGY I	
SPRING	SPRING
TECHNICAL MATH II	PRINCIPLES OF PRODUCTION MANAGEMENT
PROGRAMMING IN BASIC	LIBERAL ARTS ELECTIVE
MAJOR REQUIREMENTS	
FALL	FALL
ENGINEERING GRAPHICS	STATISTICS & QUALITY CONTROL
INTRODUCTION TO ROBOTICS	BASIC MECHANISMS
INTRODUCTION TO ENGINEERING & TECHNOLOGY	BASIC TOOL DESIGN
SPRING	SPRING
MANUFACTURING PROCESSES	INDUSTRIAL MATERIALS
STATICS & STRENGTH OF MATERIALS	ELEMENTS OF MACHINE DESIGN
DESIGN DRAFTING	FUND. OF CONTROL ELECTRONICS
ENGINEERING APPLICATIONS OF COMPUTERS	
COST ESTIMATING	

*A minimum of two years of algebra and one year of geometry or equivalent is required for acceptance into the program.

Students who successfully complete this program will receive an Associate in Science degree.

APPENDIX

SAMPLE PLACEMENT-TEST QUESTIONS

The Placement Test has four parts with 17 questions in each part: Part I — ARITHMETIC, Part II — ELEMENTARY ALGEBRA, Part III — INTERMEDIATE ALGEBRA, and Part IV — TRIGONOMETRY. Many of the following questions are quite similar to those on the Placement Test. Review only the underlined courses listed above that you have previously studied; don't worry about those you have never had.

A mathematics instructor will discuss with you your test results, and recommend a math course that is consistent with your background and educational objectives. However, the decision as to which course you take is yours!

SAMPLE QUESTIONS

PART I — ARITHMETIC

1. Subtract: $5\frac{1}{5} - 3\frac{2}{3}$
2. Divide: $2\frac{1}{3} \div \frac{1}{2}$
3. Add: $38 + 3.8 + .38$
4. 2.3 is what percent of 7? Round your answer to the nearest tenth percent.
5. The ratio of men to women in a community college is 4 to 5. How many women attend if there are 7600 men?

PART II — ELEMENTARY ALGEBRA

6. Perform the indicated operations: $-2(5 - 7) - 6$
7. Express as a single fraction in simplest form:
$$\frac{x}{2} - \frac{2x + 2y}{4y}$$
8. Solve: $3 - 2(x + 4) = x$
9. Solve: $5 - \frac{3x}{4} = 2x$
10. Solve for F: $C = \frac{5}{9}(F - 32)$

PART III — INTERMEDIATE ALGEBRA

11. Rationalize the denominator and simplify:
$$\frac{\sqrt{8} + 3\sqrt{2}}{5\sqrt{3}}$$
12. Express in simplest form without negative exponents:
$$\left(\frac{x^3 \cdot y^2}{xy}\right)^{-1}$$
13. Solve this system of equations:
$$2x - y = 4$$
$$3x - 2y = 1$$
14. Solve: $3\sqrt{x} - x = 2$
15. Given the coordinates of the two points P_1 (1,2), P_2 (-2,3), determine the slope.

PART IV — TRIGONOMETRY

16. Graph the sine and cosine functions on the same axes. Then determine the interval(s) below for which $\sin\theta > \cos\theta$: ($0^\circ \leq \theta < 90^\circ$, $90^\circ \leq \theta < 180^\circ$, $180^\circ \leq \theta < 270^\circ$, $270^\circ \leq \theta < 360^\circ$).
17. Solve for all values of θ such that $0 \leq \theta < 360^\circ$:
$$2\sin^2\theta - \sin\theta = 0$$
18. Given that $\cos\theta = \frac{\sqrt{2}}{2}$, determine the values of θ between 270° and 450°.
19. Express as a single trigonometric function in simplest form:
$$\frac{\csc\theta}{\cot\theta}$$
20. Given that $\tan\theta = -\frac{2}{3}$ and θ is in Quadrant II, determine the value of sec θ.

ANSWERS

1. $1\frac{8}{15}$
2. $4\frac{2}{3}$
3. 42.18
4. 32.9%
5. 9500 women
6. -2
7. $\frac{xy - x - y}{2y}$
8. $x = -\frac{5}{3}$
9. $x = \frac{20}{11}$ or $1\frac{9}{11}$
10. $F = \frac{9}{5}C + 32$ or $\frac{9C + 160}{5}$
11. $\frac{\sqrt{6}}{3}$
12. $\frac{1}{x^2y}$
13. (7,10)
14. 1,4
15. $-\frac{1}{3}$
16. $90^\circ \leq \theta < 180^\circ$
17. $0^\circ, 30^\circ, 150^\circ, 180^\circ$
18. $315^\circ, 405^\circ$
19. sec θ
20. $-\frac{\sqrt{13}}{3}$

2 + 2 SECONDARY/POSTSECONDARY TECH-PREP CURRICULUM

GRADE 11 → GRADE 12

Principles of Tech. I	Principles of Tech. II
English/Applied Communications	English/Applied Communications
*Math (Applied Math I, Elementary Algebra Part I, Algebra I	*Math (Applied Math II, Elementary Algebra Part II, Algebra I, Algebra II
Phys. Ed.	Phys. Ed.
Other required coursework	Other required coursework
Electives	Electives

COMMUNITY COLLEGE OF RHODE ISLAND

Elec- tronics — Chem. Tech. — Machine Design — Machine Process — Instru- mentation — Engineering Technologies — Computer Studies

General Education Requirements

Composition I or Technical Report Writing
Algebra for Technology or Technical Math I and II
Trigonometry for Technology
Technical Physics or Physics for Technology I, II
Electives

Core Curriculum

See individual course descriptions

TRANSFER EMPLOYMENT

*Math requirements may vary for some postsecondary technical programs