

Board Docket for November 10, 2005

A. NAME OF DOCKET ITEM

Consideration and approval of new or revised courses and programs.

B. STATEMENT OF ISSUE/PURPOSE

1. Background and Purpose

The following curriculum changes are proposed:

Aviation	Adoption of a new course at Miramar College	Attachment A
Construction Systems	Adoption of eight course deactivations at City College.	Attachment B
Construction Trades/Construction Systems	Adoption of a new Certificate of Achievement and a new Associate Degree at City College.	Attachment C
Jet Products Apprenticeship	Adoption of deactivation of two Certificates of Achievement and two Associate Degrees at City College.	Attachment D
Machining Trades Apprenticeship	Adoption of two new Certificates of Achievement and add two new Associate Degrees at City College.	Attachment E
Manufacturing Engineering Technology	Adoption of two new courses at City College	Attachment F

2. Cost and Funding

There is no additional cost to the District

C. PROPOSAL

The Board of Trustees hereby approves the action outlined in Part A of this docket exhibit.

Henry T. Ingle, Ph.D.  
Vice Chancellor  
Instructional Services, Planning and Technology

ACTION

Adoption of a new course at Miramar College.

Proposed course at Miramar College:

**312 Flight Instructor Refresher Clinic (FIRC)**  
**1 hour lecture, 1 unit**  
**Credit/No Credit Only**

*Limitation on Enrollment:* Must have an unexpired flight instructor certificate.

This course provides instructors the opportunity to renew their unexpired FAA flight instructor certificates through classroom study. In accordance with Federal Aviation Regulations, topics include aerodynamics, flight information publications, human factors, weather, regulations, airspace, collision avoidance procedures, professional responsibilities, fundamentals of instruction, flight maneuvers and procedures, flight safety, transition training, recurrency training, and additional selected areas that are applicable to the needs of flight instructors. (FT)  
Not Applicable to Associate Degree, Occupational/Vocational basic skills.

ACTION

Adoption of course deactivations at City College.

Proposed course deactivations at City College:

**060A Construction Systems – Introduction to HVAC I**  
— 2 hours lecture, 3 hours lab, 3 units  
**Grade-Only**

*Advisory:* ENGL 051 & ENGL 056 & MATH 095 each with a grade of "C" or better, or equivalent or Assessment Skill Level W5/R5/M40.

*Limitation on Enrollment:* This course is not open to students with previous credit for HVAC 301. In this course, trade mathematics and drawings, the tools of the trade, blueprint terminology and basic rigging equipment and procedures as applicable to HVAC are covered. This course is designed to give the construction HVAC student an understanding of copper and plastic piping practices. (FT) Associate Degree Credit only and not Transferable.

**060B Construction Systems – Introduction to HVAC II**  
— 2 hours lecture, 3 hours lab, 3 units  
**Grade-Only**

*Prerequisite:* CONS 060A with a grade of "C" or better, or equivalent.

*Limitation on Enrollment:* This course is not open to students with previous credit for HVAC 302. This course introduces the construction HVAC trainee to the basic concepts and environmental concerns related to heating, ventilation and air conditioning, including: soldering, brazing, ferrous metal piping practices, basic electricity, heating and cooling. This course also describes the HVAC program and the career opportunities available in the HVAC trade. (FT) Associate Degree Credit only and not Transferable.

**061A Construction Systems – Intermediate HVAC I**  
— 2 hours lecture, 3 hours lab, 3 units  
**Grade-Only**

*Prerequisite:* CONS 060B with a grade of "C" or better, or equivalent.

*Limitation on Enrollment:* This course is not open to students with previous credit for HVAC 303. This course instructs the HVAC trainee in the properties of air, and covers chimneys, flues and vents. Students are introduced to basic mechanical procedures commonly performed in HVAC service work, such as the operation, installation and servicing of electric furnaces. This course also introduces the student to alternating current and electronic components and circuits used in HVAC systems.

(FT) Associate Degree Credit only and not Transferable.

**061B Construction Systems – Intermediate HVAC II**  
— 2 hours lecture, 3 hours lab, 3 units  
**Grade-Only**

*Prerequisite:* CONS 061A with a grade of "C" or better, or equivalent.

*Limitation on Enrollment:* This course is not open to students with previous credit for HVAC 304. This course instructs the HVAC trainee in HVAC controls and metering devices and introduces the trainee to control circuit analysis. This course also covers compressors and heat pumps and instructs the student in leak detection, evacuation, recovery and charging service procedures used to troubleshoot, repair and/or maintain proper operation of the mechanical refrigeration system. (FT) Associate Degree Credit only and not Transferable.

**062A Construction Systems – Advanced HVAC I**  
— 2 hours lecture, 3 hours lab, 3 units  
**Grade-Only**

*Prerequisite:* CONS 061B with a grade of "C" or better, or equivalent.

*Limitation on Enrollment:* This course is not open to students with previous credit for HVAC 305. This course instructs the HVAC trainee in preventive maintenance and provides an introduction to troubleshooting applying to all types of HVAC equipment. This course also covers troubleshooting electronic controls, gas heating, electric heating and oil heating. (FT) Associate Degree Credit only and not Transferable.

**062B Construction Systems – Advanced HVAC II**  
— 2 hours lecture, 3 hours lab, 3 units  
**Grade-Only**

*Prerequisite:* CONS 062A with a grade of "C" or better, or equivalent.

*Limitation on Enrollment:* This course is not open to students with previous credit for HVAC 306. This course instructs the HVAC trainee in troubleshooting cooling, accessories, heat pumps and commercial heating and cooling systems. This course also covers water and air balance, steam systems and customer relations. (FT) Associate Degree Credit only and not Transferable.

**063A Construction Systems – HVAC Specialties I**

~~— 2 hours lecture, 3 hours lab, 3 units~~

~~Grade-Only~~

~~Prerequisite: CONS 062B with a grade of "C" or better, or equivalent.~~

~~Limitation on Enrollment: This course is not open to students with previous credit for HVAC 307.~~

~~This course covers advanced blueprint reading and specifications as they relate to HVAC, indoor air quality and energy conservation equipment commonly used in HVAC systems. This course also covers energy management systems and the methods of water treatment and water treatment equipment used with HVAC systems. (FT) Associate Degree Credit only and not Transferable.~~

**063B Construction Systems – HVAC Specialties II**

~~— 2 hours lecture, 3 hours lab, 3 units~~

~~Grade-Only~~

~~Prerequisite: CONS 063A with a grade of "C" or better, or equivalent.~~

~~Limitation on Enrollment: This course is not open to students with previous credit for HVAC 308.~~

~~This course covers commercial heating and cooling systems, maintenance of these systems and system start up and shut down. This course also covers commercial and industrial refrigeration systems, equipment, refrigerated warehouses, walk-in coolers display cases, etc. (FT) Associate Degree Credit only and not Transferable.~~

Construction Trades

ACTION

Adoption of a new Certificate of Achievement and a new Associate Degree at City College.

PROGRAM REVIEW

Pursuant to Section 78016 of the Education Code, following is a program review summary:

- A. Labor Market<sup>1</sup>: According to the California State Employment Development Department (EDD) statistics, there were approximately 41,290 persons employed in Construction Crafts Technology, Electrical - related jobs in San Diego County in 1999. Approximately 14,110 additional job opening are projected through 2006.
- B. Duplication<sup>2</sup>: Construction Crafts Technology, Electrical offered days and evenings at all San Diego City college.
- C. Effectiveness<sup>3</sup>: District enrollment in Construction Crafts Technology, Electrical is estimated at 597 students.

<sup>1</sup> Information was obtained from California Employment Development Department (EDD), Table 2, San Diego County TOP Projections, 1999-2006.

<sup>2</sup> Information was obtained by the San Diego Imperial Counties Community Association Colleges (SDICCCA).

<sup>3</sup> Information was obtained from the Vocational Education Data Systems (VEDS) Report 2002-03.

Proposed new certificate and Associate Degree for City:

**Certificate of Achievement:  
Construction Trades**

**Construction Electronic Systems Technician  
Option (Non-apprentice)**

**Courses Required for the Major: Units**

- CONS 070A, Construction Systems-Introduction to Low Voltage Building Systems I.....3
- CONS 070B, Construction Systems-Introduction to Low Voltage Building Systems II .....3
- CONS 071A, Construction Systems-Intermediate Low Voltage Building Systems I.....3
- CONS 071B, Construction Systems-Intermediate Low Voltage Building Systems II .....3
- CONS 072A, Construction Systems-Advanced Low Voltage Building Systems I.....3
- CONS 072B, Construction Systems-Advanced Low Voltage Building Systems II .....3

**Total Units = 18**

\*Program offered in conjunction with Associated builders and Contractors apprenticeship program.

**Associate in Science Degree:  
Construction Trades**

**Construction Electronic Systems Technician  
Option (Non-apprentice)\***

**Courses Required for the Major: Units**

- CONS 070A, Construction Systems-Introduction to Low Voltage Building Systems I.....3
- CONS 070B, Construction Systems-Introduction to Low Voltage Building Systems II .....3
- CONS 071A, Construction Systems-Intermediate Low Voltage Building Systems I.....3
- CONS 071B, Construction Systems-Intermediate Low Voltage Building Systems II .....3
- CONS 072A, Construction Systems-Advanced Low Voltage Building Systems I.....3
- CONS 072B, Construction Systems-Advanced Low Voltage Building Systems II .....3

**Total Units = 18**

Additional general education and graduation requirements for the associate degree are listed in the catalog. **The associate degree requires a minimum of 60 units.**

ACTION

Adoption of the deactivation of a Certificate of Achievement and Associate Degree at City College.

**Jet Products Corporation  
Apprenticeship**

A four year indentured apprenticeship program in a number of manufacturing and technical trades is available. Applications for the following trades are accepted at Jet Products Corporation, 9106 Balboa Avenue, San Diego, CA 92123.

~~Additional general education and graduation requirements for the associate degree are listed in the Academic Requirements section of catalog. **The associate degree requires a minimum of 60 units.** Recommended electives: English 101.~~

**~~Certificate of Achievement:  
Jet Products Corporation Apprenticeship  
-VTL Machinist/Milling Machinist~~**

**~~Courses Required for the Major: Units~~**

<del>ENGE 108, Dimensioning and Tolerancing .....</del>	<del>3</del>
<del>ENGE 151, Engineering Drawing .....</del>	<del>2</del>
<del>ENGE 152, Engineering Design .....</del>	<del>3</del>
<del>MACT 140, Machine Technology .....</del>	<del>4</del>
<del>MACT 150, Introduction to CNC and EDM .....</del>	<del>4</del>
<del>MAFG 102, Print Reading and Symbology .....</del>	<del>3</del>
<del>MAFG 115, Properties of Materials for Technicians .....</del>	<del>3</del>
<del>MATH 95, Elementary Algebra .....</del>	<del>5</del>
<del>JETP 349, Jet Products Work Experience .....</del>	<del>16</del>
<del>-----</del>	<del><b>Total Units = 43</b></del>

**~~Associate in Science Degree:  
Jet Products Corporation Apprenticeship  
VTL Machinist/Milling Machinist~~**

**~~Courses Required for the Major: Units~~**

<del>ENGE 108, Dimensioning and Tolerancing .....</del>	<del>3</del>
<del>ENGE 151, Engineering Drawing .....</del>	<del>2</del>
<del>ENGE 152, Engineering Design .....</del>	<del>3</del>
<del>MACT 140, Machine Technology .....</del>	<del>4</del>
<del>MACT 150, Introduction to CNC and EDM .....</del>	<del>4</del>
<del>MAFG 102, Print Reading and Symbology .....</del>	<del>3</del>
<del>MAFG 115, Properties of Materials for Technicians .....</del>	<del>3</del>
<del>MATH 95, Elementary Algebra .....</del>	<del>5</del>
<del>JETP 349, Jet Products Work Experience .....</del>	<del>16</del>
<del>-----</del>	<del><b>Total Units = 43</b></del>

Machining Trades - Apprenticeship

Adoption of new program at City.

PROGRAM REVIEW

Pursuant to Section 78016 of the Education Code, following is a program review summary:

- A. Labor Market<sup>1</sup>: According to the California State Employment Development Department (EDD) statistics, there were approximately 34,620 persons employed in Industrial/Manufacturing Technology-related jobs in San Diego County in 1999. Approximately 10,650 additional job opening are projected through 2006.
- B. Duplication<sup>2</sup>: Industrial/Manufacturing Technology offered days and evenings at all San Diego City college.
- C. Effectiveness<sup>3</sup>: District enrollment in Industrial/Manufacturing Technology is estimated at 209 students.

<sup>1</sup> Information was obtained from California Employment Development Department (EDD), Table 2, San Diego County TOP Projections, 1999-2006.

<sup>2</sup> Information was obtained by the San Diego Imperial Counties Community Association Colleges (SDICCCA).

<sup>3</sup> Information was obtained from the Vocational Education Data Systems (VEDS) Report 2002-03.

Proposed new certificates and Associate Degrees for City:

**Certificate of Achievement:  
Tool and Cutter Grinder Apprenticeship**

**Courses Required for the Major: Units**

ENGE 108, Dimensioning and Tolerancing .....	3
ENGE 151, Engineering Drawing .....	2
ENGE 152, Engineering Design.....	3
MACT 140, Machine Technology.....	4
MACT 150, Introduction to CNC and EDM.....	4
MAFG 102, Print Reading and Symbology .....	3
MAFG 115, Properties of Materials for Technicians .....	3
MATH 096, Intermediate Algebra and Geometry.....	5
<b>Total Units = 27</b>	

**Certificate of Achievement:  
VTL Machinist/Milling Machinist  
Apprenticeship**

**Courses Required for the Major: Units**

ENGE 108, Dimensioning and Tolerancing .....	3
--	---

ENGE 151, Engineering Drawing .....	2
ENGE 152, Engineering Design <sup>3</sup>	
MACT 140, Machine Technology.....	4
MACT 150, Introduction to CNC and EDM .....	4
MAFG 102, Print Reading and Symbology .....	3
MAFG 115, Properties of Materials for Technicians.....	3
MATH 096, Intermediate Algebra and Geometry .....	5
<b>Total Units = 27</b>	

**Associate in Science Degree:  
Tool and Cutter Grinder Apprenticeship**

**Courses Required for the Major: Units**

ENGE 108, Dimensioning and Tolerancing.....	3
ENGE 151, Engineering Drawing .....	2
ENGE 152, Engineering Design.....	3
MACT 140, Machine Technology.....	4
MACT 150, Introduction to CNC and EDM.....	4
MAFG 102, Print Reading and Symbology .....	3
MAFG 115, Properties of Materials for Technicians.....	3

Machining Trades - Apprenticeship

MATH 096, Intermediate Algebra and Geometry .....	5
<b>Total Units = 27</b>	

**Associate in Science Degree:  
VTL Machinist/Milling Machinist  
Apprenticeship**

**Courses Required for the Major: Units**

ENGE 108, Dimensioning and Tolerancing .....	3
ENGE 151, Engineering Drawing .....	2
ENGE 152, Engineering Design.....	3
MACT 140, Machine Technology.....	4
MACT 150, Introduction to CNC and EDM.....	4
MAFG 102, Print Reading and Symbology .....	3
MAFG 115, Properties of Materials for Technicians .....	3
MATH 095, Elementary Algebra .....	5
<b>Total Units = 27</b>	



ACTION

Adoption of a two new courses at City College.

Proposed new courses at City College:

**110 Industrial Safety**

**2 hours lecture, 2 units  
Grade Only**

*Advisory:* ENGL 051 & ENGL 056 each with a grade of "C" or better, or equivalent or Assessment Skill Level W5/R5.

The course is a study of safety fundamentals in an industrial environment and their relationship to accident prevention. It introduces students to the Occupational Safety and Health Administration (OSHA) policies, procedures and standards for industries. Course topics include electrical safety, hazardous materials and conditions, fire protection, tools and machines, welding and cutting, personal protective equipment, hazard communication and construction. This course is designed for students who are currently or will be working in construction or general industries.

Upon successful course completion, students may receive an OSHA 30-hour Construction and/or General Industry Outreach Training Completion Card. (FT) Associate Degree Credit & transfer to CSU and/or private colleges and universities.

industrial management. (FT) Associate Degree Credit & transfer to CSU and/or private colleges and universities.

**210 Statistical Process Control**

**2 hours lecture, 3 hours lab, 3 units  
Grade Only**

*Advisory:* ENGL 051 & ENGL 056 & MATH 096, each with a grade of "C" or better, or equivalent or Assessment Skill Level W5/R5/M50; and completion of MATH 119 or PSYC 258 with a grade of "C" or better, or equivalent.

This lecture/lab course familiarizes students with the applications of statistics in process and quality control function. Students learn to acquire, analyze and interpret data from a process to determine if it is in statistical control and capable of meeting customer's requirements. Statistical techniques include the use of basic graphs and diagrams, control charts, process mean and variability, process capability, sampling and normal distribution. The course also introduces students to the concepts of Six Sigma and design of experiments as part of quality control and improvement. This course is designed for students who are interested in process control, quality improvement and