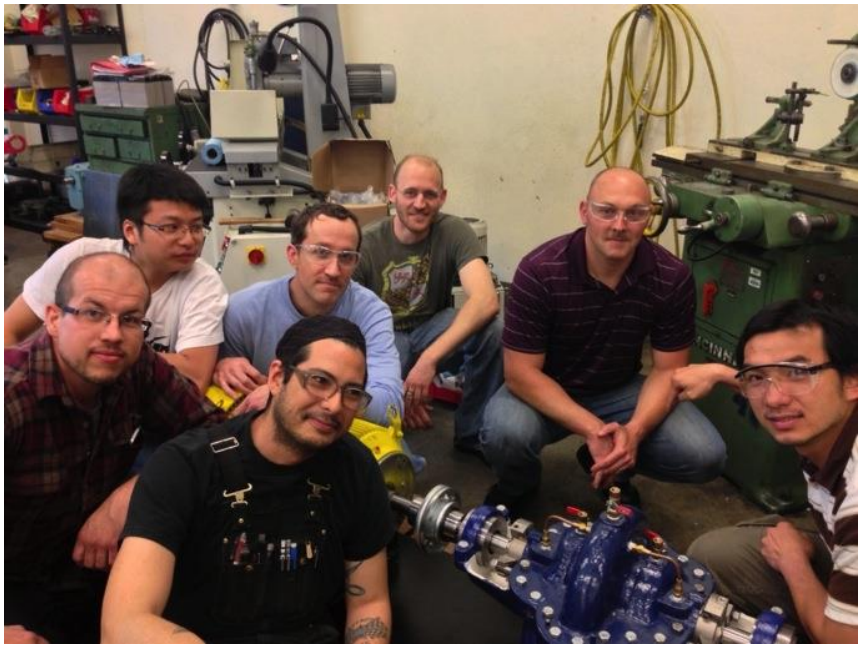
Laney College

MACHINE TECHNOLOGY

MACHINE TECHNOLOGY

EBMUD Pump Rebuilt by Laney Pump Class

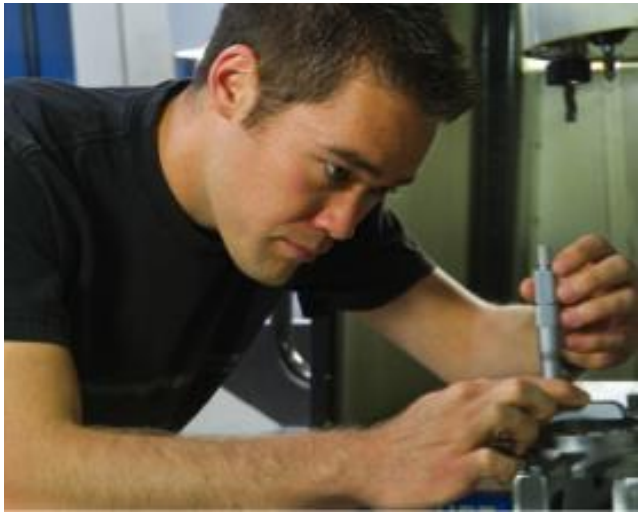


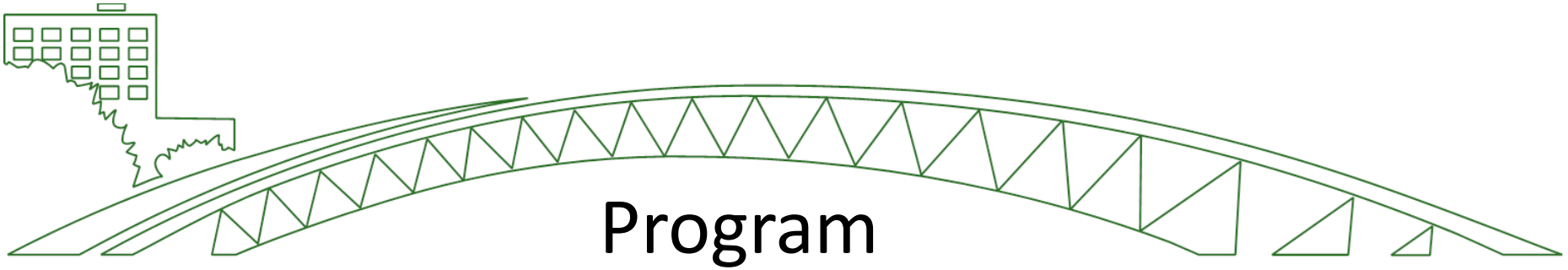
The mission of the Machine Technology Department is to give students the technical skills and professional pride that are the foundations of a successful career as a skilled tradesperson. These skills include not only the basics of machine operations, blueprint reading, knowledge of materials, and CNC and CAD/CAM programming; but critical thinking skills involved in job planning and problem solving that open up the highest levels of employment in the trade.

Development of these skills is based on a strong foundation of technical literacy. This foundation is rooted in the fundamentals of strong communication skills in reading and writing, mathematics, and computer competency. Only by integrating technical literacy and the machining skills and knowledge do we truly prepare our students for the rapidly changing world of machine technology.

Mission

Skills





Program Description

The Laney Machine Technology program is designed both for entry-level students and experienced craftspeople wanting to upgrade their skills in machining or industrial maintenance. The up-to-date curriculum provides the current theoretical, technological and practical experience necessary for employment and advancement in the industry, and features the following elements:

Careers

- The program prepares students for employment as:
  - Machinist
  - Machine Tool Operator
  - CNC–CAD/CAM Programmer
  - Industrial Maintenance Machinist
  - Quality Control
  - R & D and Prototype Machinist

Certificates & Degrees

- A.S. Machine Technology (60 units)
- C.A. Machine Technology (37 units)
- C.A. Industrial Maintenance (29.5 units)
- C.A. Quality Control Inspection *
- Advanced Industrial Maintenance *
- A.S. Industrial maintenance *

* In development

Creating High Impact Pathways

Advance Manufacturing

Multi-Axis Productivity

Industrial Maintenance

Hydraulics Training

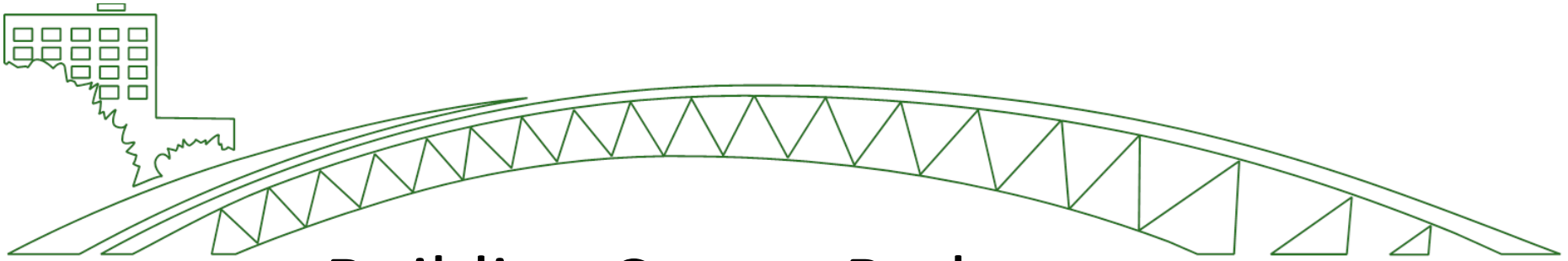
Accessibility to all

How do you create a **variety** of **on-ramps** and **bridges** to advanced manufacturing career pathways?

How do you **find** and **motivate** students to **enter** these career pathways?

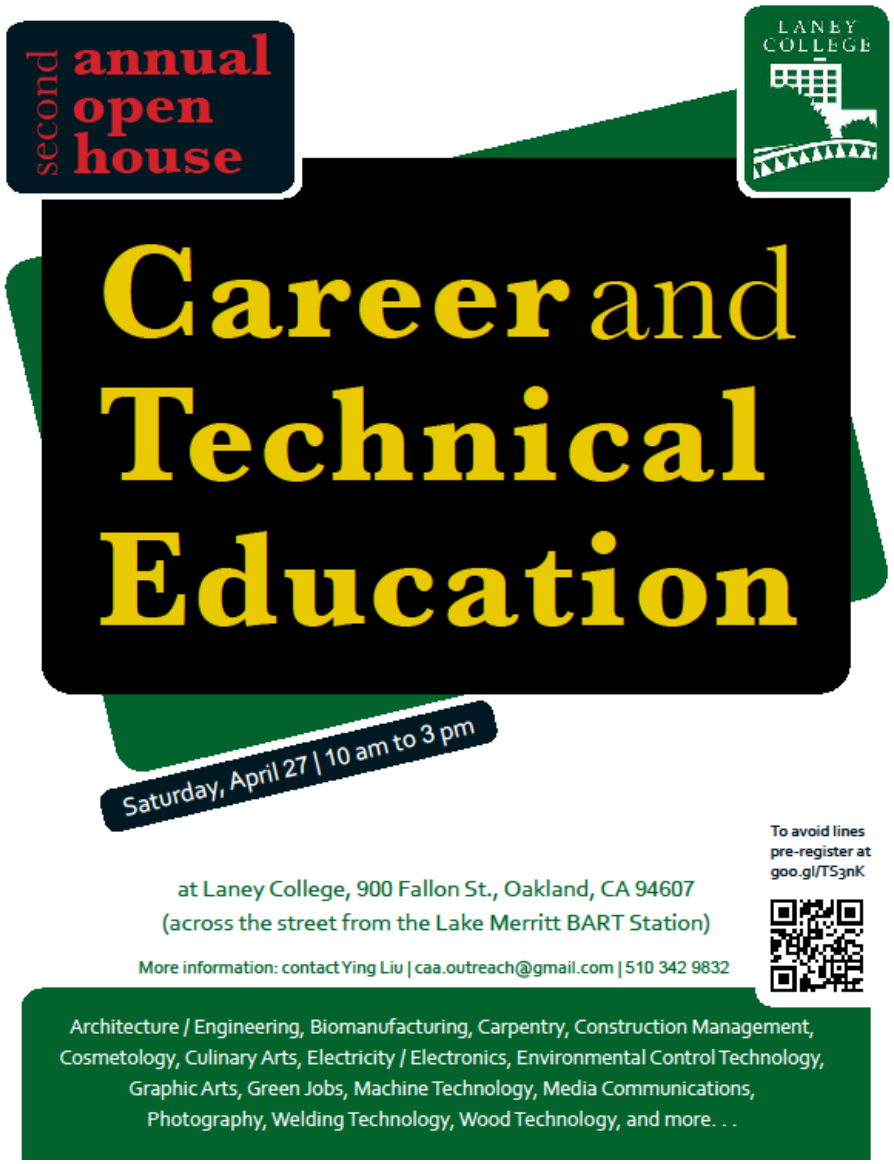
How do you get a **diversity** of students entering?

(recent high school grads, at-risk youth, opportunity youth, careers changers, vets, GED recipients, immigrants, etc.)



Building Career Pathways

- Introduction to advanced manufacturing & skilled trades at the high school (and middle school) level
  - Programs in high schools (equipment and tooling donations)
  - Community college summer programs
  - Work closely with high school teachers (training and software)
- CC bridge programs to help students find their interests and skills & prepare
  - Contextualized Math & English
- Cohort programs at the college level to help students succeed
- Building strong connections with industry to help students find jobs



Recruitment is Critical

Starts in Spring with Laney CTE Open House

Laney's 16 CTE Programs open their doors to High Schools & CBO's to display technology and discuss career opportunities.

We provide stipends for high school teachers and counselors.

Funded CTE Transitions and SB 70

iDesign-ST

Introduction to the Skilled Trades

at

Laney College in Oakland

iDesign-ST is a 4-week "sampler" course for high school & community college students interested in learning about the skilled trades (ST). This is a hands-on program where you will experience **carpentry, welding, woodworking and machining.**

If you're interested in learning about a skilled trade, but aren't sure which one to pursue, come take this course. It gives you an opportunity to learn about the excellent career opportunities in these fields. We're especially interested in graduating seniors or others who would like to start career training in the fall.

Dates: **June 17 – July 11**

- Monday – Thursday (except July 4th week = Mon – Wed)
- Carpentry, Machining, Wood Tech, Welding

Time: **9:00 am – 4:30 pm**

Location: Laney College (900 Fallon St. Oakland. BART – Lake Merritt)

Credit: 2.0 units credit

Cost: FREE

Contact: Students, teachers, and others interested in learning more, sign-up for updates at:

http://tinyurl.com/idesign-st-2013

We will notify you when the class is open for registration (enrollment limited to 25).

Questions: Mark Martin at mark.martin@design4X.com / (650) 248-7728

Summer iDesign Skilled Trades

One Project Across Carpentry, Welding, Wood Technology and Machine Technology

Targeted Population:
HS Seniors, CC Students trying to figure things out

LANEY COLLEGE

Industrial Maintenance Technician Training

Do you like working with your hands?

The Laney College Industrial Maintenance Training Program offers an intensive two semesters of hands-on training for entry-level students. This full-time program is designed to provide foundational skills in repairing and maintaining technical equipment that enable graduates to succeed in the machinist trade in such industries as water and waste water treatment, refineries, large industrial operations, and in smaller and medium sized shops.

Required Fall 2013 Courses

- Machine 210: Machining 1
- E/ET 203: Basic Electricity
- Welding 205: Introduction to Welding
- Math 220 ABC: Technical Math
- English 248: Technical Reading and Writing
- Counseling 200AB: College Success

Fall schedule is Monday thru Thursday 8am-4:30pm
Classes start August 14, 2013

Required Spring 2014 Courses

- Machine 206: Industrial Hydraulics
- Machine 220: Machining 2
- Welding 215: Welding for ECT Technicians
- Machine 205: Blueprint Reading
- E/ET 11: Commercial Wiring
- E/ET 223: Cal OSHA Safety
- Math 220 DEF: Technical Math
- Counseling 207AB: Career Exploration

Want to learn more?

- http://www.laney.edu/IndustrialMaintenance
- LaneyIndustrialMaintenance@gmail.com

Open Houses
Friday May 10th 3-4:30pm
Thursday June 27th 6-7:30pm
(priority consideration given to those attending an Open House)

Laney College
(7th and Fallon Street in Oakland)
Machine Shop, Room G-100

This program is funded through the Career Advancement Academy (CAA) and includes the following:

Book stipend
Academic counseling
Career Counseling
Strong academic support
Community learning environment
Connections to industry

Find more information, including an *application*, at:
http://www.laney.edu/IndustrialMaintenance

Open House

Demonstrate Work
Career Opportunities
Schedule Assessment
FAFSA Application
Sample Math & Spatial
Self Assessment

Interview

Review Assessment
Cover Time and Financial Commitment

Boot Camp

Building the Cohort with Teamwork Exercises
Graduate IMM Students working in the trades or internships
Industry Speakers

Intro To Manufacturing

Prepare unemployed and underemployed 18-24 year old for entry level manufacturing jobs

Or

Further education in the skilled trades

Includes

Intro to Skilled Trades course

Math 220A (pre-algebra)

OSHA safety certificate

Food handlers certificate

College & Career readiness

Industry speakers & tours

Work with WIB on job placement

Screening

Math & Reading Assessment

LANEY COLLEGE

i2m

Introduction to Manufacturing

at

Laney College in Oakland

Introduction to Manufacturing is an 8-week program for people interested in learning about the skilled trades (ST), residents of Oakland and Alameda County 18-24 years old are encouraged to apply. This is a hands-on program where you will experience **carpentry, welding, woodworking and machining.**

If you're interested in learning about a skilled trade, but aren't sure which one to pursue, come take this course. It gives you an opportunity to learn about the excellent careers in these fields. Students completing the OSHA and Food Handling courses will receive certificates that employers value. The math course will will be a refresher for the type of math used on the job site.

Dates: June 2 – July 24

- Monday – Thursday
- Program includes: Carpentry, Machining, Wood Tech, Welding, OSHA Training, Food Handler Certificate, Math 220A, Field Trips, Guest Speakers

Time: 9:00 am – 4:30 pm

Location: Laney College (900 Fallon St. Oakland. BART – Lake Merritt)

Credit: 4.5 units credit

Cost: FREE

Contact: Students, teachers, and others interested in learning more, sign-up for updates at:

http://tinyurl.com/idesign-st-2014

Questions: Matt Trocker at LaneyManufacturing@gmail.com / (510) 464-3445

This financially-assisted program or activity is an Equal Opportunity Employer/Program. Auxiliary aids and services are available upon request to individuals with disabilities.

Funded by: Alameda County Workforce Investment Board

Fall 2014

On Ramp to the Skilled Trades

A Laney College On-Ramp Program
With contextualized English, Math, computer and counseling classes for students preparing to enter CTE certificate programs

For more information or to register, contact:
Beth Maher
Tower 705
(510)464-3225
Emaher@peralta.edu

This is a cohort program. Students must enroll in all 5 classes at the same time for a total of 10 units for the semester.
You must contact a counselor or Beth Maher to enroll.

Are you starting out at Laney?

Do you think you'd like to work with your hands but you aren't sure which area you want to work in?

This program is designed to help future technical students decide on a career pathway and gain the basic math, English and computer skills they'll need in any of the skilled trades programs.

Courses

English 201A (4 units)
Preparation for Composition and Reading
This English class is designed for students who want to explore career pathways.

English 208A
Writing Workshop (1 unit)
A lab class to get hands on 1:1 assistance with student's writing.

Math 253 Pre-Algebra (3 units)
This math class applies math concepts to practical situations in the skilled trades.

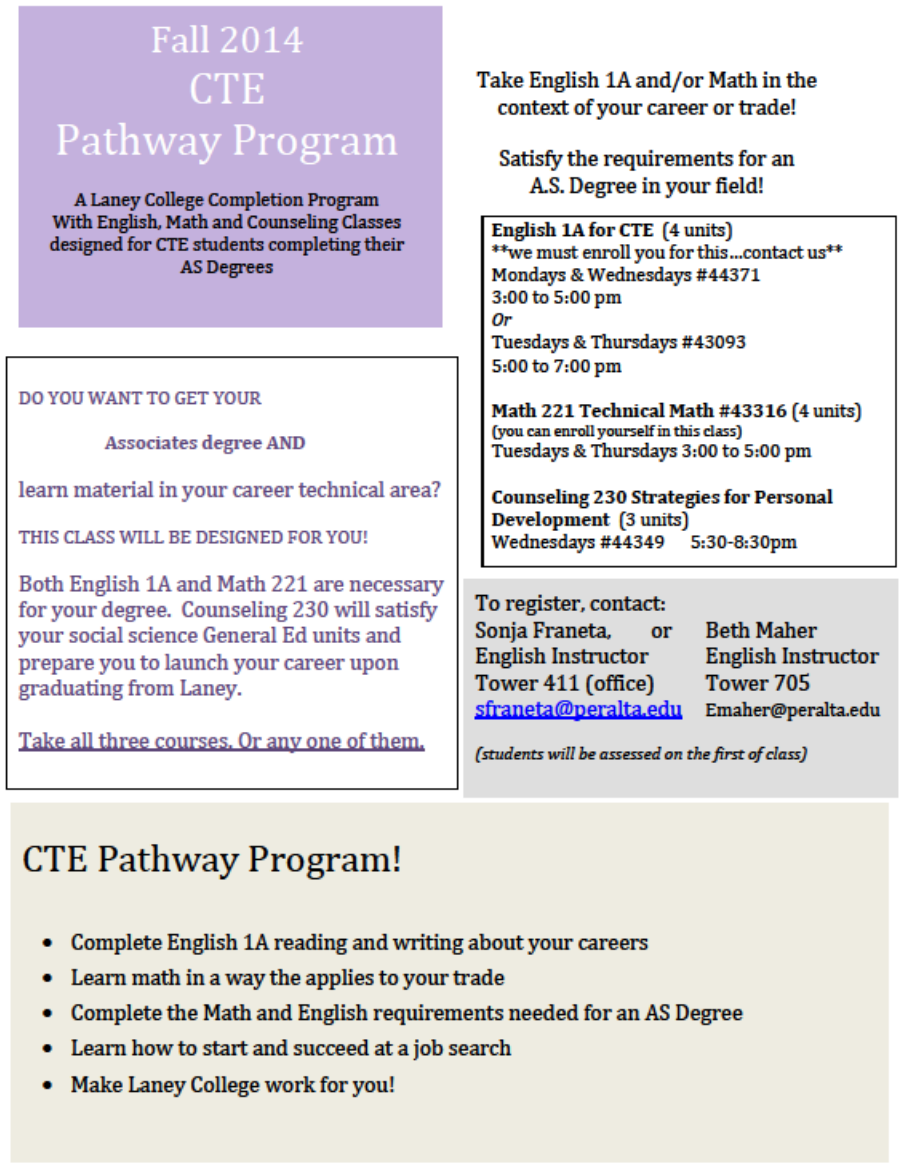
Wood Technology 211A
Basic Computerized Drafting Techniques (1 unit)
All of the skilled trades require spatial reasoning and some kind of drafting/design. This class provides the foundational skills and terminology for working with blueprints and shop drawings.

Counseling 207A
Career Exploration (1 unit)
The class will introduce students to all the skilled trades programs in the Peralta Colleges and help them decide on a career path.

On Ramp to the Skilled Trades

Focus on foundational skills preparation for success in the skilled trades. Students assessing to low for the IMM cohort now have a preparation pathway with contextualized coursework in

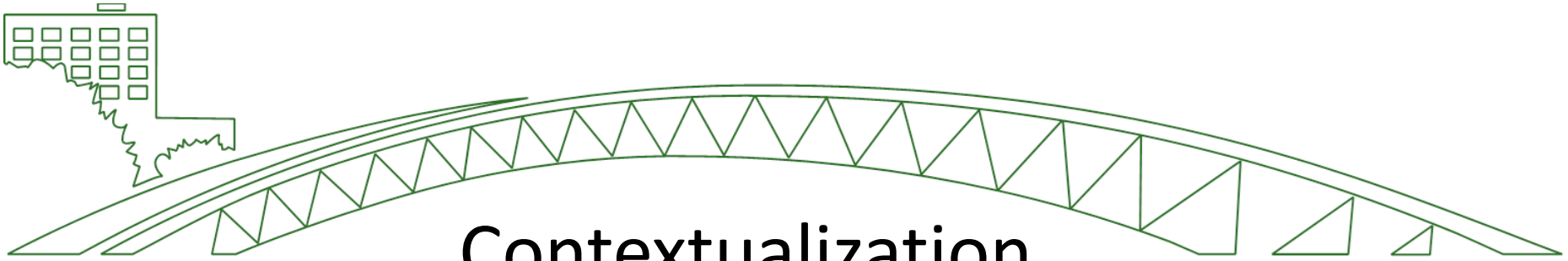
Math 253 Pre-Algebra
English 201A
English 208A Writing Workshop
Wood Technology 211A Basic Computerized Drafting (Intro to Spatial Reasoning)
Counseling 207A Career Exploration (Industry speakers and working graduates)



CTE Super Highway

Contextualized AS Degree Classes

- English 1A for CTE
  (Papers on CTE subject matter
- Math 220/221 Technical Math
- Counseling 230
  Strategies for Personal Development



Contextualization

Math is just a tool, like a wrench or set of calipers

PROJECT PLANNING WORK SHEET

OPERATION	TOOLS	CS/RPM
Center drill hole #2 or #B	#3 center drill	800 RPM to 1100 RPM Actual =
Drill 5/16 thru hole for 3/8-16 tap	5/16 HS Drill (.3125)	$\frac{60SFPM \times 4}{.3125}$ = 768 RPM Actual =
82 deg csk to .375 - .385 diameter	½ 82 deg countersink	$\frac{30SFPM \times 4}{.420}$ =285 RPM Actual =
Tap 3/8-16 threads thru	3/8-16 tap, tap wrench, and spring loaded tap guide	Hand operation
Center drill hole #3 or #C	#3 center drill	800 RPM to 1100 RPM Actual =
Drill thru hole for 10-32 socket head cap screw	#2 drill (.221)	$\frac{60SFPM \times 4}{.221}$ =1086 RPM Actual =

IMM Program Outcome

Technical literacy: Students will communicate effectively in the technical language of the maintenance machinist trade, including written verbal, mathematical and computer skills.

Math Requirements:

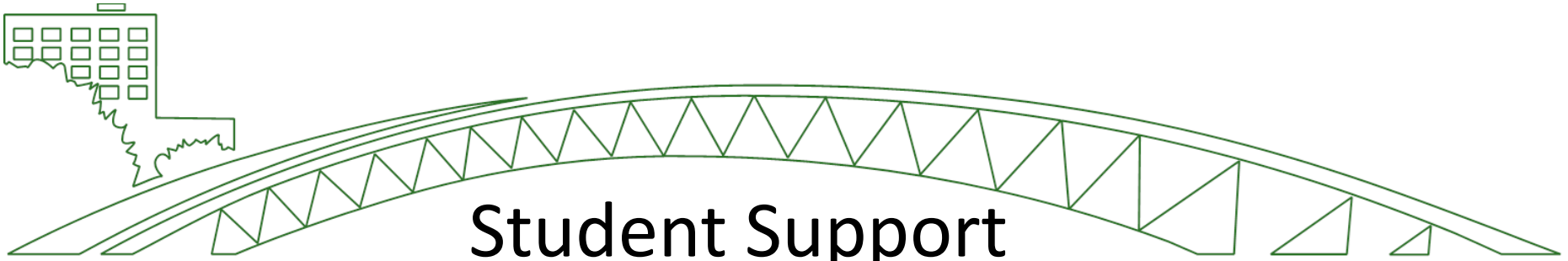
Technical Math 220A &B Elem Alg
Technical Math 220 C&D Interm Alg
Technical Math 220 E&F Geometry

Contextualization English and Counseling

First Assignment: Drill Press Planning Worksheet Into a Narrative.

Assignment : Write a personal statement as part of the application for the Gene Haas Machining Scholarships. So far 23 students have been awarded scholarships for a total of $40,000.00

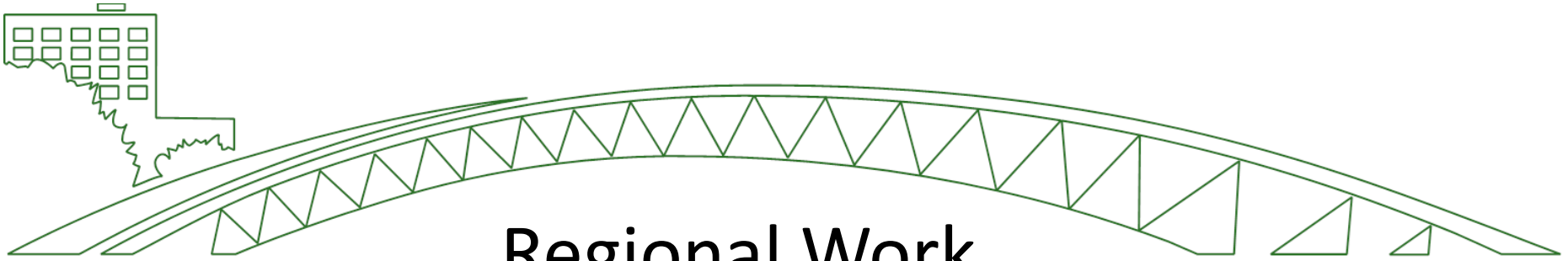
Final Assignment: Read and write a paper on Our Aging Infrastructure from Pumps & Systems a trade magazine. This will be followed up with a field trip to EBMUD where managers and workers will discuss how they deal with these issues.



Student Support

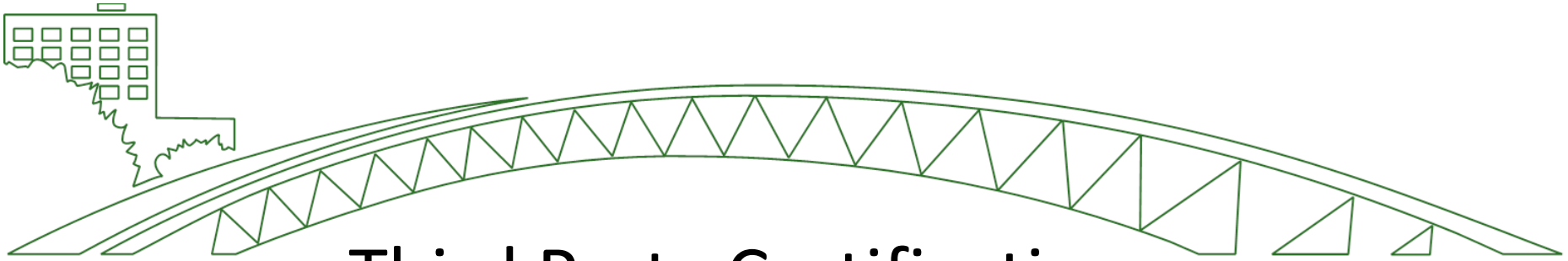
- A priority of our various grant funds has been putting instructional and counseling support in classes. Currently we are funding seven instructional aides and a part time counselor in ten different classes at a cost of $85,000

- Scholarship development. Through industry partners and the Peralta Foundation; Mach Tech students have received $80,000 in scholarship monies available to them for tuition, fees and expenses.



Regional Work

- BACCC IMM Marketplace working with industry and other community colleges (DVC, Los Medanos, Chabot, Napa) to build curriculum, internships, and placements.
- Rebuilding Regional Machinist Apprenticeship with Chabot College and De Anza College, the IAM and CTMA through an IDRC grant.
- Working with Bay Area High Schools and CPT grant to build the talent pipeline (San Leandro High, Livermore High, Granada High, John Swett High, Silicon Valley CTE) providing tooling, machines, software and training.



Third Party Certification

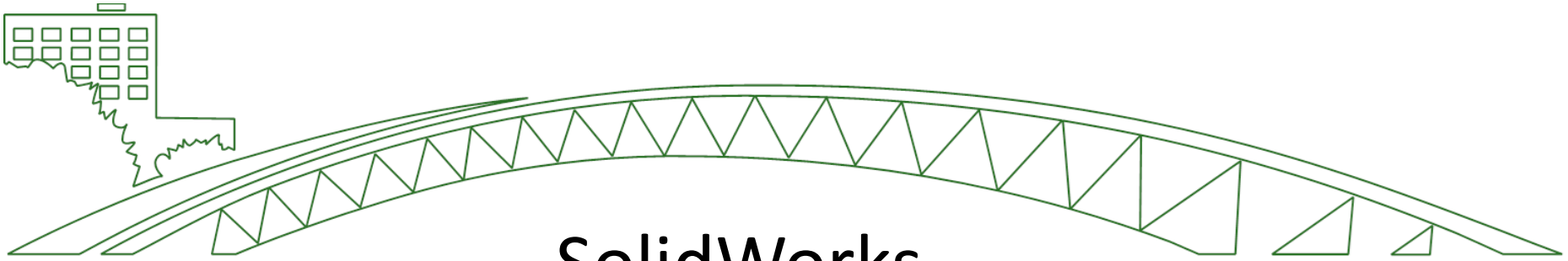
National Institute of Metalworking Skills

The National Institute for Metalworking Skills (NIMS) was formed in 1995 by the metalworking trade associations to develop and maintain a globally competitive American workforce. NIMS sets skills standards for the industry, certifies individual skills against the standards and accredits training programs that meet NIMS quality requirements.

NIMS operates under rigorous and highly disciplined processes as the only developer of American National Standards for the nation's metalworking industry accredited by the American National Standards Institute (ANSI).

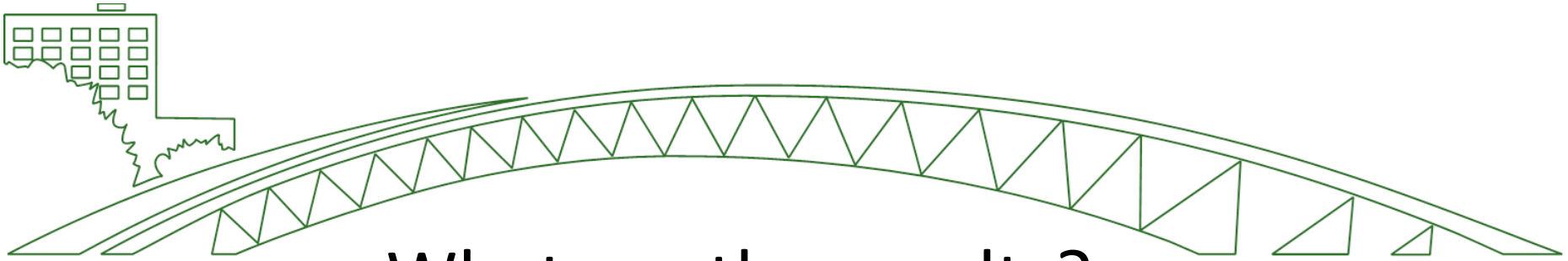
National Institute of Metalworking Skills (NIMS)

Laney College is one of only three community college machining programs accredited in CA. Laney students have earned 150 NIMS Certificates in various skill areas in the last year.



SolidWorks Certification

- Over the past four years 85 students have earned SolidWorks Certification at the Associate and Professional level.
- At the 2012 SolidWorks World Conference the Laney College SolidWorks User Group (SUG) was voted one of the top four in the world.



What are the results?

- Full classes running from 8 AM to 10 PM and 9 AM to 6 PM on Saturday with 250 students enrolled in Machine Technology classes.
- Students placed in 19 paid internships lasting 10-12 weeks at an average of $20 an hour.
- Over 50 students placed in the last 2.5 years at companies like Google, Tesla, UC Space Sciences Lab, Lawrence Berkeley Lab, Terminal Mfg. FM Industries, EBMUD, Union Sanitary District, POSCO Steel.

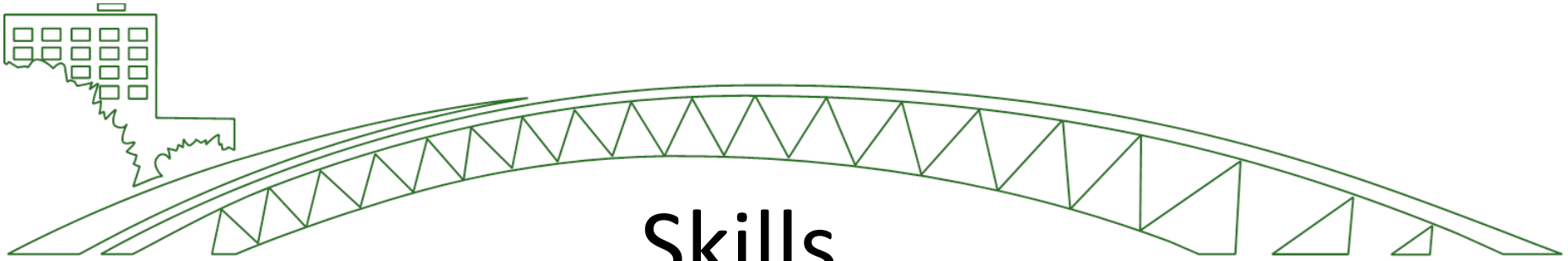
Our Challenges

How do we institutionalize resources like the $80,000.00 we are currently spending on counseling and instructional aides from grant funds?

How do we attract young people from high schools to manufacturing with high demand, high wage jobs?

Laney College

Additional Information



Skills

- Theory and design of machine tools and machinery
- Properties of materials, including heat-treating
- Laboratory courses focused on hands-on operation of machine tools
- Technical mathematics
- Precision measurement and layout and inspection
- Blueprint reading, geometric dimensioning and tolerancing,
- 3-D solid modeling (SolidWorks)
- CNC setup, operation and programming, and CAD/CAM programming

College: Laney College

Sector: Advanced Manufacturing

DBS Design It - Build It - Ship It

NOTES	ACADEMIC PROGRAM OF STUDY	INDUSTRY CERTIFICATION	JOBS & WAGES

ADVANCED LEVEL

Transfer to the CSU/UC system requires completing articulate coursework.

An Associate of Science Degree may be obtained by completing General Education requirements, in addition to the required courses for the major.

UNIVERSITY DEGREE

Industrial Technology, BS
- SJSU -

A.A./A.S. DEGREE / TRANSFER

Machine Technology, AS

Welding Technology, AS

Industrial Maintenance, AS
(in development)

General Education | CTE Pathway Program (11 units) A.S. requirements

- National Institute for Metalworking Skills-NIMS Level 2 Journey Level
- Computer Numerical Control
- Solidworks Professional

Advanced Level Employment:
- Apprentice Machinist $20-30/hr
- Maintenance Mechanic $20-30/hr
- Plant Maintenance Worker II, $20-30/hr

MID LEVEL CERTIFICATE

Inspection Certificate
(in development)
- MACH 210 Machine Technology I (5 units)
- MACH 205 Engineering Drawings for Machinist, Welders & Industrial Maintenance (3 units)
- MACH 75 Geometric Dimensioning & Tolerancing (2 units)
- MACH 20 CAD Solid Modeling with Solidworks (4 units)
- Inspection Process (3 units)

Advanced Industrial Maintenance
(22 units) / 2 semesters
- MACH 208 Theory, Operation and Maintenance of Industrial Pumps
- MACH 230 Machine Technology III
- WELD Pipe Fitting, Stick Welding
- MACH Valve Repair
- MACH Drive Mechanism
- MACH Pump Repair
- MACH Automation System

MID LEVEL

MID LEVEL CERTIFICATE

Machine Technology
(37 units)

Fourth Semester
- MACH 31 Advanced CNC and CAD/CAM Programming (4 units)
- MATH 220G Technical Math with Trigonometry (1 unit)
- WELD 205 Intro to Welding (3 units)

Third Semester
- MACH 30 Intro to CNC Programing and CAD/CAM Technology (4 units)
- MACH 230 Machine Technology III (5 units)

Second Semester
- MACH 20 CAD Solid Modeling with SolidWorks (4 units)
- MACH 220 Machine Technology II (5 units)
- MATH 220E-F Technical (1 unit) Math with Geometry (1 unit)

First Semester
- MACH 205 Engineering Drawing (3 units)
- MACH 210 Machine Technology 1 (5 units)
- MATH 220A-D Technical Math with Algebra (2 units)

Industrial Maintenance CAA (17 units) / 1 semester

Second Semester
- MACH 206 Industrial Hydraulics (2 units)
- MACH 220 Machine Technology II (5 units)
- MATH 220D-F Technical Math with Algebra/Geometry (1.5 units)
- E/ET 11 Commercial Electricity for HVAC (2 units)
- E/ET 223 CAL-OSHA 30hr for Construction Industry (2 units)
- WELD Welding for ECT Technicians (1.5 units)
- ESL 214/224 Contextualized Reading and Writing for CTE Students
- COUN 207B Career Exploration

- National Institute for Metalworking Skills-NIMS (Basic)
- Manufacturing Skills Standards Council-MSSC American Welding Society
- Drill Press
- Vertical Milling OSHA Safety 30 hr

Intermediate Level Employment:
- Production Machinist Intern, $20-$30/hr
- Machine Operator, $20-$30/hr

ENTRY LEVEL

Bay Area Machinist Apprenticeship: DeAnza College, Chabot College, and Laney College.

Certified by the Divsion of Apprenticeship Standards and DOL.

ENTRY LEVEL CERTIFICATE

Industrial Maintenance (29.5 Units)

Second Semester
- MACH 206 Industrial Hydraulics (2 units)
- MACH 220 Machine Technology II (5 units)
- MATH 220D-F Technical Math with Algebra/Geometry (1.5 units)
- E/ET 11 Commercial Electricity for HVAC (2 units)
- E/ET 223 CAL-OSHA 30hr for Construction Industry (2 units)
- WELD Welding for ECT Technicians (1.5 units)

First Semester
- MACH 205 Engineering Drawings for Machinists, Welders, and Industrial Maintenance (3 units)
- MACH 210 Machine Technology I (5 Units)
- MATH 220A-C Technical Math with Algebra (1.5 units)
- E/ET 203 Basic Electricity (3 units)
- WELD 205 Intro to Welding (3 units)

Career Advancement Academy - Industrial Maintenance
(17.5 units) / 1 semester

First Semester
- MACH 210 Machine Technology 1 (5 units)
- E/ET 203 Basic Electricity (3 units)
- WELD 205 Intro to Welding (3 units)
- MATH 220 A-C Technical Math (1.5 units)
- ESL 214/224 Contextualized Reading and Writing for CTE Students
- COUN 207A Career ExplorationW

- Measurement Materials & Safety
- Benchwork & Layout
- National Career Readiness Certificate- NCRC
- Food Handler Certificate

Entry Level Employment:
- Machine Shop Helper, $14-$18/hr
- Machine Operator, $14-$18/hr

Machining | Industrial Maintenance

BRIDGE

i2m - Introduction to Manufacturing (4.5 units)
Carpentry, Wood Technology, Machining, Welding, OSHA 10, Food Handler Certificate, Math, Career Success
8-week Summer Program for 18-24 yr olds

On Ramp to Skill Trades
(10 units)
- ENG 201A Prep for Composition and Reading (4 units)
- ENG 208A Writing Workshop (1 unit)
- MATH 253 Pre-Algebra (3 units)
- WDTEC 211A Basic Computerized Drafting (1 unit)
- COUN 207A Career Exploration (1 unit)
1 semester cohort

Career Advancement Academy Bootcamp

iDesign Skilled Trades (2 units)
Carpentry, Wood Technology, Machining, Welding, Career Success
4 week summer program for High School students

Transportation & Logistics
Advanced Manufacturing
Bio Sciences

Programs
Programs In Development

Pathways to Programs
Optional Pathways

Certificates/Permits/Credentials

Prerequisites

CAREER LADDERS PROJECT

May 29, 2014

Industrial Maintenance Pathway