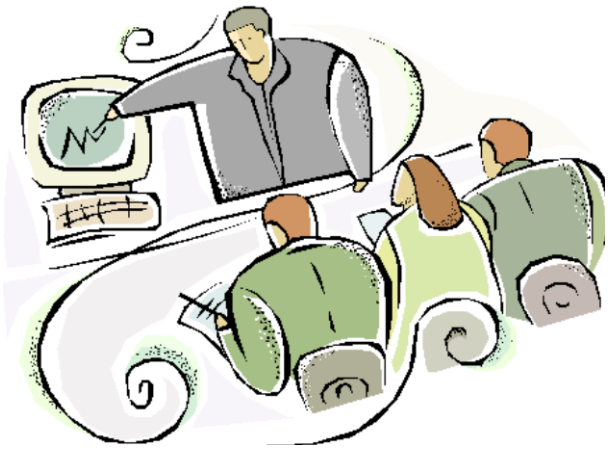
Product Development & Process Improvement

Training Catalog

Licensed by the State of Michigan



Optimizing performance by accelerating experience

THE CENTER FOR PROFESSIONAL STUDIES

Training Catalog

Volume 21, Publication and Effective Date 13 August 2012

The Center for Professional Studies, LLC
811 West Square Lake Road
Troy, Michigan 48098

Table of Contents

The content of this catalog reflects information available at the time of publication. **CPS** reserves the right to make reasonable changes at its discretion to the content of this catalog to improve and update the academic programs.

General Information

Mission Statement

- Mission

  Provide world class, hands-on application, industry specific and current technical education developed and delivered by professional multi-industry experts

- Commitment

  Constantly evaluate and update effective curriculum using industry leaders to meet the current challenges of the market

- Belief

  These steps will direct the future of technical training to the many industries we serve and deliver it in a cost effective manner

History

1993	Founded by Kas Kasravi as a licensed educational and training institute
1994	Awarded the largest State of Michigan training grant
1997	"Campus Training Partner" status with Alias
1998	Authorized trainer for GM in Unigraphics
1999	Preferred training source for all major CAD systems
2002	Incorporated engineering tools & techniques curriculum
2005	Education partner status with Dassault Systems
2006	Incorporated Designing Engineer curriculum
2007	Incorporated Program Management & PMP certification
2008	Incorporated Lean Six Sigma Green & Black Belt certification
2009	Incorporated Business Management curriculum
2010	Incorporated Simulation / Test Engineer curriculum
2011	Approved OCC vendor for economic workforce development
2012	Approved Compressed Natural Gas Vehicle Development curriculum
2012	Approved Automation Alley vendor for talent development program

What CPS Offers

Efficient focused classes taught by industry experts
Flexible training schedules
Efficient training techniques to maximize learning
Real life application of the training subject
Company specific projects worked on applying standard
Experience in all key engineering tools and techniques
Approved vendor of training services
Michigan Department of Career Development License
Expertise in petitioning, developing & executing training grants
Proven & constantly updated curriculum
Curriculum that can be customized for specific corporate needs
Placement services are offered to all CPS students on request

Licensing

CPS is licensed by the State of Michigan as a clock hour training institution (Number **20030002)**

Enrollment Information

Admissions

1. All students must submit a copy of their earned High School diploma, GED, or equivalent prior to enrollment
2. Students that have attended courses elsewhere and wish to have certain classes waived must submit certificates or transcripts of classes taken elsewhere
3. Students desiring enrollment into a CAD program must possess basic computer skills
4. Students desiring enrollment into any Certificate Program must possess basic math and reading skills
5. All students must read the General Information regarding **CPS** and its procedures prior to enrollment
6. All students must complete and return a **CPS** Registration Form and remit full tuition payment in order to be enrolled
7. All students are expected to be proficient in the English language
8. International students may be required to submit satisfactory TOEFL (Test of English as a Foreign Language) scores prior to admission

Enrollment

- Review the catalog, schedule, complete the enrollment agreement, proof of High School Diploma (or equivalent), any pre-requisite courses and appropriate tuition payment to the Office of the Registrar
- Full payment is required for registration
- Tuition is published in the Training Schedule and covers all costs for training
- Textbooks, manuals, supplements, and course packs are ***not*** included in the tuition
- **CPS** accepts VISA, MasterCard, American Express, check, money order, company purchase orders, or approved training vouchers
- Please make checks payable to **The Center for Professional Studies**
- Telephone, fax and on-line enrollments must be accompanied by credit card or purchase order number
- Registration will not be finalized until proof of High School Diploma (or equivalent) and proof of any pre-requisite course(s) has been received
- Withdrawal from class does not affect the student's financial liability for the class
- International students must submit acceptable TOEFL (Test of English as a Foreign Language) scores and schedule an interview with the **CPS** Career Development Facilitator prior to admission
- A confirmation of student enrollment will be mailed by **CPS** upon receipt of
    1. Enrollment agreement
    2. Proof of High School completion
    3. Proof of pre-requisites
    4. Full payment
- A Certificate of Achivement will be awarded to students successfully completing each class and remaining in good standing under the Student Code of Conduct guidelines
- Certificates and transcripts will ***not*** be issued unless all academic and tuition requirements have been met in full
- Replacement certificates are available at the cost of $15 per certificate
- Transcripts are issued upon on request at the cost of $10 per transcript

Holidays

No classes or exams are held during the following holidays:

New Year's, Easter, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas

Additional Information

Cancellation and Refund Policy

CPS offers *Classes* and *Programs*:

- Students enrolling in Programs may pay tuition based on the scheduled *Program* tuition or may choose to pay tuition on a *Class* basis as listed in the Schedule of Classes
- All monies paid shall be refunded if the applicant is rejected by the school before enrollment
- An application fee of $25.00 will be retained by the school if the applicant is denied
- All monies will be refunded if requested with three business days after signing an enrollment contract
- All refunds will be returned within 30 business days

For Program Enrollment:

- Students paying tuition on the *Program* basis will be entitled to a refund, if requested, calculated on an hourly prorated scale
- The calculation will be the hours attended divided by the total *Program* hours and rounded down to the closest 10% of completion
- No refunds will be issued after a student has completed more than 60% of the *Program*

For Class by Class Enrollment:

- All refunds due the student will be refunded within 30 business days of the last day of attendance.
- **CPS** reserves the right to cancel any class or class session
- Students will be promptly notified in such an event, as long as contact information is provided and updated to **CPS** by the student
- Classes may be cancelled due to adverse weather conditions or systems failures or other unforeseen situations, such as power outages
- In such an event, **CPS** will endeavor to contact each student in as timely a manner as possible
- **CPS** will also inform the radio station when there is a total school closing
- Make-up sessions will be scheduled in case of any cancellation
- **CPS** reserves the right to schedule additional classes (based on demand)
- A $30 service fee will apply to all returned checks
- All course offerings, schedules and fees are subject to change

Termination Policy

A student is subject to termination for violating any of the following:

- Failure to maintain satisfactory progress in the class or failure to complete the training within the maximum time frame
- Failure to achieve the knowledge and skills required by the occupation for which the training is intended
- Failure to comply with the **CPS** attendance policy
- Failure to comply with the **CPS** Student Code of Conduct
- Failure to meet all financial obligation to **CPS**
- Violation of any of the conditions as set forth and agreed to on the Registration Form

Probation Policy

CPS students in jeopardy of termination due to any reason (as listed above in the Termination Policy) will be notified by **CPS** in writing that continued unsatisfactory progress will result in termination. Reinstatement request should be addressed to the **CPS** Career Development Facilitator for review.

Class Schedules and Tuition

CPS's class schedule accommodates full-time and part-time students. Full-time student status is defined at an average of 8 contact hours per week over the duration of the program.

CPS publishes detailed class schedules several times per year, and CPS's web site provides the most up-to-date class schedule. These schedules with published tuition become part of this catalog. Unless otherwise noted, published tuition includes books and all fees.

Severe Weather Cancellations

CPS will cancel class for severe weather conditions and make up time will be scheduled at a later date. When the Troy Schools system has canceled classes due to severe weather conditions CPS will also cancel classes.

Student Code of Conduct

To best prepare **CPS** students for a successful career, as well as to maximize training, all students are required to adhere to the following Code of Conduct while attending **CPS** classes. Violations of the **CPS** Student Code of Conduct may result in the student's dismissal without refund. The student in poor standing will also be removed from the **CPS** Graduate Placement Assistance Referral List and will no longer be allowed to enroll into or attend future **CPS** classes.

CPS' Student Code of Conduct includes, but is not limited to the following:

- Students must conduct themselves in a professional and non-disruptive manner, demonstrating respect towards fellow students, staff, and facility hosts
- Students must not exhibit violence, insubordination, or inappropriate language toward any school staff or another student
- The destruction or damage of school or facility property is prohibited
- Many **CPS** classes are held in industrial facilities for maximum learning opportunity. In these facilities, the students must respect all building and security guidelines, keep the facilities clean and tidy, and avoid any damage to the equipment, facility or personal property
- Food and beverages may be consumed in designated areas only
- Smoking is permitted outside the buildings only
- Use of any illegal drugs or alcohol on school property or attending school while under the influence of illegal drugs or alcohol is prohibited
- **CPS** students must complete their homework (in a timely manner) and exams without receiving unfair assistance from others
- Cheating on exams will be grounds for immediate dismissal without reimbursement of any kind
- Certificates and transcripts will ***not*** be issued unless all academic, attendance and tuition requirements have been met in full, and student is in good standing
- **CPS** students are expected to demonstrate a full commitment to learning by regularly attending classes and completing the assignments, unless excused due to emergencies

Tardy, Attendance and Make-up Work

Tardiness is defined as being 20 minutes (or more) late to class. Twenty minutes after the start of class, a student is considered tardy. If a student is tardy three times, it will be equal to one absence. Students that are not in attendance for at least 50 percent of the scheduled class time for a class period will be considered absent for that class.

Good student attendance and punctuality is vital to successful completion of training and successful careers. If a student's cumulative tardiness and absences are equivalent to missing more than 20% of the total clock hours of the course, the student's grade will reflect the poor attendance. More than 25% absence constitutes grounds for a failing grade or an incomplete, depending on the circumstances. Whenever possible, students should notify the instructor of the **CPS** Career Development Facilitator of an upcoming absence or tardiness, so that makeup work or other arrangements can be made to compensate for the absence.

Training must be completed within a timely manner: for a clock hour program, the maximum time frame shall not exceed 1.5 times the normal duration of the program. If a student cannot complete the training within the maximum time frame, the student may be terminated from the program. An "Incomplete" is assigned as a grade until the student makes up the missed assignment or exam. Students have one week to turn make-up work into **CPS** before this grade is reassessed.

Students will be required to make up all assignments, exams, or other work missed as the result of any excused or unexcused absence. The student must make arrangements with the instructor to ensure that all work is made up before the end of the module in which the work was missed. The instructor may assign additional outside make-up work if deemed appropriate. Arrangements to take a missed exam must be made with the instructor within one week of returning from an absence. All arrangements are subject to approval by the Career Development Facilitator and/or the **CPS'** Managing Director.

The Grading System

The grading system used by the school to indicate student progress:

Pass	70% or better
Fail	below 70%

Scoring breakdown

10%	Attendance
10%	Participation
40%	Project
40%	Exam

CPS measures classes only in "contact hours." A "contact hour" is defined as 50 minutes of instruction or contact per hour that students will receive, depending on the class schedules or breaks.

Students must achieve satisfactory progress in every class in the program sequence to be admitted in to the next class. **CPS** recognizes 70% or better as satisfactory progress. If a student is withdrawn from a class or a class is cancelled, the student is not affected by these statuses.

Grievance Procedures

Student Grievance Procedures are available for any student who believes he or she has a grievance against the faculty, or where procedures for the resolution of that grievance are not provided for by other means. Students should first discuss any concern with the staff member involved or the course coordinator.

If a student is unable to resolve a grievance by other means, he or she should contact the Managing Director and explain in writing the basis of the grievance. The Director will attempt to negotiate a successful resolution to the grievance. If required, a complaint will be heard and resolved by the faculty's grievance committee.

The office of the Career Development Facilitator receives complaints about administrative matters and is charged with investigating and settling complaints.

Students who wish to file a complaint with the State of Michigan may do so at www.michiganps.net.

Any student can submit a grievance based on the following:

1. With a question about interpretation or application of a **CPS** school policy or procedure
2. That is in disagreement with any non-academic service provider or supervisor
3. That feels that he or she has been treated unfairly
4. that has some problems which have not been resolved to his or her satisfaction

Training Center

CPS's training center is co-located at the MSU Management Education Center located in Troy, Michigan. The center occupies 24,000 sq. ft. of office space, including a training room, administrative offices and a resource library. The training facilities include computer workstations and software for teaching computer based classes.

Nondiscriminatory Policy

The Center for Professional Studies admits students of any race, color, religion, national and ethnic origin to all the rights, privileges, programs, and activities generally accorded or made available to students at the school. It does not discriminate on the basis of race, color, religion, national and ethnic origin in administration of its educational policies, admissions policies, scholarships and loan programs, athletics, and other school-administered programs.

Tuition Assistance

CPS cooperates with many community agencies to assist students in obtaining tuition assistance. The following agencies may assist eligible clients with tuition. Additional agencies can be found in the Blue Pages of your local phone directory.

Michigan Educational Development Commission
Michigan Rehabilitative Services
Ferndale Project Jobs
Southfield Career Center
Oak Park Career Center
Macomb and St Clair Michigan Works!
North Oakland County Career Center
Troy Career Center
Job Link
Goodwill Industries
Waterford Career Center
Operation ABLE

CPS Course Methodology

Optimizing performance by accelerating experience

Lectures

- Outlining the theory and standardized accepted methodology
- PDF file of lecture material is provided for the students personal use
- Lecture note outlines to help the student capture personal notes

Specific Industry Examples

- Real life industry examples that detail out the application of the standard
- Demonstrate how different companies apply these tools and techniques
- Detailed discussion on how company cultures dictate the application of the standard

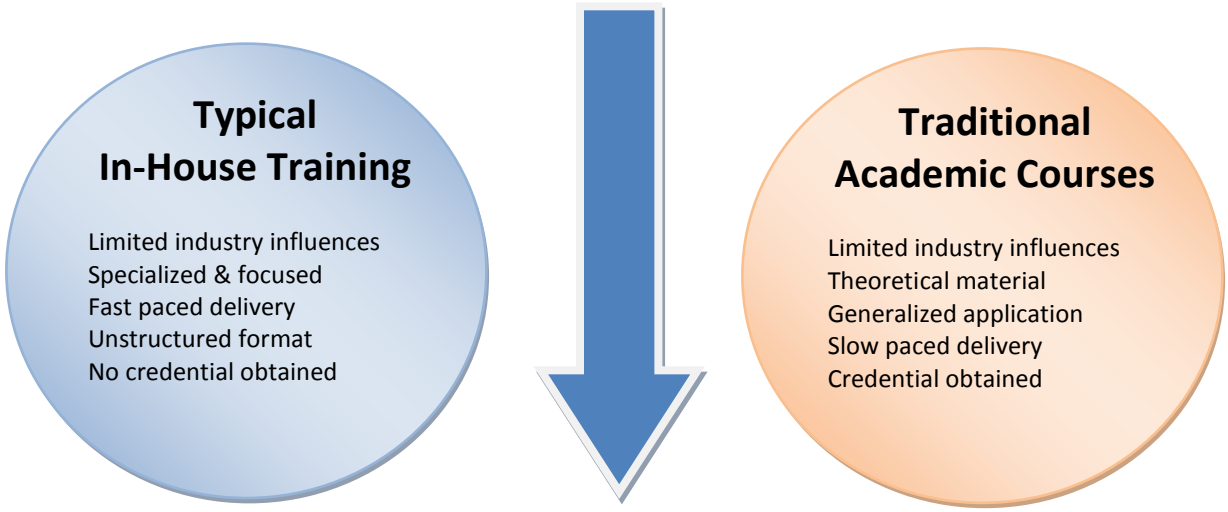
In-Class Assignments

- Student will conduct several projects that outline each key principal of the standard
- These projects increase in complexity as the students further develop their skills
- Students will present their work to the group for review and discussion
- Detailed discussion regarding each project and how it meets the standard

Specific Company Application

- Specific projects that apply these tools and techniques on specific company projects
- Build a standard methodology for appropriate application at the operation

Center for Professional Studies



Up to date industry input from industry experts
Relevant perspective of subject application
Small, fast paced, specialized, efficient and focused
Licensed Vocation School with the State of Michigan
Approved training provider with multi industry based firms
Flexible training schedules and locations
Student assessment, evaluation and certification

Corporate Training Services

Training programs may be customized to meet the needs of its corporate clients. Specifically, **CPS** offers the following training services to corporations:

- Grant Preparation
  Identify grant opportunities and assist with the subsequent preparation of the grant application
- Needs Analysis
  Consultation to establish an optimum training program for the individual client
- Custom Course Development
  Develop customized courses in any CAD related subject, based on demand
- In-house Training
  Classes may be held at client's location, minimizing facilities charges, and student travel time
- Volume Discounts
  Reduced training rates may be available for volume corporate training
- Certified Training Courses
  Authorized training partners: LMS International, Minitab, Unigraphics, PTC, Dassault Systemes and Rhino

List of CPS major Corporate Clients

- Original Equipment Manufacturers (OEM's)
  Chrysler, Ford, General Motors, UAW (GM, Ford & Chrysler), Porsche, Saab, Saturn, US Army, General Dynamics, Norwegian Jakes, Henry Ford Hospital
- Major Tier Suppliers
  AVL International, Arbor Plastics Technology, American Axle, Automotive Industries, AxleTech International, Budd, Detroit Diesel, Findlay, ITT, Karmann, Key Plastics, Lear, Magna, Magna Steyr, Piston Group, Quality Metal Craft, Tower, Trico, United Technologies, USM Manufacturing, Valeo
- Major Engineering Suppliers
  Aerotek, Altair, Comau, EDAG, EDS, Efficient Engineering, Engineering Technology, Global Tech, Gonzalez Engineering, Grand Design, Hawtal Whiting, Kuka, Modern Engineering, MSX International, Axiem, Engineering Solid Solutions, Hubert Group, New Dimensions, RCO, True Kraft, Troy Design, Utica Enterprises, Waltonen Engineering, Wisne Design
- Governmental Institutions
  Central Michigan University, City of Detroit, City of Southfield, Greater Pontiac Area Consortium, MESC, Oakland Community College, Schoolcraft College, Thumb Area Consortium, Washtenaw County E & T Group.

Certificate Programs

Designing Engineer

400 Contact Hours Certification with multiple CAD systems

Designing Engineer is focused on the technical professional who will be creating new products for multiple industries. This certificate represents the successful completion of all the key skills required to develop complex products in major industries.

Prerequisite: Minimum of 5 years experience in developing products

Curriculum Leader: Daryl Patrishkoff, PMP, CEO of the Center for Professional Studies
Bachelors and Masters Degrees
30 years in product engineering and management of global operations

Targeted Participants: Executives, Directors, Managers, Supervisors, Product Engineers, CAE Analysts, CAD Designers, Technicians, Sales Professionals

Targeted Industries: Automotive, Transportation, Specialty Vehicles, On-Highway, Off-Highway, Military, Aerospace, Energy, Ecology, Alternative Fuel Products, Medical Device Products, Consumer Products

Targeted Positions: Product Designing Engineers in multiple industries who develop multiple types of products for production

Objective: Well rounded curriculum that addresses specific job skills, tools and techniques that a Product Designing Engineer relies on to develop their specific product. These standard skills, tools and techniques apply to multiple industries, giving the participant a broad skill set to perform multiple tasks in their current position or improve their marketability.

Core Courses:
Competent Technical Communication
Program Management
Dimensional Analysis (GD&T)
Test to Failure (TTF)
Choose (1) set of CAD courses from the following list:
- Catia V5 Essentials and Mechanical Design Expert
- Pro Engineer and Advanced Pro Engineer
- Unigraphics NX7 and Advanced Unigraphics NX7

Elective Courses (choose 4):
PMP Examination Preparation
Total Quality Management (TQM)
Alternative Energy Technologies Overview
Lean Manufacturing
Lean Six Sigma 1 (2 classes)
Lean Six Sigma 2 (2 classes)
Root Cause Analysis
APQP, FMEA & PPAP
Computer Aided Engineering (CAE)
Digital Signal Processing in Noise and Vibration Testing
Experimental Modal Analysis

Certificate Programs

Simulation / Test Engineer

400 Contact Hours with multiple CAE and test systems

A Simulation / Test Engineer are focused on the technical professional who will be creating and refining new products for multiple industries. This certificate represents the successful completion of all the key skills required to analyze and validate complex products in all major global industries.

Prerequisite:	Minimum of 5 years experience in product development
Curriculum Leader:	Kevin Grenier, Senior Technical Specialist at LMS International Bachelors and Masters Degrees 20 years in the Test and Hybrid Simulation engineering profession
Targeted Participants:	Executives, Directors, Managers, Supervisors, Product Engineers, CAE Analysts, Test Engineers, Sales Professionals
Targeted Industries:	Any industry that develops products, manufactures products, assembles products or provides a service to companies or consumers
Targeted Positions:	Technical Managers, Product Design, Test or CAE Engineers, Technicians who develop multiple types of products
Objective:	Present a well rounded curriculum that addresses specific job skills, tools and techniques that an Engineer relies on to develop their specific product. These standard skills, tools and techniques apply to multiple industries, giving the participant a broad skill set to perform multiple tasks on their current position or improve their marketability for prospective positions.
Core Courses:	Competent Technical Communication Computer Aided Engineering (CAE) Digital Signal Processing in Noise and Vibration Testing Experimental Modal Analysis Rotating Machinery Testing and Source Path Models Simulation for Kinematic and Dynamic Behavior and Fatigue Life Design of Hydraulic and Thermal Fluid Systems
Elective Courses (choose 3):	Numerical Optimization Methods for Correlation and Updating Design of Vehicle Energy Management for Improved Performance Acoustic Simulation Sound Engineering Testing and Analysis Advanced Modal Analysis Test to Failure (TTF) Program Management PMP Examination Preparation Unigraphics Advanced Unigraphics Pro Engineer Advanced Pro Engineer

Certificate Programs

Program Management

400 Contact Hours with Preparation for the PMP Certification

Program Management is focused on the professional who manages complex programs from concept, design, validation, launch and continuous improvement stages of development. The PMP certification is globally recognized across all major industries as an effective way to manage the organizations key corporate initiatives.

Prerequisite: Minimum of 8 years experience in managing projects

Curriculum Leader: Daryl Patrishkoff, PMP, CEO of the Center for Professional Studies
Bachelors and Masters Degrees
30 years in product engineering and management of global operations

Targeted Participants: Executives, Directors, Managers, Supervisors, Product Engineers, Manufacturing Engineers, Production Engineers, Analysts, Designers, Technicians, Program Managers, Product Specialists, Sales Professionals

Targeted Industries: Any industry that develop products, manufacture products, assembles products or provides a service to companies or consumers

Targeted Positions: Executives, Directors, Managers, Supervisors, Product Specialists and Program Managers that mange large complex projects

Objective: Present a well rounded curriculum that addresses specific job skills, tools and techniques a Program Manager relies on to execute their complex projects. Deliver the knowledge and skills required to pass the Project Management Institute's PMP certification test.

Core Courses:
Competent Technical Communication
Program Management
APQP, FMEA & PPAP
Root Cause Analysis
Lean Manufacturing
PMP Examination Preparation

Elective Courses (choose 4):
Total Quality Management (TQM)
Lean Six Sigma 1 (2 classes)
Lean Six Sigma 2 (2 classes)
Alternative Energy Technologies Overview
Dimensional Analysis (GD&T)
Computer Aided Engineering (CAE)
Test to Failure (TTF)
Digital Signal Processing in Noise and Vibration Testing
Experimental Modal Analysis
Unigraphics
Advanced Unigraphics
Pro Engineer
Advanced Pro Engineer

Certificate Programs

Lean Six Sigma Black Belt

400 Contact Hours with Provided Project for Certification

Lean Six Sigma is focused on the professional who desires to attain a Black Belt certification which is recognized in multiple global industries. We provide a partnering company and project for your certification. Once certified, the candidate is globally recognized in all major industries as a change agent who can drive efficiency into the organization.

Prerequisite: Minimum of 5 years experience

Curriculum Leader: David Patrishkoff, President of Innovative Solutions Group
Bachelors and Masters Degrees
30 years in product engineering and management of global operations

Targeted Participants: Executives, Directors, Managers, Product Engineers, Manufacturing Engineers, Production Engineers, Analysts, Designers, Technicians

Targeted Industries: Any industry that develop products, manufacture products, assembles products or provides a service to customers

Targeted Positions: Executives, Directors, Managers, Product Engineers, Manufacturing Engineers, Production Engineers, Analysts, Designers, Technicians

Objective: Present a well rounded curriculum that addresses specific job skills, tools and techniques a Black Belt Six Sigma Professional relies on to initiate and perform their improvement projects. Deliver the knowledge and skills required to successfully document an improvement project and achieve certification.

Core Courses:
Competent Technical Communication
Lean Manufacturing
Total Quality Management (TQM)
Lean Six Sigma 1 (2 classes)
Lean Six Sigma 2 (2 classes)

Elective Courses (choose 3):
Alternative Energy Technologies Overview
Dimensional Analysis (GD&T)
APQP, FMEA & PPAP
Program Management
PMP Examination Preparation
Computer Aided Engineering (CAE)
Test to Failure (TTF)
Digital Signal Processing in Noise and Vibration Testing
Experimental Modal Analysis
Unigraphics
Advanced Unigraphics
Pro Engineer
Advanced Pro Engineer

Certificate Programs

Business Management

400 Contact Hours Certification

Designed for the professional who desires to obtain and enhance specific business management knowledge and skills in order to provide maximum contribution in today's business environment. This certification demonstrates the completion of a number of key skills required to be successful within complex business environments in major industries.

Prerequisite: Minimum of 5 years experience

Curriculum Leader: Mark Marheineke
Bachelors and Masters Degrees
20 years in executive management of global operations

Targeted Participants: Executives, Directors, Managers, Supervisors, Sales Professionals

Targeted Industries: Any industry that develop products, manufacture products, assembles products or provides a service to companies or consumers

Targeted Positions: Executives, Directors, Managers, Supervisors, Sales Professionals, Program Managers, Product Specialist

Objective: Present a well rounded curriculum that addresses specific job skills, knowledge, tools and techniques professionals rely on to be successful in any company. These standard skills, tools and techniques apply to multiple industries, giving the participant a broad skill set to perform multiple tasks on their current position or improve their marketability for prospective positions.

Core Courses:
Competent Technical Communication
Total Quality Management (TQM)
Effective Leadership and Strategic Planning
Program Management

Elective Courses (choose 6):
Alternative Energy Technologies Overview
Lean Manufacturing
Lean Six Sigma 1 (2 classes)
Lean Six Sigma 2 (2 classes)
Root Cause Analysis
Dimensional Analysis (GD&T)
Computer Aided Engineering (CAE)
Test to Failure (TTF)
Digital Signal Processing in Noise and Vibration Testing
Experimental Modal Analysis
APQP, FMEA & PPAP
PMP Examination Preparation
Unigraphics
Advanced Unigraphics
Pro Engineer

Advanced Pro Engineer

Certificate Programs Course Details

CATIA 40 contact hours Maximum 10 students
Prerequisite: Design or engineering experience CATIA software required
Audience: Designer, Engineer, Technical Manager

This course provides new users with the understanding of CATIA necessary to produce 3D models using CATIA. Participants acquire familiarity with the CATIA GUI, basic file operations, sketching, and solid modeling. Emphasis is placed on both the skillful use of part design functions, and an understanding of proper modeling technique. Different approaches to solid modeling in CATIA are compared to aid comprehension of the relative merits of each approach. This course consists of multiple modules that are structured in sequence, covering the Sketcher, Part Design, and Wireframe and Surface Design workbenches of CATIA.

Advanced CATIA 40 contact hours Maximum 10 students
Prerequisite: CATIA CATIA software required
Audience: Designer, Engineer, Technical Manager

This course is intended for users who have taken the CATIA course or have equivalent experience. Building on the skills developed in the previous course, participants will learn assembly modeling, drawing creation, and advanced methods of 3D modeling. This course consists of multiple modules that are structured in a pedagogical sequence, covering the Assembly Design, Drafting, Generative Sheet Metal Design, and Generative Shape Design workbenches of CATIA.

Pro Engineer 40 contact hours Maximum 10 students
Prerequisite: Design or engineering experience Pro Engineer software required
Audience: Designer, Engineer, Technical Manager

This comprehensive course introduces students to feature based 3D parametric solid modeling using the Pro Engineer software. The course covers all major environments of Pro Engineer with a thorough explanation of commands, options, and their applications to create real-world products. About 60 mechanical engineering industry examples are used as tutorials and an additional 40 as exercises to ensure that the student can relate their knowledge and understand the design techniques used in the industry to design a product.

Advanced Pro Engineer 40 contact hours Maximum 10 students
Prerequisite: Pro Engineer Pro Engineer software required
Audience: Designer, Engineer, Technical Manager

Building on the proficiency in solid modeling developed in the Pro Engineer course participants will learn methods of assembly modeling, drafting, and surface modeling. The creation of sheet metal parts will be covered, including conversion methods. The course includes an introduction to mechanisms in Pro Engineer and simple finite element analysis using Pro Mechanica.

Unigraphics 40 contact hours Maximum 10 students
Prerequisite: Design or engineering experience Unigraphics software required
Audience: Designer, Engineer, Technical Manager

The Unigraphics course covers the fundamentals of using Unigraphics for 3D solid modeling. Students are taught effective use and configuration of the Unigraphics GUI and a variety of geometric creation. The primary emphasis of the course is the development of a degree of competence in modern solid modeling techniques along with an understanding of legacy techniques still in use in many companies. The course is a series of tutorials and emphasizes hands on exercises and activities. The course provides an excellent introduction to Unigraphics and sets a strong foundation for gaining skills in more advanced features.

Advanced Unigraphics 40 contact hours Maximum 10 students
Prerequisite: Unigraphics Unigraphics software required
Audience: Designer, Engineer, Technical Manager

This course covers the more advanced features of Unigraphics. The course begins with comprehensive coverage of assemblies, including legacy methods still in use in some companies. Drafting is covered including the creation of custom drawing templates and the configuration of default settings. A variety of functions for the creation, evaluation and editing of surfaces will be considered along with the integration of surfaces into solid models. Finally the course will discuss advanced methods including synchronous modeling, expressions, deformable parts, and part families.

Computer Aided Engineering 40 contact hours Maximum 20 students
Prerequisite: Design or engineering experience
Audience: Designer, Engineer, Technical Manager

This course focuses on an introduction to the Finite Element Analysis (FEA) method and its practical application. At the completion of this course the participant will have a fundamental understand of the finite element tool and how it can be applied to the design and development of better products. Current popular industry software packages will be reviewed and discussed. Participants will bring information on specific company product designs to be discussed during this training for real application of these concepts, tools and techniques.

Program Management 40 contact hours Maximum 20 students
Prerequisite: Experience working on projects
Audience: Designer, Engineer, Manager, Purchasing, Logistics

This course focuses on every key element outlined in Project Management Institutes (PMI) Project Management Body of Knowledge (PMBOK) in detail demonstrating how to apply them in multiple industries. Several program management driven organizations standardized processes are reviewed demonstrating the value of a robust standardized system. At the completion of this course the participant will have a good understanding of how to set up and maintain a proper program to ensure deliver of the stated scope, time, cost and quality targets.

PMP Exam Preparation 40 contact hours Maximum 20 students
Prerequisite: Program Management, 8 years documented industry experience
Audience: Designer, Engineer, Manager, Purchasing, Logistics

This course focuses on Project Management Institutes (PMI) Project Management Professional (PMP) certification requirements, application process and certification test. At the completion of this course the participant will have a detailed understanding of all elements of the Project Management Body of Knowledge (PMBOK®) with industry examples, test questions and hands-on application. Student individual applications will be created for the PMP certification which is used to apply to PMI to take the PMP certification test. At the completion of this course the participant will have a good understanding of how to apply, study and understanding of the types of test questions to pass the PMP exam.

APQP, FMEA, PPAP 40 contact hours Maximum 20 students
Prerequisite: Experience working on projects
Audience: Designer, Engineer, Manager, Purchasing, Logistics

This course focuses on the Advanced Product Quality Process (APQP), Failure Mode and Effects Analysis (FMEA) and Production Part Approval Process (PPAP) processes have been developed by the Automotive Industry Action Group (AIAG). These are standards that outline a common process and documentation procedure for the supply base. It is widely utilized in the automotive industry and has expanded into the heavy truck and transportation segments and finding its way into many other product development markets. At the completion of this course the participant will have a good understanding of how to create and maintain the proper APQP, FMEA and PAPP documents to meet the requirements of their customer.

Root Cause Analysis 40 contact hours Maximum 20 students
Prerequisite: Experience working on projects
Audience: Designer, Engineer, Manager, Purchasing, Logistics

This course focuses on a standardized method of using data to drive decisions which identify the symptoms, causes, effects and zeroing in on the actual root cause of the failure. Root Cause Analysis is a problem solving methodology aimed at identifying the multiple root causes of problems or events that occur. This practice is predicated on the belief that problems are best solved by attempting to correct or eliminate root causes, as opposed to merely addressing the immediately obvious symptoms. By directing corrective measures at root causes, it eliminates the likelihood of problem recurrence. At the completion of this course the participant will have a good understanding of how to identify, verify and implement a corrective action to manage the root cause of a problem.

Dimensional Analysis 40 contact hours Maximum 20 students
Prerequisite: Experience working on projects
Audience: Designer, Engineer, Manager, Purchasing, Logistics

This course focuses on the application of Geometric Dimension and Tolerancing (GD&T) is a well defined 2009 American National Standard endorsed by The American Society of Mechanical Engineers (ASME) which is utilized in multiple industries. GD&T correctly applied with efficient dimensional schemes can control the systems fit, form and function with efficiencies which maintain quality standards at the proper cost investments. At the completion of this course the participant will have a good understanding of how to set up a dimensional scheme and apply the proper GD&T symbols that document the dimensional control of the entire system.

Test to Failure (TTF) 40 contact hours Maximum 20 students
Prerequisite: Experience working on projects
Audience: Designer, Engineer, Manager, Purchasing, Logistics

This course focuses on the theory and practical methods of obtaining accurate prediction of product life in the minimum amount of time. This can be accomplished by understanding the product environment and designing tests that dramatically overstress the product to produce failure modes rapidly. Following these accelerated test methods can reduce test time, save cost and potentially provide opportunity to improve the product. At the completion of this course the participant will have a good understanding of how to set up an accelerated stress test schedule, collect data, and interpret the data.

Lean Manufacturing 40 contact hours Maximum 20 students
Prerequisite: Experience working on projects
Audience: Designer, Engineer, Manager, Purchasing, Logistics

This course focuses on the evolution of Lean Manufacturing and its application in many industries and service organizations. These Lean Manufacturing processes, tools and techniques have been developed and continually improved by the Toyota Production System (TPS) to outline a standard methodology and philosophy to identify and eliminate waste in the production system. It is widely utilized in the automotive industry and has expanded into the heavy truck and transportation segments and finding its way into other product development markets. At the completion of this course the participant will have a good understanding on how to apply Lean Manufacturing tools, techniques and methodologies in their work.

Lean Six Sigma 1 80 contact hours Maximum 20 students
Prerequisite: Experience working on projects
Audience: Designer, Engineer, Manager, Purchasing, Logistics

This course focuses on Lean and Six Sigma methodologies combined offers a very large toolbox of techniques that can effectively solve almost any quality improvement, process optimization and waste reduction challenge in business today. These tools are equally applicable in improving manufacturing or transactional business processes. The application of Lean Six Sigma techniques has helped countless companies create serious business breakthroughs in a multitude of industries worldwide.

Lean Six Sigma 2 80 contact hours Maximum 20 students
Prerequisite: Lean Six Sigma 1
Audience: Designer, Engineer, Manager, Purchasing, Logistics

This course focuses on gaining a working knowledge in LSS concepts and in Minitab data analysis software through extensive practice with practice data files from real Lean Six Sigma projects. DataFit Non-Linear Regression Analysis will also be introduced. Students will learn how to draw the correct conclusions from data analysis. Lean Process Optimization techniques will also be covered and practiced in detail.

Alternative Energy 40 contact hours Maximum 20 students
Prerequisite: Experience working in companies
Audience: Any worker that wants to understand the alternative energy industry

This course focuses on gaining a basic understanding of the various alternative energy technologies (wind, solar, biomass, geothermal) and their real-world benefits and applications. At the completion of this course the participant will have an understanding of the elements of each basic technology, its application, feasibility analysis, and the basic business elements.

Competent Technical Communication 40 contact hours Maximum 20 students
Prerequisite: Experience working in companies
Audience: Any worker that wants to improve their communication skills

This course emphasizes the importance of planning communication events or meetings as well as follow-through and accountability. Throughout the course, students will have an opportunity to apply tools and techniques in small and whole group practices (including video feedback). Students will learn and practice techniques for a variety of meeting objectives (gather information, share information, problem solving, sales, etc.). These will be applied in a variety of listening and feedback venues.

Total Quality Management 40 contact hours Maximum 20 students
Prerequisite: Experience working on projects
Audience: Designer, Engineer, Manager, Purchasing, Logistics

This is a comprehensive theory-and-practice overview course, incorporating decades of Total Quality management (TQM) learning, tools, techniques and methodologies. In the 1970's when the quality of American products (compared to imports) began to dramatically "slip" and a sense of urgency throughout many manufacturing communities began to drive greater focus on tools of quality for continuous improvement. This course takes participants through a brief history and introduction to the many universal TQM principles. This forms the basis of understanding the application of all the practical TQM tools that they will learn and practice for both personal and professional examples. At the completion of this course the participant will have a good understanding of how to set up and utilize key TQM tools and techniques.

Effective Leadership 40 contact hours Maximum 20 students
Prerequisite: Experience working in companies
Audience: Any worker that wants to improve their leadership skills

This course is designed as an introduction to the form and function of 95% of all medium to large organizations in the industrialized world today - whether they are public or private; for profit or non-profit. Other than small, family owned businesses, most organizations larger than 10 people begin to add functions to help manage the work. We introduce basic organizational design and to help students view organizations as 'systems'. Participants will learn how various subsystems work together to support and organize day-to-day functioning that keeps things running smoothly. Perhaps the most intriguing part of this course is the discussion about that part of organizations which some describe as 'the white space' between the boxes on the organization chart. Some refer to this as the organizational 'culture' and 'company politics'.

Finance for the Non-Financial Manager 40 contact hours Maximum 20 students
Prerequisite: Experience working in companies
Audience: Any worker that wants to improve their financial skills

This course is designed as an introduction to the basics used in companies to report, track and forecast specific financials to industry standards. The participant will be exposed to the normal business planning process and how to build bottom up financial tools to help decide strategic business direction. Once the business plan is complete the methods to tracking and forecasting are explored and monthly reporting methodologies are explored to ensure obtaining the financial goals of the organization. Financial return maps are understood and cash flow tools, techniques and methodologies are reviewed.

Digital Signal Processing in Noise & Vibration 40 contact hours Maximum 20 students
Prerequisite: Experience working on projects
Audience: Analyst, Designer, Engineer, Manager

This course presents a hands-on approach to understanding the key elements of digital signal processing which relate to noise and vibration testing. The first part of the course is intended as an introduction or review of Digital Signal Processing for engineers and technicians active in NVH. The rest of the course will focus on state-of-the-art topics and explore the latest and most advanced aspects of digital signal processing.

Experimental Modal Analysis 40 contact hours Maximum 20 students
Prerequisite: Digital Signal Processing in Noise & Vibration
Audience: Analyst, Designer, Engineer, Manager

This course focuses on the practical implementation of experimental modal analysis testing. This is accomplished through understanding basic technical concepts and practical hands-on performance of an experimental modal test. Concepts of theoretical background, digital signal processing, excitation techniques and extraction of modal parameters from measured frequency response functions.

Rotating Machinery Test & Source Path Models 40 contact hours Maximum 20 students
Prerequisite: Digital Signal Processing in Noise & Vibration
Audience: Analyst, Designer, Engineer, Manager

This course focuses on the way to engineering quiet, efficient and reliable products, mastering the sound and vibrations produced by engines, compressors, electrical motors, pumps and shafts, is a highly complex process. Engineering teams that focus on vibro-acoustic troubleshooting and product refinement require a comprehensive array of tools: waterfall mappings, order tracking, time data, processing functions and specialized modules to analyze and visualize the vast amounts of data that are generated.

Simulation for Kinematic & Dynamic Behavior 40 contact hours Maximum 20 students
Prerequisite: Durability Fundamentals
Audience: Analyst, Designer, Engineer, Manager

This course focuses on how to engineer the performance of mechanical designs with traditional test-based development processes is no longer an option. How to evaluate functional performance attributes on a virtual prototype. The simulation of mechanical or mechatronic systems enables engineers to effectively analyze and optimize real-life performance, long before physical testing. The challenge is to guarantee that the dynamic performance of their mechanical systems matches the specifications. They need to make sure that numerous components interact and move as planned under real-life conditions, such as gravity and frictional forces.

Design of Hydraulic & Thermal Fluid Systems 40 contact hours Maximum 20 students
Prerequisite: Computer Aided Engineering (CAE)
Audience: Analyst, Designer, Engineer, Manager

This course focuses on using physics-based simulation, engineers can design complete fluids hydraulic and pneumatic systems, from the tank to the actuators up the fluid network. Using standardized libraries of hydraulic and the thermal fluid system components, one can develop products with components actuated by hydraulic and pneumatic fluid power systems. For example, fluid power actuation systems for crane, crawler, earthmoving and mining equipment and machine tools can be developed and analyzed. Also, fuel injection, lubrication, variable valve actuation and timing can be addressed. The solution delivers the required insights to improve product quality, robustness and reliability, reduce power generation and develop new functionality.

Numeric Optimization Methods for Correlation 40 contact hours Maximum 20 students
Prerequisite: Computer Aided Engineering (CAE) and Experimental Modal Analysis
Audience: Analyst, Designer, Engineer, Manager

This course is focused towards understanding the steps needed in order to perform a correlation study and introducing some techniques and methodologies for updating a finite element model using experimental data. It is intended for engineers working in the field of analytical and experimental modal analysis who have the need to correlate and update models.

Design of Vehicle Energy Management 40 contact hours Maximum 20 students
Prerequisite: Experience working on projects
Audience: Analyst, Designer, Engineer, Manager

This course focuses on how intelligent system integration is driving improved product performance and delivering innovative designs in a variety of industries. Recent surveys show that approximately 80% of the next-generation systems and products will be derived from so-called intelligent systems. One of the most common examples is the advanced injection and control systems essential to clean-running and fuel-efficient car engines.

Acoustic Simulation 40 contact hours Maximum 20 students
Prerequisite: Computer Aided Engineering (CAE)
Audience: Analyst, Designer, Engineer, Manager

This course focuses on the routine applications, such as structural noise radiation and cavity field simulations, and address specific acoustic engineering issues, like engine run-ups, flow-induced noise, aero-acoustic noise or random acoustic loading. They allow to:

- Gain full insight into acoustic problems
- Accurately and quickly predict design change effects
- Minimize the cost and weight of sound treatment
- Reduce noise levels and incorporate desirable sound before prototype testing

Sound Engineering Test & Analysis 40 contact hours Maximum 20 students
Prerequisite: Digital Signal Processing in Noise and Vibration Testing
Audience: Analyst, Designer, Engineer, Manager

This course focuses on how product sound and sound quality are key aspects of product perception. How a product sounds plays a critical role in conveying the right message about its functionality, comfort, overall brand image and its quality. Regulations and competitive pressure have forced manufacturers to keep noise levels within limits and meet increasingly stringent sound standards. Sound engineers look for more productive testing and analysis solutions to quickly and effectively identify root causes of existing sound issues and help them efficiently design products that transmit the right brand message.

Advanced Modal Analysis 40 contact hours Maximum 20 students
Prerequisite: Experimental Modal Analysis
Audience: Analyst, Designer, Engineer, Manager

This course focuses on additional test and analysis tools beyond those presented in the Basic Modal Analysis course. Topics include operating data, multiple input multiple output testing, advanced multiple reference modal parameter estimation, structural dynamic modification using both modal data and measured impedances, forced response simulation, and other topics related to advanced manipulation of measured structural dynamic data.

Corporate Training Course Details

CATIA 40 contact hours Maximum 10 students
Prerequisite: Design or engineering experience
Audience: Designer, Engineer, Technical Manager

This course provides new users with the understanding of CATIA necessary to produce 3D models using CATIA. Participants acquire familiarity with the CATIA GUI, basic file operations, sketching, and solid modeling. Emphasis is placed on both the skillful use of part design functions, and an understanding of proper modeling technique. Different approaches to solid modeling in CATIA are compared to aid comprehension of the relative merits of each approach. This course consists of multiple modules that are structured in sequence, covering the Sketcher, Part Design, and Wireframe and Surface Design workbenches of CATIA.

Advanced CATIA 40 contact hours Maximum 10 students
Prerequisite: CATIA
Audience: Designer, Engineer, Technical Manager

This course is intended for users who have taken the CATIA course or have equivalent experience. Building on the skills developed in the previous course, participants will learn assembly modeling, drawing creation, and advanced methods of 3D modeling. This course consists of multiple modules that are structured in a pedagogical sequence, covering the Assembly Design, Drafting, Generative Sheet Metal Design, and Generative Shape Design workbenches of CATIA.

Pro Engineer 40 contact hours Maximum 10 students
Prerequisite: Design or engineering experience
Audience: Designer, Engineer, Technical Manager

This comprehensive course introduces students to feature based 3D parametric solid modeling using the Pro Engineer software. The course covers all major environments of Pro Engineer with a thorough explanation of commands, options, and their applications to create real-world products. About 60 mechanical engineering industry examples are used as tutorials and an additional 40 as exercises to ensure that the student can relate their knowledge and understand the design techniques used in the industry to design a product.

Advanced Pro Engineer 40 contact hours Maximum 10 students
Prerequisite: Pro Engineer
Audience: Designer, Engineer, Technical Manager

Building on the proficiency in solid modeling developed in the Pro Engineer course participants will learn methods of assembly modeling, drafting, and surface modeling. The creation of sheet metal parts will be covered, including conversion methods. The course includes an introduction to mechanisms in Pro Engineer and simple finite element analysis using Pro Mechanica.

Unigraphics 40 contact hours Maximum 10 students
Prerequisite: Design or engineering experience
Audience: Designer, Engineer, Technical Manager

The Unigraphics course covers the fundamentals of using Unigraphics for 3D solid modeling. Students are taught effective use and configuration of the Unigraphics GUI and a variety of geometric creation. The primary emphasis of the course is the development of a degree of competence in modern solid modeling techniques along with an understanding of legacy techniques still in use in many companies. The course is a series of tutorials and emphasizes hands on exercises and activities. The course provides an excellent introduction to Unigraphics and sets a strong foundation for gaining skills in more advanced features.

Advanced Unigraphics 40 contact hours Maximum 10 students
Prerequisite: Unigraphics
Audience: Designer, Engineer, Technical Manager

This course covers the more advanced features of Unigraphics. The course begins with comprehensive coverage of assemblies, including legacy methods still in use in some companies. Drafting is covered including the creation of custom drawing templates and the configuration of default settings. A variety of functions for the creation, evaluation and editing of surfaces will be considered along with the integration of surfaces into solid models. Finally the course will discuss advanced methods including synchronous modeling, expressions, deformable parts, and part families.

Auto CAD 24 contact hours Maximum 10 students
Prerequisite: Basic computer skills
Audience: Designer, Engineer, Technical Manager

This course explores the latest tools and techniques covering all draw commands and options, editing, dimensioning, hatching, and plotting techniques available with Auto CAD. The course takes the user across a wide spectrum of engineering solutions through progressive examples, comprehensive illustrations, and detailed exercises, thereby making it ideal for both the novice and the advanced user. The course features an effective introduction detailing the tools and commands covered in each module including changes and enhancements specific to Auto CAD. The student will discover the utility of Auto CAD commands, Ribbon, Menu Browser, toolbars, palettes, and shortcut menus.

Rhino NURBS 24 contact hours Maximum 10 students
Prerequisite: Basic computer skills
Audience: Designer, Engineer, Technical Manager

In this comprehensive class you'll learn to create and edit accurate free-form 3-D NURBS models. This fast-moving class covers most of Rhino's functionality, including the most advanced surfacing commands.

Solid Works 32 contact hours Maximum 10 students
Prerequisite: Design or engineering experience
Audience: Designer, Engineer, Technical Manager

This introductory course is the foundation of your advancement in the Solid Works world. After this course the student will be able to successfully build and use Parts, Assemblies, and Drawing Layouts, in the work place. This course will prepare the student for other Solid Works Training Modules.

Team Center 24 contact hours Maximum 10 students
Prerequisite: Knowledge of design engineering data
Audience: Designer, Engineer, Technical Manager, CAD Data Manager

This Team Center Engineering course details the use of the Team Center Engineering tool to organize and manage product definition data throughout the engineering process. The course contains numerous practical examples and the student is guided through all of the concepts, techniques and commands that are necessary to gain a working knowledge of Team Center Engineering. The intended audience is engineers who will actually create data and those who only need to review data such as managers, manufacturing, and marketing. Additionally, decision makers who may never touch the data, but need to gain an understanding of PLM, will also benefit greatly.

Lifecycle Visualization 24 contact hours Maximum 10 students
Prerequisite: Design or engineering experience
Audience: Designer, Engineer, Technical Manager, CAD Data Manager

This course focuses on the application for creating, utilizing and conducting meetings using the Lifecycle Visualization Models tools and techniques. This specific software is embedded in the Unigraphics Team Center software which helps identify key areas of integration between components in complex assemblies. All the major tools are learned, including how and when to specifically use them on real projects in the workplace.

Computer Aided Engineering 40 contact hours Maximum 20 students
Prerequisite: Design or engineering experience
Audience: Designer, Engineer, Technical Manager

This course focuses on an introduction to the Finite Element Analysis (FEA) method and its practical application. At the completion of this course the participant will have a fundamental understand of the finite element tool and how it can be applied to the design and development of better products. Current popular industry software packages will be reviewed and discussed. Participants will bring information on specific company product designs to be discussed during this training for real application of these concepts, tools and techniques.

Program Management 40 contact hours Maximum 20 students
Prerequisite: Experience working on projects
Audience: Designer, Engineer, Manager, Purchasing, Logistics

This course focuses on every key element outlined in Project Management Institutes (PMI) Project Management Body of Knowledge (PMBOK) in detail demonstrating how to apply them in multiple industries. Several program management driven organizations standardized processes are reviewed demonstrating the value of a robust standardized system. At the completion of this course the participant will have a good understanding of how to set up and maintain a proper program to ensure deliver of the stated scope, time, cost and quality targets.

PMP Exam Preparation 40 contact hours Maximum 20 students
Prerequisite: Program Management, 8 years documented industry experience
Audience: Designer, Engineer, Manager, Purchasing, Logistics

This course focuses on Project Management Institutes (PMI) Project Management Professional (PMP) certification requirements, application process and certification test. At the completion of this course the participant will have a detailed understanding of all elements of the Project Management Body of Knowledge (PMBOK®) with industry examples, test questions and hands-on application. Student individual applications will be created for the PMP certification which is used to apply to PMI to take the PMP certification test. At the completion of this course the participant will have a good understanding of how to apply, study and understanding of the types of test questions to pass the PMP exam.

Program Management Planning Practitioner 40 contact hours Maximum 20 students
Prerequisite: PMP, Program Management course or documented project experience
Audience: IT Designer, IT Engineer, IT Manager, IT Data Manager

Program Management focuses on the professional who manages complex programs from concept, design, validation, launch and continuous improvement stages of development. One of the key elements of a successful program is the development of a detailed Program Plan. This course focuses on hands-on application of developing a real company sponsored Program Plan:

- Approved company sponsored program
- PMBOK® process and knowledge groups addressed in detail
- Pass CPS Program Management Certification Test
- Review program plan with company sponsor for approval
- Submit company approved Program Plan for CPS Practitioner Certification

APQP, FMEA, PPAP 40 contact hours Maximum 20 students
Prerequisite: Experience working on projects
Audience: Designer, Engineer, Manager, Purchasing, Logistics

This course focuses on the Advanced Product Quality Process (APQP), Failure Mode and Effects Analysis (FMEA) and Production Part Approval Process (PPAP) processes have been developed by the Automotive Industry Action Group (AIAG). These are standards that outline a common process and documentation procedure for the supply base. It is widely utilized in the automotive industry and has expanded into the heavy truck and transportation segments and finding its way into many other product development markets. At the completion of this course the participant will have a good understanding of how to create and maintain the proper APQP, FMEA and PAPP documents to meet the requirements of their customer.

Introduction to ISO 40 contact hours Maximum 20 students
Prerequisite: Experience working on projects
Audience: Designer, Engineer, Manager, Purchasing, Logistics

A quality process driven organization has a consistent standardized process in developing and delivering their products and services. Having this system established, understood and utilized creates a real differentiating factor in the marketplace which delivers projects efficiently with comprehensive quality based documentation, tools and techniques. This course focuses on ISO 9001 which is an internationally developed and recognized process developed by the International Organization for Standards (ISO) to help companies develop, document and ensure their quality business operations is in compliance to the standard.

ISO 9001 and TS 16949 40 contact hours Maximum 20 students
Prerequisite: Experience working on projects
Audience: Designer, Engineer, Manager, Purchasing, Logistics

A quality process driven organization has a consistent standardized process in developing and delivering their products and services. Having this system established, understood and utilized creates a real differentiating factor in the marketplace which delivers projects efficiently with comprehensive quality based documentation, tools and techniques. This course focuses on ISO 9001 and TS 16949 which is an internationally developed and recognized process developed by the International Organization for Standards (ISO) to help companies develop, document and ensure their quality business operations is in compliance to the standard. TS 16949 is the specifically developed ISO standard utilized by the automotive industry.

Root Cause Analysis 40 contact hours Maximum 20 students
Prerequisite: Experience working on projects
Audience: Designer, Engineer, Manager, Purchasing, Logistics

This course focuses on a standardized method of using data to drive decisions which identify the symptoms, causes, effects and zeroing in on the actual root cause of the failure. Root Cause Analysis is a problem solving methodology aimed at identifying the multiple root causes of problems or events that occur. This practice is predicated on the belief that problems are best solved by attempting to correct or eliminate root causes, as opposed to merely addressing the immediately obvious symptoms. By directing corrective measures at root causes, it eliminates the likelihood of problem recurrence. At the completion of this course the participant will have a good understanding of how to identify, verify and implement a corrective action to manage the root cause of a problem.

Dimensional Analysis 40 contact hours Maximum 20 students
Prerequisite: Experience working on projects
Audience: Designer, Engineer, Manager, Purchasing, Logistics

This course focuses on the application of Geometric Dimension and Tolerancing (GD&T) is a well defined 2009 American National Standard endorsed by The American Society of Mechanical Engineers (ASME) which is utilized in multiple industries. GD&T correctly applied with efficient dimensional schemes can control the systems fit, form and function with efficiencies which maintain quality standards at the proper cost investments. At the completion of this course the participant will have a good understanding of how to set up a dimensional scheme and apply the proper GD&T symbols that document the dimensional control of the entire system.

Test to Failure (TTF) 40 contact hours Maximum 20 students
Prerequisite: Experience working on projects
Audience: Designer, Engineer, Manager, Purchasing, Logistics

This course focuses on the theory and practical methods of obtaining accurate prediction of product life in the minimum amount of time. This can be accomplished by understanding the product environment and designing tests that dramatically overstress the product to produce failure modes rapidly. Following these accelerated test methods can reduce test time, save cost and potentially provide opportunity to improve the product. At the completion of this course the participant will have a good understanding of how to set up an accelerated stress test schedule, collect data, and interpret the data.

Lean Manufacturing 40 contact hours Maximum 20 students
Prerequisite: Experience working on projects
Audience: Designer, Engineer, Manager, Purchasing, Logistics

This course focuses on the evolution of Lean Manufacturing and its application in many industries and service organizations. These Lean Manufacturing processes, tools and techniques have been developed and continually improved by the Toyota Production System (TPS) to outline a standard methodology and philosophy to identify and eliminate waste in the production system. It is widely utilized in the automotive industry and has expanded into the heavy truck and transportation segments and finding its way into other product development markets. At the completion of this course the participant will have a good understanding on how to apply Lean Manufacturing tools, techniques and methodologies in their work.

Lean Six Sigma Black Belt 40 contact hours Maximum 20 students
Prerequisite: Experience working on projects
Audience: Designer, Engineer, Manager, Purchasing, Logistics

This course focuses on the combined Lean and Six Sigma methodologies which offer a very large toolbox of techniques that can effectively solve any quality improvement, process optimization and waste reduction challenge in business today. These tools are equally applicable in improving manufacturing or transactional business processes. The application of Lean Six Sigma techniques has helped countless companies create serious business breakthroughs in a multitude of industries worldwide. At the completion of this course the participant will have a good understanding of how to utilize these tools, techniques and methodologies in their day-to-day work.

Alternative Energy 40 contact hours Maximum 20 students
Prerequisite: Experience working in companies
Audience: Any worker that wants to understand the alternative energy industry

This course focuses on gaining a basic understanding of the various alternative energy technologies (wind, solar, biomass, geothermal) and their real-world benefits and applications. At the completion of this course the participant will have an understanding of the elements of each basic technology, its application, feasibility analysis, and the basic business elements.

Automotive Development Process 40 contact hours Maximum 20 students

Prerequisite: Experience working in companies

Audience: Anyone that wants to understand the automotive development process

This course is developed to give an overview of the coordinated effort it takes to develop an automobile from the very early concept idea, through feasibility, validation, launch and continuous improvement initiatives while in production. We discuss the key processes, tools, techniques and methodologies utilized in vehicle development. We then expand on the multiple quality systems that are put in place to ensure compliance to the engineering specifications. Key players in the industry are discussed and understood along with the roles and responsibilities they assume to bring a vehicle system into production.

CNG System Engineering Vehicle Integration 24 contact hours Maximum 20 students

Prerequisite: Experience working in companies

Audience: Anyone that wants to understand the CNG Vehicle development process

This course is focused on Compressed Natural Gas (CNG) vehicles that have been operating in the medium and heavy duty market for many years, highlighting significant reductions in emissions and increase in fuel economy. CNG is domestically abundant and a clear path to a reduced reliance on foreign supplied oil. The high volume passenger vehicle markets have been served by the aftermarket industry and there is only one passenger vehicle in production with a limited supply.

CNG System Installation and Inspection 40 contact hours Maximum 20 students

Prerequisite: Experience working in companies

Audience: Anyone that wants to understand the CNG Vehicle installation and inspection process

This course is focused on the aftermarket industry an Installation and Inspection standardized certification has been introduced. Due to the complexity of the CNG system, safety related concerns and a need for approved components the installation must be performed to a regulated standard. Once the system is in use a regular inspection must be conducted to ensure proper maintenance has been performed to keep the CNG system functional and safe for the consumer.

CNG System Installation and Inspection 40 contact hours Maximum 20 students

Prerequisite: Experience working in companies

Audience: Anyone that wants to understand the CNG Vehicle development process

This course is focused on CNG Vehicle development has a consistent, standardized process in a robust standardized system. This system needs to be compliant with TS 16949, ISO 9000, FMVSS and CMVSS standards. Having this system established, understood and utilized creates a real differentiating factor in the marketplace which delivers these OEM production ready CNG Vehicles efficiently to stated scope, time, cost and quality targets.

Competent Technical Communication 40 contact hours Maximum 20 students

Prerequisite: Experience working in companies

Audience: Any worker that wants to improve their communication skills

This course emphasizes the importance of planning communication events or meetings as well as follow-through and accountability. Throughout the course, students will have an opportunity to apply tools and techniques in small and whole group practices (including video feedback). Students will learn and practice techniques for a variety of meeting objectives (gather information, share information, problem solving, sales, etc.). These will be applied in a variety of listening and feedback venues.

Total Quality Management 40 contact hours Maximum 20 students

Prerequisite: Experience working on projects

Audience: Designer, Engineer, Manager, Purchasing, Logistics

This is a comprehensive theory-and-practice overview course, incorporating decades of Total Quality management (TQM) learning, tools, techniques and methodologies. In the 1970's when the quality of American products (compared to imports) began to dramatically "slip" and a sense of urgency throughout many manufacturing communities began to drive greater focus on tools of quality for continuous improvement. This course takes participants through a brief history and introduction to the many universal TQM principles. This forms the basis of understanding the application of all the practical TQM tools that they will learn and practice for both personal and professional examples. At the completion of this course the participant will have a good understanding of how to set up and utilize key TQM tools and techniques.

Effective Leadership 40 contact hours Maximum 20 students

Prerequisite: Experience working in companies

Audience: Any worker that wants to improve their leadership skills

This course is designed as an introduction to the form and function of 95% of all medium to large organizations in the industrialized world today - whether they are public or private; for profit or non-profit. Other than small, family owned businesses, most organizations larger than 10 people begin to add functions to help manage the work. We introduce basic organizational design and to help students view organizations as 'systems'. Participants will learn how various subsystems work together to support and organize day-to-day functioning that keeps things running smoothly. Perhaps the most intriguing part of this course is the discussion about that part of organizations which some describe as 'the white space' between the boxes on the organization chart. Some refer to this as the organizational 'culture' and 'company politics'.

Finance for the Non-Financial Manager 40 contact hours Maximum 20 students

Prerequisite: Experience working in companies

Audience: Any worker that wants to improve their financial skills

This course is designed as an introduction to the basics used in companies to report, track and forecast specific financials to industry standards. The participant will be exposed to the normal business planning process and how to build bottom up financial tools to help decide strategic business direction. Once the business plan is complete the methods to tracking and forecasting are explored and monthly reporting methodologies are explored to ensure obtaining the financial goals of the organization. Financial return maps are understood and cash flow tools, techniques and methodologies are reviewed.

Recruiting the Right Talent 32 contact hours Maximum 20 students

Prerequisite: Working in a hiring capacity

Audience: HR Professionals, Recruiters, Staffing Professionals

This course focuses on the recruiting process as a whole. Topics of learning will include; writing an effective job order, how to develop and prioritize the key requirements needed for the position, how to establish job order tolerances with your customer, sourcing applicants, applicant screening, and interviewing strategies. We will also explore the multiple ways recruiters find applicants.

Corporate Consulting Services

CAD System Assessment Typical 3 to 5 day engagement
Audience: Designer, Engineer, Technical Manager, CAD Data Manager

CPS will utilize their customized assessment process with the client to identify current state of CAD usage by a series of meetings and project reviews with the technical staff. Once the current state is clearly identified we will develop a "gap analysis" which outlines the potential utilization using appropriate CAD system tools, techniques and methodologies. This "gap analysis" will be presented to the client for agreement and the development of a detailed implementation plan will begin. A detailed implementation plan will be created which could include software recommendations, assessment of technical staff, seminar outlines and training plans.

CAD System Implementation Typical 2 to 5 day engagement
Audience: Designer, Engineer, Technical Manager, CAD Data Manager

Technical expert in the specific CAD system will conduct the steps agreed upon in the implementation plan to ensure all technical aspects of the project will be achieved. Detailed assessments of usage are identified and incorporated into the customized CAD curriculum to ensure the client receives real hands on application value from the training event. After the training is completed, assessment tests are conducted to identify gaps in the technical team and customized seminars are created and conducted to ensure the students have the proper skills.

Lifecycle Visualization Implementation Typical 1 to 3 day engagement
Audience: Designer, Engineer, Technical Manager, CAD Data Manager

Technical expert in Lifecycle Visualization will conduct the steps agreed upon in the implementation plan to ensure all technical aspects of the project will be achieved. Detailed assessments of usage are identified and incorporated into the customized curriculum to ensure the client receives real hands on application value from the training event. After the training is completed, assessment tests are conducted to identify gaps in the technical team and customized seminars are created and conducted to ensure the students have the proper skills.

Team Center Implementation Typical 1 to 3 day engagement
Audience: Designer, Engineer, Technical Manager, CAD Data Manager

Technical expert in Team Center will conduct the steps agreed upon in the implementation plan to ensure all technical aspects of the project will be achieved. Detailed assessments of usage are identified and incorporated into the customized curriculum to ensure the client receives real hands on application value from the training event. After the training is completed, assessment tests are conducted to identify gaps in the technical team and customized seminars are created and conducted to ensure the students have the proper skills.

Computer Aided Engineering (CAE) Implementation Typical 1 to 3 day engagement
Audience: Designer, Engineer, Technical Manager, CAD Data Manager

Technical expert in Computer Aided Engineering (CAE) will conduct the steps agreed upon in the implementation plan to ensure all technical aspects of the project will be achieved. Detailed assessments of usage are identified and incorporated into the customized curriculum to ensure the client receives real hands on application value from the training event. After the training is completed, assessment tests are conducted to identify gaps in the technical team and customized seminars are created and conducted to ensure the students have the proper skills.

Program Management Assessment Typical 3 to 5 day engagement
Audience: Designer, Engineer, Manager, Purchasing, Logistics

CPS will utilize their customized assessment process with the client to identify current state of Program Management usage by a series of meetings and project reviews with the technical staff. Once the current state is clearly identified we will develop a "gap analysis" which outlines the potential utilization using appropriate Program Management system tools, techniques and methodologies. This "gap analysis" will be presented to the client for agreement and the development of a detailed implementation plan will begin. A detailed implementation plan will be created which could include software recommendations, assessment of technical staff, seminar outlines and training plans. Once the implementation plan is approved and being executed it will be monitored and controlled to ensure compliance to the overall plan, goals and objectives.

Program Management Implementation Typical 5 to 10 day engagement
Audience: Designer, Engineer, Manager, Purchasing, Logistics

CPS will monitor and control the execution of the implementation plan created in the Program Management Assessment consulting engagement. Progress reports will be generated to document progress and modifications to the overall Program Management system will be controlled and modified if approval is obtained by all stakeholders. At the completion of the Program Management Implementation consulting engagement a final report will be generated with lessons learned and a regular review for continuous improvement will be developed.

ISO 9000 & TS 16949 Implementation Typical 3 to 5 day engagement
Audience: Designer, Engineer, Manager, Purchasing, Logistics

CPS will utilize their customized assessment process with the client to identify current state of ISO 9000 & TS 16949 usage by a series of meetings and project reviews with the technical staff. Once the current state is clearly identified we will develop a "gap analysis" which outlines the potential utilization using appropriate ISO 9000 & TS 16949 system tools, techniques and methodologies. This "gap analysis" will be presented to the client for agreement and the development of a detailed implementation plan will begin. A detailed implementation plan will be created which could include software recommendations, assessment of technical staff, seminar outlines and training plans. Once the implementation plan is approved and being executed it will be monitored and controlled to ensure compliance to the overall plan, goals and objectives.

Root Cause Analysis Implementation Typical 3 to 5 day engagement

Audience: Designer, Engineer, Manager, Purchasing, Logistics

CPS will utilize their customized assessment process with the client to identify current state of Root Cause Analysis process by a series of meetings and project reviews with the technical staff. Once the current state is clearly identified we will develop a "gap analysis" which outlines the potential utilization using Root Cause Analysis system tools, techniques and methodologies. This "gap analysis" will be presented to the client for agreement and the development of a detailed implementation plan will begin. A detailed implementation plan will be created which could include software recommendations, assessment of technical staff, seminar outlines and training plans. Once the implementation plan is approved and being executed it will be monitored and controlled to ensure compliance to the overall plan, goals and objectives.

Lean Manufacturing Implementation Typical 3 to 5 day engagement

Audience: Designer, Engineer, Manager, Purchasing, Logistics

CPS will utilize their customized assessment process with the client to identify current state of Lean Manufacturing usage by a series of meetings and project reviews with the technical staff. Once the current state is clearly identified we will develop a "gap analysis" which outlines the potential utilization using appropriate Lean Manufacturing system tools, techniques and methodologies. This "gap analysis" will be presented to the client for agreement and the development of a detailed implementation plan will begin. A detailed implementation plan will be created which could include software recommendations, assessment of technical staff, seminar outlines and training plans. Once the implementation plan is approved and being executed it will be monitored and controlled to ensure compliance to the overall plan, goals and objectives.

Lean Six Sigma Black Belt Practitioner Project 10 day engagement plus mentoring
Minitab software required
LSS Workbook required Maximum of 8 participants
Audience: Designer, Engineer, Manager, Purchasing, Logistics

Lean and Six Sigma methodologies combined offers a very large toolbox of techniques that can effectively solve almost any quality improvement, process optimization and waste reduction challenge in business today. These tools are equally applicable in improving manufacturing or transactional business processes. The application of Lean Six Sigma (LSS) techniques has helped countless companies create serious business breakthroughs in a multitude of industries worldwide.

Participants will gain a working knowledge in LSS concepts and in Minitab data analysis software through extensive practice with practice data files from real Lean Six Sigma projects. DataFit Non-Linear Regression Analysis will also be introduced. Students will learn how to draw the correct conclusions from data analysis. Lean Process Optimization techniques will also be covered and practiced in detail.

A company Lean Six Sigma project will be chartered and initiated during the 10 day consulting engagement period approved by Dave Patrishkoff and the organization. During the participants project execution they will be mentored by Dave Patrishkoff remotely to bring them to a successful completion of the project. A typical project requires approximately 14 hours of mentoring.

All key elements of Lean Six Sigma Black Belt practitioner certification must be met to obtain official practitioner certification. These are the key elements required:

1. Passing grade on the Lean Six Sigma 4 hour exam
2. Lean Six Sigma final project report approved by Dave Patrishkoff
3. Letter from an executive from the organization acknowledging project success

The Lean Six Sigma Black Belt practitioner certification is recognized throughout the world in multiple industries. We use the Motorola University and American Society of Quality (ASQ) organization's internationally known standard for the basis of our certification and we are recognized as a certifying body from them.

Everything DiSC Assessment Typical ½ to 1 day engagement
Everything DiSC assessment required Maximum of 30 participants

Audience: Designer, Engineer, Manager, Purchasing, Logistics

This workshop introduces students to the DiSC behavior model, and the students' personal DiSC styles. Learn about style, how priorities drive and influence actions, and motivators and stressors. Students learn similarities and differences among DiSC styles, and discover strategies for working effectively with people with different styles from their own. Lastly, students create an action plan for building effective relationships, especially in the workplace, and leave with a complete DiSC profile for reference.

MindScan Leadership Assessment Typical ½ to 1 day engagement
MindScan assessment required Maximum of 12 participants

Audience: Designer, Engineer, Manager, Purchasing, Logistics

This workshop introduces students to the DiSC behavior model, and the students' personal DiSC styles. Learn about style, how priorities drive and influence actions, and motivators and stressors. Students learn similarities and differences among DiSC styles, and discover strategies for working effectively with people with different styles from their own. Lastly, students create an action plan for building effective relationships, especially in the workplace, and leave with a complete DiSC profile for reference.

Conflict Management Typical ½ to 1 day engagement
Maximum of 12 participants

Prerequisite: Everything DiSC Assessment or MindScan Assessment
Audience: Designer, Engineer, Manager, Purchasing, Logistics

This workshop expands a workgroup's ability to resolve conflict before it becomes a crisis. Participants will learn the tools to handle difficult situations by first understanding conflict and its impact on employees and work groups. Participants are presented with a conflict resolution model that allows for powerful dialogue while being persuasive, not abrasive. Participants learn their natural conflict style, and practice emotional intelligence strategies to keep the conversation safe.

Effective Communication Skills for Leaders Typical ½ to 1 day engagement
Maximum of 12 participants

Prerequisite: Everything DiSC Assessment or MindScan Assessment
Audience: Designer, Engineer, Manager, Purchasing, Logistics

This workshop is for those who are just starting out to seasoned executives, this is essential to taking leadership to the next level. Learn how to be a more influential leader through strengthened communication skills, including active listening, handling critics, developing and promoting a personal brand, how to provide feedback, and generation and culture hot buttons.

Workload Management Skills Typical ½ to 1 day engagement
Maximum of 12 participants

Prerequisite: Everything DiSC Assessment or MindScan Assessment
Audience: Designer, Engineer, Manager, Purchasing, Logistics

Lack of self-management skills can become a limitation to reaching career goals. In this workshop, participants learn how to better manage their workload, delegate effectively, understand how their priorities get in the way of their progress toward reaching their goals, and how to unlock the procrastination trap. Participants will leave with an action plan and follow up tools for improved productivity with less stress.

Recruiting Process Assessment Typical 2 - 4 day engagement
Audience: Human Resources, Purchasing, Manager

CPS will utilize their customized assessment process with the client to identify current state of recruiting and on-boarding of both direct and supplemental (contract) workforce via a series of meetings and information gathering with human resources staff, purchasing and hiring managers. Upon assessment areas of improvement will be identified including process improvement, pricing, cost reduction and alternative staffing methodologies. Recruitment Process Outsourcing (RPO), Master Service Provider (MSP) and Vendor Management Services (VMS) are options that will be explored as solutions to the hiring process.

Recruiting Process Implementation Typical 3 - 10 day engagement
Audience: Human Resources, Purchasing, Manager

CPS will utilize their customized process along with key client personnel in the creation and implementation of alternative staffing methodologies. Our experienced leadership will provide in-depth insight into trends, best-practices, metrics, and research. Identification of third party providers, request for proposal development, third party assessment, pricing, and roll out of the project will be included in the management of this implementation.

Outplacement Services Typical 3 - 5 day engagement
Audience: Human Resources, Displaced Workers, Manager

CPS will utilize their customized process along with key client personnel in the creation and implementation of outplacement training. Group sessions will be held to assist the displaced workers to effectively manage and lead their own job search activities. Topics of group discussion include resume writing, networking, how to identify the passive job market and interviewing.

CPS Information

CPS Staff

Chief Executive Officer	Daryl Patrishkoff	dpatrish@cpspoly.com
Managing Director	Dennis Cavitt	dennisc@cpspoly.com
Info Technology Manager	Lee Kittredge	lee@cpspoly.com

CPS Faculty

CPS instructors are selected based on their industry knowledge, experience, education, and communications skills. CPS' faculty consists of over 15 trainers, designers and engineers who are among the most experienced and qualified in the field.

CPS Advisory Board

Daryl Patrishkoff	Chief Executive Officer	Center for Professional Studies
Dennis Cavitt	Managing Director	Center for Professional Studies
Steve Alessandri	Vice President Student Services	Center for Professional Studies
Lee Kittredge	IT Manager and CAD Trainer	Center for Professional Studies
David Patrishkoff	President	Innovative Solutions Group
Rick Olt	Customer Services Manager	LMS Software
Cindy Miller	President	C. Miller & Associates
Joe Tori	President	G2 Business Development Solutions
William Szuch	President	SynTech
David Luik	CAE and Program Management	Independent Consultant
Dave Fiddes	Testing, Validation and Engineering	Independent Consultant
Tim Beard	Director, Engineering	Eicher
Jerry Baldwin	Director, Sales and Marketing	EDAG

Corporate Office Location

The Center for Professional Studies, LLC
200 East Big Beaver Road
Troy, Michigan 48083

Training Center

MSU Management Education Center
811 West Square Lake Road
Troy, Michigan 48098

Tuition and Fees

Designing Engineer Certificate Program

Core Courses

	Course Name	Instructor	Contact Hours	Course Tuition	Books & Software	Course Fee	Total Price
Choose (1) set of CAD courses from this list							
1	Catia	Lee K	40	$ 2,500	$ 200	$ 150	**$ 2,850**
	Advanced Catia	Lee K	40	$ 2,500	$ 200	$ 150	**$ 2,850**
2	Pro Engineer	Lee K	40	$ 2,500	$ 200	$ 150	**$ 2,850**
	Advanced Pro Engineer	Lee K	40	$ 2,500	$ 200	$ 150	**$ 2,850**
3	Unigraphics	Lee K	40	$ 2,500	$ 200	$ 150	**$ 2,850**
	Advanced Unigraphics	Lee K	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Competent Technical Communication		Cindy/Steve	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Program Management		Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Dimensional Analysis (GD&T)		Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Test to Failure (TTF)		Dave F	40	$ 2,500	$ 200	$ 150	**$ 2,850**
		Sub Totals	**240**	**$ 15,000**	**$ 1,200**	**$ 900**	**$ 17,100**

Elective Courses - select a minimum of (160) contact hours

Course Name	Instructor	Contact Hours	Course Tuition	Books & Software	Course Fee	Total Price
PMP Examination Preparation	Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Total Quality Management (TQM)	Cindy M	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Alternative Energy Technologies Overview	Bill S	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Lean Manufacturing	Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Lean Six Sigma 1	Dave P	80	$ 5,000	$ 400	$ 300	**$ 5,700**
Lean Six Sigma 2	Dave P	80	$ 5,000	$ 400	$ 300	**$ 5,700**
Root Cause Analysis	Bill S/Joe T	40	$ 2,500	$ 200	$ 150	**$ 2,850**
APQP, FMEA & PPAP	Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Computer Aided Engineering (CAE)	Dave L	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Digital Signal Processing in Noise & Vibration	Van Karsen	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Experimental Modal Analysis	Dr. Avitabile	40	$ 2,500	$ 200	$ 150	**$ 2,850**
	Sub Totals	**160**	**$ 10,000**	**$ 800**	**$ 600**	**$ 11,400**
	Grand Totals	**400**	**$ 25,000**	**$ 2,000**	**$ 1,500**	**$ 28,500**

Simulation / Test Engineer Certificate Program

Core Courses

Course Name	Instructor	Contact Hours	Course Tuition	Books & Software	Course Fee	Total Price
Competent Technical Communication	Cindy/Steve	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Computer Aided Engineering (CAE)	Dave L	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Digital Signal Processing in Noise & Vibration	Van Karsen	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Experimental Modal Analysis	Dr. Avitabile	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Rotating Machinery Test & Source Path Models	LMS	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Simulation for Kinematic & Dynamic Behavior	LMS	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Design of Hydraulic & Thermal Fluid Systems	LMS	40	$ 2,500	$ 200	$ 150	**$ 2,850**
	Sub Totals	**280**	**$ 17,500**	**$ 1,400**	**$ 1,050**	**$ 19,950**

Elective Courses - select a minimum of (120) contact hours

Course Name	Instructor	Contact Hours	Course Tuition	Books & Software	Course Fee	Total Price
Numeric Optimization Methods for Correlation	LMS	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Design of Vehicle Energy Management	LMS	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Acoustic Simulation	LMS	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Sound Engineering Test & Analysis	LMS	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Advanced Modal Analysis	Dr. Avitabile	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Test to Failure (TTF)	Dave F	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Program Management	Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
PMP Examination Preparation	Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Unigraphics	Lee K	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Advanced Unigraphics	Lee K	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Pro Engineer	Lee K	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Advanced Pro Engineer	Lee K	40	$ 2,500	$ 200	$ 150	**$ 2,850**
	Sub Totals	**120**	**$ 7,500**	**$ 600**	**$ 450**	**$ 8,550**
	Grand Totals	**400**	**$ 25,000**	**$ 2,000**	**$ 1,500**	**$ 28,500**

Program Management Certificate Program

Core Courses

Course Name	Instructor	Contact Hours	Course Tuition	Books & Software	Course Fee	Total Price
Competent Technical Communication	Cindy/Steve	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Program Management	Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
APQP, FMEA & PPAP	Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Root Cause Analysis	Bill S/Joe T	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Lean Manufacturing	Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
PMP Examination Preparation	Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
	Sub Totals	**240**	**$ 15,000**	**$ 1,200**	**$ 900**	**$ 17,100**

Elective Courses - select a minimum of (160) contact hours

Course Name	Instructor	Contact Hours	Course Tuition	Books & Software	Course Fee	Total Price
Total Quality Management (TQM)	Cindy M	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Lean Six Sigma 1	Dave P	80	$ 5,000	$ 400	$ 300	**$ 5,700**
Lean Six Sigma 2	Dave P	80	$ 5,000	$ 400	$ 300	**$ 5,700**
Alternative Energy Technologies Overview	Bill S	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Dimensional Analysis (GD&T)	Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Computer Aided Engineering (CAE)	Dave L	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Test to Failure (TTF)	Dave F	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Digital Signal Processing in Noise & Vibration	Van Karsen	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Experimental Modal Analysis	Dr. Avitabile	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Unigraphics	Lee K	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Advanced Unigraphics	Lee K	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Pro Engineer	Lee K	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Advanced Pro Engineer	Lee K	40	$ 2,500	$ 200	$ 150	**$ 2,850**
	Sub Totals	**160**	**$ 10,000**	**$ 800**	**$ 600**	**$ 11,400**
	Grand Totals	**400**	**$ 25,000**	**$ 2,000**	**$ 1,500**	**$ 28,500**

Lean Six Sigma Black Belt Certificate Program

Core Courses

Course Name	Instructor	Contact Hours	Course Tuition	Books & Software	Course Fee	Total Price
Competent Technical Communication	Cindy/Steve	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Lean Manufacturing	Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Total Quality Management (TQM)	Cindy M	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Lean Six Sigma 1	Dave P	80	$ 5,000	$ 400	$ 300	**$ 5,700**
Lean Six Sigma 2	Dave P	80	$ 5,000	$ 400	$ 300	**$ 5,700**
	Sub Totals	**280**	**$ 17,500**	**$ 1,400**	**$ 1,050**	**$ 19,950**

Elective Courses - select a minimum of (120) contact hours

Course Name	Instructor	Contact Hours	Course Tuition	Books & Software	Course Fee	Total Price
Alternative Energy Technologies Overview	Bill S	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Dimensional Analysis (GD&T)	Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
APQP, FMEA & PPAP	Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Program Management	Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
PMP Examination Preparation	Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Computer Aided Engineering (CAE)	Dave L	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Test to Failure (TTF)	Dave F	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Digital Signal Processing in Noise & Vibration	Van Karsen	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Experimental Modal Analysis	Dr. Avitabile	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Unigraphics	Lee K	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Advanced Unigraphics	Lee K	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Pro Engineer	Lee K	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Advanced Pro Engineer	Lee K	40	$ 2,500	$ 200	$ 150	**$ 2,850**
	Sub Totals	**120**	**$ 7,500**	**$ 600**	**$ 450**	**$ 8,550**
	Grand Totals	**400**	**$ 25,000**	**$ 2,000**	**$ 1,500**	**$ 28,500**

Business Management Certificate Program

Core Courses

Course Name	Instructor	Contact Hours	Course Tuition	Books & Software	Course Fee	Total Price
Competent Technical Communication	Cindy/Steve	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Total Quality Management (TQM)	Cindy M	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Effective Leadership and Strategic Planning	Mark M	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Finance for the Non-Financial Manager	Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
	Sub Totals	**160**	**$ 10,000**	**$ 800**	**$ 600**	**$ 11,400**

Elective Courses - select a minimum of (240) contact hours

Course Name	Instructor	Contact Hours	Course Tuition	Books & Software	Course Fee	Total Price
Alternative Energy Technologies Overview	Bill S	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Lean Manufacturing	Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Lean Six Sigma 1	Dave P	80	$ 5,000	$ 400	$ 300	**$ 5,700**
Lean Six Sigma 2	Dave P	80	$ 5,000	$ 400	$ 300	**$ 5,700**
Root Cause Analysis	Bill S/Joe T	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Dimensional Analysis (GD&T)	Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Computer Aided Engineering (CAE)	Dave L	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Test to Failure (TTF)	Dave F	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Digital Signal Processing in Noise & Vibration	Van Karsen	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Experimental Modal Analysis	Dr. Avitabile	40	$ 2,500	$ 200	$ 150	**$ 2,850**
APQP, FMEA & PPAP	Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Program Management	Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
PMP Examination Preparation	Daryl P	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Unigraphics	Lee K	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Advanced Unigraphics	Lee K	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Pro Engineer	Lee K	40	$ 2,500	$ 200	$ 150	**$ 2,850**
Advanced Pro Engineer	Lee K	40	$ 2,500	$ 200	$ 150	**$ 2,850**
	Sub Totals	**240**	**$ 15,000**	**$ 1,200**	**$ 900**	**$ 17,100**
	Grand Totals	**400**	**$ 25,000**	**$ 2,000**	**$ 1,500**	**$ 28,500**

Corporate Training and Services

Customized Instructional Services

Customized application based tailored courses from standard curriculum will be created for specific application at the corporate client operations. Based on these specific needs, goals, expectations and deliverables will be approved and then delivery pricing will be presented. The following elements will be considered in preparing the pricing model:

- Volume of training needs
- Instructor delivering the course
- Textbooks
- Workbooks
- Travel and expenses
- Location of training
- Training facility
- Equipment requirements
- Hardware requirements
- Software requirements

Pricing Guidelines, due to the many variables a customized quote will be developed

Contact Hours	Course Tuition	Books & Software	Course Fee
24	$1,875	$200	$150
32	$1,875	$200	$150
40	$2,500	$200	$150
80	$5,000	$400	$300

Consulting Services

Customized consulting engagement will be created for specific application at the corporate client operations. Consulting project scope and timing will be created for a complete understanding of the engagement objectives. Based on these specific needs the goals, expectations and deliverables will be created and then a delivery plan will be presented. The following elements will be considered in preparing the pricing model:

- Volume of consulting needs
- Consultant delivering the services
- Materials required for specific application
- Travel and expenses
- Location of the consulting engagement
- Equipment requirements
- Hardware requirements
- Software requirements

The Center for Professional Studies

Corporate Office Location

The Center for Professional Studies
200 East Big Beaver Road
Troy, Michigan 48083

Training Center

MSU Management Education Center
811 West Square Lake Road
Troy, Michigan 48098