CURRICULUM/GEN ED COMMITTEE
a standing committee of the Education Advisory Committee

Agenda
April 2, 2008
Sylvania CC, Conference Rm B

Information Items from the Curriculum Office:
(These items do not require curriculum committee recommendation)

Experimental Courses:
TE 199G – Industrial Hydraulics I
TE 199F – Rigging
MM 199 – 3D Clay Modeling – Character Studies
HUM 299 – Themes in Humanities

Inactivations:
None to report

Old Business:

188. EET 111 – Electrical Circuit Analysis I
Course Revision – Description, Requisites, Outcomes

189. EET 112 – Electrical Circuit Analysis II
Course Revision – Description, Requisites, Outcomes

190. EET 113 – Electrical Circuit Analysis III
Course Revision – Title, Description, Requisites, Outcomes

191. EET 188 – Industrial Safety
Course Revision – Description, Requisites, Outcomes

192. EET 221 – Semiconductor Devices/Circuits
Course Revision – Title, Requisites, Outcomes

193. EET 222 – Operational Amplifier Circuits
Course Revision – Requisites, Outcomes

194. EET 223 – RF Communications Circuits
Course Revision – Outcomes

195. EET 260 – Biomedical Equipment I
Course Revision – Requisites

196. EET 261 – Biomedical Equipment II
Course Revision – Requisites

197. EET 280C – BMET Practicum
Course Revision – Description, Requisites

NEW BUSINESS:

277. CIS 277T – Oracle Forms/Reports Developer
Course Revision – Title, Description

278. BCT 123 – Roof Framing 2
Course Revision - Requisites

279. BCT 217 – Cabinetry 2
Course Revision – Requisites

280. MT 101 – Introduction to Semiconductor Manufacturing
New Course

281. MT 102 – Introduction to Semiconductor Devices
New Course

282. MT 103 – Introduction to Micro and Nano Processing
New Course

283. MT 104 – Introduction to Solar Voltaic Processing
New Course

284. CIS 178 – Applied Internet Concepts
Related Instruction

285. CAS 111D – Beg Web Site: Dreamweaver
Related Instruction

286. CAS 112D – Intermediate Web Site: Dreamweaver
Related Instruction

287. CAS 206 – Principles HTML/ XHTML
Related Instruction

288. IMT 102 – Idustrial Safety (OSHA) (TBCC)
New Course

289. IMT 104 – Rigging, Lifting & Safety Inspection (TBCC)
New Course

290. IMT 105 – Idustrial Hydraulics I (TBCC)
New Course

291. IMT 115 – Basic Electricity/Electronics (TBCC)
New Course

292. IMT 118 – Bearings, Seals and Lubrication (TBCC)
New Course

293. IMT 120 – Drive Systems (TBCC)
New Course

294. IMT 200 – Pumps and Valves (TBCC)
New Course

295. IMT 204 – Pneumatics I (TBCC)
New Course

296. IMT 209 – Pipefitting (TBCC)
New Course

297. IMT 220 - Proportional Hydraulics (TBCC)
New Course

298. IMT 222 – Statistical Process Control Applications (TBCC)
New Course

299. IMT 230 – Techniques of Preventive Maintenance (TBCC)
New Course

300. IMT 250 – Control Systems (TBCC)
New Course

Curriculum Request Form
Course Revision

Change**:**	Course Description, Requisites, Learning Outcomes
Current course number**:**	EET 111
Current course title**:**	Electrical Circuit Analysis I
Current description**:**	International System of Units, engineering notation and prefixes, definitions of current, voltage, resistance, power, work and efficiency. For DC circuits: Ohm's and Kirchoff's Laws, series, parallel, and series-parallel circuit principles, superposition, Thevenin and Norton theorems, mesh current and node voltage analysis. Includes a 3-hour per week laboratory. Prerequisite: Placement in WR 115; Prerequisite or concurrent registration: MTH 111C.
Proposed description**:**	EET 111 Electrical Circuit Analysis I, 5 Cr. System of Units; engineering notation and prefixes; definitions of current, voltage, resistance, power, work and efficiency; Ohm's and Kirchhoff's Laws; DC resistive networks including Thevenin and Norton equivalent circuits. Node voltage and mesh current analysis methods; Capacitance and RC transient response. Includes a 3-hour per week laboratory session. Prerequisite/concurrent: MTH 95.
Reason for description change**:**	To better divide the study load over the three classes, EET 111, 112, 113. Changed the prerequisites to include more students in the program. EET tutoring in place to assist the students.
Proposed learning outcomes**:**	1 Use basic electrical DC concepts and theorems to analyze circuits. 2 Build and simulate electrical DC circuits and perform measurements with electronic test equipment. Write technical reports using collected experiment data.
Current prerequisites/concurrent**:**	Prerequisite or concurrent registration: MTH 111C
Proposed prerequisites/concurrent**:**	Prerequisite or concurrent registration: MTH 95
Is there an impact on other sacs?**:**	No

Is there an impact on another dept or campus?**:**	No
Request term**:**	winter
Requested year**:**	2007
Contact name**:**	sanda nedelcu
Contact e-mail**:**	sanda.nedelcu@pcc.edu

Curriculum Request Form
Course Revision

Change:	Course Description, Requisites, Learning Outcomes
Current course number:	EET 112
Current course title:	Electrical Circuit Analysis II
Current description:	Capacitance, inductance, reactance, and impedance. Transient analysis of RL and RC circuits. AC circuit phasor analysis. Power in AC circuits. Includes a 3 hour per week laboratory. Prerequisite: EET 111 Prerequisite or concurrent registration: MTH 112.
Proposed description:	Inductance; RL transient response; sinusoidal waveforms; reactance and impedance; AC power. Phasor analysis of RLC circuits; node voltage and mesh current analysis; superposition, Thevenin's and Norton's network theorems. Includes a 3-hour per week laboratory. Prerequisite: EET 111; Prerequisite/concurrent: MTH 111.
Reason for description change:	Better divide load over the sequence and include more students in the program. EET tutoring in place to assist students.
Proposed learning outcomes:	1 Use basic AC concepts to analyze circuits. 2 Build and simulate AC electrical circuits and perform measurements with electronic test equipment. Write technical reports using collected experiment data.
Current prerequisites:	Prerequisite: EET 111
Proposed prerequisites:	Prerequisite: EET 111
Current prerequisites/concurrent:	Prerequisite or concurrent registration: MTH 112.
Proposed prerequisites/concurrent:	Prerequisite/concurrent: MTH 111.
Is there an impact on	No

other sacs?:	
Is there an impact on another dept or campus?:	No
Request term:	winter
Requested year:	2007
Contact name:	sanda nedelcu
Contact e-mail:	sanda.nedelcu@pcc.edu

Curriculum Request Form
Course Revision

Change:	Course Title, Course Description, Requisites, Learning Outcomes
Current course number:	EET 113
Current course title:	Electrical Circuit Analysis
Proposed course title:	Electrical Circuit Analysis III
Reason for title change:	Existing Error
Current description:	Superposition, THevenin and Norton theorems applied to AC circuits, AC power and transformers. Series and parallel resonant circuits, low pass, high pass, bandpass, and band reject filters, Q and selectivity, transfer functions, decibels, frequency response and Bode diagrams. Includes a 3-hour per week laboratory. Prerequisite: EET 112
Proposed description:	Series and parallel resonant circuits; Q and selectivity; RL and RC filters; decibels; transfer functions and Bode diagrams; Transformers, three phase power distribution; Fourier series and transform applied to circuit analysis. Includes a 3-hour per week laboratory. Prerequisite: EET 112; Prerequisite/concurrent: MTH 112
Reason for description change:	To better divide the study load over the sequence
Current learning outcomes:	None
Proposed learning outcomes:	Intended Outcomes: 1 Use basic AC concepts and theorems to analyze AC circuits 2 Analyze basic magnetic circuits and applications
Current prerequisites:	Prerequisite: EET 112

Proposed prerequisites:	Prerequisite: EET 112
Proposed prerequisites/concurrent:	Prerequisite/concurrent: MTH 112
Is there an impact on other sacs?:	No
Is there an impact on another dept or campus?:	No
Request term:	winter
Requested year:	2007
Contact name:	sanda nedelcu
Contact e-mail:	sanda.nedelcu@pcc.edu

Curriculum Request Form
Course Revision

Change:	Course Description, Requisites, Learning Outcomes
Current course number:	EET 188
Current course title:	Industrial Safety
Current description:	Safety practices in the electronics industry. Emphasizes electrical and chemical hazards. Safe handling of electronic components in the manufacturing environment including ESD control. Prerequisite: EET 111 or 121.
Proposed description:	Safety practices in the electronics industry. Covers: electrical safety, HAZMAT, flammable and combustible liquids, safe handling of electronic components in the manufacturing environment including ESD control, product testing/certification, blood born pathogens, fire safety, laser and radiation safety. Prerequisites: EET 111.
Reason for description change:	Update
Current learning outcomes:	None
Proposed learning outcomes:	1 Apply standard safety procedures in an industrial environment.
Current prerequisites:	Prerequisite: EET 111 or 121.
Proposed prerequisites:	Prerequisites: EET 111
Is there an impact on other sacs?:	No
Is there an impact on another dept or campus?:	No
Request term:	winter
Requested year:	2007
Contact name:	sanda nedelcu

Contact e-mail**:** sanda.nedelcu@pcc.edu

Curriculum Request Form
Course Revision

CHANGE:	Course Title, Requisites, Learning Outcomes
Current Course Number:	EET 221
Proposed Course Number:	EET 221
Current Course Title:	Semiconductor Devices/Circuits
Proposed Course Title:	Semiconductor Devises and Circuits
Proposed Transcript Title:	EET 221
Reason for Title Change:	Correct existing error

Current Learning Outcomes:

1. The student will have a qualitative understanding of P and N type semiconductors, PN junctions, NPN and PNP transistor operation, and field effect transistor operation.
2. The student will become familiar with the basic electrical characteristics of diodes and transistors, including the diode equation, and device characteristic curves.
3. The student will be able to bias diodes and transistors, and will be able to analyze and design basic diode and transistor circuits.
4. The student will be able to test diodes and transistors in a circuit and using a curve tracer.
5. The student will be able to calculate and measure the input and output impedances of transistor amplifier circuits.
6. The student will be able to calculate and measure the amplification of a transistor amplifier circuits, including common emitter, common base, and common collector types.
7. The student will be able to simulate basic diode and transistor circuits using a computer simulation program.
8. The student will be able to use computer data acquisition to acquire circuit data, and to process the data in a spreadsheet.
9. The student will be able to use a word processor, spreadsheet, and other software to produce a formal lab report on an experiment.

Proposed Learning Outcomes:	1 Apply concepts of semiconductor devices to design and analyze circuits. 2 Apply fundamentals of semiconductor devices in electronics projects and use computer tools in circuit design, evaluation and analysis.
Reason for Learning Outcomes Change:	Align with the PCC new format-5 bullets minimum
Current Prerequisites:	EET 113
Proposed Prerequisites:	EET 113, MTH 112
Will this impact other SACs?,Is there an impact on other SACs?:	No
Will this impact other Depts/Campuses?,Is there an impact on another dept or campus?:	No
Request Term:	winter
Requested Year:	2008
Contact Name:	sanda williams
Contact E-Mail:	sanda.williams@pcc.edu

Curriculum Request Form
Course Revision

CHANGE: Requisites,Learning Outcomes

Current Course Number: EET 222

Current Course Title: Operational Amplifier Circuits

Current Learning Outcomes:

1.The student will be able to calculate the quiescent point of operation for a differential amplifier, which uses a current source in the emitter circuit.
2. The student will be able to calculate and measure the input and output impedance of a differential amplifier.
3. The student will be able to determine the input bias currents, input offset current, and output offset voltage of a differential amplifier circuit and of an operational amplifier.
4. The student will be able to calculate and measure the single ended and differential gain of a differential amplifier using transistors or operational amplifiers.
5. The student will be able to measure and calculate the voltage amplification and frequency response of inverting and non-inverting operational amplifier circuits.
6. The student will be able to measure and calculate the transient response of operational amplifier differentiator and integrator circuits.
7. The student will be able to measure and calculate the sinusoidal response of operational amplifier differentiator and integrator circuits.
8. The student will be able to calculate and measure the frequency response of operational amplifier active filter circuits, including low pass, high pass, and band pass types.
9. The student will be able to calculate and measure the oscillation frequency, output waveform, and output amplitude of operational amplifier oscillators, including Hartley, Colpitts, phase shift, and Wien-bridge types.
10. The student will be able to calculate and measure the response of an operational amplifier Schmitt trigger circuit, and be able to calculate and measure the characteristics of a Schmitt trigger relaxation oscillator.

Proposed Learning Outcomes:

1 Apply op-amps fundamentals in design and analysis of op-amps applications.
2 Apply op-amps fundamentals and computer tools in project

	design, evaluation, and analysis.
Reason for Learning Outcomes Change:	Align with the PCCnew format-5 bullets maximum
Current Prerequisites:	EET 221; MTH 251
Proposed Prerequisites:	EET 221
Will this impact other SACs?,Is there an impact on other SACs?:	No
Will this impact other Depts/Campuses?,Is there an impact on another dept or campus?:	No
Request Term:	winter
Requested Year:	2008
Contact Name:	sanda williams
Contact E-Mail:	sanda.williams@pcc.edu

Curriculum Request Form
Course Revision

CHANGE:	Learning Outcomes
Current Course Number:	EET 223
Current Course Title:	RF Communications Circuits
Proposed Transcript Title:	RF Communications Circuits
Current Learning Outcomes:	1. The student will become familiar with a variety of transistor amplifier circuits used in communication systems, including common base, common collector, and common emitter types, as used in oscillators, amplifiers, frequency multipliers, and mixers. 2. The student will become familiar with the transistor's internal capacitances, and will be able to determine the effect of these capacitance's on the transistor's frequency response. 3. The student will be able to calculate and measure the amplification and frequency response of transistor amplifier circuits. 4. The student will become familiar with current source models of transistor amplifier circuits, and be able to use these models as an aide in calculating the amplifier's gain and frequency response. 5. The student will be able to calculate and measure the effect of load and source impedance on the amplification and frequency response of transistor amplifier circuits. 6. The student will be able to simulate transistor amplifier circuits using a computer simulation program. 7. The student will be able to use computer data acquisition to acquire circuit data, and to process the data in a spreadsheet. 8. The student will be able to use a word processor, spreadsheet, and other software to produce a formal lab report on an experiment.
Proposed Learning Outcomes:	1 Design and analyze multistage amplifiers and RF communications systems. 2 Analyze transistor and diode AC models and equivalent circuits. 3 Measure and analyze the performance of transistor circuits in RF communication systems
Reason for Learning Outcomes Change:	Align with the new PCC format-5 bullets maximum

Will this impact other SACs?,Is there an impact on other SACs?:	No
Will this impact other Depts/Campuses?,Is there an impact on another dept or campus?:	No
Request Term:	winter
Requested Year:	2008
Contact Name:	sanda williams
Contact E-Mail:	sanda.williams@pcc.edu

Curriculum Request Form
Course Revision

CHANGE:	Requisites
Current Course Number:	EET 260
Proposed Course Number:	EET 260
Current Course Title:	Biomedical Equipment I
Proposed Course Title:	Biomedical Equipment I
Proposed Transcript Title:	EET 260
Reason for Title Change:	NO Change
Current Description:	Introduction to the fundamentals of medical instrumentation, bioelectric signals and electrodes, recording systems, biomedical recorders, patient monitoring systems, arrhythmia and ambulatory monitoring instruments, fetal monitoring instruments, biomedical telemetry and telemedicine, oximeters, blood flowmeter, cardiac output measurement, pulmonary function analyzers, laboratory equipment, audiometers, and patient safety.
Proposed Description:	Introduction to the fundamentals of medical instrumentation, bioelectric signals and electrodes, recording systems, biomedical recorders, patient monitoring systems, arrhythmia and ambulatory monitoring instruments, fetal monitoring instruments, biomedical telemetry and telemedicine, oximeters, blood flowmeter, cardiac output measurement, pulmonary function analyzers, laboratory equipment, audiometers, and patient safety.
Reason for Description Change:	NO CHANGE
Current Learning Outcomes:	Upon successful completion of this Biomedical Engineering Technology option, students should be able to: safely evaluate, calibrate, operate and maintain the biomedical equipment included in this course. perform safety inspections make repairs when necessary.

Proposed Learning Outcomes:	Upon successful completion of this Biomedical Engineering Technology option, students should be able to: safely evaluate, calibrate, operate and maintain the biomedical equipment included in this course. perform safety inspections make repairs when necessary.
Reason for Learning Outcomes Change:	NO CHANGE
Current Prerequisites:	BI 122 or BI 233, EET 123 or instructor permission.
Proposed Prerequisites:	MP 111, BI 122 or BI 233, EET 123 or instructor permission.
Current Prerequisites/Concurrent:	EET 221
Proposed Prerequisites/Concurrent:	EET 221
Will this impact other SACs?,Is there an impact on other SACs?:	No
Will this impact other Depts/Campuses?,Is there an impact on another dept or campus?:	no
How other Depts/Campuses will be impacted:	
Request Term:	winter
Requested Year:	2008
Contact Name:	sanda williams
Contact E-Mail:	sanda.williams@pcc.edu

Curriculum Request Form
Course Revision

CHANGE:	Requisites
Current Course Number:	EET 261
Current Course Title:	Biomedical Equipment II
Current Prerequisites:	BI 122 or 233, EET 123, EET 221
Proposed Prerequisites:	EET 260
Will this impact other SACs?,Is there an impact on other SACs?:	No
Will this impact other Depts/Campuses?,Is there an impact on another dept or campus?:	No
Request Term:	winter
Requested Year:	2008
Contact Name:	sanda williams
Contact E-Mail:	sanda.williams@pcc.edu

Curriculum Request Form
Course Revision

CHANGE:	Course Description, Requisites
Current Course Number:	EET 280C
Current Course Title:	BMET Practicum
Current Description:	Provides clinical education experience in a biomedical department with a hospital, clinic or other medical facility under the supervision of a biomedical technician. Variable credit: 30 hours of work experience equals 1 credit. Recommended: EET 280B.
Proposed Description:	Provides clinical education experience in a biomedical department with a hospital, clinic or other medical facility, with a medical equipment repair/manufacturing company, or laboratory. Variable credit: 30 hours of work experience equals 1 credit.
Reason for Description Change:	Increased the number of possible co-op sites to better accommodate students.
Current Prerequisites:	NONE
Proposed Prerequisites:	Department Approval; EET 260
Current Corequisites:	NONE
Proposed Corequisites:	EET 261
Will this impact other SACs?,Is there an impact on other SACs?:	No
Will this impact other Depts/Campuses?,Is there an impact on another dept or campus?:	No
Request Term:	winter
Requested Year:	2008
Contact Name:	sanda williams
Contact E-Mail:	sanda.williams@pcc.edu

Curriculum Request Form
Course Revision

CHANGE:	Course Title,Course Description
Current Course Number:	CIS 277T
Current Course Title:	Oracle Forms/Reports Developer
Proposed Course Title:	Business Intelligence Application Development
Proposed Transcript Title:	Business Intelligence App Dev
Reason for Title Change:	Universities and Colleges throughout the state use the Banner Student Registration system. Banner rides on top of Oracle Database. Most Oregon State Agencies are using Oracle products ergo we have a great target audience. Oracle currently holds 35+ % of the enterprise database market space and growing. This title matches the Oracle marketing for its old forms/reports developer tools.
Current Description:	Covers the fundamentals of the ORacle IDS (Internet Developer Suite). Learn the oracle forms, reports, developer tools. Build user interfaces using Oracle Forms and build supporting reports using Oracle Reports. Recommended: CIS 276.
Proposed Description:	Develop skills required to use the latest Oracle Internet Development Suite to design, develop, maintain, and build complex database interfaces and forms. Recommended: CIS 276.
Reason for Description Change:	To reflect the changes in Oracle's tool names. Oracle is one of the key enterprise level database technologies of the future. We need to reflect our commitment to delivering up-to-date technology.
Will this impact other SACs?,Is there an impact on other SACs?:	No
Will this impact other Depts/Campuses?,Is there an impact on another dept or campus?:	No
Request Term:	spring
Requested Year:	2007
Contact Name:	Taylor Hanna
Contact E-Mail:	thanna@pcc.edu

Curriculum Request Form
Course Revision

CHANGE:	Requisites
Current Course Number:	BCT 123
Proposed Course Number:	BCT 123
Current Course Title:	Roof framing 2
Proposed Course Title:	Roof framing 2
Current Prerequisites:	BCT 122
Proposed Prerequisites:	BCT 122
Current Prerequisites/Concurrent:	none
Proposed Prerequisites/Concurrent:	BCT 122
Will this impact other SACs?,Is there an impact on other SACs?:	No
How other SACs may be impacted:	
Will this impact other Depts/Campuses?,Is there an impact on another dept or campus?:	No
How other Depts/Campuses will be impacted:	
Request Term:	spring
Requested Year:	2009
Contact Name:	rsteele
Contact E-Mail:	rsteele@pcc.edu

Curriculum Request Form
Course Revision

CHANGE:	Requisites
Current Course Number:	BCT 217
Proposed Course Number:	BCT 217
Current Course Title:	Cabinetry 2
Current Prerequisites:	BCT 216
Proposed Prerequisites:	BCT 216 or BCT 219
Will this impact other SACs?,Is there an impact on other SACs?:	No
How other SACs may be impacted:	
Will this impact other Depts/Campuses?,Is there an impact on another dept or campus?:	No
How other Depts/Campuses will be impacted:	
Request Term:	fall
Requested Year:	2008
Contact Name:	rsteele
Contact E-Mail:	rsteele@pcc.edu

Curriculum Request Form
New Course

Course number:	MT 101
Course title:	Introduction to Semiconductor Manufacturing
Transcript title:	Intro to Semic. Manuf.
Course credits:	1
Lec contact hrs:	1
Special fee:	No
Course description:	Course presents a succinct history of the semiconductor manufacturing processing, and fundamental clean room protocol. Students will understand the importance of quality and contamination control emphasis in the industry.
Prerequisites coreq concurrent:	Prerequisites: placement into MTH 65.
Addendum to course description:	This course is the first one of a sequence of three one credit courses: MT 101, MT 102 and MT 103. The sequence is required by graduation with an AAS degree in Microelectronics.
Intended outcomes:	Develop basic learning skills to help you succeed in the PCC MT AAS program Understand the working environment: clean rooms, compressed workweek, etc. Develop abilities and habits in using the information methods of the industry to communicate and find information on: business news, processes, advances, technical data, etc. Determine if this is a career and degree you want to pursue.
Course activities and design:	The course consists only of lecture but that will include demonstrations, and/or student discussions stressing key topics. In preparation for each class, students will be expected to complete all reading and problem/question homework assignments assigned the

	previous week.
Outcomes assessment strategies:	Assessment of student performance in this course will consist of written examinations. Assessment will also include oral presentations, and written reports.
Course content and skills:	1.1 Microelectronics Technology 1.1. Understand the courses and their purpose in the MT AS degree program 1.2. Identify the local employment opportunities in the industry 1.3. Describe the working environment in the industry 2. History of the Semiconductor Industry 2.1. Trace the history of the semiconductor industry from the invention of the transistor in 1947 to the present, giving dates and names of people for major discoveries, inventions, and events. 2.2. Identify key applications of integrated circuits and list the advantages of integrated circuits over earlier, discrete devices used in electronic products. 2.3. State Moore's Law and discuss current trends in semiconductor manufacturing: understand feature size and feature size reduction, role of wafer size and benefits of increasing wafer size, associated fab construction costs, the role of throughput, and associated economic risks.
Course used to supply ri for certificate:	No
Ri computation hrs:	0
Ri computation activities:	
Ri communication hrs:	0
Ri communication activities:	
Ri human relations hrs:	0
Ri human relations activities:	
Reason for new course:	Revision of existing curriculum and adjusting it to respond to the needs of a new PV option.
How course will be taught:	Campus,Online,Hybrid
Explanation if there are degrees andor certificates that are affected by the instruction of this course:	The AAS and EST certificate degrees in Microeletcronics will benefit of this change. This new course (1 cr. only) represents just one fraction of the old course MT 100. MT 101, along with MT 102 and MT 103, totaling 3 credits, will replace the MT 100 course. The

	new structure (three one credit courses instead of one 3 credit course) will offer more flexibility in scheduling and will address a larger and more diverse student population.
Explanation if this course transfer to any other academic institution:	Yes, it will to OIT and to PSU (as elective).
Explanation if there are similar courses existing in other programs or disciplines at pcc:	No impact on other programs.
Explanation if they have consulted with sac chairs of other programs regarding potential impact:	The course is specific for and only for MT.
Explain if there are any potential impact on another department or campus:	No.
Implemented term or year requested:	Fall 2008
Submitter:	dorina cornea-hasegan
From:	dcorneah@pcc.edu
Sac chair:	eric kirchner
Sac chair email:	ekirchne@pcc.edu
Sac admin liason name:	margie fyfield
Sac admin liason email:	mfyfield@pcc.edu

Curriculum Request Form
New Course

Course number:	MT 102
Course title:	Introduction to Semiconductor Devices
Transcript title:	Intro to Semic. Dev.
Course credits:	1
Lec contact hrs:	10
Special fee:	No
Course description:	Course will be the continuation of MT 101. In MT 102 students will understand how basic semiconductor devices like the diode, solar cell and MOSFET work.
Prerequisites coreq concurrent:	Prerequisites: MT 101 and placement or completion of MTH 65.
Addendum to course description:	This course is the second one in a sequence of three one-credit courses: MT 101, MT 102 and MT 103. The sequence is required by graduation with an AAS degree in Microelectronics.
Intended outcomes:	Develop basic learning skills to help you succeed in the PCC MT AAS program Understand basic construction and operation of semiconductor devices. Develop abilities and habits in using the information methods of the industry to communicate and find information on: business news, processes, advances, technical data, etc.
Course activities and design:	The course will include instructor delivered lectures, demonstrations, and/or student discussions stressing key topics in the course. In preparation for the class, students will be expected to complete all reading and problem/question homework assignments.
Outcomes assessment strategies:	Assessment of student performance in this course will consist of written examinations. Assessment may also include oral presentations, written reports, and other class projects.
Course content and skills:	1. Semiconductor Materials 1.1. Identify the parts of an atom. Provide sketches to describe

	the atomic structure of a given atom (e.g. carbon, silicon, and germanium). 1.2. Describe an atom, ion, and molecule. Use sketches as appropriate. 1.3. List three semiconducting materials. 1.4. Name the two unique properties of a doped semiconductor: precise resistivity control through doping and electron and hole conduction. 1.5. Describe the difference in composition and electrical functioning of n-type and p-type semiconductor materials. 2. PN junction, The cellular Cell and CMOS 2.1 Describe the mechanism for conduction in n-type and p-type semiconductor materials. 2.2 Describe how a diode and a solar cell work. 2.3 Draw a cross-sectional view of a MOS transistor and label the source, drain, gate, and gate oxide. 2.4 Describe the basic on/off switching operation of a MOS transistor. 2.5 Describe the sequential processes (i.e. the process flow) used in manufacturing a MOS transistor. 2.6. Define the terms: layering, patterning, and doping.
Course used to supply ri for certificate:	No
Reason for new course:	The new structure of MT 100 (a 3 credit course) will offer more flexibility in scheduling.
How course will be taught:	Campus,Online
Reason for other:	
Explanation if there are degrees andor certificates that are affected by the instruction of this course:	Only the existing AAS in Microelectronics.
Explanation if this course transfer to any other academic institution:	OIT and PSU.
Explanation if there are similar courses existing in other programs or disciplines at pcc:	No.
Explanation if they have	No.

consulted with sac chairs of other programs regarding potential impact:	
Explain if there are any potential impact on another department or campus:	No.
Implemented term or year requested:	Fall 2008
Submitter:	dorina cornea-hasegan
From:	dcorneah@pcc.edu
Sac chair:	eric kirchner
Sac chair email:	ekirchne@pcc.edu
Sac admin liason name:	margie fyfield
Sac admin liason email:	mfyfield@pcc.edu

Curriculum Request Form
New Course

Course number:	MT 103
Course title:	Introduction to Micro and Nano Processing
Transcript title:	Intro to Micro and Nano
Course credits:	1
Lec contact hrs:	10
Lec lab contact hrs:	0
Lab contact hrs:	0
Special fee:	No
Course description:	Introduces the methods used to manufacture Micro and Nano technologies. Traces semiconductor processing from raw material to a finished integrated circuit using planar technology. Introduces the processes and equipment used to create devices on the micro and nano scale. Emerging applications of MEMS and Nanotechnology are discussed.
Prerequisites coreq concurrent:	Prerequisite: MT 101, MT 102 and placement into MTH 65.
Addendum to course description:	This is the final course in a sequence of MT 101, 102 and 103, all required for graduation with an AAS degree in Microelectronics.
Intended outcomes:	Determine if this is a career and degree you want to pursue. Develop basic learning skills to help you succeed in the PCC MT AAS program Understand emerging uses and opportunities with MEMS and Nanotechnology Develop abilities and habits in using the information methods of the industry to communicate and find information on: business news, processes, advances, technical data, etc.
Course activities and design:	The class will be based on instructor delivered lectures, demonstrations, and/or student discussions stressing key topics in the course. In preparation for the lecture, students will be expected

to complete all reading and problem/question homework assignments.

Outcomes assessment strategies: Assessment of student performance in this course will consist of written examinations. Assessment may also include oral presentations, written reports.

Course content and skills:

1. Oxidation

1.1. Write the chemical reaction used to produce silicon dioxide in the semiconductor manufacturing process.
1.2. Describe the mechanism of thermal oxidation.
1.3. List three principal uses of silicon dioxide layers in semiconductor devices: (1) surface passivation, (2) surface dielectric, and (3) device dielectric.
1.4. Describe the basic equipment layout and components used for oxidation

2. Photolithography

2.1. Define photolithography in the context of semiconductor manufacturing.
2.2. Define the terms: negative photoresist and positive photoresist.
2.3. Explain the difference between light field and dark field masks (reticles).
2.4. Construct a flow diagram (about ten steps) that represents the photolithography process. Give reasons for each step and show a cross-sectional view of the wafer at each step.
2.5. Describe the basic equipment layout and components used for photolithography

3. Etch

3.1. Define etch and explain its use in semiconductor manufacturing.
3.2. Explain what is meant by anisotropic etch and isotropic etch.
3.3. Describe the plasma etching process.
3.4. Compare and contrast wet etch with dry etch.
3.5. Describe processes used to remove the photoresist layer.
3.6. Describe the basic equipment layout and components used for etching

4. Doping

4.1. Name the chemical elements used for doping n-type and p-type semiconductor materials.

4.2. Describe the process of diffusion. List two major conditions that are necessary for diffusion to take place.
4.3. Explain the drive-in process and its purpose in diffusion.
4.4. List the key limits of diffusion in the doping of semiconductors and show how these limits are overcome by ion implanting.
4.5. Describe the basic equipment layout and components of a rapid thermal processor

5. Chemical Vapor Deposition

5.1. List at least five desirable attributes of deposited films and describe why are they important in the manufacture of semiconductor devices.
5.2. Name the main parts of a CVD system. Use sketches as necessary.
5.3. Explain the basic principles of CVD and discuss the related chemical considerations.
5.4. Give a brief overview of processes, including chemistry and equipment, used to provide polysilicon semiconductor layers, insulators (dielectrics), and conductors in microelectronic devices.

6. Metallization

6.1. Define metallization in semiconductor manufacturing and give examples of functions provided by metal films.
6.2. List desirable properties of metals used as surface conductors on an integrated circuit.
6.3. List some key metals and alloys used in the metallization processes in semiconductor manufacturing.
6.4. Describe the sputter deposition or physical vapor deposition process.

7. Test, Sort, and Packaging

7.1. Describe the process of testing and sorting die on a wafer.
7.2. Explain reliability and how reliability testing is done.
7.3. Describe the parametric tests performed on a die.
7.4. List the four functions of a semiconductor package.
7.5. Recognize and identify the major package designs, e.g. Dual-in-Line, Quad, and Pin Grid Array.

Course used to supply ri for certificate: no

Ri computation hrs: 0

Ri computation activities:

Ri communication hrs:	0
Ri communication activities:	
Ri human relations hrs:	0
Ri human relations activities:	
Reason for new course:	The new structure of the old MT 100 (a 3 credit) course will offer more flexibility in scheduling.
How course will be taught:	Campus,Online
Reason for other:	
Explanation if there are degrees andor certificates that are affected by the instruction of this course:	Only the AAS degree in Microelectronics is affected.
Explanation if this course transfer to any other academic institution:	No.
Explanation if there are similar courses existing in other programs or disciplines at pcc:	No.
Explanation if they have consulted with sac chairs of other programs regarding potential impact:	No.
Explain if there are any potential impact on another department or campus:	No.
Implemented term or year requested:	Fall 2008
Submitter:	dorina cornea-hasegan
From:	dcorneah@pcc.edu
Sac chair:	eric kirchner
Sac chair email:	ekirchne@pcc.edu
Sac admin liason name:	margie fyfield
Sac admin liason email:	mfyfield@pcc.edu

Curriculum Request Form
New Course

Course number:	MT 104
Course title:	Introduction to Photo Voltaic Processing
Transcript title:	Inro to PV Processing
Course credits:	1
Lec contact hrs:	10
Special fee:	No
Course description:	Introduces the methods used to manufacture silicon sollar cells. Traces cell processing from raw material to a finished product using planar technology. The course has an emphasis on crystal growing techniques.
Prerequisites coreq concurrent:	Prerequisites: MT 101, MT 102 and placement into MTH 65.
Addendum to course description:	Traces semiconductor processing from raw material to a finished sollar cell. Includes the following manufacturing processes: crystal growing and wafer preparation.
Intended outcomes:	Develop basic learning skills to help you succeed in the PCC MT-PV Option of the AAS program. Understand the crystal growing process and learn the steps of the wafer preparation process. Understand basic construction and operation of a solar cell. Develop abilities and habits in using the information methods of the solar industry to communicate and find information on: business news, processes, advances, technical data, etc
Course activities and design:	The lecture of the course will be instructor delivered and it my include demonstrations, and/or student discussions stressing key topics. In preparation for the lecture portion of the course, students will be expected to complete all reading and problem/question homework assignments.
Outcomes assessment strategies:	Assessment of student performance in this course will consist of written examinations. Assessment may also include oral presentations, written reports, and other class projects.

Course content and skills:	1. Semiconductor Material 1.1 Describe the difference in composition and electrical functioning of n-type and p-type semiconductor materials. 1 2. Describe the mechanism for conduction in n-type and p-type semiconductor materials. 2. Crystal Growth and Wafer Preparation 2.1. Define the following terms: crystalline, polycrystalline, and amorphous. 2.2. Define the terms: Miller index and crystal plane. 2.3. Describe the Czochralski method of growing crystals. 2.4. Describe the steps required to produce a silicon wafer from a silicon ingot. 2.5. Describe the steps required to produce a silicon ingot from sand. 3. Overview of Wafer Fabrication
Course used to supply ri for certificate:	No
Ri computation hrs:	0
Ri computation activities:	
Ri communication hrs:	0
Ri communication activities:	
Ri human relations hrs:	0
Ri human relations activities:	
Reason for new course:	This one credit course will be required by the new PV option of the existing AAS in Microelectronics.
How course will be taught:	Campus
Reason for other:	
Explanation if there are degrees andor certificates that are affected by the instruction of this course:	Just the new PV option of the AAS in Microelectronics Technology.
Explanation if this course transfer to any other academic institution:	OIT and PSU.
Explanation if there are	No

similar courses existing in other programs or disciplines at pcc:	
Explanation if they have consulted with sac chairs of other programs regarding potential impact:	No
Explain if there are any potential impact on another department or campus:	No
Implemented term or year requested:	Fall 2008
Submitter:	dorina cornea-hasegan
From:	dcorneah@pcc.edu
Sac chair:	eric kirchner
Sac chair email:	ekirchne@pcc.edu
Sac admin liason name:	margie fyfield
Sac admin liason email:	mfyfield@pcc.edu

Curriculum Request Form
Related Instruction

Current Course Number:	CIS 178
Current Course Title:	Applied Internet Concepts
Computation Hours:	10
Content (Activities, Skills, Concepts, etc.):	Mathematical concepts include TCP/IP and other protocols, measuring Internet performance, constructing Uniform Resource Locators (URL's), analyzing data from web searches, pinging and tracing an IP address, and assigning values to properties in HTML.
Communication Hours:	10
Content (Activities, Skills, Concepts, etc.):	Use a variety of communication tools such as email, a mailing/discussion list, a newsgroup, a bulletin board and a chat room. Participate in on-line discussion groups. Document activities through written postings on a bulletin board, by email, or using other Internet-based media.
Human Relations Hours:	10
Content (Activities, Skills, Concepts, etc.):	Work cooperatively with colleagues via a mailing/discussion list, newsgroup, bulletin board, chat room, email or other Internet-based media. Communicate with the instructor to develop skill in working with supervisors.
Contact Name:	Art Schneider
Contact Email:	aschneid@pcc.edu

Curriculum Request Form
Related Instruction

Current Course Number:	CAS 111D
Current Course Title:	Beg Web Site: Dreamweaver
Computation Hours:	15
Content (Activities, Skills, Concepts, etc.):	Calculations involving screen resolution, the hex numbering system for colors, determining percentage width for tables and table cells, determining the length and width of an image, etc. In APDiv's, measuring placement on the screen in terms of pixels. In HTML, CSS and Behaviors, assigning values to properties and variables.
Communication Hours:	20
Content (Activities, Skills, Concepts, etc.):	Writing web pages with content developed by the student. May also include posting content on the web using e-mail, bulletin boards or blogs.
Human Relations Hours:	15
Content (Activities, Skills, Concepts, etc.):	In campus classes, working in groups to develop skill in working with colleagues. In online classes, working cooperatively via bulletin boards or other shared media. Communication with the the instructor to develop skill in working with supervisors.
Contact Name:	Art Schneider
Contact Email:	aschneid@pcc.edu

Curriculum Request Form
Related Instruction

Current Course Number:	CAS 112D
Current Course Title:	Intermediate Web Site: Dreamweaver
Computation Hours:	15
Content (Activities, Skills, Concepts, etc.):	Calculations involving screen resolution, the hex numbering system for colors, determining percentage width for tables and table cells, determining the length and width of an image, etc. In APDiv's, measuring placement on the screen in terms of pixels. In HTML, CSS and Behaviors, assigning values to properties and variables.
Communication Hours:	20
Content (Activities, Skills, Concepts, etc.):	Writing web pages with content developed by the student. May also include posting content on the web using e-mail, bulletin boards or blogs.
Human Relations Hours:	15
Content (Activities, Skills, Concepts, etc.):	In campus classes, working in groups to develop skill in working with colleagues. In online classes, working cooperatively via bulletin boards or other shared media. Communication with the the instructor to develop skill in working with supervisors.
Contact Name:	Art Schneider
Contact Email:	aschneid@pcc.edu

Curriculum Request Form
Related Instruction

Current Course Number:	CAS 206
Current Course Title:	Principles HTML / XHTML
Computation Hours:	15
Content (Activities, Skills, Concepts, etc.):	Calculations involving screen resolution, the hex numbering system for colors, determining percentage width for tables and table cells, determining the length and width of an image, etc. In APDiv's, measuring placement on the screen in terms of pixels. In HTML, CSS and Behaviors, assigning values to properties and variables.
Communication Hours:	20
Content (Activities, Skills, Concepts, etc.):	Writing web pages with content developed by the student. May also include posting content on the web using e-mail, bulletin boards or blogs.
Human Relations Hours:	15
Content (Activities, Skills, Concepts, etc.):	In campus classes, working in groups to develop skill in working with colleagues. In online classes, working cooperatively via bulletin boards or other shared media. Communication with the the instructor to develop skill in working with supervisors.
Contact Name:	Art Schneider
Contact Email:	aschneid@pcc.edu

Curriculum Request Form
New Course

Course number:	IMT 102
Course title:	Industrial Safety (OSHA)
Transcript title:	Industrial Safety (OSHA)
Course credits:	3
Lec contact hrs:	30
Course description:	Provides an introduction to the essential skills needed to maintain safety in industrial workplaces. Course includes information regarding general accident prevention.
Prerequisites coreq concurrent:	None
Intended outcomes:	• Apply safe work practices to promote and develop safe environments within the industrial workplace. • Apply OSHA and OR-OSHA rules and laws to develop safe operational processes and procedures for common situations that occur in manufacturing and construction industries. • Integrate learning to develop and operate a functioning safety committee and reporting processes that would suffice for compliance of state and federal safety rules and laws.
Course activities and design:	Learning activities will include: • Lecture • Workplace application report • Workbook assignments
Outcomes assessment strategies:	• Assessment of workplace application report • Written test • Assessment of workbook activities

Course content and skills:	Themes: Safety Lifelong skill development Concepts: Safety planning Issues: Working safely and efficiently while responding to the pressure of production Skills: Develop personal safety practices and plans Identify safety hazards
Course used to supply ri for certificate:	No
Ri computation hrs:	0
Ri computation activities:	N/A
Ri communication hrs:	0
Ri communication activities:	N/A
Ri human relations hrs:	0
Ri human relations activities:	N/A
Reason for new course:	Part of IMT Program
How course will be taught:	Campus
Explanation if there are degrees andor certificates that are affected by the instruction of this course:	No
Explanation if this course transfer to any other academic institution:	Depends on the college and program.
Explanation if there are similar courses existing in other programs or disciplines at pcc:	Courses from welding and manufacturing will be used as part of the program, but similar courses don't really exist.
Explanation if they have consulted with sac chairs of other programs regarding potential impact:	Spoke with manufacturing SAC chair.
Explain if there are any potential	N/A

impact on another department or campus:	
Implemented term or year requested:	Fall 2008
Submitter:	Fred Smith and Lori Gates
From:	lgates@pcc.edu
Sac chair:	Lori Gates
Sac chair email:	lgates@pcc.edu
Sac admin liason name:	Lori Gates
Sac admin liason email:	lgates@pcc.edu

Curriculum Request Form
New Course

Course number:	IMT 104
Course title:	Rigging, Lifting and Safety Inspection
Transcript title:	Rigging,Lifting & Safety Insp
Course credits:	3
Lec contact hrs:	10
Lec lab contact hrs:	40
Course description:	Provides instruction in fundamental rigging skills, including industrial knots, rigging calculations, rigging and hand signals, gear selection, overhead crane operations and lift operation. Inspection, safety and practical applications are stressed.
Prerequisites coreq concurrent:	None
Intended outcomes:	• Apply rigging knowledge to plan rigging lifts and moves, evaluating possible safety hazards. • Operate overhead cranes in a safe and efficient manner. • Perform safety evaluations of rigging and lifting equipment. • Apply safe practices during lifts involving equipment, other than cranes, commonly found in industry.
Course activities and design:	Learning activities will include: • Lecture and/or pod cast • Text and workbook activities • Lab activities • Workplace applications
Outcomes assessment	• Assessment of text and workbook activities

strategies:	• Assessment of workplace application reports • Assessment of lab activities • Written test
Course content and skills:	Themes: Safety Lifelong skill development Concepts: Physics of load moving and lifting Issues: Working safely and efficiently while responding to the pressure of production. Skills: Tie industrial knots Plan rigging lifts and moves Operate overhead cranes Inspect rigging and lifting equipment
Course used to supply ri for certificate:	no
Ri computation hrs:	0
Ri computation activities:	N/A
Ri communication hrs:	0
Ri communication activities:	N/A
Ri human relations hrs:	0
Ri human relations activities:	N/A
Reason for new course:	Part of IMT Program
How course will be taught:	Campus
Explanation if there are degrees andor certificates that are affected by the instruction of this course:	No
Explanation if this course transfer to any other academic institution:	Depends on the college and program.
Explanation if there are similar courses existing in other programs or disciplines at pcc:	Courses from welding and manufacturing will be used as part of the program, but similar courses don't really exist.
Explanation if they have consulted with sac chairs of other programs regarding potential impact:	Spoke with manufacturing SAC chair.

Explain if there are any potential impact on another department or campus:	N/A
Implemented term or year requested:	Fall 2008
Submitter:	Fred Smith and Lori Gates
From:	lgates@pcc.edu
Sac chair:	Lori Gates
Sac chair email:	lgates@pcc.edu
Sac admin liason name:	Lori Gates
Sac admin liason email:	lgates@pcc.edu

Curriculum Request Form
New Course

Course number:	IMT 105
Course title:	Industrial Hydraulics I
Transcript title:	Industrial Hydraulics I
Course credits:	3
Lec contact hrs:	20
Lec lab contact hrs:	20
Course description:	Provides instruction in reading and developing an understanding of hydraulic theory, analysis of fundamental hydraulic schematics, troubleshooting common hydraulic problems and maintaining hydraulic systems used in a variety of production applications.
Prerequisites coreq concurrent:	MTH 20 and Pneumatics or instructor approval.
Intended outcomes:	• Apply hydraulic theory and principles to develop and evaluate hydraulic systems used commonly in industrial applications. • Analyze hydraulic schematics to facilitate the logical troubleshooting of hydraulic systems and components. • Using hydraulic theory, proper safety procedures, and common hydraulic tools (i.e., flow meters, and pressure gauges) troubleshoot common hydraulic system components (e.g. servos and actuators) and application problems. • Apply preventative maintenance systems in the maintenance of hydraulic systems, including filtration system maintenance.
Course activities and design:	Learning activities will include:

	• Lecture and/or pod cast • Lab lecture activities
	• Assessment of text and workbook activities • Assessment of workplace applications.
Outcomes assessment strategies:	• Completion of lab activities • Report of workplace applications • Written and/or hands-on tests
Course content and skills:	Themes: Troubleshoot, maintain and repair industrial system. Lifelong skill development Safety Concepts: Fluid power physics Issues: Working safely and efficiently while responding to the pressure of production. Skills: Hydraulic system troubleshooting, maintenance, and repair Analysis of hydraulic Using safe working practices
Reason for new course:	Part of IMT Program
How course will be taught:	Campus
Explanation if there are degrees andor certificates that are affected by the instruction of this course:	No
Explanation if this course transfer to any other academic institution:	Depends on the college and program.
Explanation if there are similar courses existing in other programs or disciplines	Courses from welding and manufacturing will be used as part of the program, but similar courses don't really exist.

at pcc:	
Explanation if they have consulted with sac chairs of other programs regarding potential impact:	Spoke with manufacturing SAC chair.
Explain if there are any potential impact on another department or campus:	N/A
Implemented term or year requested:	Fall 2008
Submitter:	Fred Smith and Lori Gates
From:	lgates@pcc.edu
Sac chair:	Lori Gates
Sac chair email:	lgates@pcc.edu
Sac admin liason name:	Lori Gates
Sac admin liason email:	lgates@pcc.edu

Curriculum Request Form
New Course

Course number:	IMT 115
Course title:	Basic Electricity/Electronics
Transcript title:	Basic Electricity/Electronics
Course credits:	3
Lec contact hrs:	20
Lec lab contact hrs:	20
Course description:	Provides instruction in safe practices to use in working with electric circuits as well as the fundamentals of electricity and electronics.
Prerequisites coreq concurrent:	Instructor approval Millwright Apprentice Status
Addendum to course description:	
Intended outcomes:	• Use common electrical test equipment in the logical troubleshooting of electric circuits and components as well as common safety practices with electric energy. • Apply an understanding of the interrelationship of magnetism, volts, ohm, and amps to common applications used in industry. • Apply an understanding of common electrical circuits and rules for each type of circuit in order to calculate voltage, resistance and amperage at different points of the circuit. • Use common electric symbols to design simple circuits and troubleshoot circuits in industrial applications. • Apply an understanding of how motor operation impacts industrial application.

- Use the theory of how alternators work as opposed to generators to determine the suitability of each in different industrial applications.
- Choose the best application for a transformer need based on construction and operation principles.
- Use atomic theory to analyze transistor and diode operation systems for industrial applications.
- Perform basic instrument calibration on equipment commonly used in industry.

Course activities and design:	Learning activities will include: * Lab activities * Text and workbook activities * Workplace applications
Outcomes assessment strategies:	* Assessment of manual assignments * Assessment of workplace application reports * Assessment of lab activities
Course content and skills:	Themes: Troubleshoot, maintain and repair industrial systems Lifelong skill development Safety Concepts: Physics of electricity and solid state electronics. Issues: Working safely and efficiently while responding to the pressure of production. Skills: Use of tools safely
Course used to supply ri for certificate:	No
Ri computation hrs:	0
Ri computation activities:	N/A
Ri communication hrs:	0
Ri communication activities:	N/A
Ri human relations hrs:	0
Ri human relations activities:	N/A
Reason for new course:	Part of IMT Program

How course will be taught:	Campus
Reason for other:	
Explanation if there are degrees andor certificates that are affected by the instruction of this course:	No
Explanation if this course transfer to any other academic institution:	Depends on the college and program.
Explanation if there are similar courses existing in other programs or disciplines at pcc:	Courses from welding and manufacturing will be used as part of the program, but similar courses don't really exist.
Explanation if they have consulted with sac chairs of other programs regarding potential impact:	Spoke with manufacturing SAC chair.
Explain if there are any potential impact on another department or campus:	N/A
Implemented term or year requested:	Fall 2008
Submitter:	Fred Smith and Lori Gates
From:	lgates@pcc.edu
Sac chair:	Lori Gates
Sac chair email:	lgates@pcc.edu
Sac admin liason name:	Lori Gates
Sac admin liason email:	lgates@pcc.edu

Curriculum Request Form
New Course

Course number:	IMT 118
Course title:	Bearings, Seals and Lubrication
Transcript title:	Bearings, Seals & Lub
Course credits:	3
Lec contact hrs:	10
Lec lab contact hrs:	40
Course description:	Provides an introduction to bearings, seals, and lubrication types and techniques used in industry to develop skills in diagnosis, inspection and repair of moving parts.
Prerequisites coreq concurrent:	None
Addendum to course description:	
Intended outcomes:	• Develop and operate an oil analysis program to troubleshoot and maintain bearings and lubrication systems. • Use statistical process control theory to implement and operate a vibration analysis program. • Apply the theory of operation related to bearings, seals and lubricants to the analysis of failure and corrective action to prevent future premature failures. • Demonstrate skillful techniques in the proper removal and replacement of bearings, seals and lubricants. • Evaluate machine variables (i.e. speed, and load) and how they impact needed lubrication characteristics. • Apply knowledge of proper lubrication techniques for

	specific equipment commonly found in industrial settings.
Course activities and design:	Learning activities will include: • Lecture • Text and workbook activities • Lab activities • Workplace applications
Outcomes assessment strategies:	• Assessment of text and workbook activities • Assessment of workplace application reports • Assessment of lab activities • Written test
Course content and skills:	Themes: Troubleshoot, maintain and repair industrial systems Life long skill development Safety Concepts: Physics of bearing operation Chemistry of lubrications systems Issues: Working safely and efficiently while responding to the pressure of production. Skills: Troubleshoot and maintain bearings and lubrications systems Operate an oil analysis program Operate a vibration analysis program Prevent and analyze bearing failures
Reason for new course:	Part of IMT Program
How course will be taught:	Campus
Reason for other:	
Explanation if there are degrees andor certificates that are affected by the instruction of this course:	No
Explanation if this course transfer	Depends on the college and program.

to any other academic institution:

Explanation if there are similar courses existing in other programs or disciplines at pcc:	Courses from welding and manufacturing will be used as part of the program, but similar courses don't really exist.
Explanation if they have consulted with sac chairs of other programs regarding potential impact:	Spoke with manufacturing SAC chair.
Explain if there are any potential impact on another department or campus:	N/A
Implemented term or year requested:	Fall 2008
Submitter:	Fred Smith and Lori Gates
From:	lgates@pcc.edu
Sac chair:	Lori Gates
Sac chair email:	lgates@pcc.edu
Sac admin liason name:	Lori Gates
Sac admin liason email:	lgates@pcc.edu

Curriculum Request Form
New Course

Course number:	IMT 120
Course title:	Drive Systems
Transcript title:	Drive Systems
Course credits:	3
Lec contact hrs:	20
Lec lab contact hrs:	20
Course description:	Provides instruction in troubleshooting, maintaining and repairing drive systems, including belt, chain, and gear drives. Applications and handling of seals and shaft alignment are included in this course.
Prerequisites coreq concurrent:	None
Intended outcomes:	• Using power transmission theory, troubleshoot, maintain and repair major drive systems (e.g. belt drive systems, chain drive systems, gear drive systems) commonly used in industry. • Apply systems knowledge to prevent and analyze drive system failures. • Apply an understanding of horse power transfer, speed ratios and tensioning techniques in manufacturing processes.
Course activities and design:	Learning activities will include: • Lab activities • Text and workbook activities • Workplace applications

Outcomes assessment strategies:	• Assessment of text and workbook activities • Assessment of workplace application reports • Assessment of lab activities
Course content and skills:	Themes: Troubleshoot, maintain, and repair industrial drive systems Life long skill development Safety Concepts: Physics of drive system operation Issues: Working safely and efficiently while responding to the pressure of production. Skills: Troubleshoot, maintain, and repair belt, chain and gear drive systems Align shafts
Reason for new course:	Part of IMT Program
How course will be taught:	Campus
Explanation if there are degrees andor certificates that are affected by the instruction of this course:	No
Explanation if this course transfer to any other academic institution:	Depends on the college and program
Explanation if there are similar courses existing in other programs or disciplines at pcc:	Courses from welding and manufacturing will be used as part of the program, but similar courses don't really exist.
Explanation if they have consulted with sac chairs of other	Spoke with manufacturing SAC chair.

programs regarding potential impact:	
Explain if there are any potential impact on another department or campus:	N/A
Implemented term or year requested:	Fall 2008
Submitter:	Fred Smith and Lori Gates
From:	lgates@pcc.edu
Sac chair:	Lori Gates
Sac chair email:	lgates@pcc.edu
Sac admin liason name:	Lori Gates
Sac admin liason email:	lgates@pcc.edu

Curriculum Request Form
New Course

Course number:	IMT 200
Course title:	Pumps and valves
Transcript title:	Pumps and valves
Course credits:	3
Lec contact hrs:	20
Lec lab contact hrs:	20
Course description:	Provides instruction in how to troubleshoot and maintain industrial pumping systems. Content includes alignment procedures, rebuild methods, installation of packing and seals for pumps and valves and selecting pumps for specific applications.
Prerequisites coreq concurrent:	None
Intended outcomes:	• Apply hydraulic theory to maintain, troubleshoot and repair industrial pumps, heat exchanges, and servo units and other hydraulic system components commonly found in manufacturing. • Align pumps and drivers for efficient operation. • Demonstrate skill in using systems to prevent and analyze pump failures. • Demonstrate skill in using hydraulic schematics in situations ranging from assembly of systems to troubleshooting. • Demonstrate safe practices in the repair of pumps. • Apply knowledge of valve and gate type applications

and troubleshooting in pumps commonly used in manufacturing situations.

Course activities and design:	Learning activities will include: • lecture and/or pod cast • text and workbook activities • lab activities • workplace applications
Outcomes assessment strategies:	• assessment of workplace application reports • assessment of lab activities • written test
Course content and skills:	Themes: troubleshoot, maintain, and repair industrial production systems lifelong skill development safety concepts: physics of pump operation issues: working safely and efficiently while responding to the pressure of production. Skills: troubleshoot, maintain, and repair industrial pumping systems align pumps and drivers analyze pump failures
Reason for new course:	Part of IMT program
How course will be taught:	Campus
Explanation if there are degrees andor certificates that are affected by the instruction of this course:	No

Explanation if this course transfer to any other academic institution:	Depends on the college and program.
Explanation if there are similar courses existing in other programs or disciplines at pcc:	Courses from welding and manufacturing will be used as part of the program, but similar courses don't really exist.
Explanation if they have consulted with sac chairs of other programs regarding potential impact:	Spoke with manufacturing sac chair.
Explain if there are any potential impact on another department or campus:	N/a
Implemented term or year requested:	Fall 2008
Submitter:	Fred smith and lori gates
From:	Lgates@pcc.edu
Sac chair:	Lori gates
Sac chair email:	Lgates@pcc.edu
Sac admin liason name:	Lori gates
Sac admin liason email:	Lgates@pcc.edu

Curriculum Request Form
New Course

Course number:	IMT 204
Course title:	Pneumatics I
Transcript title:	Pneumatics I
Course credits:	2
Lec contact hrs:	20
Course description:	Provides an introduction to operating a pneumatic system, including maintenance and rebuilding procedures. Analysis of pneumatic schematics is included. This course is a prerequisite for more advanced pneumatic control training.
Prerequisites coreq concurrent:	None
Intended outcomes:	• Using pneumatic theory and applications, maintain, troubleshoot and repair pneumatic systems and components (i.e., air dryers, regulators, filters, oiling system, air pumps, compressors, and moisture control systems). • Analyze pneumatic schematics to possibly improve systems or troubleshoot potential or real system problems or weaknesses.
Course activities and design:	Learning activities will include: • Lecture • Text and workbook activities • Workplace applications
Outcomes assessment strategies:	• Assessment of text and workbook activities • Assessment of workplace application reports • Written test

Course content and skills:	Themes: Troubleshoot, maintain and repair industrial systems Lifelong skill development Safety Concepts: Physics of fluid power Issues: Working safely and efficiently while responding to the pressure of production. Skills: Troubleshoot, maintain and repair pneumatics systems Analyze pneumatic schematics
Reason for new course:	Part of IMT Program
How course will be taught:	Campus
Explanation if there are degrees andor certificates that are affected by the instruction of this course:	No
Explanation if this course transfer to any other academic institution:	Depends on the college and program.
Explanation if there are similar courses existing in other programs or disciplines at pcc:	Courses from welding and manufacturing will be used as part of the program, but similar courses don't really exist.
Explanation if they have consulted with sac chairs of other programs regarding potential impact:	Spoke with manufacturing SAC chair.
Explain if there are any potential impact on another department or campus:	N/A
Implemented term or year requested:	Fall 2008
Submitter:	Fred Smith and Lori Gates
From:	lgates@pcc.edu
Sac chair:	Lori Gates
Sac chair email:	lgates@pcc.edu
Sac admin liason name:	Lori Gates
Sac admin liason email:	lgates@pcc.edu

Curriculum Request Form
New Course

Course number:	IMT 209
Course title:	Pipefitting
Transcript title:	Pipefitting
Course credits:	3
Lec contact hrs:	20
Lec lab contact hrs:	20
Course description:	Examines the essential operations to assemble and maintain piping and other mechanical systems. Practical applications are stressed in this course.
Prerequisites coreq concurrent:	Instructor approval.
Addendum to course description:	
Intended outcomes:	• Apply materials often used in industrial piping to the proper assembly for specific industrial applications commonly found in industry to maintain piping systems. • Demonstrate safety precautions necessary for piping system repair. • Apply different methods commonly used to join pipes in industry (threading, flaring, welding, soldering). • Apply a working knowledge of types of pipe fittings in their application in industry. • Use knowledge of piping and fitting to determine different requirements.
Course activities and design:	Learning activities will include: • Lab activities

	• Text and workbook activities • Workplace applications
Outcomes assessment strategies:	• Assessment of manual assignments • Assessment of workplace application reports • Assessment of lab activities
Course content and skills:	Themes: Troubleshoot, maintain and repair industrial systems Lifelong skill development Safety Concepts: Physics of piping and other mechanical systems Issues: Working safely and efficiently while responding to the pressure of production. Skills: Maintain piping systems Install piping systems
Reason for new course:	Part of IMT Program
How course will be taught:	Campus
Explanation if there are degrees andor certificates that are affected by the instruction of this course:	No
Explanation if this course transfer to any other academic institution:	Depends on the college and program.
Explanation if there are similar courses existing in other programs or disciplines at pcc:	Courses from welding and manufacturing will be used as part of the program, but similar courses don't really exist.
Explanation if they have consulted with sac chairs of other programs regarding potential impact:	Spoke with manufacturing SAC chair.
Explain if there are any potential impact on another department or	N/A

campus:

Implemented term or year requested:	Fall 2008
Submitter:	Fred Smith and Lori Gates
From:	lgates@pcc.edu
Sac chair:	Lori Gates
Sac chair email:	lgates@pcc.edu
Sac admin liason name:	Lori Gates
Sac admin liason email:	lgates@pcc.edu

Curriculum Request Form
New Course

Course number:	IMT 220
Course title:	Proportional Hydraulics
Transcript title:	Proportional Hydraulics
Course credits:	3
Lec contact hrs:	20
Lec lab contact hrs:	20
Course description:	Examines the industrial applications of proportional hydraulics theory, application, troubleshooting and repair of these advanced hydraulic applications.
Prerequisites coreq concurrent:	None
Intended outcomes:	• Determine how proportional hydraulics are advantageous in industrial applications. • Apply design, operation and application of different proportional valves to different industrial needs. • Apply hydraulic amplifier design and operation theory to different industrial settings. • Use switching control, i.e., speed control used in different industrial processes, in workplace application. • Using mathematical formulas and theorems, perform calculations of motion related to hydraulic cylinder drives. • Demonstrate common safety practices in the repair of hydraulic systems. • Perform troubleshooting exercises and repairs to hydraulic systems.

Course activities and design:	Learning activities will include: • Lab activities • Text and workbook activities • Workplace applications
Outcomes assessment strategies:	• Assessment of manual assignments • Assessment of workplace application reports • Assessment of lab activities
Course content and skills:	Themes: Troubleshoot, maintain and repair industrial systems Lifelong skill development Safety Concepts: Physics of hydraulics and other mechanical systems Issues: Working safely and efficiently while responding to the pressure of production. Skills: Hydraulic system safety
Reason for new course:	Part of IMT Program
How course will be taught:	Campus
Explanation if there are degrees andor certificates that are affected by the instruction of this course:	No
Explanation if this course transfer to any other academic institution:	Depends on the college and program.
Explanation if there are similar courses existing in other programs or disciplines at pcc:	Courses from welding and manufacturing will be used as part of the program, but similar courses don't really exist.
Explanation if they have consulted with sac chairs of other programs	Spoke with manufacturing SAC chair.

regarding potential impact:

Explain if there are any potential impact on another department or campus:	N/A
Implemented term or year requested:	Fall 2008
Submitter:	Fred Smith and Lori Gates
From:	lgates@pcc.edu
Sac chair:	Lori Gates
Sac chair email:	lgates@pcc.edu
Sac admin liason name:	Lori Gates
Sac admin liason email:	lgates@pcc.edu

Curriculum Request Form
New Course

Course number:	IMT 222
Course title:	Statistical process control applications
Transcript title:	Statistical process control ap
Course credits:	3
Lec contact hrs:	20
Lec lab contact hrs:	20
Course description:	Provides instruction in the use of statistical process control to improve maintenance and production processes.
Prerequisites coreq concurrent:	None
Addendum to course description:	
Intended outcomes:	• Using mathematical theories, apply statistical concepts that form Statistical Process Control and perform industrial applications of its implementation. • In manufacturing operations, recognize common causes and effects of variation of processes on production output. • Use the different types of control charts often used as part of statistical process control systems and interpret different control charts from actual industrial processes. • Applying principles of statistical process control, carry out corrections needed from the interpretation of different charts noting opportunities for improvement.
Course activities and design:	Learning activities will include:

	• lab activities • text and workbook activities • workplace applications
Outcomes assessment strategies:	• assessment of manual assignments • assessment of workplace application reports • assessment of lab activities
Course content and skills:	Themes: troubleshoot, maintain and repair industrial systems lifelong skill development safety concepts: statistics applied to other mechanical systems issues: working safely and efficiently while responding to the pressure of production. Skills: interpret charts of data for process improvement
Reason for new course:	Part of imt program
How course will be taught:	Campus
Explanation if there are degrees andor certificates that are affected by the instruction of this course:	No
Explanation if this course transfer to any other academic institution:	Depends on the college and program.
Explanation if there are similar courses existing in other programs or disciplines at pcc:	Courses from welding and manufacturing will be used as part of the program, but similar courses don't really exist.
Explanation if they have consulted with sac chairs of other programs regarding potential impact:	Spoke with manufacturing sac chair.
Explain if there are any potential impact on another department or campus:	N/a
Implemented term or year requested:	Fall 2008
Submitter:	Fred smith and lori gates
From:	Lgates@pcc.edu

Sac chair:	Lori gates
Sac chair email:	Lgates@pcc.edu
Sac admin liason name:	Lori gates
Sac admin liason email:	Lgates@pcc.edu

Curriculum Request Form
New Course

Course number:	IMT 230
Course title:	Techniques of Preventive Maintenance
Transcript title:	Techniques of Preventive Maint
Course credits:	3
Lec contact hrs:	30
Course description:	Examines the development and implementation of a preventative maintenance program using proven actions and procedures and common computer software.
Prerequisites coreq concurrent:	None
Addendum to course description:	
Intended outcomes:	• From a production output standpoint, establish a preventive maintenance system. • Applying preventive maintenance practices, develop a preventive maintenance system and inventory management system using common computer technology (software) to organize and maintain the system. • Evaluate predictive maintenance and preventative maintenance and their advantages and disadvantages to the production process in manufacturing. • Design an actual preventative maintenance process for a specific piece of equipment commonly found in manufacturing processes.
Course activities and design:	Learning activities will include: • Lab activities

	• Text and workbook activities • Workplace applications
Outcomes assessment strategies:	• Assessment of manual assignments • Assessment of workplace application reports • Assessment of lab activities
Course content and skills:	Themes: Troubleshoot, maintain and repair industrial systems Lifelong skill development Safety Concepts: Logic of preventive maintenance on mechanical systems Issues: Working safely and efficiently while responding to the pressure of production. Skills: Prevention of work loss through planning maintenance
Reason for new course:	Part of IMT Program
How course will be taught:	Campus
Reason for other:	
Explanation if there are degrees andor certificates that are affected by the instruction of this course:	No
Explanation if this course transfer to any other academic institution:	Depends on the college and program.
Explanation if there are similar courses existing in other programs or disciplines at pcc:	Courses from welding and manufacturing will be used as part of the program, but similar courses don't really exist.
Explanation if they have consulted with sac chairs of other programs regarding potential impact:	Spoke with manufacturing SAC chair.
Explain if there are any potential impact on another department or campus:	N/A
Implemented term or year requested:	Fall 2008
Submitter:	Fred Smith and Lori Gates

From:	lgates@pcc.edu
Sac chair:	Lori Gates
Sac chair email:	lgates@pcc.edu
Sac admin liason name:	Lori Gates
Sac admin liason email:	lgates@pcc.edu

Curriculum Request Form
New Course

Course number:	IMT 250
Course title:	Control Systems
Transcript title:	Control Systems
Course credits:	3
Lec contact hrs:	20
Lec lab contact hrs:	20
Course description:	Examines theory, troubleshooting and safe repair of motor control systems used in industry. AC/DC and solid state controls will be covered as part of the course.
Prerequisites coreq concurrent:	None
Intended outcomes:	• Skillfully diagnose and repair problems using wiring and line diagrams, related direct current motor controls, reduced voltage starters, alternating current motor controls, various starter types, and component circuits. • From atomic structure to microprocessor controlled motor drives, apply an understanding of solid state motor control systems and demonstrate safe work practices while logically troubleshooting these motor control systems. • Use a schematic of common industrial circuits and identify symbols for motors, generators, transformers and various control systems in order to address the operation and application of the component within the circuit. • Apply proper troubleshooting procedures (mechanical and electrical faults) using the NEC handbook for motors, controls and generators.

- Recognize applications that create the need to reconnect induction motors for changes in voltage number of phases, number of poles, frequency and output then make these changes to motors for different applications.

Course activities and design:	Learning activities will include: • Lab activities • Text and workbook activities • Workplace applications
Outcomes assessment strategies:	• Assessment of manual assignments • Assessment of workplace application reports • Assessment of lab activities
Course content and skills:	Themes: Troubleshoot, maintain and repair industrial systems Lifelong skill development Safety Concepts: Physics of electricity and solid state electronics and other mechanical systems. Issues: Working safely and efficiently while responding to the pressure of production. Skills: Logical testing of control systems.
Reason for new course:	Part of IMT Program
How course will be taught:	Campus
Explanation if there are degrees andor certificates that are affected by the instruction of this course:	No
Explanation if this course transfer to any other academic institution:	Depends on the college and program.
Explanation if there are similar courses existing in other	Courses from welding and manufacturing will be used as part of the program, but similar courses don't really exist.

programs or disciplines at pcc:

Explanation if they have consulted with sac chairs of other programs regarding potential impact:	Spoke with manufacturing SAC chair.
Explain if there are any potential impact on another department or campus:	N/A
Implemented term or year requested:	Fall 2008
Submitter:	Fred Smith and Lori Gates
From:	lgates@pcc.edu
Sac chair:	Lori Gates
Sac chair email:	lgates@pcc.edu
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