
The Kentucky Bridges to Opportunity: Career Pathways Experience

Wisconsin Regional Industry Skills Education Initiative
Leadership Conference
Madison, WI
September 10, 2007

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KCTCS Career Pathways Webpage: <http://kctcs.edu/student/careerpathways/>

Kentucky Snapshot

- KCTCS is one of nine postsecondary institutions coordinated by CPE along with adult education
 - KCTCS is a centralized system comprised of 16 colleges and 65 campuses with over 86,000 students governed by KCTCS Board of Regents (over 50,000 students in courses with an online component, ranging from web-enhanced to totally online)
 - 120 KY Adult Education Providers – KYAE housed in CPE
 - 10 KY WIB/WIA regions housed in KY Education Cabinet/Dept. for Workforce Investment
 - Secondary Career and Technical ed provided through KDE (175 school districts) and OCTE (55 ATC's)
 - KY Economic Development Cabinet – BSSC and the “Golden Triangle”
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Career Pathways: A Synergy of Promising Practices (AKA The Whole is Greater than the Sum of Its Parts)

- ❑ New certificates and degrees
 - ❑ New courses
 - ❑ Remedial bridges
 - ❑ Secondary alignment
 - ❑ Articulation with 4 year
 - ❑ Customized and short term training interventions
 - ❑ Integrated work experience
 - ❑ More career counseling
 - ❑ Improved assessments
 - ❑ Non-traditional delivery (time, place, technology)
 - ❑ Other
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Career Pathways: Operationalizing (Essential Elements)

- Employers engaged / contributing / work experience
 - Academic framework – credentials
 - Remedial and secondary bridge
 - Transfer to 4 year
 - Short term customized interventions
 - Supportive services/career counseling
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Kentucky's Mission Integration Quotient

A tool assessing the status of:

- Employer Engagement
 - Partner Engagement
 - Student Support Services Integration
 - Instructional Transformation
 - Continuous Improvement
 - Sustainability
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Career Pathways: Lessons Learned

- Every college starts in a different place, builds upon different strengths and progresses at a different rate
 - Redesign of curriculum and delivery methods (internal issues) as challenging as employer and agency partnership development (external issues)
 - Conversations between colleges (academic faculty) and employers were elevated to a new level
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Career Pathways: Lessons Learned (2)

- Workforce development staff facilitate and support while reinventing their role and relationships
 - Be prepared to align pathways with corresponding secondary efforts (Perkins, Tech Prep, High Schools that Work, etc.)
 - Colleges initially look to adult ed providers for more flexible and targeted remediation – engage dev ed
 - Additional technical assistance and resources needed to engage college faculty in curriculum design and redesign
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Shoring Up The Secondary Pipeline:

- KDE/OCTE/KCTCS curriculum alignment initiative
 - Using CCTI Curriculum Template
 - Perkins Funded
 - Six sectors currently being addressed
 - Construction
 - Education
 - Health Science
 - Information Technology
 - Manufacturing
 - STEM
 - Joint Faculty Teams to:
 - Identity pathways in sector
 - Align secondary and post secondary curricula
 - Identify dual credit opportunities
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KENTUCKY CAREER PATHWAY/PROGRAM OF STUDY TEMPLATE

COLLEGE/UNIVERSITY:

CLUSTER:

HIGH SCHOOL (S):

PATHWAY:

PROGRAM:

	GRADE	ENGLISH	MATH	SCIENCE	SOCIAL STUDIES	REQUIRED COURSES				CREDENTIAL CERTIFICATE DIPLOMA DEGREE
						RECOMMENDED ELECTIVE COURSES	OTHER ELECTIVE COURSES	CAREER AND TECHNICAL EDUCATION COURSES		
SECONDARY	9									
	10									
	11									
	12									
POSTSECONDARY	Year 13									
	Year 14									
	Year 15									
	Year 16									



League of CCTI
FOR INNOVATION College and Career Transitions Initiative

Funded by the U. S. Department of Education
(V051B020001)

Revised Jan. 2005
October, 2006-CTE/Kentucky

Required Courses

Recommended Elective Courses

Other Elective Courses

Career and Technical Education Courses

Credit-Based Transition Programs (e.g. Dual/Concurrent Enrollment, Articulated Courses, 2+2+2)
 =High School to Comm. College) =Com. College to 4-Yr Institution) = Opportunity to test out)

Mandatory Assessments, Advising, and Additional Preparation

Note: Categories of courses (e.g. Required, Recommended Electives, other Electives and career and Technical Education) apply to both secondary and postsecondary levels.

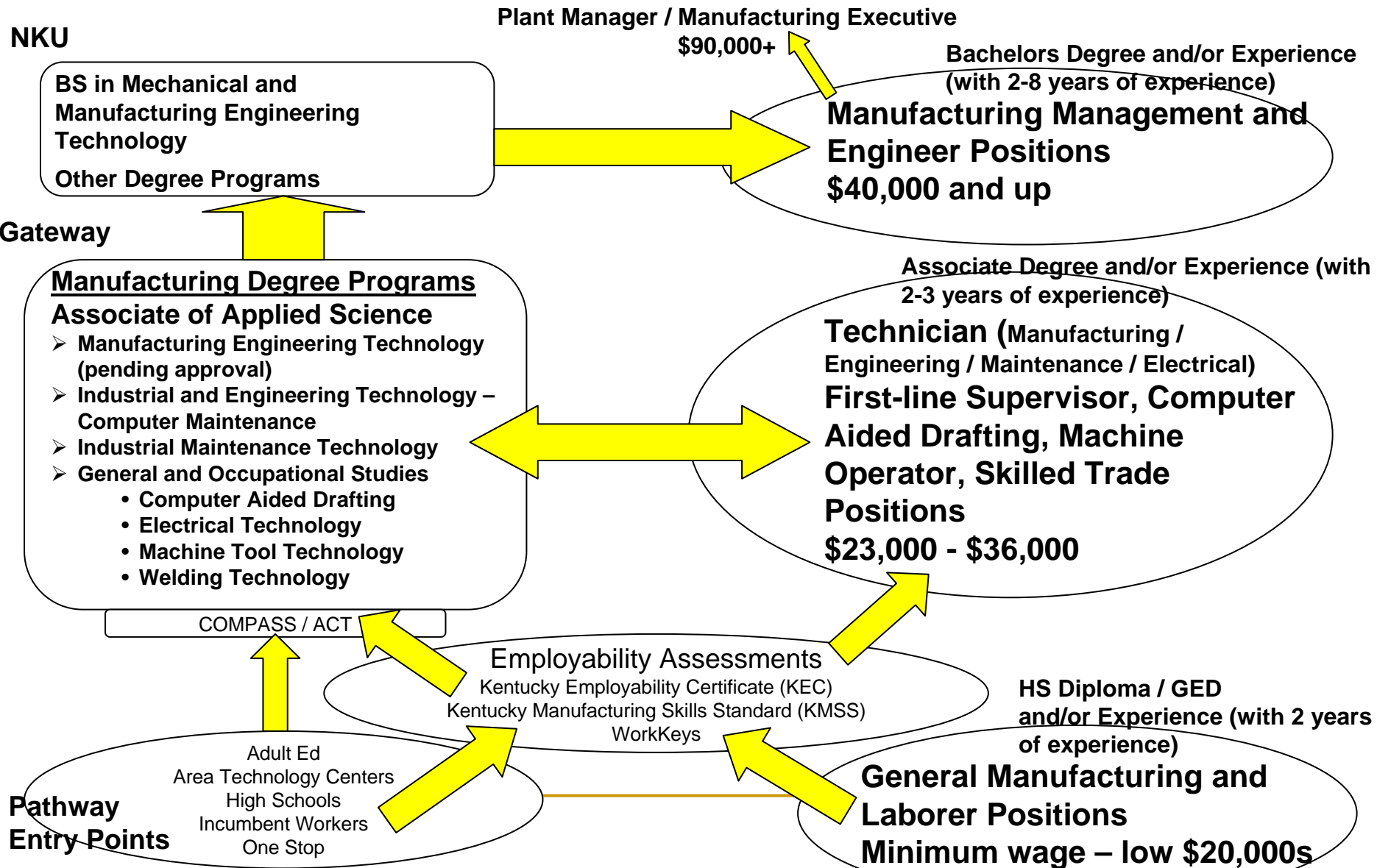
And Career Pathways Make Economic Sense: Kentucky's Projected ROI (July 2004 – August 2007)

- At least 22 Pathways (to date)
 - Allied Health (14)
 - Advanced Manufacturing (3)
 - Construction (2)
 - Transportation (1)
 - Business (2)
 - KY WINS (Workforce Training Incentive Funds) commitment of \$6.2M
 - Projected project revenue of \$2M
 - Cash and in kind contributions of \$10.7M
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Kentucky Career Pathways Outcomes to date:

- Approximately 5,333 students served Fall'04 to Spring'07
 - Career Pathways students earned 573 credentials since July, 2004
 - 155 Associate Degrees
 - 91 Diplomas
 - 327 Certificates
 - Career Pathways students had a higher retention rate than the KCTCS student population from Fall 2005 to Fall 2006
 - Career Pathways Students 71%
 - KCTCS population 46%
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Manufacturing Careers Pathway



Engineering Technician Knowledge and Skills

Quantitative Ratings

A = 2

B = 1

C = 0

Employers were asked to rate each knowledge and skill area with A being the most important and C being the least important when considering the knowledge and skills required of entry-level engineering technicians.

Knowledge / Skill Area	Rating	Average Rating
Manufacturing Processes	A, A, A, B, A, A, A, A, A, B, A, A, B, A, B	1.9
Math	A, A, C, B, A, A, B, B, B, A, A, A, B, B, A, A	1.6
CAD / CAM	B, A, C, B, A, A, B, A, A, A, A, B, A, A, A	1.5
Interpersonal skills	B, A, A, A, B, C, A, B, C, B, A, A, A, A, A, B	1.4
Production Operations	A, A, B, A, B, B, B, A, A, A, B, A, B, C, A, B	1.4
Co-op Experience	A, A, A, B, C, A, B, A, C, B	1.4
Effective speaking	B, A, B, A, B, B, A, C, B, C, B, A, A, A, A, B	1.3
Writing	C, A, B, A, B, B, A, B, B, C, A, A, B, A, A, B	1.3
Quality Control	A, A, A, B, B, B, B, B, A, B, B, B, B, C, B, C	1.2
Statistics	A, A, C, C, C, B	0.8
Statics / Strength of Materials	B, A, C, C, C, A	0.8
Maintenance	B, A, A, A, A, C, C, B, C, C, C, B, C, C, B, C	0.8
Tooling	C, A, B, C, A, B, C, B, C, B, C, B, C, C, B, A	0.8
CNC Programming / PLC Programming	C, C, A, C, C, A, C, C, B, A, C, C, C, C, A, A	0.7
Project Management	C, C, C, A, A, A, A, B, A, C	0.6
Management	C, B, B, B, C, C, B, C, B, B, C, A, C, B, C, C	0.6
Economics	C, A, C, C, C, C	0.3
Cost Accounting / Budgeting	C, C, C, C, B, C, C, B, A, C	0.2

What We Heard

Manufacturing Engineering Technicians need...

- (8) Strong communication and interpersonal skills, the ability to work with others
- (7) Co-op experience – strongly preferred, a plus, the more the better
- (6) Strong math skills – extremely important, grasp concepts, Algebra II, Trigonometry, fractions, decimals
- (5) Speaking and presentation skills
- (5) Project management skills
- (4) Team skills – work in teams to get the job done
- (4) Business-level understanding of manufacturing processes – from order to shipment, how the company makes its products

What We Heard - Quality Certificate

Favorable

1. Would want Quality engineers to understand CMM (Coordinate Measurement Machine).
2. QC certificate should include process understanding, gage maintenance and calibration, perhaps not TQM, statistics / SPC in depth, exposure to Six Sigma, understanding of drawings
3. Absolutely saw value in a QC certificate – should cover computer skills, interpersonal skills, communication, problem-solving and basic statistics
4. Person with QC certificate needs knowledge of basic measuring tools – scales, micrometers, CMM machines, video measuring, automatic gauging
5. QC should focus on tolerances
6. Would like more QC experience, more quality engineering focused, not sure that an AAS in Quality provides more than a certificate
7. QC certificate – a plus for people to get hired

Unfavorable

1. Quality Control and Lean is secondary
2. Not a lot of value in a QC certificate
3. Lean manufacturing of higher value in industry than Quality Control
4. Already does a lot of training in Quality Control and Lean – everyone does it a little bit differently

What We Heard - Lean Certificate

Favorable

1. Does see value in offering a certificate for new employees and current employees who want to formalize their skills.
2. Lean certificate should be 4-5 hours online and 3 hours in a face-to-face simulation
3. Lean manufacturing of higher value in industry than Quality Control
4. Must be able to work in a lean environment – offer suggestions

Unfavorable

1. Did not see value in a Lean Certificate – need other skills to make Lean work – saw value in having lean topics as part of a QC certificate
2. Lean manufacturing as a part of manufacturing processes
3. Quality Control and Lean is secondary
4. Lean – so many different theories, which one would you focus on
5. Already does a lot of training in Quality Control and Lean – everyone does it a little bit differently

Interpreting What We Heard

Degree program should include...

- Interpersonal skills
- Co-op experience
- Strong math component
- Communication skills – speaking, presenting, writing
- Project management
- An emphasis on working in teams
- Business-level understanding of manufacturing along with some understanding of manufacturing process and production operations
- CAD / CAM introduction
- Quality Control component

Three New Certificates

EMBEDDED CERTIFICATES

Are earned with the General Education and Technical Core Courses
within the AAS degree

Can also be earned independent of the AAS degree

Integrated Manufacturing Technologies Certificate

(6 courses with 2 labs)

- Electrical Circuits
- Intro to CAD
- Manufacturing Processes
- College Algebra
- Trigonometry
- Statics and Strengths of Materials

Manufacturing Operations Certificate

(6 courses)

- Basic Public Speaking
OR Intro to Interpersonal
Communications
- Intro to Business
- Production Mgt
- Intro to Quality Systems
- College Algebra
- Statistics for Quality I

Quality Control Certificate

(7 courses)

- Intro to CAD
- Basic Public Speaking OR
Intro to Interpersonal
Communications
- Metrology / Control
Charts (elective course – not
embedded)
- Intro to Quality Systems
- Quality Audits (elective course
– not embedded)
- College Algebra
- Statistics for Quality I

Manufacturing Engineering Technology degree with Associated Certificates

General Education Requirements (10 courses)

- Intro to College
- Writing I & II
- College Algebra
- Trigonometry
- Calculus I OR Elementary Calculus
- Basic Public Speaking OR Intro to Interpersonal Communications
- General Physics OR Applied Physics
- General Psychology
- Heritage / Humanities elective

Manufacturing Engineering Technology Core Requirements (10 courses and 2 labs)

- Electrical Circuits
- Statics and Strengths of Materials
- Intro to CAD
- Manufacturing Processes
- Intro to Business
- Co-op Education
- Production Mgt
- Manufacturing Capstone
- Intro to Quality Systems
- Statistics for Quality I

Elective Courses (6 -8 credit hours for completion of degree)

Electives can be chosen from a wide variety of disciplines

OR

Electives may be chosen is a particular sequence to earn an additional certificate

Additional Certificates

Earned within the AAS degree by taking elective courses

Can also be earned independent of the AAS degree

- Electronics Tester
2 courses with 2 labs in:
 - Electrical circuits
- Robotics and Automation Helper
3 courses with 2 labs in:
 - Electrical circuits
 - Fluid Power
- Exploratory Machining
2 courses in:
 - Machine Tool
- Quality Control
7 courses (2 electives) in:
 - Intro to CAD
 - Basic Public Speaking OR Intro to Interpersonal Communications
 - College Algebra
 - Metrology / Control Charts
 - Quality Mgt / Statistics / Auditing

EMBEDDED CERTIFICATES

Are earned with the General Education and Technical Core Courses within the AAS degree

Can also be earned independent of the AAS degree

Integrated Manufacturing Technologies Certificate (6 courses with 2 labs)

- Electrical Circuits
- Intro to CAD
- Manufacturing Processes
- College Algebra
- Trigonometry
- Statics and Strengths of Materials

Manufacturing Operations Certificate (6 courses)

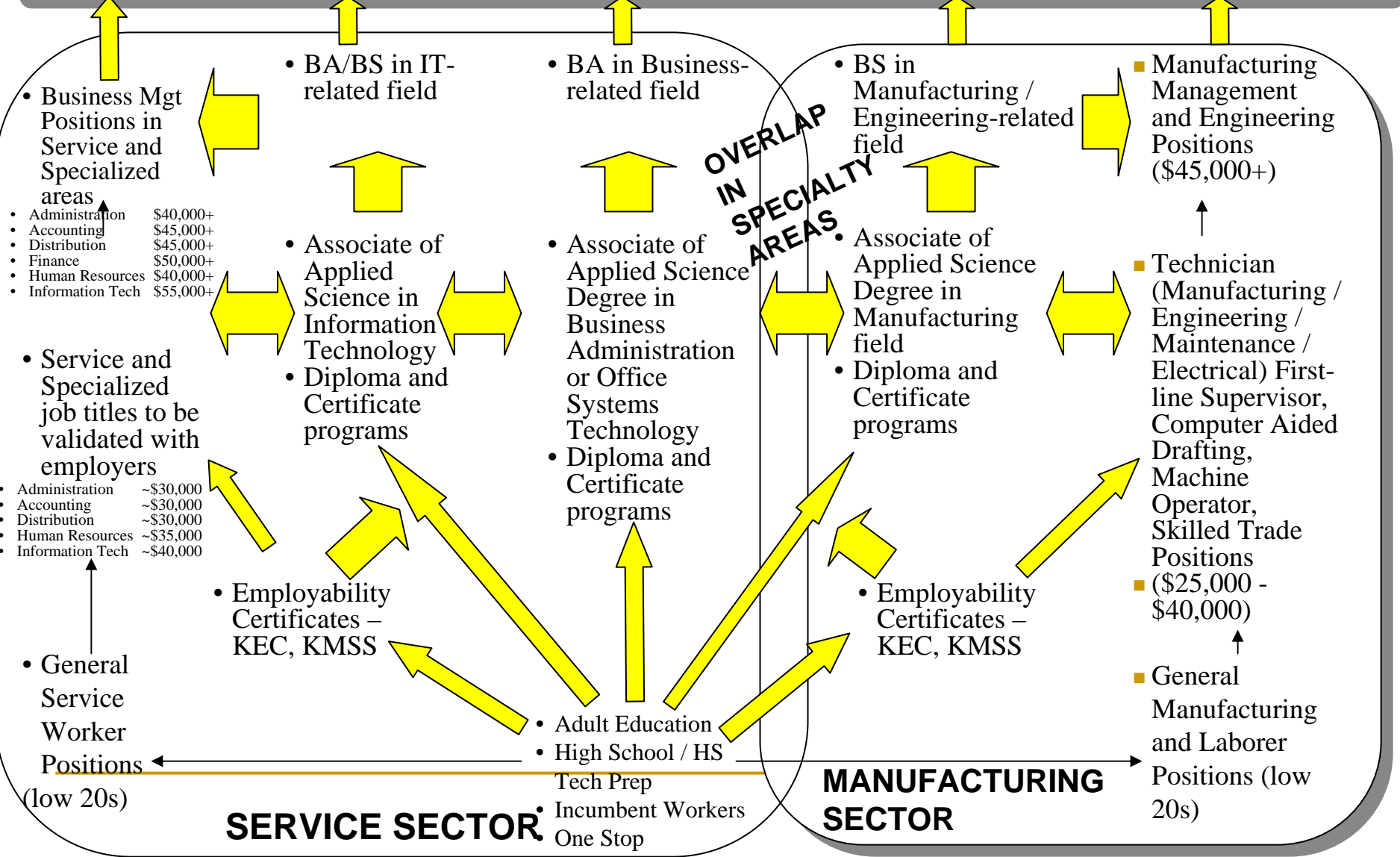
- Basic Public Speaking OR Intro to Interpersonal Communications
- Intro to Business
- Production Mgt
- Intro to Quality Systems
- College Algebra
- Statistics for Quality I

Project Outcomes

- Increased enrollment in manufacturing programs
 - 72 new students enrolled on the pathway by Fall 2006
- Make Gateway's manufacturing programs more accessible to potential participants
 - Marketing and communication at pathway entry points
 - Recruiter / Advisor positions
 - Marketing materials
- Curriculum alignment with
 - Secondary schools
 - Northern Kentucky University
- The foundation of a manufacturing pathway that is
 - A systematic tool for lifelong learning
 - A data-driven accountability tool
 - A strategic tool for institutional transformation

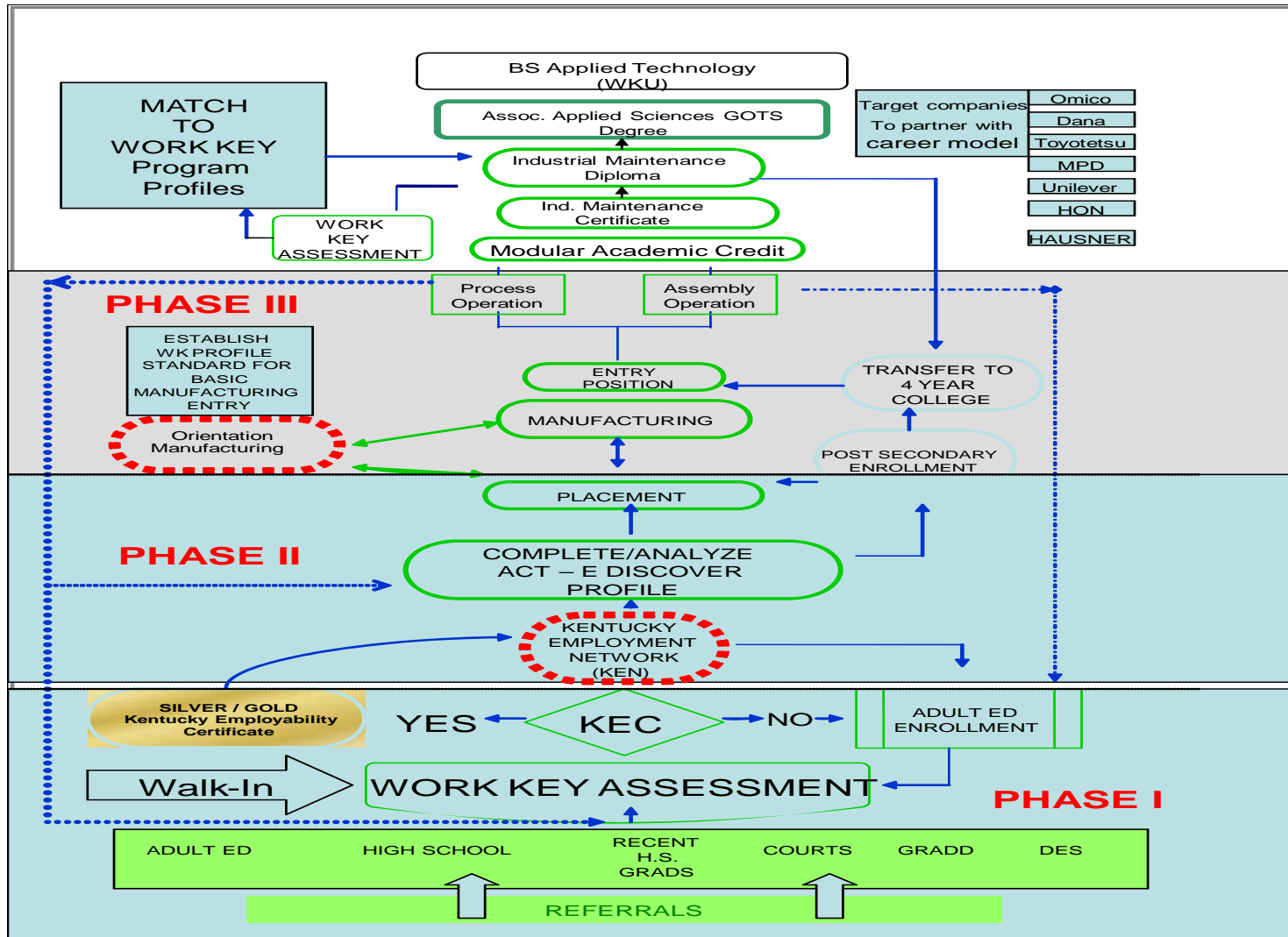
Business Careers Pathway

General Management Positions or Business Management Positions with Areas of Specialization (\$90,000+) Sales / Marketing , Accounting / Finance, Human Resources, Operations / Manufacturing, Information Technology



All salaries are estimates and need to be validated with employers.

Owensboro Community and Technical College's Industrial Maintenance Career Pathway



Madisonville Community College

Nursing Pathway

