

JFF

SOUTHCENTRAL ADVANCED MANUFACTURING PROGRAM OF STUDY FINDINGS

JUNE 14, 2019

PRESENTED BY

Anna O'Connor

Ankita Jhaveri

HOW WE DEVELOP PROGRAM OF STUDY MAPS

IDENTIFY PROMISING CREDENTIALS

Identify credentials that hold value in the labor market and are *promising* options for students to pursue



IDENTIFY DOOR OPENER AND STRATEGIC COURSES

Recommend dual enrollment courses within and across all relevant degree programs



EXPERTS DISCUSS AND VERIFY

Discuss implications and considerations of program of study maps with Southcentral partners



ADVANCED MANUFACTURING (+)

WE LOOKED AT 11 DEGREE PROGRAMS

Engineering, Manufacturing, and Technology

Transportation

- Auto Body & Collision Technology
- Automotive Services

Advanced Manufacturing

- Energy Technical Specialist
- Machine Tool Technology
- Mechatronics
- Welding

Building & Design

- Architectural Drafting & Design
- Carpentry
- Civil Engineering Technology
- Geographic Information Systems
- HVAC

MIT'S LIVING WAGE CALCULATOR

WHAT'S THE **LIVING WAGE** IN THE MANKATO REGION?



One Adult
\$11.51/hour
\$23,941/annually



One Adult/One Child
\$24.74/hour
\$51,459/annually

WHAT OCCUPATIONS ARE AVAILABLE?

ADVANCED MANUFACTURING OCCUPATION LIST

Occupation	Median Wage	Growth	Education Required
Architectural and Civil Drafters (Architectural Drafting & Design)	\$22.17	22%	Associate's Degree
Electrical and Electronics Repairers (Mechatronics)	\$27.65	17%	Postsecondary Certificate
Automotive Body and Related Repairers	\$20.46	5%	High School Diploma
Computer-Controlled Machine Tool Operators	\$17.38	6%	High School Diploma
Machinists	\$18.68	8%	High School Diploma
Mobile Heavy Equipment Mechanics (Mechatronics)	\$25.80	26%	High School Diploma
Painters, Transportation Equipment	\$18.67	0%	High School Diploma
Welders, Cutters, Solderers, and Brazers	\$19.64	14%	High School Diploma



One Adult
\$11.51/hour

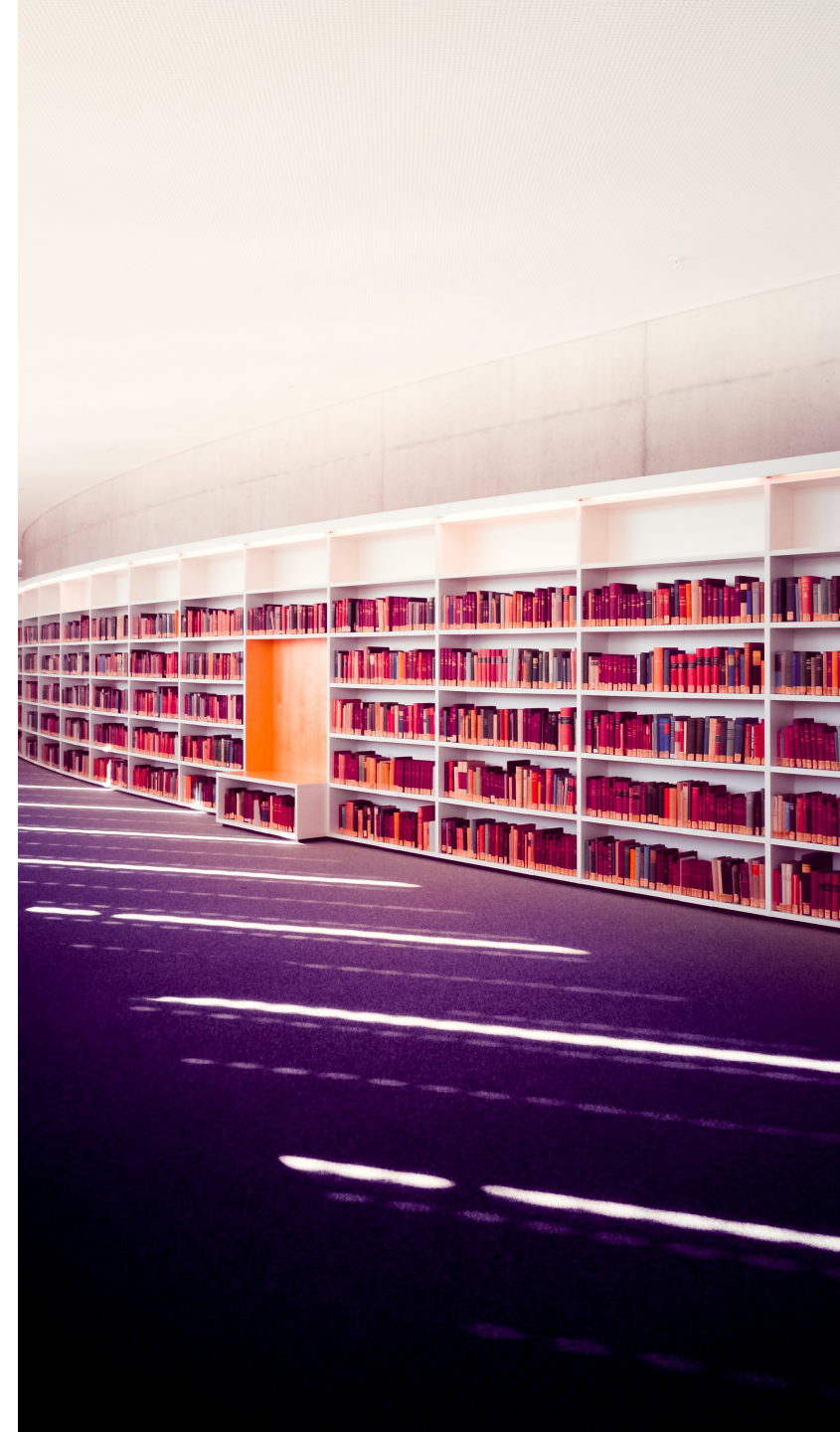


One Adult/One Child
\$24.74/hour

RECOMMENDATION CRITERIA

1. Course must be required for at least two degrees, one of which falls under the Advanced Manufacturing program
2. Preference for courses that lead to promising credentials (Architectural Drafting & Design, Mechatronics)
3. Preference for courses that continue to build knowledge in a sequenced manner (e.g., 101 followed by 102 courses)
4. Recommend four general education courses and four technical courses

*Courses already filtered by three or more credits and does not include the many electives that are optional for students.



GEN ED: CRITERIA 1 (ADVANCED MANUFACTURING)

Liberal Arts Course Title	Frequency	Degrees
MATH120: College Algebra	4	Energy Technical Specialist, Mechatronics, Architectural Drafting & Design, Civil Engineering Technology
MATH1050: Mathematics for Careers	4	Machine Tool Technology, Mechatronics, Welding, Carpentry
ENGL:100 English Composition	4	Energy Technical Specialist, Mechatronics, Architectural Drafting & Design, Civil Engineering Technology
COMM120: Small Group Communication	3	Machine Tool Technology, Welding, Carpentry
COMM140: Interpersonal Communication	3	Machine Tool Technology, Welding, Carpentry
MATH125: Trigonometry	2	Architectural Drafting & Design, Civil Engineering Technology
PHYS101: Introductory Physics	2	Energy Technical Specialist, Mechatronics

*Advanced Manufacturing Degrees



GEN ED: CRITERIA 2 (PROMISING CREDENTIAL)

Liberal Arts Course Title	Frequency	Degrees
MATH120: College Algebra	4	Energy Technical Specialist, Mechatronics, Architectural Drafting & Design, Civil Engineering Technology
MATH1050: Mathematics for Careers	4	Machine Tool Technology, Mechatronics, Welding, Carpentry
ENGL:100 English Composition	4	Energy Technical Specialist, Mechatronics, Architectural Drafting & Design, Civil Engineering Technology
COMM120: Small Group Communication	3	Machine Tool Technology, Welding, Carpentry
COMM140: Interpersonal Communication	3	Machine Tool Technology, Welding, Carpentry
PHYS101: Introductory Physics	2	Energy Technical Specialist, Mechatronics

*Advanced Manufacturing Degrees *Promising Credential



GEN ED: CRITERIA 3 (SEQUENCED COURSES)

Liberal Arts Course Title	Frequency	Degrees
MATH120: College Algebra	4	Energy Technical Specialist, Mechatronics, Architectural Drafting & Design, Civil Engineering Technology
MATH1050: Mathematics for Careers	4	Machine Tool Technology, Mechatronics, Welding, Carpentry
ENGL:100 English Composition	4	Energy Technical Specialist, Mechatronics, Architectural Drafting & Design, Civil Engineering Technology
PHYS101: Introductory Physics	2	Energy Technical Specialist, Mechatronics

*Advanced Manufacturing Degrees *Promising Credential



GEN ED: RECOMMENDATIONS

Liberal Arts Course Title	Frequency	Degrees
MATH120: College Algebra	4	Energy Technical Specialist, Mechatronics, Architectural Drafting & Design, Civil Engineering Technology
MATH1050: Mathematics for Careers	4	Machine Tool Technology, Mechatronics, Welding, Carpentry
ENGL:100 English Composition	4	Energy Technical Specialist, Mechatronics, Architectural Drafting & Design, Civil Engineering Technology
PHYS101: Introductory Physics	2	Energy Technical Specialist, Mechatronics

*Advanced Manufacturing Degrees *Promising Credential



TECHNICAL: CRITERIA 1 (ADVANCED MANUFACTURING)

Liberal Arts Course Title	Frequency	Degrees
MECA1122: Electricity Devices & Circuits I	2	Energy Technical Specialist, Mechatronics
MECA1222: Electricity Devices & Circuits II	2	Energy Technical Specialist, Mechatronics
MECA1250: Mechatronics Systems Operations I	2	Energy Technical Specialist, Mechatronics
MECA2100: Sensors & Control	2	Energy Technical Specialist, Mechatronics
MECA2120: Fluid Power I	2	Energy Technical Specialist, Mechatronics
MECA2130: Fluid Power II	2	Energy Technical Specialist, Mechatronics

*Advanced Manufacturing Degrees



TECHNICAL: CRITERIA 2 (PROMISING CREDENTIAL)

Liberal Arts Course Title	Frequency	Degrees
MECA1122: Electricity Devices & Circuits I	2	Energy Technical Specialist, Mechatronics
MECA1222: Electricity Devices & Circuits II	2	Energy Technical Specialist, Mechatronics
MECA1250: Mechatronics Systems Operations I	2	Energy Technical Specialist, Mechatronics
MECA2100: Sensors & Control	2	Energy Technical Specialist, Mechatronics
MECA2120: Fluid Power I	2	Energy Technical Specialist, Mechatronics
MECA2130: Fluid Power II	2	Energy Technical Specialist, Mechatronics

*Advanced Manufacturing Degrees *Promising Credential



TECHNICAL: CRITERIA 3 (SEQUENCED COURSES)

Liberal Arts Course Title	Frequency	Degrees
MECA1122: Electricity Devices & Circuits I	2	Energy Technical Specialist, Mechatronics
MECA1222: Electricity Devices & Circuits II	2	Energy Technical Specialist, Mechatronics
MECA1250: Mechatronics Systems Operations I	2	Energy Technical Specialist, Mechatronics
MECA2100: Sensors & Control	2	Energy Technical Specialist, Mechatronics
MECA2120: Fluid Power I	2	Energy Technical Specialist, Mechatronics
MECA2130: Fluid Power II	2	Energy Technical Specialist, Mechatronics

*Advanced Manufacturing Degrees *Promising Credential



TECHNICAL: RECOMMENDATIONS

Liberal Arts Course Title	Frequency	Degrees
MECA1122: Electricity Devices & Circuits I	2	Energy Technical Specialist, Mechatronics
MECA1222: Electricity Devices & Circuits II	2	Energy Technical Specialist, Mechatronics
MECA2120: Fluid Power I	2	Energy Technical Specialist, Mechatronics
MECA2130: Fluid Power II	2	Energy Technical Specialist, Mechatronics

*Advanced Manufacturing Degrees *Promising Credential



PROPOSED PATHWAYS

Advanced Manufacturing Pathways

Junior

MATH120: College Algebra
ENGL100: English Comp

MECA1122: Electricity
Devices & Circuits I
MECA2120: Fluid Power I

Mechatronics

Energy Technical
Specialist

Senior

MATH1050: Mathematics for Careers
PHYS101: Intro Physics

MECA1222: Electricity Devices &
Circuits II
MECA2130: Fluid Power II

BIOL106: Introduction to Cell Biology*
PHYS101: Intro Physics

MECA1222: Electricity Devices &
Circuits II
MECA2130: Fluid Power II



*course only counts toward Energy Technical Specialist degree



IN SUMMARY...

The two proposed pathways:

- Provide students an option to earn credits towards an advanced manufacturing degree:
 - Students in the **Mechatronics** pathway are earning credits towards an advanced manufacturing promising credential and accruing credits towards other SSC degrees
 - Students in the **Energy Technical Specialist*** pathway are earning credits towards an advanced manufacturing degree and accruing credits towards other SSC degrees.
- Provide students an opportunity to earn both general education and technical course credit requirements.

* The Energy Technical Specialist pathway is identical to the Mechatronic pathway unless students choose a degree specific mathematics course