Statement of Grant Impact (Section 5)

The purpose of this section is to show the full scope of the grant activities in a narrative form so that the reviewer understands the full impact of the I-AM grant on each signature program. Below is a checklist of each activity that should be addressed. Please provide any additional information you see fit as this checklist does not cover every activity over the past three years. Please take time to review the grant Technical Proposal as part of this process.

Priority 1 – Build stacked and latticed curriculum and career pathways in signature programs

- Create program pathways, including from non-credit into credit programs
- Align curricula with relevant industry recognized certifications (NIMS, MSSC, AWS, etc.)
- Certify instructors
- Establishment of AWS ATFs or collaboration with ATF college for certification
- Incorporate NCRC into program of study
- Updated credit for prior learning policies and practices
- Embed new technology (equipment, curriculum, etc.) into programs

The credit Industrial Maintenance program has been in a state or review and modification for several years. In the past four years there have been four modifications to the program and two of those have been significant. As a result, determining and reporting completers has been a challenge. During the spring 2016 term it is our goal to clarify some of the students' program requirements and work with the division chair and Registrar's office to ensure the students have met the competencies needed and be awarded accordingly.

The I-AM grant team is recommending that the credit program refocus on the well planned pathway from high school to WITCC, which was created several years ago and provides guidance and a structured map to attain various certificates and diploma. The pathway is provided on the following page.

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Industrial Plant Technology - High School

High School Junior Year			
IND 111	Industrial Safety Mechanical System (PSEO or	EGT 143	Fluid Power II (PSEO or GS)
ELT 102	Blueprint Reading (PSEO or GS)	IND 141	Power Transmission (PSEO or GS)
EGT 142	Fluid Power I (PSEO or GS)	MATH Gen Ed	
Totals	**5 cr**	**Totals**	**7cr**
High School Senior Year			
IND 180	Industrial Heating and Cooling (PSEO or GS)	ELT 740	Industrial Safety Electrical Systems (PSEO or GS)
MFG 520	Predictive Maintenance (PSEO or GS)	ELT 150	Basic Electrical Theory (PSEO or GS)
	Totals 4 cr		**Totals 3 cr**

HIGH SCHOOL GRADUATION

ELT 110- Electronics 2cr.
ELT 208- Motor Control 2cr.
2 cr
Total: **4 cr**

Fall Semester - Use your College Now Scholarship!		**Spring Semester - Use your**
ELT 780	Electromechanical Control Systems	
ELT 118	Programmable Controlers	
BPT 114	Instrumentation 1	
BPT 115	Instrumentation 2	
SDV 108	The College Experience	
ENG Gen Ed		
Tech Support Elect		
Totals	**14 cr**	

( ) Course recommended but not required See your Guidance Counselor for registration info!
Successfully complete this plan and earn your
A. A. S. DEGREE IN Mechanical Engineering Technology!

second recommendation is for the Industrial Maintenance program to pursue the partnership and articulation agreement offered by the University of Northern Iowa, as established during the I-AM grant.

The draft proposal is presented on the following pages.

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Articulation Agreement

Western Iowa Technical Community College & University of Northern Iowa

DEGREES: UNI Bachelor of Arts Degree: Technology Management, Department of Technology

Western Iowa Technical Community College A.A.S degrees: Technical Studies, Agribusiness Technology, Agriculture Management, Auto Collision Repair Technology, Automotive Technology, Cyber Security & Digital Crime, Electronic Systems Tech, Graphic Design, Wind Energy Technician, Web Design, Technical Business Management, Social Media Marketing, Networking Administration & Security, Motorcycle/Powersports Technology, Mechanical Engineer Technology.

This constitutes an agreement between the University of Northern Iowa and Western Iowa Technical Community College concerning requirements for completion of the Bachelor of Arts degree in Technology Management at UNI. The agreement is based on an analysis of the program requirements as stated in the 2014-2015 Western Iowa Technical Community College catalog and the major and degree requirements as stated in the 2014-2016 UNI catalog. It is understood that this agreement will be reviewed and, if necessary, modified when either institution issues a new catalog or alters the program/major requirements.

This agreement was developed by the following representatives from Western Iowa Technical Community College and UNI:

Greg Strong, Division Chair, Career & Technical Education, WITCC
Terry Murrell, President, Western Iowa Technical Community College
Dr. Mohammed Fahmy, Department Head, Department of Technology, UNI
Dr. Nilmani Pramanik, Technology Management Program Coordinator, UNI
Linda Reardon-Lowry, Recruitment Coordinator, UNI

Implementation of this agreement is effective with the approval of both cooperating institutions as attested to by the following signatures:

Signed Date

_____ _____

Dr. Mohammed Fahmy, Department Head, University of Northern Iowa

_____ _____

Gloria J. Gibson, Executive Vice President and Provost,
University of Northern Iowa

_____ _____

Dr. William N. Ruud, President, University of Northern Iowa

_____ _____

Greg Strong, Division Chair, Career & Technical Education, WITCC

_____ _____

Terry Murrell, President, WITCC

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ARTICULATION AGREEMENT

UNI Bachelor of Arts Degree: Technology Management, Department of Technology

Western Iowa Technical Community College A.A.S degrees: Technical Studies, Agribusiness Technology, Agriculture Management, Auto Collision Repair Technology, Automotive Technology, Cyber Security & Digital Crime, Electronic Systems Tech, Graphic Design, Wind Energy Technician, Web Design, Technical Business Management, Social Media Marketing, Networking Administration & Security, Motorcycle/Powersports Technology, Mechanical Engineer Technology.

Shown below are the remaining requirements for those students in the A.A.S. programs listed above that wish to pursue a major at UNI in Technology Management. All courses in the B.A. major are listed, with the exception of general education and university elective requirements. Those marked ***with an X are the courses being accepted into the Technology Management program.*** A block transfer means that courses in that category are fulfilled, i.e. these courses do not need to be taken at UNI.

Mathematics/Science.....10-11 Hours

☐	STAT 1772 Introduction to Statistical Methods	3
☐	CHEM 1010 Principles of Chemistry **or** CHEM 1020 Chemical Technology **or** CHEM 1110 General Chemistry I	4
☐	PHYSICS 1400 Conceptual Physics (4) **or** PHYSICS 1000 Physics in Everyday Life (3) **or** PHYSICS 1511 General Physics I (4)	3-4

Business & Management .....21 Hours

☐	TECH 3131 Technical Project Management	3
☐	TECH 2043 Managing Manufacturing Systems	
☐	TECH 1065 Technology in Society &Organizations	3
☐	TECH 3168 Technology Training Strategies	3
☐	TECH 3142 Statistical Quality Control	3
☐	TECH 3180 Lean & Sustainable Manufacturing	3
☐	TECH4187 Applied Industrial Supervision and Management	3

Technical Electives.....42 Hours

☒ Block Transfer

Semester Hours Accepted from WITCC:

Technology Management	42
Liberal Arts Core	6
University Electives	0
*Total	48

* This may be increased further if other transferable courses are taken in the Liberal Arts Core or the mathematics/science core of the major.

Any liberal arts core courses including the mathematics/science core listed above will be reviewed by the Office of Admissions and if approved can be transferred in addition to the technical courses listed above. A maximum of 65 credits may be transferred to UNI.

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Remaining Semester Hours at UNI

Technology Management	33
Liberal Arts Core	39
Approximate Total	72

ADVISORY STATEMENTS FOR TRANSFER STUDENTS FROM IOWA COMMUNITY COLLEGES

1. In order to be admitted to UNI, students transferring from Iowa Community Colleges must have a minimum GPA of 2.0 on graded coursework
2. Credits transferred to UNI under the heading 'Career and Technical Credits' are not counted in the calculation of the overall UNI GPA
3. UNI will grant equivalent blanket credit on a 1-1 basis up to a maximum of 48 semester hours of approved technical courses completed with a minimum grade of C at Iowa Community Colleges. Technical courses in which the student received a C- or less will not be counted for transfer.
4. The total combined transfer credit in college parallel education and equivalent UNI credit for technical level work may not exceed 65 semester hours.
5. Students entering UNI who graduated from high school in 1989 or thereafter are required to have competency in a foreign language equivalent to that achieved after two semesters at the college level. This requirement may be met by satisfactory completion (minimum of C- in the last course taken to meet the requirement) of one of the following: 1) two years of high school foreign language; 2) combination of high school and college courses in one foreign language; or 3) one year (8 S.H.) of one foreign language at the community college. An examination can also be used to test proficiency.
6. At least 32 S.H. are needed at the junior and senior years at UNI, which can include non-residence credit if approved.
7. A maximum of 32 S.H. can be attained with credit by examination.
8. A maximum of 6 S.H. of practicum, field experience, on-the-job training, and related seminars, earned from an Iowa Community College, can be used to satisfy degree requirements at UNI.

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The non-credit Industrial Maintenance program at WITCC has been growing and strengthening in the past three years, and much of that is in direct correlation with being one of the signature programs under the I-AM grant.

Prior to the I-AM grant, the LeMars Center was created, based on the drive and involvement of several companies within our district. WITCC developed the sector board, held development and planning meetings with the sector board, and as a result was able to create a non-credit program tailored to the needs of local industry to provide training for a skilled workforce. Without the input and support of the I-AM grant, this program would have only been able to function on a smaller scale and not meet the full potential needed by local industry. WITCC has much gratitude for this opportunity for our students and community.

The credit and non-credit programs have worked to define and align the competencies within each of their programs to provide clear and efficient transcripting for students and for companies wishing to provide sequential and credentialed training.

The non-credit program recognizes that with this partnership it will soon be necessary to review the initial curriculum developed and redefine the alignment with the credit program. The initial process is presented in the following pages. In the first chart you will see the competencies defined by the sector board, followed by the chart with the competencies for the credit program. These charts are tools with which review of students' coursework can be used to determine the credits students may have earned. In addition, WITCC offers a Technical Studies degree, providing a holistic and comprehensive review of a students' academic career, and credit for prior learning. The Technical Studies degree follows the charts used to align competencies between credit and non-credit.

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LeMars Sector Board Competencies

Course Prefix/#	Course Title	Course Competencies	Credit Course/ Competency Alignment
IS	Industrial Safety	1. Describe OSHA's role in the workplace	
IS	Industrial Safety	2. Follow emergency procedures	
IS	Industrial Safety	3. Wear personal protective equipment appropriately	
IS	Industrial Safety	4. Protective himself or herself from blood borne pathogen hazards	
IS	Industrial Safety	5. Avoid struck-by and caught-in hazards	
IS	Industrial Safety	6. Work safely with electricity	
IS	Industrial Safety	7. Work safely while on raised platforms, roofs and ladders	
IS	Industrial Safety	8. Lift heavy objects correctly and safely	
IS	Industrial Safety	9. Use and locate information on chemicals in the workplace	
IS	Industrial Safety	10. Use tools safely and appropriately on the job	
IS	Industrial Safety	11. Describes the use of lockout/tagout to control energy and protect personnel and equipment.	
BET	Basic Electrical Theory	1. Define the basic principles of electricity	
BET	Basic Electrical Theory	2. Demonstrate safety procedures and precautions	
BET	Basic Electrical Theory	3. Perform procedures for measuring voltage with an electronic VOM	
BET	Basic Electrical Theory	4. Perform current and resistance measurement using electrical VOM	
BET	Basic Electrical Theory	5. Apply Ohm's Law to calculate resistance, voltage, current, and power	
BET	Basic Electrical Theory	6. Calculate resistance, current and voltage drops in series, parallel circuits	
BET	Basic Electrical Theory	7. Describe how magnetism is used to produce electricity	
BET	Basic Electrical Theory	8. Identify and utilize overcurrent, short circuit, ground, and arc-fault devices	
BET	Basic Electrical Theory	9. Identify the basic symbols used in wiring diagrams and schematics for electrical devices	

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BET	Basic Electrical Theory	10. Describe the purpose of circuit or device overload protection	
BET	Basic Electrical Theory	11. Describe the effects of inductance and capacitance in an electrical circuit	
BET	Basic Electrical Theory	12. Install and measure the values of transformers in alternating current circuits	
BET	Basic Electrical Theory	13. Differentiate between single, two and three phase current.	
BET	Basic Electrical Theory	14. Identify proper grounding and bonding procedures	
BET	Basic Electrical Theory	15. Demonstrate and describe the effects of an ungrounded circuit	
BET	Basic Electrical Theory	16. Read a wiring diagram	
IEW	Industrial Elect. Wiring	1. Interpret an electrical print	
IEW	Industrial Elect. Wiring	2. Select terminal blocks for an application	
IEW	Industrial Elect. Wiring	3. Install a terminal block in an electrical panel	
IEW	Industrial Elect. Wiring	4. Determine the wire colors needed for an application	
IEW	Industrial Elect. Wiring	5. Terminate wires at a terminal block	
IEW	Industrial Elect. Wiring	6. Run wires between panels	
IEW	Industrial Elect. Wiring	7. Connect a wire to a terminal screw	
IEW	Industrial Elect. Wiring	8. Bundle wires in an electrical panel	
IEW	Industrial Elect. Wiring	9. Wire an electrical machine	
IEW	Industrial Elect. Wiring	10. Interpret an electro-pneumatic power diagram	
IEW	Industrial Elect. Wiring	11. Connect and operate an pneumatic control circuit give a power diagram	
MC	Motor Control	1. Compare and contrast the three basic types of control systems	
MC	Motor Control	2. Recognize different schematic symbols	
MC	Motor Control	3. Wire a normally open/closed contact	
MC	Motor Control	4. Recognize differences between schematic and wiring diagrams	
MC	Motor Control	5. Identify the proper connection of a wye-delta motor	

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MC	Motor Control	6. Troubleshoot a control system from a properly installed motor control cabinet as well identify components in the cabinet	
MC	Motor Control	7. Identify basic parts of a DC motor and explain the function of these parts	
MC	Motor Control	8. Define the types of insulation material used in commutators – This is important, but may not be in the top 10 competencies	
MC	Motor Control	9. Interpret motor wiring diagrams	
MC	Motor Control	10. Describe the operation of a three-phase motor controller	
MC	Motor Control	11. Read name plates	
MC	Motor Control	12. Recognize and configure VFDs	
MC	Motor Control	13. Identify best practices for safety	
PLC	Prog. Logic Controllers	1. List the components of a typical Programmable Logic Controller	
PLC	Prog. Logic Controllers	2. Draw and explain a typical ladder diagram rungs and instructions	
PLC	Prog. Logic Controllers	3. Show outputs from various logic functions	
PLC	Prog. Logic Controllers	4. Identify different number systems-more on the programming side so be aware: “not needed but nice to know”	
PLC	Prog. Logic Controllers	5. Program various logic functions	
PLC	Prog. Logic Controllers	6. Write up documentation for making a change and follow protocol	
PLC	Prog. Logic Controllers	7. Wire input and output modules into PLC	
PLC	Prog. Logic Controllers	8. Properly troubleshoot a PLC system	
PLC	Prog. Logic Controllers	9. Identify types of communications devices-especially on networking side	
PLC	Prog. Logic Controllers	10. Program math functions (Don’t create formulas or functions from scratch)	
PLC	Prog. Logic Controllers	11. Program common advanced logic functions	
PLC	Prog. Logic Controllers	12. Use advanced programming commands common to most PLCs	
PLC	Prog. Logic Controllers	13. Setup and program a PLC using RSLogix	
PLC	Prog. Logic Controllers	14. Configure drivers necessary for PLC network communications	
PLC	Prog. Logic Controllers	15. Recognize: Is it a PLC problem? Is it a software or hardware problem?	
PLC	Prog. Logic Controllers	16. Work safely	
PLC	Prog. Logic Controllers	17. Identify consequences of an unsafe environment	

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VFD	VFD for Motor Control	1. Describe the application of variable frequency drives	
VFD	VFD for Motor Control	2. Apply variable frequency drives to control process acceleration, speed and torque	
VFD	VFD for Motor Control	3. Recognize diagnostic features and common troubleshooting techniques of variable frequency drives	
VFD	VFD for Motor Control	4. Operate a three wire control circuit using a variable frequency AC drive	
VFD	VFD for Motor Control	5. Program, connect, and operate a variable frequency drive for motor jogging	
VFD	VFD for Motor Control	6. Control motor speed using a keypad of a variable frequency drive	
VFD	VFD for Motor Control	7. Program and operate a variable frequency drive to ramp a motor to its rated speed	
VFD	VFD for Motor Control	8. Program and operate a variable frequency drive to ramp a motor to a stop	
VFD	VFD for Motor Control	9. Program and operate a variable frequency AC drive to provide DC injection braking to a motor	
VFD	VFD for Motor Control	10. Determine faults based on the fault display of a variable frequency AC drive	
VFD	VFD for Motor Control	11. Troubleshoot a circuit that includes a variable frequency drive	
VFD	VFD for Motor Control	12. Program a variable frequency drive to automatically reset a fault	

IN1	Instrumen-tation 1	1. Interpret the basic concepts of process control	
IN1	Instrumen-tation 1	2. Differentiate between the principles of single feedback loop and advanced loop controls	
IN1	Instrumen-tation 1	3. Recognize the fundamental principles of controllers in instrument control systems	
IN1	Instrumen-tation 1	4. Relate the basics of process systems, their characteristics and variables, types of energy, various temperature scales, and heat transfer methods	
IN1	Instrumen-tation 1	5. Identify the characteristics and measurement/calibration techniques for the process control variables to include pressure, level, temperature and flow	
IN1	Instrumen-tation 1	6. Locate the symbols found on process and instrumentation diagrams	
IN1	Instrumen-tation 1	7. Describe the organizational sections, symbols and reference information provided on a loop diagram	

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IN1	Instrumen-tation 1	8. Demonstrate basic digital control concepts, including terminology, symbols, and designations found on process instrumentation diagrams	
IN1	Instrumen-tation 1	9. Explain the importance of sound mechanical connections, including fittings, wiring and tubing, to the process measurement and control of instrumentation systems	
EPR	Electrical Print Reading	1. Recognize types of lines and their purposes	
EPR	Electrical Print Reading	2. Understand auxiliary and sectional views	
EPR	Electrical Print Reading	3. Explain tolerance dimensions	
EPR	Electrical Print Reading	4. Identify differences between drawings	
EPR	Electrical Print Reading	5. Recognize notes and symbols	
EPR	Electrical Print Reading	6. Identify special markings	
EPR	Electrical Print Reading	7. Identify typical ***voltage*** features	
EPR	Electrical Print Reading	8. Recognize differences between ***different energy units including Joules and calories.***	
EPR	Electrical Print Reading	9. Identify the various lines used on a blueprint	
EPR	Electrical Print Reading	1. Identify color coding for electrical systems	
EPR	Electrical Print Reading	2. Identify system requirements from print to take meter readings	
EPR	Electrical Print Reading	3. Calculate electrical properties including voltage, amperage, resistance, and power within the system based on print specifications	
EPR	Electrical Print Reading	4. Identify different power requirements, as typically expressed in horsepower, of systems	
EPR	Electrical Print Reading	5. Design and draw base electrical circuits	

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Industrial Maintenance Credit Program Competencies

Course Prefix/#	Course Title	Course Competencies	Non-Credit Course/ Competency Allignment
SDV 108	The College Experience	1. Articulate the values inherent in higher education	
SDV 108	The College Experience	2. Outline essential academic information, resources and opportunities	
SDV 108	The College Experience	3. Employ academic skills necessary for student success	
SDV 108	The College Experience	4. Utilize life skills necessary for student success	
ELE 101	Industrial Safety	1. Describe OSHA's role in the workplace	
ELE 101	Industrial Safety	2. Follow emergency procedures	
ELE 101	Industrial Safety	3. Wear personal protective equipment appropriately	
ELE 101	Industrial Safety	4. Protective himself or herself from blood borne pathogen hazards	
ELE 101	Industrial Safety	5. Avoid struck-by and caught-in hazards	
ELE 101	Industrial Safety	6. Work safely with electricity	
ELE 101	Industrial Safety	7. Work safely while on raised platforms, roofs and ladders	
ELE 101	Industrial Safety	8. Lift heavy objects correctly and safely	
ELE 101	Industrial Safety	9. Use and locate information on chemicals in the workplace	
ELE 101	Industrial Safety	10. Use tools safely and appropriately on the job	
ELE 101	Industrial Safety	11. Describes the use of lockout/tagout to control energy and protect personnel and equipment.	
ELE 150	Basic Electrical Theory	1. ELS1 - Basic Principles	
ELE 150	Basic Electrical Theory	2. ELS2 - Alternating Current	
ELE 150	Basic Electrical Theory	3. ELS3 - Conductors	
ELE 150	Basic Electrical Theory	4. ELS4 - Wiring	
ELE 150	Basic Electrical Theory	5. ELS5 - Installation Distribution	

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ELE 150	Basic Electrical Theory	6. ELS6 - Generators and Motors	
ELE 150	Basic Electrical Theory	7. ELS7 - AC Motor Control and Current Measurement	
ELE 311	Industrial Elect. Wiring	1. Interpret an electrical print	
ELE 311	Industrial Elect. Wiring	2. Select terminal blocks for an application	
ELE 311	Industrial Elect. Wiring	3. Install a terminal block in an electrical panel	
ELE 311	Industrial Elect. Wiring	4. Determine the wire colors needed for an application	
ELE 311	Industrial Elect. Wiring	5. Terminate wires at a terminal block	
ELE 311	Industrial Elect. Wiring	6. Run wires between panels	
ELE 311	Industrial Elect. Wiring	7. Connect a wire to a terminal screw	
ELE 311	Industrial Elect. Wiring	8. Bundle wires in an electrical panel	
ELE 311	Industrial Elect. Wiring	9. Wire an electrical machine	
ELE 311	Industrial Elect. Wiring	10. Interpret an electro-pneumatic power diagram	
ELE 311	Industrial Elect. Wiring	11. Connect and operate an pneumatic control circuit give a power diagram	
ELT 208	Motor Control	1. Compare and contrast the three basic types of control systems	
ELT 208	Motor Control	2. Recognize different schematic symbols	
ELT 208	Motor Control	3. Wire a normally open/closed contact	
ELT 208	Motor Control	4. Recognize differences between schematic and wiring diagrams	
ELT 208	Motor Control	5. Identify the proper connection of a wye-delta motor	
ELT 208	Motor Control	6. Troubleshoot a control system from a properly installed control cabinet	
ELT 208	Motor Control	7. Identify basic parts of a DC motor and explain the function of these parts	
ELT 208	Motor Control	8. Define the types of insulation material used in commutators	
ELT 208	Motor Control	9. Interpret motor wiring diagrams	
ELT 208	Motor Control	10. Describe the operation of a three-phase motor controller	
ELT 208	Motor Control	11. Compare and contrast different types of sensors	
ELT 208	Motor Control	12. Identify the proper use of timers and counters	
ELT 208	Motor Control	13. Describe the application of variable frequency drives	
ELT 208	Motor Control	14. Apply variable frequency drives to control process acceleration, speed and torque	

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ELT 208	Motor Control	15. Recognize diagnostic features and common troubleshooting techniques of variable frequency drives	
ELT 118	Programmable Controllers	1. List the components of a typical Programmable Logic Controller	
ELT 118	Programmable Controllers	2. Draw and explain a typical ladder diagram rungs and instructions	
ELT 118	Programmable Controllers	3. Show outputs from various logic functions	
ELT 118	Programmable Controllers	4. Identify different number systems	
ELT 118	Programmable Controllers	5. Program various logic functions	
ELT 118	Programmable Controllers	6. Write up documentation describing functionality of PLC programs	
ELT 118	Programmable Controllers	7. Wire input and output modules into PLC	
ELT 118	Programmable Controllers	8. Properly troubleshoot a PLC system	
ELT 118	Programmable Controllers	9. Identify types of communications devices	
ELT 118	Programmable Controllers	10. Program math functions	
ELT 118	Programmable Controllers	11. Program common advanced logic functions	
ELT 118	Programmable Controllers	12. Use advanced programming commands common to most PLCs	
ELT 118	Programmable Controllers	13. Setup and program a PLC using RSLogix	
ELT 118	Programmable Controllers	Configure drivers necessary for PLC network communications	
ELE 312	VFD for Motor Control	1. Describe the application of variable frequency drives	
ELE 312	VFD for Motor Control	2. Apply variable frequency drives to control process acceleration, speed and torque	
ELE 312	VFD for Motor Control	3. Recognize diagnostic features and common troubleshooting techniques of variable frequency drives	
ELE 312	VFD for Motor Control	4. Operate a three wire control circuit using a variable frequency AC drive	
ELE 312	VFD for Motor Control	5. Program, connect, and operate a variable frequency drive for motor jogging	
ELE 312	VFD for Motor Control	6. Control motor speed using a keypad of a variable frequency drive	
ELE 312	VFD for Motor Control	7. Program and operate a variable frequency drive to ramp a motor to its rated speed	
ELE 312	VFD for Motor Control	8. Program and operate a variable frequency drive to ramp a motor to a stop	

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ELE 312	VFD for Motor Control	9. Program and operate a variable frequency AC drive to provide DC injection braking to a motor	
ELE 312	VFD for Motor Control	10. Determine faults based on the fault display of a variable frequency AC drive	
ELE 312	VFD for Motor Control	11. Troubleshoot a circuit that includes a variable frequency drive	
ELE 312	VFD for Motor Control	12. Program a variable frequency drive to automatically reset a fault	
BPT 114	Instrumen-tation I	1. Interpret the basic concepts of process control	
BPT 114	Instrumen-tation I	2. Differentiate between the principles of single feedback loop and advanced loop controls	
BPT 114	Instrumen-tation I	3. Recognize the fundamental principles of controllers in instrument control systems	
BPT 114	Instrumen-tation I	4. Relate the basics of process systems, their characteristics and variables, types of energy, various temperature scales, and heat transfer methods	
BPT 114	Instrumen-tation I	5. Identify the characteristics and measurement techniques for the process control variables to include pressure, level, temperature and flow	
BPT 114	Instrumen-tation I	6. Locate the symbols found on process and instrumentation diagrams	
BPT 114	Instrumen-tation I	7. Describe the organizational sections, symbols and reference information provided on a loop diagram	
BPT 114	Instrumen-tation I	8. Demonstrate basic digital control concepts, including terminology, symbols, and designations found on process instrumentation diagrams	
BPT 114	Instrumen-tation I	9. Explain the importance of sound mechanical connections, including fittings, wiring and tubing, to the process measurement and control of instrumentation systems	

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Technical Studies

Associate of Applied Science

This program is designed to meet the specific educational needs of students, businesses, and industry. The Technical Studies Associate of Applied Science degree is a customized program drawing from existing course offerings that must contain at least 45 technical credits. The degree will allow students to combine skills and knowledge from different disciplines, enabling the graduate to meet a specific job opportunity. Students will develop an approved Plan of Study in cooperation with their academic advisors. The Plan of Study must include a rationale, sequenced courses, and sufficient evidence of academic rigor to warrant the confirmation of the Associate of Applied Science degree. The Plan of Study must be approved by the respective department chair(s) and dean(s). The amount of time required to complete this degree will vary.

Plan of Study

SDV 108 The College Experience..... 1
Elective..... 13
ENG 105 Composition I..... 3
Elective..... 13
MAT 772 Applied Math..... 3
Elective..... 10
SPC 122 Interpersonal Communication..... 3
PSY 111 Introduction to Psychology..... 3
Elective..... 15
Program Total..... 64

All WITCC students are given the opportunity to take the NCR exam at no cost. Specifically, NCRC is offered in the first semester students are enrolled in the industrial maintenance program, and at the orientation provided before the start of the semester. The outcome has been a process created to simplify scheduling, help students sign up and log in for the testing, and understand the results of the exams and how those may help students in their employment and career. This has been made possible through collaboration among the grant team, instructors and the Testing Center Staff.

While the need for new or additional equipment for the industrial maintenance program has not been great, items for the labs or modifications to the current facilities and equipment were needed.

Priority 2– Build a steady pipeline of skilled workers for Iowa's in-demand, advanced manufacturing occupations

- Develop a plan for remediation, including Career Ready 101
- Develop a digital literacy strategy
- Contextualize learning for students
- Add online and blended learning options
- Utilize intensive advising
- Launch a regional marketing effort to support the statewide Elevate initiative
- Promote the Uof I Online BAS to participants

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In order to focus on student learning needs, the grant team at WITCC participated in a number of committees related to this. Perry, our pathway navigator, chaired the Advising Committee and while the committee developed a superb model geared toward the full development of the student, WITCC decided to pursue another advising model at this time. However, in advising for industrial maintenance students, the pathways the faculty and grant team have outlined and prepared are shared with students, as well as the potential to pursue a four year degree, or further, through the Universities of Iowa and Northern Iowa.

Amy, one of the grant coordinators, chaired the committee for Digital Literacy. Again, the group worked together to create pathways of learning based on the particular needs of the student or program curriculum established. Each community college is then able to choose the pathway and curriculum options best suited to their students' needs.

Career Ready 101, already used in ELL and credit programs, is offered to the industrial maintenance students, as well as any other student at the college and provides further soft skill enhancement in particular, as well as career preparations.

Every new student must take a basic safety course, ELE 101, and during the course students may earn their OSHA 10 Hour card. Other CTE programs have adopted this model and more students leave with an industry credential at the beginning of their academic career.

Priority 3– Improve the collaboration and alignment between community college programs, the workforce system, and target industry employers to keep and create high quality jobs in Iowa

- Partner with employers who wrote letters of support
- Expand employer partnerships to include new companies
- Partner with workforce to promote I-AM signature programs

Collaborating with industry to provide 1) education on I-AM initiatives, 2) Industry representation on the grant advisory board and 3) regional workforce partnerships, as well as engaging employers to promote career pathways and lifelong learning for their employees continues to be a focus with WITCC's advisory and sector boards, industry partners, and with the many companies and industry leaders the grant team and industrial maintenance faculty and staff partner with.

The original companies (Tyson, Sabre, Gelita and IDFI) who wrote letters of support continue to be our partners and those relationships have strengthened and expanded. Dean Foods, Hyvee, and Rock Tenn, all part of our sector board, and Michael's Foods, have also become steady and committed partners to student learning and workforce training.

Sustainability

- Please provide information on the aspects of the I-AM grant that will be sustained beyond the period of performance.

The I-AM grant's model for pathway navigators has been adopted by the college and a number have been hired and gone through Train the Trainer, based on the experiences and information Perry, the grant and college pathway navigator, has been able to share. He meets regularly with

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Admissions, Financial Aid, Recruitment, and Veterans' departments as well as the other pathway navigators to discuss student issues and challenges, including ways in which to refer them to the I-AM initiative or other programs or support services. This will continue beyond the life of the grant.

Orientation for new students in their specific credit CTE (Career Technical Education) programs, developed from the I-AM grant model, is now well established, and at the start of each semester is a means to accommodate and support incoming CTE students. This will continue beyond the life of the grant.

The Credit for Prior Learning policies and processes are clearly established and communicated and will continue being implemented beyond the life of the grant.

Contextualized math, created and implemented in the welding program, is being adopted by other CTE programs and will continue beyond the life of the grant. The credit Industrial Maintenance program is also incorporating this within its curriculum.

Digital Literacy, the NCRC exam and Career Ready 101 continue to be resources and integral tools available to help students enhance existing knowledge and skills, and to skill up as well. These resources will be available beyond the life of the grant.

Revised and improved industrial maintenance curriculum, both credit and non-credit, will continue to be implemented and under WITCC's quality improvement process will be supported, beyond the life of the grant.

Finally, through the resources, equipment, faculty training and support provided by the grant, the credit and non-credit industrial maintenance programs are able to offer greater learning opportunities and benefits to our students, the college, our business and industry partners, and to the community as a whole.

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