

<https://survey.alchemer.com/s3/6745284/NACC-Curriculum-Committee-Program-Review>
Program Review

AAS in Industrial Systems Technology (CIP: 47.0303)

Program Purpose

What is the published purpose/mission of the program?

The primary objective of the Industrial Systems Technology Program is to provide learning experiences that enable students to obtain the skills necessary for gainful employment in a variety of industrial settings.

How does the program's purpose/mission fit into the overall mission of the college?

This program supports goals three, five, and seven of the college mission.

Do any changes need to be made to the program's purpose/mission? Explain.

Changes are implemented as the needs of industry change.

Do any changes need to be made to how the program's purpose/mission fits into the overall college mission? Explain.

No.

Program Learning Outcomes

What are the program learning outcomes?

A.A.S.-Industrial Systems Technology-Electrical and Instrumentation Option

Graduates of the Industrial Systems Technology Program (Electrical and Instrumentation Option) will be able to:

- Function as a competent entry-level Industrial Maintenance Technician by demonstrating knowledge and skills retained from course work. (ADM 150-154)
- Perform tasks in a safe manner. (ADM 150-154)
- Exhibit a positive work ethic. (ADM 150-154)

A.A.S.-Industrial Systems Technology-Mechanical Maintenance Option

Graduates of the Industrial Systems Technology Program (Industrial Maintenance Option) will be able to:

- Function as a competent entry-level Industrial Maintenance Technician by demonstrating knowledge and skills retained from course work. (ADM 150-154)
- Perform tasks in a safe manner. (ADM 150-154)
- Exhibit a positive work ethic. (ADM 150-154)

A.A.S.-Industrial Systems Technology-Multi-Skilled Option

Graduates of the Industrial Systems Technology Program (Multi-Skilled Option) will be able to:

- Function as a competent entry-level Industrial Maintenance Technician by demonstrating knowledge and skills retained from course work. (ADM 150-154)
- Perform tasks in a safe manner. (ADM 150-154)
- Exhibit a positive work ethic. (ADM 150-154)

How are the Program Learning Outcomes assessed?

The student will function as a competent entry-level industrial maintenance technician by demonstrating knowledge and skills retained from course work.

In ADM 150-154, the student will be evaluated on his/her ability to function as a competent entry-level industrial maintenance technician in a work experience setting by scoring at least 80% on a comprehensive work experience evaluation.

The student will perform tasks in a safe manner.

In ADM 150-154, throughout the class, the student will perform tasks in a safe manner with 100% proficiency according to the standardized Occupational Safety and Health Rubric.

The student will exhibit a positive work ethic.

In ADM 150-154, the student's work ethic will be assessed by scoring at least 30 points on a standardized Workplace Readiness Skills Rubric.

What can students do with the knowledge they have after completing the program?

Students earning an AAS degree or certificate may gain employment in manufacturing and building sectors. Graduates of the Industrial Systems Technology Program typically work in manufacturing facilities.

What are the plans for reviewing the program learning outcomes and revising them?

The program learning outcomes are reviewed each year when the program sets its Unit Goals. The program coordinator records specific actions undertaken to achieve the program learning outcomes goals, the results of the evaluation of the outcomes, and improvements that have been made in the program after evaluating and analyzing the goals.

Assessed Needs and Assumptions

What are the occupational projections for careers for which the program trains?

Occupation	Region	Employment		Percent Change
		2019	2029	
Installation, maintenance, and repair occupations (49-0000)	Nation	6,128,000	6,301,300	2.8%

Source: National Data—Bureau of Labor Statistics, Occupational Outlooks Handbook. (<https://www.bls.gov/emp/tables/occupational-projections-and-characteristics.htm>)

Occupation	Region	Employment		Percent Change
		2018	2028	
Installation, maintenance, and repair occupations (49-0000)	Statewide	100,360	107,190	6.81%
	Workforce Development Region 2	7,360	7,690	4.49%

Source: State and Regional Data—Alabama Department of Labor, Industry and Occupation Projections 2018-2028. (<http://www2.labor.alabama.gov/Projections/ProjectionsTAB.aspx>)

Based on the occupational projections, what is the employment outlook for graduates of the program?

Based on feedback from local industries, there is a shortage of qualified technicians. This is due to industry growth, aging workforces, and other factors.

What is the outlook for the continued need of the program within the mission of the college?

Growing economies both nationally and locally will have a continued and increased demand for graduates of the IST program. Mission goal seven supports the training of our students to fill the needs of local industries.

Structure

What credentials does the program offer?

Associate in Applied Science Degree (AAS)

- Electrical and Instrumentation Option
 - o Certificate
 - o Short-Term Certificate
- Mechanical Maintenance Option
 - o Certificate
 - o Short-Term Certificate
- Multi-Skilled Maintenance Option
 - o Certificate

What are the requirements for each credential?

AAS in Industrial Systems Technology Electrical and Instrumentation

Area I: Written Composition (3 hours total)

ENG 101—English Composition I (3 hours)

Area II: Humanities and Fine Arts (6 hours total)

SPH 107—Fundamentals of Public Speaking (3 hours)

Humanities and Fine Arts Elective (3 hours)

Choose from ART 100, 203, 204; MUS 101; PHL 206; REL 100, 151, 152; SPA 201, 202; THR 120, 126

Area III: Natural Science and Mathematics (9-11 hours total)

CIS 146 (3 hours)

MTH 100 or numerically higher (3-4 hours)

Math, Science, or Computer Science Elective (3-4 hours)

Area IV: History, Social, and Behavioral Sciences (3 hours total)

Area IV Elective (3 hours)

Choose from: ECO 231, 232; GEO 100; HIS 101, 102, 201, 202; POL 211; PSY 200, 210; SOC 200, 210

Area V: Pre-Professional, Major, and Elective Courses (45 hours total)

INT 117 (3 hours)

Cooperative Education Electives (3 hours)

Choose from: ADM 150-154

WKO 106 (3 hours)

WKO 110, 131, 132, 133, 134 (3 hours)

ILT 108 (3 hours)

ILT 118 (3 hours)

ILT 160 (3 hours)

ILT 161 (3 hours)

ILT 162 (3 hours)
ILT 163 (3 hours)
ILT 166 (3 hours)
ILT 194 (3 hours)
ILT 197 (3 hours)
ILT 231 (3 hours)
INT 118 (3 hours)
Program advisor approved elective (3 hours)
Total Hours Required for Degree: 69-71
Certificate in Industrial Systems Technology – Electrical and Instrumentation
ENG 100 or 101 (3 hours)
SPH 107 (3 hours)
MTH 116 or any 100 level MTH (3-4 hours)
CIS 146 (3 hours)
WKO 106 (3 hours)
INT 117 (3 hours)
INT 118 (3 hours)
ILT 231 (3 hours)
ILT 118 (3 hours)
ILT 231 (3 hours)
ILT 160 (3 hours)
ILT 161 (3 hours)
ILT 194 (3 hours)
Program advisor approved elective (3 hours)
Total Hours Required for Certificate: 48-49 hours
Short-Term Certificate in Industrial Systems Technology – Electrical and Instrumentation
ILT 160 (3 hours)
ILT 161 (3 hours)
ILT 162 (3 hours)
ILT 197 (3 hours)
Program advisor approved elective (3 hours)
Total Hours Required for Short-Term Certificate: 15 hours
AAS in Industrial Systems Technology Mechanical Maintenance
Area I: Written Composition (3 hours total)
ENG 101—English Composition I (3 hours)

Area II: Humanities and Fine Arts (6 hours total)
SPH 107—Fundamentals of Public Speaking (3 hours)
Humanities and Fine Arts Elective (3 hours) Choose from ART 100, 203, 204; MUS 101; PHL 206; REL 100, 151, 152; SPA 201, 202; THR 120, 126
Area III: Natural Science and Mathematics (9-11 hours total)
CIS 146 (3 hours)
MTH 100 or numerically higher (3-4 hours)
Math, Science, or Computer Science Elective (3-4 hours)
Area IV: History, Social, and Behavioral Sciences (3 hours total)
Area IV Elective (3 hours) Choose from: ECO 231, 232; GEO 100; HIS 101, 102, 201, 202; POL 211; PSY 200, 210; SOC 200, 210
Area V: Pre-Professional, Major, and Elective Courses (45 hours total)
INT 117 (3 hours)
Cooperative Education Electives (3 hours) Choose from: ADM 150-154
WKO 106 (3 hours)
WKO 110, 131, 132, 133, 134 (3 hours)
INT 118 (3 hours)
INT 126 (3 hours)
INT 127 (3 hours)
MTT 147 (3 hours)
MTT 148 (3 hours)
MTT 149 (3 hours)
MTT 150 (3 hours)
WDT 108 (3 hours)
WDT 122 (3 hours)
WDT 127 (3 hours)
WDT 257 (3 hours)
WDT 115 (3 hours)
WDT 155 (3 hours)
Total Hours Required for Degree: 72-75 hours
Certificate in Industrial Systems Technology – Mechanical Maintenance
ENG 100 or 101 (3 hours)
SPH 107 (3 hours)
MTH 116 or any 100 level MTH (3-4 hours)
CIS Elective (3 hours)
INT 117 (3 hours)

INT 126 (3 hours)
WKO 106 (3 hours)
WKO 110, 131, 132, 133, 134 (3 hours)
Mechanical Maintenance Electives by Advisement (24 hours)
Total Hours Required for Certificate: 48-49 hours
Short-Term Certificate in Industrial Systems Technology - Mechanical Maintenance
INT 117 (3 hours)
INT 118 (3 hours)
INT 126 (3 hours)
INT 127 (3 hours)
Total Hours Required for Short-Term Certificate: 12
AAS in Industrial Systems Technology Multi-Skilled
Area I: Written Composition (3 hours total)
ENG 100 or 101(3 hours)
Area II: Humanities and Fine Arts (6 hours total)
SPH 107—Fundamentals of Public Speaking (3 hours)
Humanities and Fine Arts Elective (3 hours) Choose from ART 100, 203, 204; MUS 101; PHL 206; REL 100, 151, 152; SPA 201, 202; THR 120, 126
Area III: Natural Science and Mathematics (9-11 hours total)
CIS 146 (3 hours)
MTH 116 or any 100 level MTH (3-4 hours)
Math, Science or CIS Elective (3-4 hours)
Area IV: History, Social, and Behavioral Sciences (3 hours total)
Area IV Elective (3 hours) Choose from: GEO 100; HIS 101, 102, 201, 202; POL 211; PSY 200, 210; SOC 200, 210
Area V: Pre-Professional, Major, and Elective Courses (51 hours total)
INT 117 (3 hours)
Cooperative Education Electives (3 hours) Choose from: ADM 150-154
WKO 106 (3 hours)
WKO 110, 131, 132, 133, 134 (3 hours)
INT 118 (3 hours)
INT 126 (3 hours)
INT 127 (3 hours)
INT 134 (3 hours)
ILT 118 (3 hours)

ILT 160 (3 hours)
ILT 161 (3 hours)
ILT 195 (3 hours)
ILT 197 (3 hours)
ILT 231 (3 hours)
Program advisor approved elective (3 hours)
Total Hours Required for Degree: 69-72 hours
Certificate in Industrial Systems Technology - Multi-Skilled
ENG 100 or 101 (3 hours)
SPH 107 (3 hours)
MTH 116 or any 100 level MTH (3-4 hours)
CIS 146 (3 hours)
WKO 106 (3 hours)
INT 117 (3 hours)
INT 118 (3 hours)
ILT 231 (3 hours)
ILT 118 (3 hours)
ILT 160 (3 hours)
ILT 161 (3 hours)
ILT 195 (3 hours)
ILT 197 (3 hours)
Program advisor approved elective (3 hours)
Total Hours Required for Certificate: 48-49
How often are the requirements for the degree reviewed?
Degree requirements are reviewed every year.
Are there any plans for revising the degree requirements?
Degree plans may change depending on industry demand.

Accreditation

What is the institutional accreditation for the program?

The Industrial Systems Technology Program is within the institutional accreditation granted by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) and reaffirmed in 2015.

Does the program have any program-specific accreditations?

No.

Instructors

Who are the current instructors in the program, and what are their credentials?

- Dennis Lester
A.S. General Studies
A.A.S. Industrial Electronics, Northeast Alabama Community College
A.A.S. Water / Wastewater Mgt. & Technology, Northeast Alabama Community College
A.A.S. Computer Science, Northeast Alabama Community College
38+ years' experience in Industrial Preventive/Multi-craft maintenance
- Galen Andrews
A.A.S., Southern Crescent Technical College, Griffin, Georgia
30+ years' experience as Industrial / Building Maintenance

How have the instructors in the program developed professionally over the past two years?

Dennis Lester:

National Occupational Competency Testing Institute (NOCTI)
Teacher Assessment in Electrical Construction Technology (2016)

National Coalition of Certification Centers (NC₃)
504 Multimeter Certification for Instructors (2019)

Galen Andrews:

Hired at NACC in spring 2021

What are any planned professional development activities for instructors in the program?

Additional professional development in the student advisement area for new computer system software and SMC instructor training for new lab equipment for full-time facility.

Are any additional instructors anticipated within the next five years? If so, please explain.

Not at this time.

Instructional Quality and Enhancements/Curriculum Design

How is the general education core incorporated into the course of study for this program?
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The AAS Degree includes 18-19 credit hours of general education in the 63-64 total: ENG 101, SPH 107, three hours of humanities or fine arts, CIS 146, any 100-level math class, and three hours of History, Social and Behavioral Sciences.
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Are all course syllabi current and posted on the NACC website? Explain.
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Yes. They are posted and current.

How is curriculum of each program option evaluated to ensure it is relevant and current? Examples include advisory committee suggestions, student learning outcome evaluations, student evaluations, etc.
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Advisory committee suggestions are used to evaluate curriculum.

Describe changes that have been made in the delivery of the courses in each option of the program as a result of review of the program learning outcomes over the last five years.

Mechatronics (automation) training equipment was purchased. Mechanical trainers were built to facilitate hands-on training.
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Are courses in the program scheduled to maintain availability and accessibility in accordance with the college's mission? Explain.

In accordance with NACC Mission Goal 3, courses are routinely offered and made available so that students can graduate on time.

Program Resources

Describe the physical facilities and resources, including any laboratories, used in the program. Are the physical facilities and resources adequate? Explain.

Increased size of physical facilities needed.

The Industrial Systems Technology Program is housed in the following areas on campus:

TC 101 - Office

TC 105 – Motor Controls/Troubleshooting Lab

TC 110 – Lab and Classrooms for DC/AC/Solid State/Digital/Motors & Transformers/Mechanical

TC 104 – Lab for Mechanical Principles

GY 102 –Wiring Lab

IC 102 – Lab and Classroom for Robotics, PLC’s, and Instrumentation

TC 108- Classroom for Motor Controls/Hydraulics/Pneumatics/ Pumps & Piping

IS 108- Classroom for PLC’s/Instrumentation/ Industrial Control, advanced PLC’s

IS 107- Lab for Hydraulics/Pneumatics/Pumps & Piping

Are there any plans for major expansion or upgrade of facilities or major replacement/expansion of equipment? Explain the rationale and include projected costs.

Equipment purchases for the hands-on component of all courses are reviewed annually to provide the best learning opportunities.

Describe the technological resources used in the program. Are the technological resources adequate? Explain.

Industrial Systems labs are equipped with equipment and instructional technology appropriate to the courses taught, including the following:

Oscilloscopes

Power supplies

Function generators

Logic probes

Digital multi meters

Fanuc Industrial robots/trainers

Vibralign, Industrial laser shaft alignment

PLC trainer and associated equipment

Instrumentation calibration equipment/trainers

Hydraulic/Pneumatic trainers

Electrical wiring materials and supplies

Laptop Computers

Multimedia equipment in each room

Hand and power tools

Hydraulic press

Motor and pump mounting trainers

Gear/sheave/sprocket ratio and alignment trainers

Automation Trainer
Tap/die/drill sets
Specialty pullers and separators
Motor control equipment

Are there any plans for major expansion or upgrade of technological resources? Explain the rationale and include projected costs.

The need for upgrading and replacing equipment is ongoing due to the continually changing needs of industry. Resources will be added as needed to provide current and relevant education and skills training.

Describe the library resources that are available to the program.

IST faculty makes recommendations for additions to the campus library.

Are the library resources adequate for the program? Explain.

Yes

Are there any plans for expansion or upgrade of library resources for the program? Explain the rationale and include projected costs.

No

Advisory Committee

Is an advisory committee in place for the program? If so, list the committee members and their affiliation in the community. If not, are plans in place to establish an advisory committee?

The IST Advisory Committee consists of the following members:

Dr. David Campbell (ex officio), President NACC

Dr. Mike Kenamer (ex officio), Dean of Workforce Development, NACC

Dennis Lester, Instructor, NACC

David Hudson, WestRock, Stevenson, AL.

Sammy Hicks, Playcore, Fort Payne, AL.

Kenny Brown, Vulcraft, Fort Payne, AL.

Randy King, Oval International, Fort Payne, AL.

Reggie Lowe, Newman Technology, Albertville, AL.

Steve Howell, Polyamide High Performance, Scottsboro, AL.

Gary Anderson, Polyamide High Performance, Scottsboro, AL.

What is the purpose and role of the advisory committee?

The Industrial Systems Technology Advisory Committee provides a means through which local industry leaders may provide input into the development and evaluation of the industrial systems technology program.

Describe any changes that have been made to the program as a result of advisory committee activity or suggestions.

- Increased focus on Programmable Logic Controllers (PLC'S).
- Soft skills and leadership skills have been incorporated into the IST program.
- Real time work experience has been addressed with the addition of a co-op work experience for each student.

Enrollment and Completions

What are the enrollment trends in the program over the last five years?

Number of Students Majoring in Industrial Systems Technology by Option AY 2015-2016 through AY 2019-2020					
Option	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
Electrical & Instrumentation (ISI)	22	18	16	13	13
Mechanical Maintenance (IMM)			4	8	3
Multi-Skilled (ISS)	22	22	27	20	19
Total	44	40	47	41	35

What are the enrollment trends in the program over the last five years by gender?

Number of Students Majoring in Industrial Systems Technology (all options) by Gender AY 2015-2016 through AY 2019-2020					
	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
Female	1	1	1	1	-
Male	43	39	46	40	35
Total	44	40	47	41	35

What are the enrollment trends in the program over the last five years by race/ethnicity?

Number of Students Majoring in Industrial Systems Technology (all options) by Race/Ethnicity AY 2015-2016 through AY 2019-2020					
	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
African American	2	2	1	1	2
Asian	-	-	-	-	-
Hispanic	3	4	2	3	4
Native American	2	1	1	1	-
Other	-	-	-	-	-
White	37	33	43	36	29
Total	44	40	47	41	35

What are the total number of enrollments and credit-hour production over the last five academic years?

Total Enrollments and Credit-Hour Production Industrial Systems Technology Courses AY 2015-2016 through AY 2019-2020					
	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
ILT Course Enrollment	396	307	282	255	203
CHP	1,171	876	811	724	581
INT Course Enrollment	93	108	104	94	96
CHP	279	324	312	282	288

What are the course success and retention rates in the program over the last three academic years?

Course Success and Retention Rates ILT, INT, MTT, and WDT Courses AY 2017-2018 through AY 2019-2020									
Year	Enrollments	Withdrawal Rate		Failure Rate		Pass Rate (A-D)		Success Rate (A-C)	
		No.	%	No.	%	No.	%	No.	%
2017-2018	953	57	6.0%	25	2.6%	869	91.2%	819	85.9%
2018-2019	813	75	9.2%	17	2.1%	714	87.8%	690	84.9%
2019-2020	761	40	5.3%	24	3.2%	696	91.5%	678	89.1%

*Grades of I ("incomplete") are not calculated in the course success and retention rates.

What do the data indicate about enrollment and student retention in the program?

Efforts to promote completion need to continue.

What are the plans for increasing enrollment and retention rates in the program?

Increased recruitment of dual enrollment students by inclusion and development of summer programs for STEM.

Hybrid course delivery methods added for students who are unable to attend class on campus due to full time employment.

How many students have earned a credential in the program in the last five academic years?

Completers in Industrial Systems Technology Academic Years 2015-2016 through 2019-2020					
Credential	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
AAS					
Electrical & Instrumentation (ISI)	5	4	5	2	2
Mechanical Maintenance (IMM)	-	-	-	1	-
Multi-Skilled (ISS)	4	4	3	2	3
Certificate					
Electrical & Instrumentation (ISI)	5	7	3	4	1
Mechanical Maintenance (IMM)	-	-	-	1	-
Multi-Skilled (ISS)	3	3	4	6	3
STC					
Electrical & Instrumentation (ISI)	3	33	7	19	4
Multi-Skilled (ISS)	-	-	-	-	-
Mechanical Maintenance (IMM)	-	2	2	3	1
Total Completers	20	53	24	38	14

Note: A student who earned multiple awards is counted in all applicable rows.

What are the plans for increasing the completion rates in the program?

Hybrid course delivery methods added for students who are unable to attend class on campus full time due to full time employment.

Licensure passage rates

Does the program lead to the opportunity for licensure? If so, what are the licensure opportunities?
No
What are the licensure pass rates, if applicable?
N/A
Does the program or any coursework in the program lead to any type of industry certification? If so, what are the certifications?
Electronics Technicians Association (ETA) certifications: EM1, EM2, EM4 (WKO-110) NCCER Core Course National Coalition of Certification Centers (NC ₃), 504 Multimeter Certification
What are the industry certification pass rates, if applicable?
504 Multimeter Certification 92% EM 1, 2 & 4 results for Fall 2019. (prior to COVID-19 pandemic) EM1 44% EM2 33% EM4 30% NCCER Core Course Spring and Fall for 2019 (prior to COVID-19 pandemic) 56%

Job Placement Rates and Employer Satisfaction

What are the job placement rates for graduates of the program?

As reported in the Perkins Report of 2020, the IST program had an employment rate of 100%.

Is employer satisfaction of graduates assessed? If so, are employers satisfied with graduates of the program? Please describe.

Employer satisfaction is assessed upon the student's completion of their co-op class (ADM-150/151/152). The employers have expressed satisfaction in most students completing their co-op.

Student Follow-Up Reports

Is student satisfaction with the program assessed? If so, are students in the program satisfied with the program? Please describe.

At this time, there is no formal assessment of student satisfaction.

Is alumni satisfaction with the program assessed? If so, are alumni of the program satisfied with the program? Please describe.

At this time, there is no formal assessment of alumni satisfaction.

Findings of Review

What are the strengths of the program?
<p>The Industrial Systems Technology program enables students with the knowledge to apply and receive employment in a high demand area.</p> <p>Through the efforts of the Advisory Committee and the faculty, the curriculum for each degree are continually evaluated and modified to meet the needs of local industries.</p> <p>Approved by Electronics Technicians Association – International (ETA) Approved by National Center for Construction Education and Research (NCCER). Approved by National Coalition of Certification Centers (NC₃)</p>
What are recommendations for improvement?
<p>Continue receiving recommendations from industry and upgrading equipment accordingly to facilitate the student’s exposure to modern manufacturing techniques. Add additional lab and classroom space.</p>
Please provide any other findings that are pertinent to the review.
N/A

Report Affirmed by:

Signed: Dennis Lester	Date: 7/1/2021
Dennis Lester, Industrial Systems Technology Program Coordinator	
Signed:	Date:
Kerry Wright, Dean of Workforce Development and Skills Training	
Signed:	Date:
Dr. David Campbell, NACC President	
Signed:	Date:
Kelly Black, Drafting and Design Instructor and Chair of the Curriculum Committee	