TAB G

Board of Trustees
Washtenaw Community College

DISCUSSION

4800 E. Huron River Drive
Ann Arbor, Michigan 48105-4800

Subject
Recommendation for New Programs for 2020-21

Date
March 31, 2020

RECOMMENDATION

That the Board of Trustees approve the New Programs and 3 + 1 Articulation Agreements for Fall 2020 as listed below:

- Transportation Technologies Associate in Applied Science – Advanced Technology and Public Services
- Advanced Automotive Services Technician Advanced Certificate – Advanced Technology and Public Services Division
- Automotive Cybersecurity Certificate – Business and Computer Technologies Division
- Management Certificate Business and Computer Technologies Division
- 3 + 1 Articulation Agreements
  - AAS in Physical Therapist Assistant - Eastern Michigan University /BS in Exercise Science
  - AAS in Physical Therapist Assistant - Eastern Michigan University/ BS in Exercise Science
  - AS in Construction Supervision - Rowan University / BA in Construction Management

IF MOVED TO ACTION, A ROLL CALL VOTE WILL BE TAKEN

Prepared by: Dr. Kimberly Hurns
Title: Vice President for Instruction

Recommended by: Rose B. Bellanca, Ed.D.
Rose B. Bellanca, President

Transportation Technologies
Associate in Applied Science – 60 Credits
Advanced Technology and Public Services Division
Transportation Technology Department

Description: In this Associate in Applied Science degree program, students have a choice to follow any of three different specialty tracks that will prepare them for employment in the transportation industry. This option can be selected if an associate's degree is required for employment or advancement in a field. Each track features a variety of application level classes where students perform lab-oriented practice for the required skills in the automotive service, auto body repair or motorcycle service related fields. Students will learn using the latest technology, methods and tooling in area of concentration.

Students will select a specialized track in one of the following areas, each of which has its own associated certificate program(s).

- Auto Service
- Auto Body
- Motorcycle Service

The program prepares the student for the State of Michigan Mechanics certification tests as well as the National Institute for Automotive Service Excellence (ASE) Certification Exams. Meet with a divisional advisor of faculty member for assistance in developing a concentration of study. An advisor can help determine career interests and educational goals, as well as provide transfer and career information.

Need/Job Demand: Employers in the transportation sectors are experiencing a gap between the supply of skilled workers and the demand for job ready employees. Indeed.com currently lists over 80,000 job openings around the United States in these fields and over 2,000 in Michigan. The Bureau of labor statistics anticipates an average projected growth (4-9%) between 2018 and 2028.[1]

Student Learning Outcomes:

1. Demonstrate the mastery of skills related to the student's technical concentration.
2. Apply critical thinking skills to solve an identified problem in the student's technical concentration.
3. Demonstrate and apply required industry related safety standards.

Curriculum Review: Reviewed by the Curriculum and Assessment Committees 1/23/20.

Wage Data: The median salary in 2019 was $15.00-$24.50 hourly or $36,790 to $47,350 annually.

[1] Occupational Outlook Handbook Bureau of Labor Statistics

Program Requirements:

Automotive Services Pathway

Semester 1	**Title**	**Credits**
Elective	Math Elective	3
Elective	Writing/Composition Elective	3
ASV 130	Automotive Maintenance	4
ASV 131	Automotive Electrical	4
Restricted Elective	Restricted Elective 1*	2 - 4
		16-18
Semester 2	**Title**	**Credits**
ASV 132	Automotive Engines	4
ASV 133	Automotive Fuel Systems	4
ASV 134	Automotive Transmissions	4
ASV 135	Facility Operations	3
Restricted Elective	Restricted Elective 2**	2 – 4
		17-19
Semester 3	**Title**	**Credits**
Elective	Arts and Humanities Elective	3
Elective	2nd Writing/Composition or Communication Elective	3
ASV 254	Suspension and Steering	2
ASV 255	Brakes	2
ASV 256	Electrical and Electronic Systems	4
ASV 258	Engine Drivability	2
		16
Semester 4	**Title**	**Credits**
Elective	Natural Science Elective	3
Elective	Social and Behavioral Science Elective	3
ASV 251	Engine Diagnosis and Repair	2
ASV 257	Heating and Air Conditioning Systems	2
ASV 266	Advanced Transmissions	2
		12
Minimum Credits		**61**

***** Restricted Elective 1: Select from ASV 174, ASV 269, ASV 270, ASV 277, ASV 279, ABR 114, MTT 102, WAF 105, ABR 111 or CST 185.

** Restricted Elective 2: Select from ABR 140 or WAF 103.

Motorcycle Services Pathway

Semester 1	**Title**	**Credits**
Elective	Math Elective	3
Elective	Writing/Composition Elective	3
MST 110	Motorcycle Service Technology I	4
ABR 114 or WAF 105	Applied Auto Body Welding Introduction to Welding Processes	4
Restricted Elective	Restricted Elective*	2 - 4
		16- 18
Semester 2	**Title**	**Credits**
MST 120	Motorcycle Service Technology II	4
MST 130	Motorcycle Service Technology III	4
MTT 102 or MST 230	Machining for the Technologies Motorcycle Service Technology III	2 - 3
ABR 140 or WAF 103	Aluminum Welding for Automotive Applications Introduction to Gas Tungsten Arc Welding	2 - 4
Restricted Elective	Restricted Elective*	2 – 4
		14 - 19
Semester 3	**Title**	**Credits**
Elective	Arts and Humanities Elective	3
Elective	Writing/Composition or Communication Elective	3
MST 140	Motorcycle Service Technology IV	4
MST 220	Dynamometer Operations	4
Restricted Elective	Restricted Elective*	2 - 4
		16 - 18
Semester 4	**Title**	**Credits**
Elective	Natural Science Elective	3
Elective	Social and Behavioral Science Elective	3
MST 210	Performance Engine Technology	4
MST 225	Advanced Dynamometer Tuning	4
		14
Minimum Credits		**60 - 69**

***** Restricted Elective: Select from ABR 119, ABR 201, ASV 130, MST 106 or MST 112

Auto Body Pathway

Semester 1	**Title**	**Credits**
Elective	Math Elective	3
Elective	Writing/Composition Elective	3
ABR 111	Introduction to Auto Body Repair	4
ABR 112	Introduction to Automotive Refinishing	4
ABR 114	Applied Auto Body Welding	2
		16
Semester 2	**Title**	**Credits**
ABR 113	Estimating and Shop Operations	4
ABR 119	The Art of Metal Shaping	2
ABR 123	Technical Auto Body Repair	4
ABR 124	Technical Automotive Refinishing	4
Restricted Elective	Restricted Elective*	2 – 4
		16 - 18
Semester 3	**Title**	**Credits**
Elective	Arts and Humanities Elective	3
Elective	Writing/Composition or Communication Elective	3
ABR 135 or ASV 130	Collision-Related Mechanical and Electrical Repairs Automotive Maintenance	4
ABR 140	Aluminum Welding for Automotive Applications	4
Restricted Elective	Restricted Elective*	2 - 4
		16 - 18
Semester 4	**Title**	**Credits**
Elective	Natural Science Elective	3
Elective	Social and Behavioral Science Elective	3
ABR 201	Lightweighting Composite Repair	4
Restricted Elective	Restricted Elective*	2 - 4
		12 - 14
Minimum Credits		**60 - 66**

Advanced Automotive Services Technician

Advanced Certificate – 12 Credits
Advanced Technology and Public Services Division
Transportation Technology Department

Description: This advanced certificate builds on the electrical and mechanical skills developed in the Automotive Services Technician (CTASVT) certificate. This advanced certificate prepares students for employment as a certified automotive technician. The program also prepares the student for the State of Michigan Mechanic certification tests as well as the National Institute for Automotive Service Excellence (ASE) certification exams.

Using specialized electrical diagnostic equipment students will diagnose and repair vehicle systems such as Automotive Engines, Automatic and Manual Transmissions, Automotive HVAC systems and Powertrain Drivability systems.

Need/Job Demand: Employers in the transportation sectors are experiencing a gap between the supply of skilled workers and the demand for job ready employees. Indeed.com currently lists over 80,000 job openings around the United States in these fields and over 2,000 in Michigan. The Bureau of labor statistics anticipates an average projected growth (4-9%) between 2018 and 2028.

Student Learning Outcomes:

1. Diagnose and repair vehicle engine components.
2. Perform engine related repairs on project vehicles
3. Perform powertrain control module faults using vehicle specific equipment.

Curriculum Review: Reviewed by the Curriculum and Assessment Committees 1/23/20.

Wage Data: The median salary in 2019 was $15.00-$24.50 hourly or $36,790 to $47,350 annually.[2]

Program Requirements:

Course Code	Title	Credits
ASV 135	Facility Operations	2 credits
ASV 257	Heating and Air Conditioning Systems	2 credits
ASV 266	Advanced Transmissions and Drivetrain	2 credits
ASV 258	Engine Drivability	2 credits
ASV 251	Engine Diagnosis and Repair	2 credits
Restricted Electives	Select 2 credits from ABR 140 or WAF 103	2 credits
Total	Total	12 credits

[2] Occupational Outlook Handbook Bureau of Labor Statistics

Automotive Cybersecurity
Certificate – 19 Credits
Business and Computer Technologies Division
Computer Science and Information Technology Department

Description: This certificate program is designed to meet the emerging demand for highly skills automotive cybersecurity professionals. In this certificate program, students are introduced to the skills and strategies needed to test security related to automobile networks and related infrastructure. Students will work with the various automobile networks (CAN, LIN, Ethernet, and FlexRay) and explore protocols and messages produced by the vehicle that could be vulnerable to attacks. Students will consider risk mitigation technologies including authentication, encryption and firewall technologies.

Learners in this program acquire the following skills: Learn basic networking concepts including V2V, V2I and V2X communication; Understand common security terms and concepts and how they relate to automobiles in both a technical and compliance nature; Understand relevant vehicle technologies including ECU's (Electronic control unit) and basic electrical theory; Read and write basic computer programs and scripts; Develop process and procedures for testing the security of a vehicle's information network; Practice reverse engineering techniques for testing security.

Need/Job Demand: Today there are over 100 million lines of code in the average modern high end vehicle with multiple entry points for bad actors. As the threat of nation state hackers is on the rise, securing our critical infrastructure in the area of mobility has never been more important. Automotive companies have expanded their hiring needs to include Automotive Cyber Security Technicians and Engineers. These individuals will not only understand cyber security but be able to think like a hacker in order to make vehicles and the connected infrastructure safe from attacks.

Student Learning Outcomes:

1. Students will identify and use process and procedures for testing the security of a vehicle's information network.
2. Students will explain the components and protocols surrounding vehicle security.
3. Students will test the security of a vehicle network in order to find vulnerabilities.
4. Students will connect regulatory and compliance issues to connected automobiles.

Curriculum Review: Reviewed by the Curriculum and Assessment Committees 2/20/20.

Wage Data: This career field is too new to predict. However, the median pay for an Information Security Analysts is $98,350 per year or $47.28 per hour. Jobs are estimated to grow by 32% between 2018 and 2028.[3]

[3] Occupational Outlook Handbook Bureau of Labor Statistics

Program Requirements:

Course Code	Title	Credits
CST 185	Local and Mobile Networking Essentials	4 credits
CSS 200	Introduction to Network Security - Security+	4 credits
ASV 131	Automotive Electrical	4 credits
CPS 120	Introduction to Computer Science	3 credits
CSS 285	Pen Testing Automotive Platforms	4 credits
Total	**Total**	**19 credits**

Management
Certificate – 12 credits
Business and Computer Technologies Division
Business Department

Description: This certificate offers students an opportunity to acquire skills to supervise an operation by learning and applying basic management principles through case studies and exercises. Upon completing this program, students will be able to use various tools to manage an operation which includes developing goals, organizing work activities, promoting desired employee performance, and monitoring productivity with a customer focus. Emphasis will be placed on developing skills that will involve both a critical and creative approach to management problem-solving activities. The certificate may also be applied toward various WCC Associate in Applied Science Degrees.

Need/Job Demand: This is a high demand, high skill and high wage program as defined by the Michigan Community College Network[4].

Student Learning Outcomes:

1. Recognize and apply tools and skills required for management in common organizational settings
2. Recognize and apply management skills, tools, and function of management in common organizational settings.

Curriculum Review: This program is moving from an advanced certificate to a certificate. It was reviewed by the Curriculum and Assessment Committees 2/13/20.

Wage Data: The median salary range in 2018 was $54,240 to $132,620 annually.

Course Code	Title	Credits
BMG 230	Principles of Management	3
BMG 273	Managing Operations	3
BMG 279	Performance Management	3
BMG 291 or BMG 231	Project Management Nonprofit Management	3
Total		12

[4] http://www.michigancc.net/ccdata/sd/pi.aspx

3 + 1 Articulation Agreement Degree Programs

Washtenaw Community College – AAS in Physical Therapist Assistant
And
Eastern Michigan University – BS in Exercise Science

Title	Credits
General Education/MTA	30 credits
WCC Accounting Requirements and Electives	50 credits
Total Transfer Credits	**80 credits**

Washtenaw Community College – AAS in Multiple Programs
And
Purdue University Fort Wayne – BAS in Applied Science Program

Title	Credits
General Education	30 credits
WCC Requirements and Electives	58 credits
Total Transfer Credits	**88 credits**

Washtenaw Community College – AS in Construction Supervision
And
Rowan University – BA in Construction Management

Title	Credits
General Education	36 credits
WCC Construction Supervision Requirements and Electives	48 credits
Total Transfer Credits	**84 credits**