

**OFFICE OF CHIEF ACADEMIC OFFICER**  
**Summary of State Board of Education Agenda Items**  
**Consent Agenda**  
**February 16, 2023**

**OFFICE OF CAREER AND TECHNICAL EDUCATION**

- F. Approval to begin the Administrative Procedures Act process: To revise selected Mississippi Secondary Curriculum Frameworks in Career and Technical Education

**Executive Summary**

The Mississippi Secondary Curriculum Frameworks have a two-year or four-year curricula revision cycle. The revision cycle includes input from local district personnel and business/industry partners. Approved secondary curricula will be disseminated for implementation in the 2023-2024 school year.

The following secondary curriculum frameworks are recommended for approval:

1. Agricultural and Natural Resources
2. Aquaculture
3. Diesel Technician
4. Entrepreneurship
5. Logistics and Supply Chain
6. Polymer Science

All curricula frameworks are designed to provide local programs with an instructional foundation that can be used to develop localized instructional management plans and course syllabi. Additionally, the frameworks include the following elements for each revised secondary curriculum:

- ❖ Program
- ❖ Description
- ❖ Classification of Instructional Program (CIP) Code and CIP Name
- ❖ Course Outline and Codes
  - Curriculum
  - Student Competencies
  - Suggested Student Objectives

NOTE: The Office of Career and Technical Education has provided executive summaries of the curriculum framework revisions. The detailed documents are available upon request.

Recommendation: Approval

Back-up material attached

## Summary of Secondary Curricula Changes for Career & Technical Education

### **2023 Agricultural and Natural Resources**

- Document in new curriculum format.
- Competencies and objectives reflect current standards and industry recommendations.
- Unit 1: The unit stayed the same from the previous document.
- Unit 2: Changed title from Agricultural Leadership and Career Development to The National FFA Organization and Career Development.
- Unit 3: Changed title from Introduction to Experiential Learning (SAE) to Supervised Agricultural Experience (SAE) for All and Embedded Work-Based Learning to meet National FFA standards and new state Perkins indicators for program quality.
- Unit 4: Focused on more animal breeds and classes. More focus on animal body systems and reproduction. Added competencies in management practices for maintaining herd health.
- Unit 5: Expanded on plant classification (angiosperms, gymnosperms, etc.). Added more focus on binomial nomenclature. Removed some content on pest management.
- Unit 6: Remove the land capability classification system.
- Unit 7: Added new unit- Hand and Power Tools in Agriculture.
- Unit 8: Revised former Unit 7 (Agricultural Labs Operation and Safety)-Welding and Cutting Processes.
- Unit 9: Former Unit 8. Added basic tools for engine repair.
- Unit 10: Former Unit 9. Changed name from Orientation/Careers/Leadership to ANR Careers and FFA Leadership. Incorporated SAE for ALL recordkeeping principles.
- Unit 11: Former Units 10 and 11 changed their title from Science of Agricultural Environment to Conservation and Management of Natural Resources. Included Water Quality Management.
- Unit 12: The unit stayed the same from the previous document.
- Unit 13: Combined former Units 13 and 14 (Wildlife and the Environment and Environmental Stewardship).
- Unit 14: Removed Construction from the name of the former unit 15.
- Unit 15: Took concepts from former Unit 15 and added welding concepts.
- Unit 16: Added more business concepts to former Unit 16.

### **2023 Aquaculture**

- Document in new curriculum format.
- Competencies and objectives reflect current standards and industry recommendations.
- Changed the name of the course from Aquaculture Technology to Aquaculture.
- Decreased the number of units from 19 to 15.
- Unit 2: Safety and Biosecurity moved from Unit 12 in the original document.
- Unit 3: Professional and Student Organizations replaced Leadership and Experiential Learning.
- Unit 4: SAE for All was added to the document.
- Unit 5: Basic Water Chemistry and Management moved from Unit 3 in the original document.
- Unit 6: Major and Minor Crops with Application combined the content in Units 6-8 in the original document.
- Unit 7: Aquatic Resources Management was moved from the end of the original (Unit 18) because the content was more desirable earlier in the course.

- Unit 8: Moved from Unit 10.
- Unit 9: Combined Hatchery Management (Unit 17) and Hatchery Maintenance and Operation (Unit 9). The new Name for Unit 9 is Hatchery Management and Operation.
- Unit 10: Aquatic Health Management- combined Units 14 and 15.
- Unit 11: Added Immersion SAE concepts into FFA.
- Unit 12: Created a Unit titled Aquaculture Wastes and Remediation.
- Unit 13: Title remained Advanced Culture Methods. The content was reworded to better fit the embedded WBL model.
- Unit 14: Added a Pond Aquaculture Unit to the 2023 curriculum.
- Unit 15: Previously, Unit 19 in the older document.
- Competencies and objectives began with more action verbs to compensate for the newly adopted work-based learning assessment method for agricultural pathways.
- Acknowledgement section changed format, and representatives were updated.
- Names of the Two-Two Carnegie Courses changed to Aquaculture Concepts and Aquaculture Applications

### **2023 Diesel Service Technician**

- Document in new curriculum format.
- All items listed below as "Moved", "Created", "Revised", "Reworded", or "Combined" were implemented upon the attending industry representatives' requests.
- Standards were revised to reflect the needs within the industry.
  - The "Automotive Service Excellence (ASE), Education Foundation Standards" has replaced all other standards. ASE is the benchmark for Diesel Services certification.
- Competencies and objectives reflect current standards and industry recommendations.
- Course Outline changes include the following:
  - Description and hours adjusted to curriculum changes.
- Career Pathway Outlook – "Current and Projected Occupation Report" updated.
- Professional Organizations have been edited to reflect industry changes.
- Expanded old Unit 1: "Fundamentals of Diesel Systems and Components" and old Unit 2: "Diesel Systems, Theories, and Components".
  - Topics covered in these two older units have been either alluded to or included within the new Units 1 through 12 that are based on the ASE industry standards.
- Unit 1 retitled: "Orientation".
  - Revised and condensed old Unit 1: objective one by removing competency 1b.
- Unit 2 retitled: "Workplace Employability Skills".
- Unit 3 retitled: "Automotive Shop and Personal Safety".
  - Safety note added and included a note that indicates this is an ongoing topic utilized throughout the course.
- Unit 4 retitled: "Tools and Equipment".
- Unit 5 retitled: "Preparing a Vehicle for Service".
- Units 6 – 52 have been adapted from the Automotive Service Excellence (ASE) Education Foundation Medium/Heavy Truck Series Standards for Inspection, Maintenance, and Minor Repair (IMMR).
- Unit 6 retitled: "Diesel Engines – General".
  - Initiates the ASE industry standard-based curriculum.
  - Safety note added and included a note that necessitates maintenance/repair document review.
  - Note added to indicate that access to a working diesel vehicle is preferable for the ensuing objectives.

- Unit 7 retitled: "Diesel Engines – Cylinder Head and Valve Train".
- Unit 8 retitled: "Diesel Engines – Engine Block".
- Unit 9 retitled: "Diesel Engines – Lubrication Systems".
- Expanded old Unit 3: "Electrical/Electronic Systems".
  - Topics covered in this older unit have been either alluded to or included within the new Units 13 through 24 that are based on the ASE industry standards.
- Unit 14
  - Safety note added and included a note that necessitates maintenance/repair document review.
  - Note added that access to an electrical trainer/workstation is preferable for the ensuing objectives.
- Unit 20
  - Safety note added and included a note that necessitates maintenance/repair document review.
  - Note added to indicate that access to a working diesel vehicle is necessary for the ensuing objectives.
- Unit 24
  - Safety note added and included a note that necessitates maintenance/repair document review.
  - Note added that access to a working diesel vehicle or hydraulic system equipment is necessary for the ensuing objectives.
- Expanded old Unit 4: "Preventive Maintenance and Inspection" and old Unit 5: "Advanced Diesel Engine Performance".
  - Topics covered in these two older units have been either alluded to or included within the new Units 25 through 38 that are based on the ASE industry standards.
- Unit 26
  - Safety note added and included a note that necessitates maintenance/repair document review.
  - Note added to indicate that access to either a working diesel vehicle or an air brake trainer is necessary for the ensuing objectives.
- Unit 36
  - Safety note added and included a note that necessitates maintenance/repair document review.
  - Note added to indicate that access to either a working diesel vehicle or older steering and suspension components and tires would be necessary for the ensuing objectives.
- Expanded old Unit 6: "Auxiliary Components - Hydraulic Systems, Theories, and Components" through old Unit 9: "Auxiliary Components - Introductory Welding and Cutting".
  - Topics covered in these four older units have been either alluded to or included within the new Units 39 through 52 that are based on the ASE industry standards.
- Unit 44
  - Safety note added and included a note that necessitates maintenance/repair document review.
  - Note added to indicate that access to a working diesel vehicle is preferable for the ensuing objectives.

- Unit 49
  - Safety note added and included a note that necessitates maintenance/repair document review.
  - Note added to indicate that access to either a working diesel vehicle or an HVAC trainer is preferable for the ensuing objectives.
  - Note added indicating that HVAC practices and procedures must be adhered to throughout this unit and the subsequent units.
- Unit 52 concludes the ASE industry standard-based curriculum.
- Industry Standards updated to reflect changes.

### **2023 Entrepreneurship**

- Document in new curriculum format.
- Competencies and objectives reflect current standards and industry recommendations.
- Changed unit titles.
- Updated the course description.
- Deleted Appendix A, C, and D.
- Updated Appendix.

### **2023 Logistics and Supply Chain**

- Course name change from “Transportation Logistics” to “Logistics and Supply Chain”.
- Document in new curriculum format.
- All items listed below as "Moved", "Created", "Revised", “Reworded”, or "Combined" were implemented upon the attending industry representatives’ requests.
- Standards were revised to reflect the needs within the industry.
  - The "American Society of Transportation and Logistics Standards (ASTL)" was replaced with "Manufacturing Skill Standards Council Standards (MSSC)—Logistics 2021 “Industry 4.0” Edition".
- Competencies and objectives reflect current standards and industry recommendations.
- Course Outline changes include the following:
  - Description and hours adjusted to curriculum changes.
  - Each of the four one-Carnegie unit courses’ names have changed.
    - From "Fundamentals of Transportation Logistics" to "Fundamentals of Logistics and Supply Chain".
    - From "Receiving and Stocking" to "Fundamentals of Material Handling".
    - From "Material Handling" to "Advanced Material Handling".
    - From "Supply-Chain Management" to "Advanced Logistics and Supply Chain".
  - Each of the two 2-Carnegie unit courses’ names have changed.
    - From "Transportation Logistics I" to "Logistics and Supply Chain I".
    - From "Transportation Logistics II" to "Logistics and Supply Chain II".
- Career Pathway Outlook – Current and Projected Occupation Report updated.
- Professional Organizations have been edited to reflect industry changes.
- All competencies involving the term definitions now include their application as well.
- Revised Unit 2 Objective.
  - Replaced the term "distribution facility" with "distribution/fulfillment facility" throughout this unit.
  - Created new competencies for 1b and 1c to include first aid, CPR, safety, and ergonomics.
  - Specifically mentioned the "OSHA 10 General Industry" certification to reflect industry standards.

- All subsequent competencies have been shifted up one level.
- Unit 3 retitled “Overview of Supply Chain Automation, Transportation, and Distribution/Fulfillment”.
  - Removed the term “APICS” and replaced it with “industry” to allow for general adaptability.
  - Reworded competency 1a to require an in-depth "raw material" to "consumer" product flowchart.
  - Shifted the focus of this unit to the "global supply chain" to meet industry standards.
  - Removed old competencies 2d, 2e, 3c, and 3d.
  - Reworded objective 4 to emphasize "efficiency" and "process improvement".
  - Removed old competencies 1a, 1b, and 1e; introduced “Lean logistics” as an industry standard.
  - Created new competency 5c to introduce “international ports” aligning the "global supply chain".
- Removed the “-” from the Unit 4 title.
  - Combined old competencies 1a and 1m.
  - Removed old competency 1f.
  - Reworded old competency 1g from “operational maintenance” to “corrective maintenance”.
- Unit 5
  - Revised old competency 1c to include “material requirements planning (MRP)”.
  - Combined old competencies 2a and 2b.
  - Combined old competencies 2k and 2l and moved them to new competency 2c.
  - Removed old competencies 2e and 2f.
  - Reversed the order of old competencies 2i and 2j.
  - Created a new competency 2i to bring awareness to “warehouse operations, inventory, and material handling equipment (MHE)”.
  - Removed old competency 2n.
  - Changed old competency 3a wording from “concerns” to “factors”.
  - Revised the wording in old competency 3c.
- Unit 6 retitled “Receiving and Stocking Procedures”.
  - Reworded objective 1.
  - Changed wording in old competency 1c from “checking” to “inspecting in-bound” merchandise.
  - Reworded competency 1d from “Complete” to “Receiving”.
  - Added “Returned Materials Authorization (RMA)” to competency 1g.
  - Revised object two wording regarding stocking to “demonstrate proper procedures”.
  - Replaced old competency 2c with the industry term “process of replenishments.”
  - Removed objective 3.
- Unit 7
  - Revised competency 1b.
  - Created new competency 1d to “explain backorders or shortages.”
  - Removed old competencies 1i, 2c, 2h, 2j, 2k, 2l, 2o, 3d, 3m, and 3n.
  - Combined old competencies 2d and 2e to become the new 2c.
  - Added examples of load types to old competency 2q, which has become the new 2j.
  - Added “conversions” to competency 3a.
- Created new Unit 8 titled: “Emerging Technologies”.

- Introduces various industry-recognized technologies used globally.
- All subsequent units have been renumbered.
- Unit 9 retitled “Orientation, Leadership, Employability Skills, Safety, and Logistics Review”.
  - Competency 4d replaced old Unit 8: competency 4d.
    - Changed “put-away” to “putting away.”
- Unit 10 retitled “Advanced Material Handling, Storage Equipment, and Supply Chain Technologies”.
  - Competency 1a replaced old Unit 9: competency 1a.
    - Changed “distribution centers” to “global supply chain.”
  - Competency 1b replaced old Unit 9: competency 1c.
    - Changed “carousels” to “conveyor and sorting systems.”
  - Reworded objective two from “warehouse” to “supply chain.”
  - Removed old Unit 9: competency 2b.
- Unit 11 retitled “Managing Distribution/Fulfillment Centers and Warehouse Facilities”.
- Unit 12 retitled “Advanced Logistics, Supply Chain Automation, and Intermodal Operations”.
  - Competency 1b replaced old Unit 11: competency 1b; added “global” as industry terminology.
  - Removed old Unit 11: competencies 1d, 1e, and 2k.
  - Revised objective two from “management” to “automation.”
  - Competency 2a replaced old Unit 11: competency 2a; added “global” as industry terminology.
  - Competency 2e replaced old Unit 11: competency 2e; removed “management.”
  - Competency 2g replaced old Unit 11: competency 2g; added a focus on “automation.”
- Unit 13, retitled “Environmental Safety and Sustainability”.
  - Consolidated old Unit 12: competencies 1a, 1b, 1c, 1e, 1f, and 1g into new competency 1a.
- Created new Unit 14 titled: “Advanced Emerging Technologies”.
  - Compares and contrasts the various industry-recognized technologies used globally.
- Industry Standards updated to reflect changes.

### **2023 Polymer Science**

- Document in new curriculum format.
- All items listed below as "Moved", "Created", or "Revised" in any way, or "Combined" was implemented upon the attending industry representatives' requests.
- Competencies and objectives reflect current standards and industry recommendations.
- Course Outline – description and hours adjusted to curriculum changes.
- Career Pathway Outlook – Current and Projected Occupation Report updated.
- Added “American Chemical Society” to Professional Organizations.
- Unit 1 retitled: “Orientation to Industrial Employability and Safety”.
  - Moved old Unit 11: Objectives 1 and 2 to Objectives 2 and 3.
  - Shortened and revised Unit 11: “Enrichment” and added to Objective 5
  - Added safety notice
- Unit 2 retitled: “Chemistry of Solids and Solutions”.
  - Moved old Unit 3: Objectives 1 - 4 to Objectives 1 – 4.
- Unit 3 retitled: “Foundational Organic Chemistry”.
  - Split old Unit 3: Objective 5 into Objectives 1 – 2.

- Moved old Unit 3 “Enrichment” #5 to new Unit 3 “Enrichment”.
- Unit 4 retitled: “Polymers”.
  - Moved old Unit 1: Objective 2 to Objective 1.
  - Moved old Unit 4: Objective 2 to Objective 3.
  - Created new Unit 2.
  - Moved old Unit 2 to Objective 4.
  - Revised old Unit 4: Objective 1 and move to Objective 5.
  - Moved old Unit 4: Objective 3 to Objective 6.
  - Created new Objective 7.
  - Combined the “Enrichment” section with old Unit 2 “Enrichment”.
- Unit 5 retitled: “Thermoplastic Polymer Processing”.
  - Created Competency 1.
  - Revised old Unit 7: Objective 2 and moved to Objective 2.
  - Moved old Unit 7: Objective 3 to Objective 3.
  - Moved old Unit 5: Competency 2b to 3b.
  - All subsequent competencies are renumber to reflect these additions.
- Added safety notification to Unit 6.
- Created Unit 7: "Industry Guided Work-Based Learning" module in Year Two.
  - Based on a combination of the scientific method and the engineering design process.
- Unit 8 retitled: “Advanced Polymer Manufacturing”.
  - Moved old Unit 7 to Unit 8.
  - Revised Competency 2a.
- Unit 9 retitled: “Metals”.
  - Moved old Unit 8: Competency 1a to Unit 9.
  - Moved old Unit 8: Competency 1c to Competency 1b.
  - Moved old Unit 8: Competency 1d to Competency 2b.
  - Moved old Unit 8: Competency 1b to Competency 2a.
  - Moved a portion of the Unit 8 "Enrichment" section to Unit 9 "Enrichment"
- Unit 10 retitled: "Ceramics and Glass".
  - Moved Unit 8: Objective 2 to Objective 1.
  - Moved Unit 8: Competency 2d to Competency 2a.
  - Moved a portion of the Unit 8 "Enrichment" section to Unit 10 "Enrichment".
- Moved Unit 9: “Surface Coatings” to Unit 11.
- Unit 12 retitled: "Composite Materials, Manufacturing, and Applications".
  - Reworded Unit 10: Competency 2b to create Unit 12: Competencies 2b and 2c.
- Industry Standards updated to reflect changes.