Montana Big Sky Pathways (Programs of Study) Agreement Valid for 2014-2015 Academic Year

The Carl D. Perkins Career and Technical Education Act of 2006 (Perkins IV) calls for states to offer "career and technical programs of study," known as Big Sky Pathways in Montana, as an option to students and their parents when planning for and completing future coursework. These programs, at a minimum, must:

- Incorporate and align secondary and postsecondary education elements,
- Include academic and CTE content in a coordinated, non-duplicative progression of courses,
- Offer the opportunity, where appropriate, for secondary students to acquire postsecondary credits, and
- Lead to an industry-recognized credential or certificate at the postsecondary level, or an associate or baccalaureate degree.

By my signature on this form, I verify each of the eight (8) requirements listed below are demonstrated within the Big Sky Pathways Proposal and Gap Analysis. For approval, all eight (8) requirements must be checked.

<table>
<thead>
<tr>
<th>Name of Big Sky Pathway (Cluster Level):</th>
<th>Ag. Mechanics / AFNR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of High School:</td>
<td>Harlem High School</td>
</tr>
<tr>
<td>Names of High School Lead Teacher &amp; Counselor:</td>
<td>Rod Donahue / Darlene Azure</td>
</tr>
<tr>
<td></td>
<td>The Lead High School Teacher will be contacted if OPI has questions about this request.</td>
</tr>
<tr>
<td></td>
<td>Lead Teacher's email address: <a href="mailto:rodd@harlem-hs.k12.mt.us">rodd@harlem-hs.k12.mt.us</a></td>
</tr>
<tr>
<td></td>
<td>Lead Teacher's phone number: 406.353.2287</td>
</tr>
<tr>
<td>Name of College:</td>
<td>MSU-Northern</td>
</tr>
<tr>
<td>Name of College Program:</td>
<td>AAS Agriculture Mechanics Technology</td>
</tr>
<tr>
<td>Name of College Lead Faculty Member:</td>
<td>Jeremy Hofman</td>
</tr>
</tbody>
</table>

REQUIREMENTS FOR APPROVAL

1. Includes all state and local graduation requirements preparing students for entry into a postsecondary program or apprenticeship. ✔
2. Identifies the appropriate secondary CTE, academic, and recommended elective courses offered by this high school which will prepare the student for college-level courses without remediation. ✔
3. Outlines a non-duplicative sequence of courses from grades 9-12 and from secondary to postsecondary education. ✔
4. Leads to an industry-recognized postsecondary credential, degree or employment. ✔
5. Completed "Gap Analysis" with a program offered by a Montana postsecondary institution. ✔
6. When applicable, dual enrollment, Advanced Placement, International Baccalaureate courses and CTE START (Statewide Articulations) opportunities have been identified. ✔
7. Pathway curriculum includes appropriate state/national standards and/or industry skills standards. Identify standards used: Montana Standards for Career and Technical Education ✔
8. Links with a web-based guidance delivery system such as Montana Career Information System (MCIS). If using something other than MCIS, please indicate: ✔

High School Principal’s Signature: [Signature]
Date: 12/16/14

High School CTE Teacher’s Signature: [Signature]
Date: 12/1/14

High School Counselor’s Signature: [Signature]
Date: 12/1/14

College Dean’s Signature: [Signature]
Date: 1/18/14

College Lead Faculty Member’s Signature: [Signature]
Date: 1/18/14

Please submit this Approval Form with the Big Sky Pathways Proposal to the Big Sky Pathway Coordinator at the College identified above.

OPI Approval: [Signature]
Date of Approval: 12/16/14

OCHE Approval: [Signature]
Date of Approval:
## HIGH SCHOOL: Harlem High School

### COLLEGE: MSU-Northern

### COLLEGE DEGREE PROGRAM: Agricultural Mechanics, AAS

<table>
<thead>
<tr>
<th>Cluster Overview:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Careers in the Agriculture, Food and Natural Resources cluster involve the planning, implementation, production, management, processing, and/or marketing of agricultural commodities and services.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pathway Options:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Food Products and Processing Systems</td>
</tr>
<tr>
<td>• Plant Systems</td>
</tr>
<tr>
<td>• Animal Systems</td>
</tr>
<tr>
<td>• Power, Structural &amp; Technical Systems</td>
</tr>
<tr>
<td>• Natural Resources Systems</td>
</tr>
<tr>
<td>• Environmental Service Systems</td>
</tr>
<tr>
<td>• Agribusiness Systems</td>
</tr>
</tbody>
</table>

### Occupation Examples:
- Agricultural Chemical Dealer
- Aquaculturalist
- Environmental Compliance-Assurance Manager
- Farm Manager
- Health and Safety Sanitarian
- Meat Cutter-Meat Grader
- Park Manager
- Produce Buyer
- Recycling Technician
- Wildlife Manager
- Botanist
- Agricultural Educator
- Ecologist
- Environmental Engineer
- Fish and Game Officer
- Bank Loan Officer
- Plant Pathologist
- Veterinarian

For a complete listing, go to: [http://online.cnetcenter.org/find/career?c=1&g=Go](http://online.cnetcenter.org/find/career?c=1&g=Go)

## SUGGESTED HIGH SCHOOL COURSES

<table>
<thead>
<tr>
<th>Grade</th>
<th>Graduation Requirements</th>
<th>Workforce/2-Year College Prep</th>
<th>Pathway Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>9th</td>
<td>Graduation Requirements</td>
<td>Workforce/2-Year College Prep</td>
<td>English 9, PE 9, Algebra 1, Earth Science, Computer Skills, 2.5 from Foundation and/or electives.</td>
</tr>
<tr>
<td></td>
<td>4-Year MT College/Univ Prep (Rigorous Core)</td>
<td>English 9, PE 9, Algebra 1 or Geometry, Earth Science, Computer Skills, 2.5 from Foundation and/or electives. Driver's Ed.</td>
<td></td>
</tr>
<tr>
<td>CTE and/or Electives</td>
<td>CTE Cluster Foundation Courses</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Graduation Requirements</th>
<th>Workforce/2-Year College Prep</th>
<th>Pathway Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>10th</td>
<td>Graduation Requirements</td>
<td>Workforce/2-Year College Prep</td>
<td>English 10, PE 10, Geometry, World History, Biology, and 2 credits electives.</td>
</tr>
<tr>
<td></td>
<td>4-Year MT College/Univ Prep (Rigorous Core)</td>
<td>English 10, PE 10, Geometry or Algebra 2, World History, Biology, and 2 credits electives.</td>
<td></td>
</tr>
<tr>
<td>CTE and/or Electives</td>
<td>2 credits CTE Cluster or CTE Pathway Courses</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Graduation Requirements</th>
<th>Workforce/2-Year College Prep</th>
<th>Pathway Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>11th</td>
<td>Graduation Requirements</td>
<td>Workforce/2-Year College Prep</td>
<td>English 11, Algebra 2/2A, Us History, and 4 Credits from CTE Pathway courses.</td>
</tr>
<tr>
<td></td>
<td>4-Year MT College/Univ Prep (Rigorous Core)</td>
<td>English 11, Algebra 2 or Pre-Calculus, Us History, Chemistry or Anatomy and Physiology 1, and 3 Credits from CTE Pathway courses.</td>
<td></td>
</tr>
<tr>
<td>CTE and/or Electives</td>
<td>Up to 4 credits from CTE Pathway Courses</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Graduation Requirements</th>
<th>Workforce/2-Year College Prep</th>
<th>Pathway Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>12th</td>
<td>Graduation Requirements</td>
<td>Workforce/2-Year College Prep</td>
<td>English 12, Government, 5 credits electives and CTE.</td>
</tr>
<tr>
<td></td>
<td>4-Year MT College/Univ Prep (Rigorous Core)</td>
<td>English 12, Government, Pre-Calc or Calculus, Physics, AP 2, and 2 credits CTE.</td>
<td></td>
</tr>
<tr>
<td>CTE and/or Electives</td>
<td>Pathway Courses</td>
<td></td>
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</tr>
</tbody>
</table>

## ADVANCED LEARNING OPPORTUNITIES

High School to College/Career Linkages

### CTE START courses:

### Advanced Placement or IB courses:

### Dual Enrollment courses:

### Online courses:

**Other:** Supervised Agricultural Experience (SAE) and participation in appropriate FFA activities support and reinforce classroom and laboratory learning and should be a requirement for all students

## POSTSECONDARY PROGRAM OF STUDY

<table>
<thead>
<tr>
<th>Math</th>
<th>English</th>
<th>Major</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>14—Semester 1</td>
<td>AGTE225 Intro to Grain Harvesting</td>
<td>DIES104 Intro to Diesel Engines</td>
<td>SPCH142 Intep. Communications</td>
</tr>
<tr>
<td></td>
<td>DIES114 Intro to Diesel Engines Lab</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

September 2011
14—Semester 2
M111 Tech. Math
Or
M121 Co Algebra
Or
M145 Liberal Arts
AGTE130 Intro to Ag Tractors
ATDI/134 Electrical/Electronic Systems 1
DIES115 Intro to Diesel Fuel Systems

15—Semester 1
AGTE230
AGTE210 Tlg, Pntg, Spry Implements
DIES216 Heavy Duty Power Trains
DIES262 Diesel Engine Diagnosis & Repair
DIES272 Diesel Engine Diag & Repair Lab
WLDG260 Repair & Maintenance Welding

15—Semester 2
WRIT108 Elem. TechWriting
AGTE120 Forage Implements
ATDI/264 Ad. Elec/Electronic Syst 2
ATDI/265 Heating & Air Condition
DIES204 Intro/Handyrics & Pneumatics
DIES214 Intro/Handyrics & Pneumatics Lab

MONTANA POSTSECONDARY OPPORTUNITIES
Montana University System Degree and Program Inventory: http://www.homepage.montana.edu/~mus/drginv/
Your Guide to Montana's Certificate and Associate Degree Programs: http://mus.edu/twoday/YourGuide.html

Colleges of Technology:
BLCOT—Billings; GFCC—Great Falls; HCC—Helena; TECHCOT—Butte; UMCC—Missoula;
GCP—Bozeman

Community Colleges:
DCC—Glendive;
FVCC—Kalsied;
MCC—Missoula

Tribal Colleges:
BFCC—Browning;
CDKC—Lame Deer;
FCC—Butte;
FPCC—Poplar;
SCC—Box Elder;

Four Year Colleges/Universities:
MSU—Bozeman; MSUB—Billings;
MSUN— Havre; TECH—Butte; UM—Missoula; UMW—Dillon

MILITARY
• Requires diploma or GED
• 17 with parental consent; 18 without
Air Force, Air Guard, Army, Coast Guard, Marines, and Navy
For more information: http://todaysmilitary.com

PROFESSIONAL CERTIFICATE
• Requires diploma or GED
• Less than 30 credits; little/no general ed credits
• Complete in one year or less
Agri-Mechanics Machinery/Technology — MSUN
Farm Equipment Mechanics
For more information: http://www.mt.gov/mt/agriculture/mt-farm-equipment-technology.html

APPRENTICESHIP
• Requires diploma or GED
• Must be at least 18
• Minimum 2,000 hours of supervised experience
Agri-Business Technology — MCC
Agri-Mechanics Machinery/Technology — DCC
Livestock Technology — DCC
Natural Resource Management — FVCC

CERTIFICATE OF APPLIED SCIENCE
• Requires diploma or GED
• 30-45 credits; limited general education credits
• Complete in one year or less
Agri-Business Technology — DCC
Agri-Business Technology—Equitation — DCC
Agri-Business Technology—Mechanical — DCC
Mechanical Engineering — MSUN
Natural Resource Management — FVCC

ASSOCIATE OF APPLIED SCIENCE DEGREE
• Requires diploma or GED
• 60-72 credits; includes 15-25 general ed credits
• Complete in two years (if prepared academically in math and English)
Agri-Business Technology — DCC
Agri-Business Technology—Equitation — DCC
Agri-Business Technology—Mechanical — MSUN
Equine Studies — UM, MCC
Natural Horsemanship — UM
Natural Resource Management — FVCC, BFCC

BACCALAUREATE DEGREE
• Requires 4-year college prep for admission
• 128 credits (approximately)
• Complete in four years
Agriculture Business — MSU
Agriculture Education — MSU
Animal Science — MSU
Biotechnology — MSU
Environmental Horticulture — MSU
Environmental Sciences — MSU
Land Rehabilitation — MSU

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<table>
<thead>
<tr>
<th>Land Resource Sciences — MSU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Resources &amp; Rangeland Technology — MSU</td>
</tr>
<tr>
<td>Plant Science — MSU</td>
</tr>
<tr>
<td>Sustainable Food &amp; Bio-energy Systems — MSU</td>
</tr>
<tr>
<td>Earth Sciences — MSU</td>
</tr>
<tr>
<td>Biological Sciences — MSU</td>
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<tr>
<td>Biology — UM</td>
</tr>
<tr>
<td>Environmental Studies — UM</td>
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<tr>
<td>Forestry — UM</td>
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<tr>
<td>Resource Conservation — UM</td>
</tr>
<tr>
<td>Wildland Restoration — UM</td>
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<tr>
<td>Wildlife Biology — UM</td>
</tr>
<tr>
<td>Environmental Engineering — TECH</td>
</tr>
<tr>
<td>Mining Engineering — TECH</td>
</tr>
<tr>
<td>Geological Engineering — TECH</td>
</tr>
<tr>
<td>Environmental Science — UMW, SKC</td>
</tr>
<tr>
<td>Earth Science — UMW</td>
</tr>
<tr>
<td>Environmental Science &amp; Forestry — SKC</td>
</tr>
</tbody>
</table>

*Degree and Program Inventory above may not be all inclusive*